

**PLANT McDONOUGH-ATKINSON  
CCR SURFACE IMPOUNDMENT  
(CCR UNIT AP-2 and 3/4)  
COBB COUNTY, GEORGIA  
PART B SECTION 1 – HYDROGEOLOGICAL  
ASSESSMENT REPORT**

---

FOR



**Georgia  
Power**

**Revision 05 – August 2022**

Golder Associates USA Inc.  
5170 Peachtree Road  
Building 100, Suite 300  
Atlanta, GA 30341  
(770) 496-1893

**wsp GOLDER**



# Table of Contents

<b>CERTIFICATION</b> .....	<b>IV</b>
<b>1.0 INTRODUCTION</b> .....	<b>1</b>
<b>1.1 Current Site Conditions and Pond Closure</b> .....	<b>1</b>
<b>2.0 BACKGROUND INFORMATION</b> .....	<b>2</b>
2.1 Site Description and Physiography .....	2
2.2 Regional Geologic and Hydrogeologic Setting .....	2
2.2.1 Regional Geology .....	3
2.2.2 Regional Hydrogeology .....	4
<b>3.0 SITE GEOLOGIC CONDITIONS</b> .....	<b>5</b>
3.1 Geologic Mapping Methodology .....	5
3.2 Residual Soil and Saprolite .....	5
3.3 Lithologic Units .....	6
3.4 Geologic Structure .....	6
3.4.1 Foliation and Faults .....	6
3.4.2 Joints .....	6
3.5 Lineament Analysis .....	7
3.5.1 Methodology .....	7
3.5.2 Discussion of Lineaments .....	8
3.5.3 Discontinuity Mapping and Lineament Analysis Correlation .....	8
<b>4.0 CONCEPTUAL SITE HYDROGEOLOGIC MODEL</b> .....	<b>8</b>
4.1 Uppermost Groundwater Aquifer .....	8
4.2 Groundwater Flow .....	9
4.3 Conceptual Site Hydrogeologic Model Summary .....	12
<b>5.0 THREE-DIMENSIONAL NUMERICAL GROUNDWATER MODEL</b> .....	<b>13</b>
<b>6.0 WELL NETWORK DESIGN</b> .....	<b>13</b>
6.1 AP-1 Network .....	15
6.2 AP-2, and Combined Unit AP-3/4 Network .....	15
<b>7.0 GROUNDWATER MONITORING STATUS</b> .....	<b>16</b>
<b>8.0 REFERENCES</b> .....	<b>16</b>

## Table of Contents (continued)

### Tables

Table GW-1 Summary of Groundwater Elevations

Table GW-2 Horizontal Groundwater Flow Velocity Calculations – October 2021

Table GW-3 Summary of Aquifer Test Data

Table GW-4 Monitoring Well Network Summary

### Sheets

Sheet GW-1 Monitoring Well and Piezometer Map

Sheet GW-2 Estimated Top of Rock Map

Sheet GW-3a Geologic Cross Section Schematic A-A'

Sheet GW-3b Geologic Cross Section Schematic B'-B'

Sheet GW-3c Geologic Cross Section Schematic C'-C'

Sheet GW-3d Geologic Cross Section Schematic D-D'

Sheet GW-3e Geologic Cross Section Schematic E-E'

Sheet GW-3f Geologic Cross Section Schematic F-F'

Sheet GW-3g Geologic Cross Section Schematic G-G'

Sheet GW-3h Geologic Cross Section Schematic H-H'

Sheet GW-3i Geologic Cross Section Schematic I-I'

Sheet GW-3j Geologic Cross Section Schematic J-J'

Sheet GW-4 Geologic Map

Sheet GW-5 Discontinuity Data from Geologic Mapping

Sheet GW-6 Remote Sensing Lineament Map/Comparison of Measured Discontinuities and Lineaments

Sheet GW-7 October 27, 2021, Potentiometric Surface Map

### Appendices

Appendix A Three-Dimensional Numerical Groundwater Modeling Summary Report

Appendix B Drillers Bond

Appendix C Boring Logs

## Certification

This *Hydrogeologic Assessment Report* for Georgia Power Company's (Georgia Power) Plant McDonough-Atkinson (Plant McDonough) was prepared by Golder Associates USA Inc. (Golder).

I certify that this *Hydrogeologic Assessment Report* was prepared in accordance with the Georgia Environmental Protection Division Rule (391-3-4-.10(9)(c)(6)) "Rules for Solid Waste Management, Coal Combustion Residuals."

**Golder Associates USA Inc.**



---

Dawn L. Prell, CPG

*Senior Consultant, Hydrogeologist*



---

Rachel P. Kirkman, PG

*Georgia Licensed Professional Geologist No. 1756*

## 1.0 INTRODUCTION

Georgia Environmental Protection Division (GA EPD) Rule 391-3-4-.10 of the Georgia Solid Waste Management Regulations establishes a permitting program that regulates the storage and disposal of coal combustion residuals (CCR), providing requirements for operation, closure, and post closure care of CCR units in Georgia GA. Georgia Power Company (Georgia Power) is presenting this *Hydrogeologic Assessment Report* (HAR) to meet the requirements as specified in GA EPD Rule 391-3-4-.10(9)(c)(6) for the ash ponds at Plant McDonough-Atkinson (Plant McDonough, Site) Surface Impoundments must submit a technical report of geological and hydrogeological units within the disposal site and potentiometric map of the water table as specified in GA EPD Rule 391-3-4-.10(9)(c)(6). This report describes geologic and hydrogeologic information of Ash Pond 2 (AP-2), Ash Pond 3 (AP-3) and Ash Pond 4 (AP-4) at Plant McDonough. AP-3 and AP-4 were historically operated together and are being closed as a Combined Unit AP-3/4, as required by 391-3-4-.10(7)(a). Ash Pond 1 (AP-1) is located west of AP-2 and 3/4 and is referenced here as it relates to site conditions. Information included specific to AP-1 should not be considered for permitting. This report and the facility's Groundwater Monitoring Plan supports compliance with the CCR Rule by demonstrating that the groundwater monitoring system at Plant McDonough meets the requirements outlined in 391-3-4-.10(6) and 40 CFR § 257.91.

### 1.1 Current Site Conditions and Pond Closure

The following sections describe geologic and hydrogeologic information of Ash Pond 2 (AP-2), Ash Pond 3 (AP-3) and Ash Pond 4 (AP-4) at Plant McDonough. AP-3 and AP-4 were historically operated together and are being closed as a Combined Unit AP-3/4, as required by 391-3-4-.10(7)(a).

At AP-2, closure by removal of ash was completed in September 2016. Closure procedures included excavating all visible ash, over excavating into the subgrade soils, and placement of topsoil and seeding for vegetative cover. AP-3 and adjacent AP-4 are currently being consolidated and closed in place as combined unit AP-3/4 in accordance with § 257.102(d). CCR in the eastern portion of AP-4 has been relocated to the western portion of AP-4 as well as dry stacked on AP-3. During closure, AP-3 and AP-4 are being dewatered as required to facilitate consolidation and closure in place. CCR will be graded within the footprint of the impoundment to create a subgrade for the final cover system. Additional dewatering has commenced to facilitate lowering of the dam. This process is expected to result in groundwater flow returning to its original, pre-construction flow direction to the south.

The *Closure Plan* (Golder, 2019) was prepared in accordance with § 257, Subpart D and meets the requirements of § 257.102(b) and following complete closure, maintenance will be provided on the final cover system for the required post-closure care period so that the integrity and effectiveness of the final cover system is maintained. Relevant data including dewatering are part of the scope evaluated in the Closure Design and AEM methods and addressed in the Closure Plan and Post-Closure Care Plan. Minor variations in site potentiometric surface have been modeled for the different AEMs under consideration for AP-1 as well as AP-2 and 3/4. Groundwater model evaluations of AP-3/4 have confirmed the potentiometric surface will remain below the base of the CCR within AP-3/4 for each of the AEM scenarios being evaluated for AP-1.

## 2.0 BACKGROUND INFORMATION

### 2.1 Site Description and Physiography

Plant McDonough is located in southeast Cobb County, GA and is owned and operated by the Georgia Power. The property occupies approximately 390 acres and is bounded on the southeast by the Chattahoochee River. A detailed site map is included as Sheet GW-1.

The site is located within the Piedmont Physiographic Province of central GA, which is characterized by gently rolling hills and narrow valleys, with locally pronounced linear ridges. Overall, the property slopes gently south towards the Chattahoochee River.

AP-1 is located in the western limits of the site on ground topographically sloped downward to the southwest, creating an impoundment via side hill embankments constructed along the southern portions of the unit that tie into higher natural ground in the northeast quadrant of the Unit. A small unnamed creek originally flowed through the footprint of the current AP-1 area and was rerouted into an engineered stream channel that now flows to the south, parallel and adjacent to the western and southern boundary of AP-1.

AP-2 is located east of AP-1 and south of AP-3 in the center of the eastern half of the Site. The majority of CCR removal from AP-2 was completed in 2016 and remnant CCR removal from AP-2 was completed in 2019. Additional over excavation into the underlying soils creates a topographic low point.

AP-3/4 is located in a topographically high area on the property, that created a generally radial groundwater drainage downslope of AP-3/4 during impoundment operations. A small creek flows south under Plant Atkinson Road into a corrugated metal pipe (CMP) slip lined with a fiberglass reinforced plastic (FRP) stream diversion culvert, which inlets north of AP-3/4 and outlets southeast of AP-3/4.

Topographic relief near Plant McDonough ranges from less than 750 feet mean sea level (ft msl) near the tributaries and river to greater than 840 ft MSL near the center of the property.

### 2.2 Regional Geologic and Hydrogeologic Setting

The following section and subsections include a general description of regional geologic and hydrogeologic characteristics of formations that occur beneath the site. Information presented in this section is based on published literature, and discussion with local geologic experts as cited, as well as experience working in this geologic terrain. This information is intended to serve as a framework for the description of site-specific conditions presented in Section 3.0.

The site is located within the Northwest Atlanta, GA United States Geological Survey (USGS) 7.5-minute topographic quadrangle. The Piedmont geologic province contains some of the oldest rocks in the Southeastern United States. Since their origin, approximately 276 to 1100 million years ago (Ma), these late Precambrian (Neoproterozoic) to late Paleozoic (Permian) rocks have undergone repeated cycles of igneous intrusions and extrusions, metamorphism, folding, faulting, shearing, and silicification. The latest regional metamorphism and associated deformation has been attributed to the collision of the North America plate with the Eurasian plate approximately 200 to 230 Ma. More recent deformation and emplacement of mafic dikes is associated with the rifting of the North American craton during the Mesozoic and Cenozoic Eras.

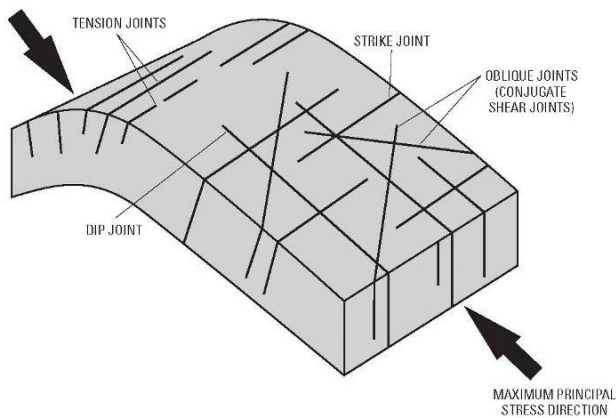
The metamorphic and igneous rocks that underlie the area have been subjected to physical and chemical weathering, which has created a landscape dissected by creeks and streams forming a dendritic drainage pattern. These rocks are deeply weathered due to the humid climate and bedrock is typically overlain by a variably thick blanket of residual soils and saprolite. The overall depth of weathering in the Piedmont geologic province is variable (Planert and Williams, 1995), with saprolite thickness reaching up to 150 feet. Because of variations in rock types and structure, the depth of weathering can vary significantly over short horizontal distances.

### 2.2.1 Regional Geology

The site lies in a regional zone of deformation, referred to as the Brevard Zone, which extends from Alabama to Virginia. Lithologic contacts and major structural features in the Brevard Zone generally trend northeast-southwest. In addition to strike-slip and thrust faults, structural features within this shear zone consist of northwest-verging, doubly plunging folds that have been overprinted by a shear-induced foliation. The Centralhatchee Synclinorium is a regional fold-system that occurs within the Brevard Zone. Discrete zones of intense shearing occur within the Brevard Zone that have locally reduced the grain size of the parent rocks forming a variety of tectonic rock types, including phyllonite, button schist, and mylonitic rocks. Generally, the Brevard Zone and associated shear foliation are subparallel to compositional layering and lithologic unit contacts, with discordance of less than 10 degrees. Discordance significantly increases between the shear foliation and regional foliation in areas of fold noses and hinges.

The Brevard Fault Zone is inactive with no displacement since the Holocene. Several regionally extensive faults have been mapped near and within the site associated with the inactive Brevard Fault Zone. An unnamed, faulted, intrusive contact traverses northeast-southwest across the site and is observed throughout most of the metro-Atlanta area. Regionally, this appears to be a normal fault contact; however, where it is exposed and observed in core holes drilled adjacent to the contact at Plant McDonough, the fault has endured substantial movement as indicated by porphyroclastic-feldspars with sigmoidal-tails. Other regional faults characterized by near-vertical, strike-slip movement, occur north and south of the site: the Long Island Creek Fault is located approximately one mile north of the site; and a series of strike-slip faults that define a zone of intense shearing within the Brevard Zone occur just south of the site. These faults were formed at significant depth within the crust, enduring intense ductile deformation while forming in a high pressure, low temperature environment.

Four main joint orientations are commonly found in folded and faulted rocks in the Piedmont Physiographic Province (see inset below). Strike joints develop parallel to the strike of bedding, foliation, and fold axes, typically forming from tension along fold hinges or due to shearing. The dip direction and angle of these joints is orthogonal to the dip direction and angle of bedding. Dip joints form parallel to bedding dip direction and are typically perpendicular to the strike of bedding and fold axes, representing extension in the maximum principal stress direction or direction of compression. These joints are commonly near vertical. Oblique joints develop diagonal ( $\pm 30^\circ$ ) to the principal stress direction and represent conjugate sets formed from shearing.



Schematic Diagram showing typical joint patterns (Davis, 2012)

## 2.2.2 Regional Hydrogeology

Groundwater in the Piedmont Physiographic Province (Piedmont) can occur as perched water within residual soils, as an unconfined regional aquifer within residual soils and transitionally weathered materials, and as a series of confined to semi-confined, discrete, but locally interconnected aquifer systems within the bedrock. Perched groundwater occurs above the local or regional groundwater table and is locally developed above lithologies with relatively lower permeability, which temporarily retard the natural downward infiltration of groundwater. This groundwater is unconfined, recharged by precipitation, and is laterally discontinuous and temporally transient.

The regional groundwater table is laterally consistent and generally occurs within overburden overlying less-weathered bedrock. In general, this overburden consists of residual soils and a transitionally weathered zone typical of Piedmont settings. Due to chemical weathering, saprolitic-soil retains relict structural features of the parent rock such as foliation and compositional layering while having the texture of a soil. Saprolitic rock is similar to the saprolitic soil but is less decomposed. This saprolitic material is generally more permeable than the overlying residuum, and the underlying bedrock, and serves to concentrate groundwater along a tabular zone of enhanced permeability. Although weathering generally increases porosity and permeability within this zone, some processes taking place in this zone, such as the growth of clay minerals, mineral deposition in fractures, and development of iron oxide 'hardpan,' can significantly decrease the permeability. This tabular zone of enhanced permeability is referred to as the transitionally weathered zone, which is characterized by heterogeneously interlayered, fresh to completely weathered (saprolitic) rock.

Groundwater within the overburden, which is comprised of residual soils, saprolite, and transitionally weathered rock (TWR), is generally unconfined and the surface is generally a subdued reflection of topography. In areas where bedrock is relatively shallow and when water levels are seasonally depressed, the regional groundwater table also occurs within the upper zones of weathered bedrock.

Bedrock aquifer systems are recharged by groundwater that is stored in the overburden. This groundwater slowly infiltrates underlying bedrock aquifer systems by moving through preferentially weathered discontinuities in the bedrock mass, such as foliation/compositional layering, joints, and faults. The occurrence and characteristics of discontinuities (size, orientation, dilation, infilling, spacing, and persistence) are dependent on the lithology of the rock and the type of stresses applied to these rocks. These discontinuities are locally enlarged along individual planes as well as at the intersection of planes due to physical and chemical weathering, providing preferential



pathways for enhanced groundwater flow. Groundwater can move readily, both vertically and horizontally, through these isolated areas of enhanced porosity and permeability, and depending upon the size, concentration, and interconnection of these secondary openings, the bedrock can either be dry or host to high-yield wells (Heath, 1994).

### 3.0 SITE GEOLOGIC CONDITIONS

Site geologic conditions were evaluated through a detailed geologic mapping performed onsite and a series of subsurface boring and well data that were collected over several years. Subsurface conditions were evaluated from available boring and monitoring well installation logs. Interpretations were made, primarily related to depth to bedrock and the material that constitutes bedrock (e.g., mineralogy), considering the overall rock mass quality [e.g., rock quality designation (RQD)]. These data were used as the basis a top of rock contour map, presented as Sheet GW-2, and for geologic cross sections, presented as Sheet GW-3a through GW-3j.

#### 3.1 Geologic Mapping Methodology

Geologic mapping was performed by Petrologic Solutions, Inc. (Petrologic) within and around the site using the Northwest Atlanta, GA USGS 7.5-minute topographic quadrangle as a base map in 2016. Sheets GW-4 and GW-5 present interpretations of structural and lithologic features encountered during mapping of the area. Information recorded at each map station included: lithology and mineralogy; orientation and characteristics of structural discontinuities including, shearing, faulting, jointing, cleavage, and compositional bedding; and depth and type of weathering characteristics of the rock. Map station locations were chosen based on outcrop availability and recorded using a hand-held, Wide Area Augmentation System (WAAS)-enabled Global Positioning System (GPS).

#### 3.2 Residual Soil and Saprolite

Boring logs indicate that residual soils, primarily clayey/sandy silt, sandy silt with clay, and silty sand (increasing with depth), occur as a variably thick deposit overlying bedrock across most of the site, as illustrated on geologic cross sections presented as Sheets GW-3a through GW-3j oriented to the nine profile lines depicted on Sheet GW-1. Saprolitic soils range in thickness from approximately 4 to 55 feet across the site and were generally encountered at or near ground surface. Saprolitic rock is also considered to be partially weathered rock (PWR), which is defined by Standard Penetration Test (SPT) blow counts that exceed 100 blows/twelve inches. Material overlying the top of rock surface, including residual soils, saprolite, and TWR (i.e., generalized term, not quantified through SPT), is collectively referred to as overburden or regolith in this report. The thickness of the overburden encountered in the borings is variable, ranging from a minimum of approximately 9 feet to as much as 65 feet, with an average thickness of approximately 43 feet. Thickness of TWR varied from 0.30 to 30 feet.

The criterion used for identifying top of bedrock was generally the depth at which a significant thickness of fresh, relatively competent (i.e., good overall rock mass quality) bedrock was encountered. This depth determined using professional judgement and a combination of visual observations of core, auger refusal, and drill rig response. These elevations were used to develop the top of rock contour map presented on Sheet GW-2, which shows the top of rock surface has been largely uniformly weathered and generally follows topography. The cross sections (Sheets GW-3a through GW-3j) were also used to bolster three-dimensional interpretation of the surface.



### 3.3 Lithologic Units

Based on the detailed geologic mapping, graphically represented on Sheet GW-4, the plant property is underlain by two lithological units separated by a faulted intrusive contact, which trends northeast to southwest through the site.

The plant property northwest of the faulted contact is underlain by the following unit:

Long Island Creek Gneiss (OZli): a medium- to coarse- grained; very felsic rock that yields light-colored soil. Foliation is moderately well-developed; near faults and shear zones, the gneiss has an augen texture; locally intruded by granitic pegmatites that are commonly unshaped.

The plant property southeast of the faulted contact is underlain by the following unit:

Phyllonite, Button Schist, Mylonite, and Mylonitic Biotite Gneiss (OZbs): rocks all interlayered on a scale of inches, feet, and 10's of feet. The phyllonite consists of fine recrystallized muscovite along schistosity surfaces, formed by dislocation (shearing) metamorphism. The mylonite button schist is composed primarily of fine sericite, muscovite, quartz, and feldspar; with medium- to coarse-grained muscovite forming distinctive 'eyes;' there is a well-developed shear foliation. The mylonite is composed of sericite, quartz, and feldspar, extremely fine-grained, with a poorly developed foliation. The mylonitic biotite gneiss is composed primarily of biotite, quartz, and feldspar, very fine-grained, with a well-developed shear foliation.

### 3.4 Geologic Structure

#### 3.4.1 Foliation and Faults

One of the most pervasive structural features of the Brevard Zone is the presence of a well-developed shear foliation. Regional foliation is also observed at the site; the intersection of regional and shear foliation locally creates shear fabrics such as button-shaped mica in schists. Bedrock discontinuity orientations were analyzed using lower hemisphere equal area stereonet, presented as Sheet GW-5, to determine dominant orientations for each discontinuity type (i.e., joints, foliation, and layering). One domain of foliation was observed on site during geologic mapping - the property is characterized by foliation that strikes generally northeast-southwest. Equal-area, lower-hemisphere stereonet analyses of the foliation measurements for this domain has an average pole concentration representing a foliation of N44°E, dipping 42° to the southeast.

At Plant McDonough, the measured geologic strike of foliation, formation contacts, and mapped faults and fold axes observed in the rock outcrops of biotite gneiss and mica schist mapped at the site ranges from N42°-57°E. Dip joints should be perpendicular to local geologic strike and oblique conjugate joint sets should be +/- 30° from the dip joint direction.

#### 3.4.2 Joints

Because the evaluation of joints is visual and judgmental, an effort is made for consistency in describing the relative frequency of occurrence using the following designations: Abundant (A); Common (C); and Scarce (S). These designations are relative to one another but are used consistently in descriptions made throughout the study area. An effort is made to record all of the different joint sets and, if an exposure is large, several same (or similar) joints may be recorded at the same map station. This deliberate method of visual evaluation in the field is more scientifically relevant and efficient than saturation-measurement of joints.

Joints within the Brevard Zone are common and persistent in most of the rock types. The joints are generally spaced on the order of a few inches to a few feet; however, there are more massive parts of various rock units

which have a wider joint spacing. Joint sets in units outside of the Brevard Zone are variably developed, largely dependent upon the lithologic character of the unit.

The dominant joint set observed on site is oriented northwest-southeast and represents the strike joint. As shown on Sheet GW-5, the average strike and dip of this joint set (Jmax) is N41°W, 63°SW (azimuth 221°/63°). Four other joint sets were recorded during the detailed geologic mapping. Equal area stereonet analysis of all joints measured in all lithologies is presented in Sheet GW-5.

- 1) N34°E 75°NW (214°/75°) – strike joint (J1)
- 2) N68°W 77°NE (292°/77°) – dip joint (J2)
- 3) N29°W 78°NE (331°/78°) – dip joint (J3)
- 4) N54°W 70°SE (126°/70°) – dip joint (R1)

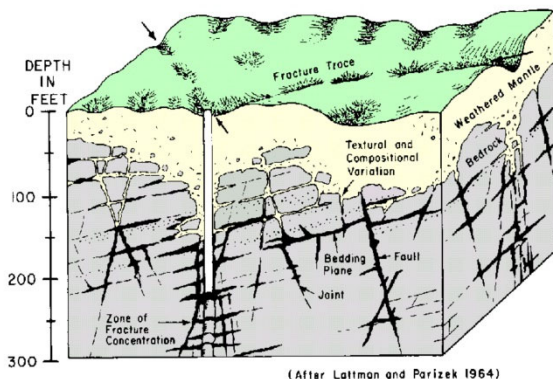
Locally, some of the joints contain clay infilling; however, most of the joints do not contain any infilling in surface exposures. The plane-surface morphology of each joint was noted in the field descriptions. Most of the joints are planar and smooth with little to no evidence of high fluid flow except in the mylonitic biotite gneiss units.

## 3.5 Lineament Analysis

### 3.5.1 Methodology

Subsurface geologic discontinuities such as lithologic contacts between resistant or non-resistant units, fracture zones, jointing, shear planes, and faults often have ground surface expressions that can be identified through analysis of photographic and topographic images. The discontinuities expressed as lineaments at ground surface commonly have enhanced porosity and permeability in the rock mass due to differential weathering. Groundwater in igneous and metamorphic rocks generally moves along discontinuities in the bedrock, enhancing the differential weathering processes.

Because discontinuity zones are typically less resistant to weathering, they are often expressed as natural topographic lows, such as straight stream valley segments, swales, aligned depressions and gaps in ridges or as linear tonal or vegetative alignments due to variations in soil thickness and moisture (see inset). These surface manifestations are referred to as fracture traces or lineaments and were identified for this project by remote-sensing techniques using topographic maps, aerial photographs, and shaded relief maps generated from 10-meter Digital Elevation Model (DEM) data.



Inset - Block diagram shows how lineament/fracture trace is a surface manifestation of an underlying bedrock fracture zone. (Lattman and Parizek, 1964)

Lineament analyses were conducted on USGS topographic maps, USGS DEMs, and USGS low-altitude aerial photographs (verified with National High-Altitude Photography Program (NHAP) high-altitude aerial photographs). Linear features or linear groups of features were identified and traced on digital overlays of the maps, presented as Sheet GW-6. Lineaments arise from a number of sources. Many lineaments observed on the small-scale imagery or maps are related to fence, property, and section lines. However, many lineaments are related to local and regional geologic anomalies. Rectilinear segments of streams may be associated with local weakness in the underlying bedrock related to persistent joint sets. Faults tend to be long linear features that are often difficult to detect at ground surface, but generally form photographic and topographic lineaments.

### 3.5.2 Discussion of Lineaments

Based on a total of 296 lineaments identified on the topographic maps, low and high-altitude aerial photographs, and DEM, two major groups of lineament orientations were identified within and around the site by the lineament analyses and both are consistent in orientation with measured discontinuities in the bedrock (Sheet GW-6):

- L<sub>1</sub>: N40° to 60°W – perpendicular to foliation strike
- L<sub>2</sub>: N30° to 60°E – parallel to foliation strike

Lineament orientations appear to correlate with mapped regional and local tectonic fabrics suggesting that they originate as bedrock fracture concentrations and are likely actual manifestations of subsurface fracture zones or possibly low-resistant stratigraphic layers or shear zones within the rock formations underlying the study site. Such structural weaknesses in rocks are reflected by the fractures formed, which subsequently can be weathered to form lineaments.

### 3.5.3 Discontinuity Mapping and Lineament Analysis Correlation

Lineaments identified are considered to be the ground-surface expression of preferential weathering related to discontinuities in rock. Sheet GW-6 shows a comparison of measured discontinuities and lineaments for this study. Based on this evaluation, the project area appears to be characterized by two persistent lineament sets whose orientations are consistent with the structural stresses experienced in this area. It appears that L<sub>1</sub> is related in orientation to the dip joints and dip direction of the northeast-trending foliation; L<sub>2</sub> is related in orientation to the strike joint and strike direction of the northeast-trending foliation as well as the orientation of the fault intrusive contact. Although counterintuitive to predicted patterns of L<sub>1</sub> being strike parallel as is common in the Brevard Zone and throughout the Piedmont, it is possible that given the study area is highly developed, remaining exposures may bias the count in the dip direction.

The orientation of these discontinuities forms a classic joint pattern that develops in rock formations in the Piedmont due to compressional stress (Heath, 1994; Jennings, 2010). Because lineament orientations correlate with known regional tectonic fabrics, it is likely that most are true manifestations of subsurface fracture zones or low-resistance stratigraphic layers within the rock formations underlying the site.

## 4.0 CONCEPTUAL SITE HYDROGEOLOGIC MODEL

### 4.1 Uppermost Groundwater Aquifer

Boring logs and monitoring well/piezometer installation logs were used to evaluate hydrostratigraphy of the site. Piezometers at the site have been used for water level measurements and enhance the understanding of site hydrogeology. Material types identified included residual soils, saprolitic soils, saprolitic rock (or PWR if blow counts were provided), transitionally weathered rock (TWR), and competent bedrock. Based on review of the

logs, the screen/filter pack interval for most of the piezometers and monitoring wells installed on site provides connection to the overburden, indicating that the site is underlain by a regional groundwater aquifer that occurs within the overburden and upper bedrock depending on topographic location. Wells and piezometers to the east and south of AP-2 and AP-3/4 are screened in the upper bedrock.

According to water level measurements recorded between August 2016 and October 2021 from wells and piezometers screened in the overburden and upper bedrock, the water table elevation ranges between approximately 836 ft MSL at upgradient well DGWA-71 to approximately 742 ft MSL at downgradient piezometer B-62. These data is summarized in Table GW-1. The depth to saturation varies from approximately -1.6 to 46.4 feet below ground surface (ft bgs) throughout the site and is variable with lithology (Table GW-1). Depth to saturation ranged from approximately 2.5 to 42.6 ft bgs and 0.9 to 46.4 ft bgs in the OZli and OZbs formations, respectively. The geometric mean of depth to saturation data was similar in both formations.

Localized groundwater flow directions within this aquifer are influenced by topographic and top of rock variations on site. As illustrated on the Geologic Cross-Section Schematics shown on Sheets GW-3a through GW-3j and the October 27, 2021, Potentiometric Surface shown on Sheet GW-7, the water table surface is a subdued reflection of topography at the site, with groundwater generally flowing towards the south and west of the ash ponds. As discussed in Section 3.2, the top of rock surface also generally follows topography and likely controls groundwater flow direction in the uppermost aquifer. Local complexities in groundwater flow within this aquifer are influenced by topographic and related top of rock variations on site. AP-3/4 is on a topographic high, creating radial flow around the ponds, with the exception of the one upland high upgradient northwest of AP-3/4. As a result of localized dewatering activities, groundwater flow in the northeast portion of AP-3/4 is inward toward the ash pond. AP-2 has a side-hill embankment, 16 feet high with an original pond area of 7 acres. Currently, AP-2 is over excavated into subgrade soils, creating a topographic low point and low hydraulic gradient. Regionally groundwater is interpreted to flow south-southeast from the topographic high northwest of AP-3/4 towards AP-2. The groundwater flow pattern interpreted using the October 2021 elevation data is consistent with previous observations.

## 4.2 Groundwater Flow

Relatively thick silt/clay-rich overburden is present across most of the site which may retard recharge from the uppermost aquifer into the underlying bedrock aquifer systems. Additionally, boring logs indicate that some areas, particularly topographic highs, correlate with bedrock that is resistant to weathering and massive (i.e., few discontinuities); consequently, bedrock aquifer systems are likely not well-developed and/or interconnected in these areas. Preferential groundwater flow in bedrock is anticipated along lineaments and discontinuities. The faulted intrusive contacts in and around the site may also be preferential flow pathways; however, no evidence obtained to date indicates preferential flow along the faulted intrusive contact onsite.

**The Long Island Creek Gneiss that occurs north of the fault generally does not transmit groundwater to water supply wells in the region. This unit may locally function as an aquitard (i.e., hydrogeologic barrier) that limits groundwater flow in the bedrock aquifer. Regionally, it is understood that this unit generally does not form productive bedrock aquifer systems and rate of infiltration is relatively slow (Miller, 1990).**

It is expected that a significant amount of groundwater flow occurs in the residual soils, saprolite, and TWR/PWR - i.e., overburden. This is typical of the Piedmont, as discussed in Fetter (1988). The significance of groundwater flow between the overburden and upper fractured bedrock is dependent on the degree of hydraulic connectivity between the units. Generally, the majority of groundwater flow across the site occurs laterally in the overburden.

Based on site-specific hydrogeologic characteristics, groundwater is expected to move laterally more than vertically within the TWR/PWR unit.

Based on available boring logs for wells screened in the upper bedrock, the upper 30 feet of bedrock are fractured and appear to conduct groundwater horizontally on the same order of magnitude as the overburden. The upper bedrock appears to be connected hydraulically with the overburden. Groundwater elevations in these wells reflect topographic and weathering effects (e.g., depth to bedrock variations), and groundwater flow that is predominately lateral rather than vertically through the aquifer. The vertical hydraulic gradient is dependent on topographic location (e.g., a downward vertical gradient is generally observed in topographically high areas).

Based on drilling at the Site, borings completed deeper in the bedrock aquifer (i.e., greater than 30 feet into the bedrock unit) exhibit minimal and likely isolated fractures. The occurrence and water production of fractures generally decreases with depth as is typical of Piedmont hydrogeologic settings. Therefore, it is anticipated that there is minimal connectivity between the overburden and the deeper bedrock hydrogeologic unit.

Data from several borings drilled into deeper bedrock during delineation activities at AP-2 and 3/4 confirm that fractures within the bedrock are limited and decrease in number and groundwater production with depth, supporting the above statement. Specifically, site borings B-103D, B-122D and B-123D were installed to vertically delineate constituents in areas where bedrock was approximately 70 feet below ground surface (bgs) and therefore were installed to capture groundwater flow from bedrock fractures. Groundwater monitoring wells were screened across available fractures and do not produce sufficient water for proper development or sampling.

Site geophysical logs and groundwater monitoring data at B-123D confirm that the deeper fractures produce less than 0.025 milliliters per minute. This flow rate does not constitute groundwater in an "aquifer" but rather limited groundwater movement within the deeper bedrock unit.

Based on these site-specific examples and supporting data, fractures within the bedrock at the site are not well connected and the predominant groundwater flow at the site occurs in the overburden and upper bedrock at the site.— Several references to published work within the GWMP were reviewed and confirm these observations made at the site are consistent with Piedmont geology.

Based on these interpretations, groundwater located on the upland high west of the engineered stream channel located on the west boundary of AP-1 is considered upgradient of the plant property. This upland area and the upland high northwest of AP-2 and AP-3/4 represent the only upgradient locations on the property near the units with the current pond configuration. It is anticipated that as water continues to be pumped from AP-3/4, portions of the northern and northeastern corner of the property will become upgradient over time, returning to the historical regional groundwater flow pattern, corresponding to historical pre-ash pond construction regional topography.

Based on review of the potentiometric contours (Sheet GW-7), horizontal hydraulic gradient is also variable and reflects topography at the site. The horizontal gradient appears steeper around the downgradient perimeter of the ash ponds, particularly along embankments where groundwater flow lines are influenced by the constructed slopes for the impoundment dams. Hydraulic gradient is calculated as the difference in groundwater elevation (in feet) divided by the distance between two piezometers or wells (in feet).

October 2021 groundwater elevation data from six piezometer and/or monitoring well pairings located along the groundwater flow path and perpendicular to the potentiometric contours were used to calculate horizontal hydraulic gradients for AP-1 and AP-2, 3/4. As shown on Table GW-2, hydraulic gradients were calculated as

follows; DGWA-53/DGWC-13 [0.028 feet/feet (ft/ft)], DGWA-71/DGWC-5 (0.025 ft/ft), and B-26/DGWC-48 (0.027 ft/ft) for AP-2, 3/4, and B-29/DGWC-68A (0.040 ft/ft), B-28/DWGC-37 (0.021 ft/ft), and B-50/DWGC-39 (0.025 ft/ft) for AP-1. Overall average hydraulic gradients for AP-1 and AP-2, 3/4 derived using these horizontal gradients are 0.029 ft/ft and 0.027 ft/ft, respectively.

Field hydraulic conductivity tests (i.e., slug tests) performed in a variety of geologic materials indicate an average hydraulic conductivity for the uppermost aquifer of  $3.45 \times 10^{-4}$  centimeters per second (cm/s);  $4.9 \times 10^{-4}$  cm/s in the overburden and  $2.0 \times 10^{-4}$  cm/s in the upper bedrock, respectively (Table GW-3). Plotting site gradation data (SCS, 2013) on a soil classification-specific yield triangle (Johnson, 1967) indicates that a majority of the soil samples plot in the silty sand classification with effective porosities ranging from 15% to 25%. Assumed effective porosity of 20% for overburden was used based on the default values for effective porosity recommended by USEPA for a silty sand-type soil (USEPA, 1996). An assumed effective porosity of 9% was used for bedrock (Daniel and Dahlen, 2002; Dowd and Marshall, 1995).

A horizontal flow velocity range was calculated for the overburden and upper bedrock using several hydraulic gradients throughout the site and average site hydraulic conductivity values from field hydraulic conductivity tests.

Horizontal flow velocity was calculated using the common derivative of Darcy's Law:

$$V = \frac{K * i}{n_e} \quad \text{Where:}$$

$V$  = Groundwater flow velocity  $\left(\frac{\text{feet}}{\text{day}}\right)$   
 $K$  = Average hydraulic conductivity of the aquifer  $\left(\frac{\text{feet}}{\text{day}}\right)$   
 $i$  = Horizontal hydraulic gradient  $\left(\frac{\text{feet}}{\text{feet}}\right)$   
 $n_e$  = Effective porosity

Using this equation, groundwater flow velocities were calculated for AP-1 and AP-2, 3/4 using **October 2021** groundwater elevation data. Table GW-2 presents the velocities calculated using groundwater elevation data from the **October** 2021 sampling event.

Calculated (horizontal) flow velocities range from approximately 104 feet per year (ft/yr) to 109 ft/yr in **October** 2021. These estimated flow velocities are consistent with past results and are also generally consistent with other published velocities for regolith-upper bedrock aquifers of the Piedmont (Heath, R.C., 1982).

### Vertical Hydraulic Conductivity

Hydraulic Conductivity zone values used for groundwater modeling at Plant McDonough are summarized below in Table 4.2.1.

**Table 4.2.1: Model Hydraulic Conductivity**

Zone	Layer	Hydraulic Conductivity (ft/day)	Source
Ash	1	0.55 (horizontal) 0.037 (vertical)	AP-3/4 CPT dissipation and aquifer testing data (Golder, 2016)
Overburden	1&2	0.70 (horizontal) 0.14 (vertical)	Historical Slug testing (Golder, 2016)



PWR	3	0.2 (horizontal) 0.02 (vertical)	Model Calibration
Bedrock	4	0.16 (horizontal) 0.016 (vertical)	Model Calibration

## Notes:

1. ft/d – feet per day
2. Assumed hydraulic conductivity vertical anisotropy ratios ( $K_{xy}/K_z$ ) varied between 5 and 15, which is typical for unconsolidated residuum and alluvial aquifers (Bendient et al., 1994).

The layer 1 areal zone extent varies between models. Conductivity zones include:

- Ash: Limited to within footprint of ash ponds
- Overburden: Includes northern portion of AP-1 and fringes of AP-1 and AP-3/4 in Layer 1 and all of Layer 2.
- PWR: Includes all of model layer 3.
- Bedrock: Includes all of model layer 4.

No site specific vertical hydraulic conductivity measurements have been completed. Vertical hydraulic conductivities in the groundwater model are defined based on typical ratios with measured horizontal hydraulic conductivities for the site.

### 4.3 Conceptual Site Hydrogeologic Model Summary

A regional, unconfined aquifer system is present at the site, which consists of residual soils and TWR – i.e., overburden. Interconnected fractures in the transition zone transmit groundwater stored in the overburden soils to underlying bedrock, following the conceptual model for groundwater flow in the Piedmont (LeGrand, 2004). The water level trends noted at the site are comparable to similar hydrogeologic settings in the Piedmont region of southeastern US (e.g., Chapman et al., 2007). Additionally, the relationship between groundwater levels and the site topography is consistent with the slope-aquifer conceptual model for groundwater flow in the Piedmont (Robinson et al., 1996; LeGrand, 2004). Other attributes of the site-specific hydrogeologic model include:

- 1) The site is directly underlain by a variably thick blanket of overburden (approximately 9 to 65-feet thick), which is comprised of residual and saprolitic soils, saprolitic rock, PWR, and TWR. Based on field hydraulic conductivity tests, the overburden is estimated to have an average horizontal hydraulic conductivity of  $10^{-4}$  cm/s.
- 2) Bedrock north of the faulted intrusive contact is primarily characterized as Ordovician age Long Island Creek Gneiss (Ozli), which is described as felsic sphene-epidote-biotite-quartz-feldspar gneiss with well-developed foliation and an augen texture reflecting historical movement/deformation near fault and shear zones of the inactive Brevard fault zone. South of the faulted intrusive contact is primarily characterized by interlayered Ordovician age phyllonite, button schist (OZbs) with well-developed shear foliation, fine-grained mylonite with poorly developed foliation, and very fine-grained mylonitic biotite gneiss with well-developed shear foliation.
- 3) Two lineament sets (i.e., L<sub>1</sub> and L<sub>2</sub>) were identified onsite that orientations are consistent with the structural stresses experienced in this area.
- 4) The top of rock surface and water table generally mimic site topography.
- 5) The uppermost aquifer occurs within the overburden and upper bedrock at the site. According to water levels measured from August 2016 to October 2021 from wells and piezometers screened in the overburden and upper bedrock, the depth to saturation varies from approximately 1.6 to 46.4 ft bgs across the site and is variable with topography. Calculated geometric means for depth to saturation were similar in both

formations. The deeper (i.e., greater than 30 feet) in the bedrock aquifer is generally massive in nature with few, low-yield and isolated fractures, with both the occurrence and water production decreasing with depth. Consequently, groundwater flow within the uppermost aquifer is anticipated to occur primarily along the TWR zone, which is located at the interface between the overburden residual soils and massive bedrock, and upper bedrock. It is anticipated that there is minimal connectivity between the overburden and the deeper bedrock hydrogeologic unit.

- 6) The potentiometric surface for the uppermost aquifer indicates groundwater flows generally southeast to south. AP-3/4 is on a topographic high, creating semi-radial flow around the ponds. With initiation of the dewatering system at AP-3/4, the groundwater flow direction is generally inward toward the pond. Following completion of closure activities, it is anticipated that groundwater flow will return to the historical regional groundwater flow pattern, which corresponds with pre-construction regional topography.
- 7) Across the site, vertical gradients are expected to occur downward in topographically highs and upwards near topographic lows.

## 5.0 THREE-DIMENSIONAL NUMERICAL GROUNDWATER MODEL

A three-dimensional (3-D) numerical groundwater model was developed to compare closure conditions to Pre-Closure-August 2016 conditions. Model input files were created using a combination of Environmental System Research Institute ArcMap 10.4.1 and the Environmental Simulations Inc. Groundwater Vistas 7 (GV) graphical user interface. A steady state groundwater flow model was developed using the MODFLOW-NWT finite difference model code (Niswonger, Panday, & Ibaraki, 2011), which is an enhanced version of the MODFLOW code (McDonald & Harbaugh, 1988). Model construction, calibration, and results are described in the Three-Dimensional Numerical Groundwater Modeling Summary Report (Golder, 2019; Appendix A).

At the time of model development, groundwater data only includes data measured up to August 2016. As such, calibration and development of this model utilizes the August 2016 dataset. The model simulates groundwater flow from the northwest corner to the south and southeast across the plant property with groundwater discharging at modelled boundary conditions. Modelled simulated groundwater flow patterns are consistent with the conceptual model of groundwater flow for the site.

## 6.0 WELL NETWORK DESIGN

Two groundwater monitoring systems at the site were designed and installed to accurately represent the quality of background groundwater and groundwater passing the waste boundaries of the AP-1 and AP-2, 3/4 CCR units. **For the purpose of this HAR, AP-1 network information is presented for informational purposes only and should not be considered for permitting.** The monitoring wells are located and installed near the approximate pre-closure ash limits to yield groundwater samples representative of conditions in the uppermost aquifer that:

- Accurately represent the quality of background groundwater not affected by the waste management units (CCR units) and
- Accurately represent the quality of groundwater passing the limits of the CCR units. The downgradient monitoring systems installed at the waste boundary provide early detection of potential releases from the waste units to the uppermost aquifer.



The number, spacing, and depths of the groundwater monitoring systems were determined in accordance with 40 CFR 257.91(b) and based upon site-specific technical information that included a thorough characterization of:

- 1) Aquifer thickness, groundwater flow rate, groundwater flow direction, including seasonal and temporal fluctuations in groundwater flow and
- 2) Saturated and unsaturated geologic units and fill materials overlying the uppermost aquifer, materials comprising the uppermost aquifer, and materials comprising the lower boundary of the uppermost aquifer, including, but not limited to, thicknesses, stratigraphy, lithology, hydraulic conductivities, porosities and effective porosities.

Site-specific well siting factors that were considered when developing the proposed groundwater monitoring networks include:

- 1) Groundwater conditions within saprolite and the TWR zone are comparable to conditions within the residual soil and are therefore included in the hydrostratigraphy identified for the uppermost aquifer, collectively referred to as overburden.
- 2) The uppermost aquifer generally occurs within the overburden and is connected with more fractured portions of the upper bedrock beneath the site depending on topographic location; such that the upper 30 feet of bedrock is appears to transmit groundwater horizontally on the same order of magnitude as the overburden.
- 3) Significant amount of groundwater flow is expected to occur in the overburden, which is typical of the Piedmont as discussed in Fetter (1988), with the majority of groundwater flow occurring laterally in the TWR zone. The significance of groundwater flow between the overburden and fractured bedrock is dependent on the degree of hydraulic connectivity between the units.
- 4) Based on site-specific hydrogeologic characteristics, groundwater is expected to move laterally more than vertically within the upper aquifer, it is likely that there is limited amount of aquifer recharge occurring into deeper bedrock in and around the site.
- 5) Consistent with regional gradients, the potentiometric surface of the uppermost aquifer is generally south-southeast to southwest from AP-3/4 towards AP-2. Localized groundwater flow directions within this aquifer are influenced by topography and top of rock variations on site.
- 6) Lithologic variations in bedrock are anticipated to have variable geochemistry and different weathering characteristics. Overburden material is likely to represent variable geochemistry of the underlying parent rock.
- 7) Careful consideration was given in defining areas that represent upgradient and downgradient conditions at the site with regard to the anticipated potentiometric surface, site geology, and the structures that will require monitoring, with some local mounding anticipated to occur near the ponds. Groundwater flow patterns are expected to change with diminishing water levels in AP-3/4; eventually returning to a pattern that generally reflects original site topography (southward).

In summary, well locations are based on a robust dataset and the site conceptual model for groundwater flow at the site. Well locations were selected based on subsurface conditions and localized geologic and hydrogeologic conditions.

Based on these considerations, a monitoring well network was developed for each of the CCR units at the site. Groundwater monitoring wells have screens positioned in the upper portion of the uppermost water-bearing zone, as well as in the underlying and hydraulically connected bedrock zone. The monitoring well networks for each of the CCR units are described in more detail below. Driller's surety bonds can also be viewed in Appendix B and well logs for each of the site borings, monitoring wells and piezometers can be viewed in Appendix C.

## 6.1 AP-1 Network

For the purpose of this HAR, AP-1 network information is presented for informational purposes only and should not be considered for permitting. The AP-1 detection and assessment monitoring well networks are presented because data are relevant to the site hydrogeology. The AP-1 monitoring well network consists of ten (10) groundwater monitoring wells (Table GW-4). Three (3) background wells (DGWA-53, DGWA-70A, and DGWA-71) are positioned on topographic highs and are considered to represent an upgradient (i.e., uninfluenced) position relative to AP-1. DGWA-53 and DGWA-71 are located north of AP-1 and provide background data for the OZli unit. DGWA-70A is located on a topographic high west of AP-1 and provides background data for the OZbs unit.

The general direction of groundwater flow across AP-1 is to the west-southwest. Seven (7) monitoring wells are positioned downgradient of AP-1 (DGWC-37, DGWC-38, DGWC-39, DGWC-40, DGWC-67, DGWC-68A, and DGWC-69). The downgradient wells are placed as close to the approximate pre-closure ash limits as was practical and, based on groundwater contours, and at a point where a release would be detected.

The static groundwater level measured across the site was between approximately 1.6 and 46 ft bgs between August 2016 and October 2021. As described above, the uppermost aquifer generally occurs within the overburden and is connected with more fractured portions of the upper bedrock beneath the site depending on topographic location. The AP-1 groundwater monitoring wells have a total depth ranging from 21.2 to 58.9 ft bgs and were constructed with 10-foot screened intervals so that the top of the screen is located beneath the seasonal low water table to ensure adequate monitoring of the upper aquifer. Well construction details are provided in Table GW-4.

## 6.2 AP-2, and Combined Unit AP-3/4 Network

AP-2, 3/4 monitoring network consists of twenty-three (23) groundwater monitoring wells (Table GW-4). The three (3) background wells described above (DGWA-53, DGWA-70A, and DGWA-71) were integrated into the AP-2, and AP-3/4 network based on the following rationale: DGWA-53 and DGWA-71 are located north-northwest of AP-2, 3/4 and hydraulically upgradient of AP-3/4 towards AP-2, based on the interpreted groundwater flow direction to the south-southeast across the site; and, DGWA-70A is located on the topographic high southwest of AP-2, 3/4 and hydraulically upgradient at the topographic high west of the engineered stream channel situated southwest of AP-2, AP-3/4.

Twenty (20) wells (DGWC-2, DGWC-4, DGWC-5, DGWC-8 through DGWC-15, DGWC-17, DGWC-19 through DGWC-23, DGWC-42, DGWC-47, and DGWC-48) were positioned in each direction (north, south, east, and west) downgradient of AP-2, 3/4 in both geologic units. AP-3 and AP-4 were historically operated together and are being closed as a Combined Unit AP-3/4. A multi-unit monitoring network was installed along the boundary of the farthest downgradient unit to monitor AP-2 and Combined Unit AP-3/4. The downgradient wells were placed as close to the approximate pre-closure ash limits as was practical.

The AP-2, 3/4 groundwater monitoring wells have a total depth ranging from 25.1 to 69.0 ft bgs and were constructed with 10-foot screened intervals so that the top of the screen is located beneath the seasonal low water table to ensure adequate monitoring of the upper aquifer. Well construction details are provided in Table GW-4.

## 7.0 GROUNDWATER MONITORING STATUS

Groundwater monitoring has been initiated for both CCR Units to meet USEPA and GA EPD requirements and in accordance with the Groundwater Monitoring Plans (Golder, 2018; Golder, 2021e). Activities for background monitoring and the initial detection monitoring were performed at Plant McDonough from August 2016 through June 2019. Groundwater monitoring and reporting for Plant McDonough were performed in accordance with the requirements of 40 CFR § 257.90 through 257.91 and § 257.93 through 257.98 of the USEPA CCR rule. Statistical evaluation of the groundwater monitoring data for AP-1 and AP-2, 3/4 identified statistically significant increases (SSIs) and statistically significant levels (SSLs) of Appendix III and IV groundwater monitoring parameters, respectively. An Assessment of Corrective measures has been initiated for the site and remedy selection is ongoing. Monitoring results have been documented in Semi-Annual and Annual Groundwater Monitoring and Corrective Action Reports, prepared for AP-2, and AP-3/4 (recent reports submitted to GA EPD, Golder, 2021c). These reports have been submitted to EPD and posted to the site's CCR compliance website.

## 8.0 REFERENCES

References listed below may not be directly cited in the above text if used indirectly for report development.

Publicly available information:

Bendient, P.B., Rifai, H.S., and Newell, C.J. (1992) *Ground Water Contamination*. Prentice-Hall, Englewood Cliffs, New Jersey.

Chapman, M., M. Schlegel, B. A. Huffman, and K. B. McSwain, 2007, Hydraulic Gradients in Recharge and Discharge Areas and Apparent Ground-Water Age Dates from the Characterization of Multiple Regolith-fractured bedrock ground-water research stations in North Carolina, *Proceedings of the 2007 Georgia Water Resources Institute Proceedings held March 27-29, 2007, at The University of Georgia, Athens*.

Davis, G.H., S.J. Reynolds, and C. Kluth, *Structural Geology of Rocks and Regions* (3rd Ed.); John Wiley and Sons, Inc., New York, New York. 864 pp. 2012.

Fractured Bedrock Ground-Water Research Stations in North Carolina. *Proceedings of the 2007 Georgia Water Resources Conference* held March 27–29, 2007, at The University of Georgia, Athens, Georgia.

Fetter, C. W., 1988, *Applied Hydrogeology*.

Focazio, M.J., Plummer, L. N., Bohlke, J. K., Busenberg, E., Bachman, L. J., Powars, and D. S., Preliminary, 1988, Estimates of Residence Times and Apparent Ages of Ground Water in the Chesapeake Bay Watershed, and Water quality Data from a Survey of Springs, US Geological Survey, Water-Resources Investigations Report 97-4225.

Heath, R.C., 1984., Ground-water regions of the United States: U.S. Geological Survey Water-Supply Paper 2242, 78 p.

Jennings, S. P., 2010, Assessment of the Hydrogeology of the Piedmont, Alabama, Area, Geological Survey of Alabama.

Johnson, A. A., 1967, Specific Yield – Compilation of Specific Yields for Various Materials, Geologic Survey Water Supply Paper 1662-D.

Lattmon, L.H. and R.R. Parizek. 1964. Relationship Between Fracture Traces and the Occurrence of Groundwater in Carbonate Rocks. *Journal of Hydrology* 2:73-91

Legrand, Sr., H. E., 2004, Master Conceptual Model for Hydrogeological Site Characterization in the Piedmont and Mountain Region of North Carolina: A Guidance Manual.

Markewich, H. W., Pavich, M., Buell, G. R., 1990, Contrasting Soils and Landscapes of the Piedmont and Coastal Plain, Eastern United States, *Geomorphology*, 3, 417-447.

McDonald, M. G., & Harbaugh, A. W., Chapter A1, 1988, A Modular Three-Dimensional Finite-Difference Ground-Water Flow Model. In *Techniques of Water-Resources Investigations of the United States Geological Survey* (p. 586). Washington: United States Geological Survey Printing Office.

Miller J. A., 1990, Ground water atlas of the United States: Alabama, Florida, Georgia, and South Carolina. US Geological Survey Hydrologic Investigations Atlas 730-G.

Niswonger, R. G., Panday, S., & Ibaraki, M., MODFLOW-NWT, 2011, A Newton Formulation for MODFLOW 2005: U.S. Geological Survey Techniques and Methods 6-A37. Reston, Virginia: United States Geological Survey.

Northwest Atlanta, GA USGS 7.5-minute topographic quadrangle – 2014

Planert M., Williams J. S., 1995, Ground water atlas of the United States: California and Nevada. US Geologic Survey Atlas 730-B.

Robinson, J. L., Journey, C. A., Atkins, J B, 1996, Ground-Water Resources of the Coosa River Basin in Georgia and Alabama - Subarea 6 of the Apalachicola-Chattahoochee-Flint and Alabama-Coosa-Tallapoosa River Basins, USGS Report 96-177.

Trapp, Henry, Jr., and Horn, M.A., 1997, Ground water atlas of the United States, Segment 11—Delaware, Maryland, New Jersey, North Carolina, Pennsylvania, Virginia, West Virginia: U.S. Geological Survey Hydrologic Investigations Atlas 730–L, 24 p.

#### Internal reports:

Southern Company Services (SCS), 2013, Plant McDonough – Historical Site Borings

Golder, 2017a, Installation Report for Surface Impoundment Groundwater Piezometers – Georgia Power Plant McDonough, Smyrna, Georgia, B-series wells and piezometers (B-47 through B-51) – December 2017

Golder, 2017b, Installation Report for Surface Impoundment Groundwater Piezometers – Georgia Power Plant McDonough, Smyrna, Georgia, B-series wells and piezometers (B-52 through B-63) – December 2017

Golder, 2018a, Installation Report for Surface Impoundment Groundwater Piezometers – Georgia Power Plant McDonough, Smyrna, Georgia, B-series wells and piezometers (B-67 through B-71) – January 2018

- Golder, 2018b. Plant McDonough-Atkinson CCR Surface Impoundments (CCR Unit AP-2, Combined CCR Unit AP-3/4), Cobb County, Georgia Part A Section 6- Groundwater Monitoring Plan. November 2018
- Golder, 2018c. Plant McDonough-Atkinson CCR Surface Impoundments (CCR Unit AP-1) Cobb County, Georgia Part A Section 6- Groundwater Monitoring Plan. -November 2018
- Golder, 2020. Well Installation and Design Report – Addendum, Georgia Power Company-Plant McDonough-Atkinson, Ash Pond 2 and 3/4, Golder Associates Inc., Revised September 2020
- Golder, 2021a. Piezometer Installation Report (B-101D through B-111D), Georgia Power Company – Plant McDonough-Atkinson, Golder Associates Inc., February 12, 2021.
- Golder, 2021b. Piezometer Installation Report (B-112D through B-120D), Georgia Power Company – Plant McDonough-Atkinson, Golder Associates Inc., June 13, 2021.
- Golder 2021c. 2021 Annual Groundwater Monitoring & Corrective Action Report, Georgia Power Company – Plant McDonough-Atkinson Ash Pond 2 and 3/4, Golder Associates Inc., July 30, 2021
- Golder, 2022a. Plant McDonough-Atkinson CCR Surface Impoundments (CCR Unit AP-2, Combined Unit AP-3/4) Cobb County, Georgia, Part A Section 8 – Post Closure Plan, July 2022.
- Golder, 2022b. Plant McDonough-Atkinson CCR Surface Impoundments (CCR Unit AP-1), Cobb County, Georgia Part A Section 6- Groundwater Monitoring Plan. July 2022.

---

# TABLES

**TABLE GW-1**  
**SUMMARY OF GROUNDWATER ELEVATIONS - MONITORING WELLS**  
 Georgia Power Company - Plant McDonough  
 Atlanta, Georgia

Well ID	Top of Casing Elevation (feet/NAVD88) <sup>1</sup>	Groundwater Elevation (feet)																
		8/29/2016	12/5/2016	3/27/2017	7/10/2017	10/23/2017	2/26/2018	7/9/2018	11/5/2018	3/11/2019	8/26/2019	10/14/2019	1/14/2020	8/10/2020	9/21/2020	11/3/2020	2/25/2021	10/27/2021
<b>ASH POND 1 (AP-1) MONITORING WELLS</b>																		
DGWA-53	844.26	NM <sup>2</sup>	840.16	841.21	844.59	840.73	842.64	842.00	828.02	831.04	834.88	835.51	830.74	829.41	830.68	830.87	830.64	829.75
DGWA-70A	808.52	NM	NM	NM	767.37	766.93	767.76	768.62	767.73	771.92	768.16	765.92	767.41	768.95	762.11	768.37	769.85	766.90
DGWA-71	863.84	NM	NM	834.8	835.84	835.32	835.56	835.70	834.78	837.74	835.40	834.53	835.49	835.74	835.26	835.91	836.52	835.19
DGWC-37	766.21	753.01	753.21	752.87	753.27	753.43	753.26	752.83	752.66	753.60	752.34	752.20	753.51	752.13	752.92	752.91	752.94	752.28
DGWC-38	757.43	751.24	751.24	750.99	751.00	751.60	751.09	750.74	750.60	753.11	750.73	750.53	751.57	750.97	751.54	751.70	751.50	751.08
DGWC-39	759.89	751.82	752.52	752.67	752.78	752.33	752.78	752.55	752.06	754.92	750.54	749.90	753.24	751.21	752.88	753.63	753.22	752.00
DGWC-40	779.06	760.98	760.74	761.80	762.95	760.69	762.45	762.90	761.06	764.26	759.01	757.60	761.44	760.12	761.56	762.55	762.56	760.54
DGWC-67	766.70	NM	NM	758.36	758.37	758.09	757.93	757.56	757.30	757.86	756.64	756.54	757.78	756.40	757.31	757.35	757.18	756.39
DGWC-68A	765.33	NM	NM	NM	756.30	756.46	755.73	755.81	755.69	756.02	755.35	755.32	756.82	755.00	755.53	755.42	755.45	754.97
DGWC-69	763.75	NM	NM	758.22	758.15	758.48	758.50	758.03	757.99	758.57	757.77	757.63	758.88	757.37	758.01	758.10	758.26	757.55
DGWC-121	764.16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
<b>ASH POND 2 and ASH PONDS 3/4 (AP-2, 3/4) MONITORING WELLS</b>																		
DGWA-53	844.26	NM	840.16	841.21	844.59	840.73	842.64	842.00	828.02	831.04	834.88	835.51	830.74	829.41	830.68	830.87	830.64	829.75
DGWA-70A	808.52	NM	NM	NM	767.37	766.93	767.76	768.62	767.73	771.92	768.16	765.92	767.41	768.95	762.11	768.37	769.85	766.9
DGWA-71	863.84	NM	NM	834.80	835.84	835.32	835.56	835.70	834.78	837.74	835.40	834.53	835.49	835.74	835.26	835.91	836.52	835.19
DGWC-2	850.88	822.66	821.27	820.00	822.53	821.22	820.39	820.73	819.05	822.11	820.06	819.89	819.84	820.86	820.53	820.83	820.80	820.66
DGWC-4	814.85	797.89	797.37	798.47	798.95	796.24	795.91	794.37	793.07	794.83	791.98	791.36	792.98	791.48	791.43	792.04	791.90	790.13
DGWC-5	791.75	785.98	786.33	785.90	786.18	785.74	785.48	784.54	784.02	784.89	782.57	782.13	783.95	782.15	782.85	782.85	779.74	781.04
DGWC-8	826.38	812.00	808.38	807.69	811.43	805.36	799.81	797.87	795.21	798.35	794.48	793.75	794.72	793.33	793.57	793.85	792.07	787.64
DGWC-9	824.35	810.40	808.16	807.19	812.39	805.03	802.88	801.13	799.61	802.55	799.25	797.57	802.32	799.07	800.14	801.59	795.21	798.22
DGWC-10	823.55	802.79	802.30	800.80	806.57	800.33	797.50	796.22	794.05	796.58	792.55	793.59	800.22	791.09	793.53	795.37	796.18	794.64
DGWC-11	800.57	791.49	792.56	791.44	795.26	791.15	790.61	789.86	787.57	789.89	786.81	787.22	792.92	783.81	786.33	788.68	789.25	785.55
DGWC-12	773.86	765.72	766.17	766.27	767.20	765.64	767.13	765.54	765.14	766.40	764.43	764.79	767.05	763.51	765.13	765.11	765.16	762.68
DGWC-13	794.10	760.19	760.30	760.39	761.49	NM	768.46	760.44	759.55	760.10	760.69	759.94	761.06	760.55	761.87	760.77	759.96	760.25
DGWC-14	792.40	770.41	769.77	770.44	771.56	771.69	771.31	771.67	771.46	773.96	771.29	770.91	772.15	771.30	771.31	772.97	772.54	771.99
DGWC-15	824.50	786.06	785.21	785.13	786.08	786.06	785.28	785.79	785.38	786.89	784.94	784.52	784.74	785.05	784.94	785.33	785.02	784.44
DGWC-17	837.05	809.35	808.83	809.08	810.77	809.75	809.19	808.34	807.56	809.02	806.61	806.17	806.40	804.92	804.51	804.59	804.28	802.35
DGWC-19	825.46	804.25	803.58	803.81	806.11	804.73	805.36	804.70	804.16	805.05	803.21	802.51	802.61	801.16	801.20	801.51	801.18	800.23
DGWC-20	822.14	802.21	801.24	801.05	802.43	801.30	801.72	800.68	800.20	801.71	798.98	798.56	799.95	798.00	799.24	800.39	800.57	799.51
DGWC-21	816.28	802.74	801.41	800.77	800.50	799.79	799.85	799.03	798.47	799.09	798.22	796.96	797.51	796.96	798.78	800.10	800.73	799.93
DGWC-22	816.59	805.02	803.20	802.84	801.71	799.88	800.84	799.69	798.25	800.74	797.05	796.36	798.09	796.03	796.29	797.34	797.81	795.57
DGWC-23	818.37	804.61	804.84	804.88	803.89	802.66	804.02	801.83	800.61	803.75	798.64	797.77	802.29	797.89	798.92	799.67	800.82	795.74
DGWC-42	804.68	778.08	775.93	775.01	775.21	774.13	774.24	773.80	773.28	774.84	772.36	771.96	773.58	772.46	769.51	774.54	775.11	775.13
DGWC-47	797.45	776.88	776.70	778.54	780.25	778.16	779.78	780.70	779.15	782.01	774.51	773.79	780.84	777.61	780.49	781.06	781.11	777.86
DGWC-48	788.33	771.45	770.67	771.66	773.33	771.63	772.84	772.88	771.60	774.90	769.69	768.34	774.12	771.83	772.89	774.29	774.58	773.68
<b>PIEZOMETERS</b>																		
B-3	837.78	811.85	810.09	811.86	811.36	808.91	807.28	806.10	804.82	805.58	803.77	803.22	803.49	803.08	802.55	802.66	802.64	801.63
B-6	789.47	787.40	786.35	786.98	787.04	786.72	786.18	785.43	785.19	785.89	784.15	783.89	784.87	783.87	784.14	784.17	780.84	783.05
B-7	809.16	799.54	797.50	796.76	797.04	795.51	792.92	791.26	791.04	792.20	788.36	787.60	788.31	787.35	786.75	786.46	809.16	784.5
B-16	826.47	802.60	802.25	802.61	804.41	800.02	800.71	799.59	798.25	800.45	796.05	795.20	797.07	795.42	795.25	795.82	795.53	792.85
B-18	826.56	809.19	808.33	808.53	811.84	810.19	810.71	809.21	808.21	810.41	807.50	806.93	807.45	804.91	804.71	805.23	805.28	803.08



**TABLE GW-1**  
**SUMMARY OF GROUNDWATER ELEVATIONS - MONITORING WELLS**  
 Georgia Power Company - Plant McDonough  
 Atlanta, Georgia

Well ID	Top of Casing Elevation (feet/NAVD88) <sup>1</sup>	Groundwater Elevation (feet)																
		8/29/2016	12/5/2016	3/27/2017	7/10/2017	10/23/2017	2/26/2018	7/9/2018	11/5/2018	3/11/2019	8/26/2019	10/14/2019	1/14/2020	8/10/2020	9/21/2020	11/3/2020	2/25/2021	10/27/2021
B-24	822.11	806.65	804.87	807.18	808.10	804.72	806.23	805.47	803.00	809.86	803.09	801.61	804.56	803.11	802.87	803.49	805.30	804.48
B-25	836.54	821.63	822.51	823.42	823.85	822.68	824.06	822.50	821.06	824.12	819.20	817.71	824.24	818.43	821.53	822.84	823.32	818.52
B-26	853.60	829.13	827.14	829.97	831.02	827.90	829.45	828.59	826.26	833.30	826.25	824.82	827.27	826.64	825.55	827.05	829.40	825.71
B-27	NA	830.16	828.94	836.76	ABANDONED													
B-28	816.08	793.30	792.40	792.42	792.12	789.56	791.14	790.07	787.90	791.89	786.52	785.52	788.99	786.05	786.95	787.92	788.96	785.73
B-29	816.43	790.87	790.42	792.15	792.30	789.57	791.80	790.69	788.83	793.96	787.99	786.97	790.46	788.57	788.90	790.08	791.34	787.34
B-31	797.47	764.17	764.31	764.68	766.38	763.81	765.11	765.23	763.62	766.88	763.61	763.07	764.73	763.94	764.01	764.21	764.60	763.41
B-41	795.20	774.74	773.24	772.28	772.46	770.97	771.32	771.01	770.28	771.76	768.70	767.98	770.50	768.70	769.91	770.89	770.92	770.17
B-50	809.67	783.18	781.78	781.93	782.49	781.16	782.32	782.04	781.00	783.83	780.34	780.17	782.75	781.58	784.77	786.78	788.27	787.79
B-51	765.92	753.69	753.90	753.57	753.89	754.08	753.86	753.44	753.26	754.15	753.00	752.80	754.07	752.66	753.37	753.42	753.46	752.76
B-52	822.89	NM	796.52	799.44	800.17	797.09	798.56	798.66	795.73	803.49	796.58	794.51	795.78	796.63	795.34	795.87	797.86	797.81
B-54	785.46	NM	781.24	780.81	780.91	781.23	780.67	780.09	780.28	780.44	779.46	779.47	780.33	779.52	779.86	779.96	777.08	779.36
B-55	825.12	NM	812.13	810.46	815.77	807.47	805.77	804.55	803.08	805.21	802.68	803.89	806.37	802.40	804.99	805.72	802.49	798.84
B-56	823.59	NM	805.57	804.87	810.59	802.42	799.29	797.00	795.42	798.40	794.91	794.27	797.93	794.43	795.39	796.80	796.43	795.43
B-57	789.04	NM	766.42	767.55	769.46	768.51	768.52	770.71	768.67	773.56	767.91	766.19	768.14	769.93	770.02	771.62	771.66	770.89
B-58	788.17	NM	764.20	765.36	767.61	766.40	766.63	768.59	766.37	771.75	765.57	763.75	766.02	767.77	767.76	769.52	769.72	769.31
B-59	788.00	NM	782.84	782.46	782.58	782.62	782.22	781.46	781.51	781.83	780.40	780.31	781.42	780.39	780.72	780.85	775.67	779.88
B-60	782.13	NM	748.58	748.44	749.87	749.49	749.48	751.13	749.78	755.46	749.91	748.89	750.33	750.42	751.22	753.80	752.32	751.61
B-61	782.09	NM	758.46	759.12	761.86	760.30	760.82	762.98	760.50	766.59	759.78	758.06	760.58	761.75	762.24	764.58	764.34	763.66
B-62	760.08	NM	745.89	745.33	745.89	751.03	749.15	748.04	745.82	754.34	746.21	745.32	747.91	742.48	743.11	749.24	745.66	744.95
B-63	777.10	NM	745.02	745.46	746.75	746.75	746.95	747.38	746.55	753.35	746.85	746.64	748.55	747.56	749.12	751.65	749.80	748.75
B-64	785.83	NM	781.29	781.40	781.50	781.67	781.20	780.54	780.67	781.01	779.69	779.66	780.89	779.70	780.14	780.27	776.49	779.28
B-65	821.95	NM	811.62	811.38	814.82	811.24	806.45	805.56	803.98	807.77	803.79	803.22	804.63	803.50	803.40	804.50	821.95	801.83
B-66	815.90	NM	801.50	799.86	804.66	799.91	798.36	797.80	796.43	798.14	794.79	796.11	801.39	793.69	796.72	797.58	798.33	796.4
B-68	758.68	NM	NM	755.45	NM	NM	NM	NM	NM	NM	754.84	754.81	756.20	754.72	755.19	755.09	755.14	754.7
B-72	758.46	--	--	--	--	--	--	--	--	--	--	--	--	755.04	754.83	755.35	755.35	754.96
B-73	759.21	--	--	--	--	--	--	--	--	--	--	--	--	754.72	755.26	755.12	755.21	754.706
B-74	759.06	--	--	--	--	--	--	--	--	--	--	--	--	754.90	754.68	754.59	755.39	754.9
B-76	760.53	--	--	--	--	--	--	--	--	--	--	743.20	746.62	745.42	745.11	750.04	746.06	745.71
B-77	776.86	--	--	--	--	--	--	--	--	--	--	745.23	748.36	746.42	748.68	750.96	748.96	747.48
B-78	790.75	--	--	--	--	--	--	--	--	--	--	779.94	781.70	780.25	780.84	780.90	778.67	779.65
B-79	788.66	--	--	--	--	--	--	--	--	--	--	781.71	782.74	781.84	782.14	782.21	780.49	781.58
B-80	804.47	--	--	--	--	--	--	--	--	--	--	786.97	787.99	787.10	786.62	786.37	786.13	784.84
B-81	820.56	--	--	--	--	--	--	--	--	--	--	788.80	789.17	788.63	787.86	782.41	782.41	784.31
B-82	810.07	--	--	--	--	--	--	--	--	--	--	797.42	801.17	790.70	794.12	796.22	796.22	793.97
B-83	776.98	--	--	--	--	--	--	--	--	--	--	744.01	748.23	744.88	745.99	747.35	747.35	746.58
B-84	776.34	--	--	--	--	--	--	--	--	--	--	740.54	746.22	741.33	743.85	746.63	746.63	745.42
<b>PIEZOMETERS</b>																		
B-85	782.54	--	--	--	--	--	--	--	--	--	--	--	780.27	779.54	775.63	777.76	777.76	779.14
B-86	784.29	--	--	--	--	--	--	--	--	--	--	--	783.38	782.34	777.24	781.22	781.22	782.1
B-87	803.37	--	--	--	--	--	--	--	--	--	--	--	787.81	786.87	786.57	785.95	785.95	784.94
B-88	820.07	--	--	--	--	--	--	--	--	--	--	--	788.60	787.50	786.77	782.04	782.04	783.58



**TABLE GW-1**  
**SUMMARY OF GROUNDWATER ELEVATIONS - MONITORING WELLS**  
**Georgia Power Company - Plant McDonough**  
**Atlanta, Georgia**

Well ID	Top of Casing Elevation (feet/NAVD88) <sup>1</sup>	Groundwater Elevation (feet)																
		8/29/2016	12/5/2016	3/27/2017	7/10/2017	10/23/2017	2/26/2018	7/9/2018	11/5/2018	3/11/2019	8/26/2019	10/14/2019	1/14/2020	8/10/2020	9/21/2020	11/3/2020	2/25/2021	10/27/2021
B-89	822.36	--	--	--	--	--	--	--	--	--	--	--	800.58	799.35	799.26	800.36	822.36	796.56
B-90	784.00	--	--	--	--	--	--	--	--	--	--	--	783.12	781.14	782.44	782.50	781.36	781.97
B-91	782.98	--	--	--	--	--	--	--	--	--	--	--	780.08	779.29	779.60	779.67	778.00	779.18
B-92	785.08	--	--	--	--	--	--	--	--	--	--	--	781.20	779.78	780.32	780.40	777.95	779.36
B-93	789.07	--	--	--	--	--	--	--	--	--	--	--	784.21	781.35	782.55	782.67	779.89	780.57
B-94	801.74	--	--	--	--	--	--	--	--	--	--	--	--	786.71	786.49	786.26	785.79	784.86
B-95	784.00	--	--	--	--	--	--	--	--	--	--	--	--	781.58	781.89	781.92	781.45	781.9
B-96	784.92	--	--	--	--	--	--	--	--	--	--	--	--	779.37	779.82	779.85	778.30	778.88
B-97	786.29	--	--	--	--	--	--	--	--	--	--	--	--	780.26	781.29	780.99	781.03	779.84
B-98	789.67	--	--	--	--	--	--	--	--	--	--	--	--	780.52	782.01	782.15	782.39	780.15
B-99	782.39	--	--	--	--	--	--	--	--	--	--	--	--	778.57	778.97	778.99	779.06	778.63
B-100	777.95	--	--	--	--	--	--	--	--	--	--	--	--	742.31	742.78	749.14	744.87	744.7
B-101D	824.29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	793.26	793.836
B-102D	823.42	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	792.80	791.56
B-103D	795.96	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	783.50	782.28
B-104D	787.90	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	781.64	780.439
B-105D	779.01	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	762.82	760.75
B-106D	826.21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	790.54	787.01
B-107D	823.38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	801.98	800.95
B-108D	821.13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	801.03	800.27
B-109D	850.73	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	812.13	811.87
B-110D	764.61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	756.55	755.69
B-111D	791.87	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	781.12	780.07
B-112D	765.58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	757.86
B-113D	758.22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	756.21
B-115D	789.17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	768.96
B-116D	807.82	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	764.80
B-117D	863.82	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	834.63
B-118	807.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	756.15
B-119D	807.15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	759.14
B-120D	836.42	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	801.72
B-122D	777.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-123D	781.80	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

**Notes:**

1. Elevation data recorded in feet North American Vertical Datum (NAVD)
2. Survey data for monitoring wells and piezometers provided by Metro Engineering.
3. Monitoring well DGWC-121 was installed in April 2022.
4. Data presented for AP-1 are included for reference only as they are used to support the conceptual site model. These data should not be considered for permitting of AP-2 and 3/4.

**TABLE GW-2**  
**HORIZONTAL GROUNDWATER FLOW VELOCITY CALCULATIONS - OCTOBER 2021**  
 Georgia Power Company - Plant McDonough  
 Atlanta, Georgia

Flow Paths	Groundwater Elevation (feet msl)	$\Delta h$ (feet) <sup>1</sup>	$\Delta l$ (feet) <sup>2</sup>	Hydraulic Gradient ( $\Delta h/\Delta l$ ) <sup>3</sup>	Average Hydraulic Conductivity, K (centimeter per second) <sup>5</sup>	Assumed Effective Porosity ( $n_e$ ) <sup>6</sup>	Average Linear Groundwater Velocity	
							(feet per day) <sup>4</sup>	(feet per year) <sup>4</sup>
<b>ASH POND 1 (AP-1)</b>								
B-29/DGWC-68A	787.34	32.37	900	0.036	0.00077	0.2	0.39	143
	754.97							
B-28/DGWC-37	785.73	33.45	1700	0.020	0.00077	0.2	0.21	78
	752.28							
B-50/DGWC-39	787.79	35.79	1400	0.026	0.00077	0.2	0.28	102
	752.00							
<b>ASH POND 2 AND ASH PONDS 3/4 (AP-2, 3/4)</b>								
DGWA-53/DGWC-13	829.75	69.50	2550	0.027	0.00077	0.2	0.30	109
	760.25							
B-26/DGWC-48	825.71	52.03	2000	0.026	0.00077	0.2	0.28	104
	773.68							

**Notes:**

1.  $\Delta h$  = Change in groundwater elevation
2.  $\Delta l$  = Distance along flow path
3.  $l = \Delta h / \Delta l$
4. Velocity =  $(l * K)/n_e$
5. Hydraulic conductivity based on historic aquifer performance tests
6. Assumed effective porosities for overburden was based on the default values recommended by USEPA for a silty sand-type soil (1996). Assumed effective porosity for upper bedrock was derived from Daniel and Dahlen (2002) and Dowd and Marshall (1995).
7. Data presented for CCR Unit AP-1 is included for reference only. This data should not be considered for permitting of CCR Units AP-2 and 3/4.

**TABLE GW-3**  
**SUMMARY OF AQUIFER TEST DATA**  
 Georgia Power Company - Plant McDonough  
 Atlanta, GA

SCREENED LITHOLOGY	PIEZOMETER IDENTIFICATION	SATURATED AQUIFER THICKNESS VALUE (feet)	SCREEN LENGTH (feet)	PIEZOMETER DIAMETER (inches)	AQUIFER ANALYSIS METHOD	AQUIFER TEST TYPE	HYDRAULIC CONDUCTIVITY (cm/sec)
<b>OVERBURDEN</b>	DGWC-9	63	10	3	Bouwer-Rice	Falling	5.0E-04
	DGWC-13	15	10	3	Bouwer-Rice	Falling	5.8E-04
						Rising	9.1E-04
	DGWC-19	25	10	3	Bouwer-Rice	Falling	7.2E-04
						Rising	8.6E-04
	DGWA-70A	20	10	2	Bouwer-Rice	Falling	2.50E-04
						Rising	1.54E-04
	DGWA-71	19	10	2	Bouwer-Rice	Falling	4.26E-04
						Rising	3.50E-04
	DGWC-67	47	10	2	Bouwer-Rice	Falling	2.13E-04
						Rising	3.02E-04
	DGWC-68A	20	10	2	Bouwer-Rice	Falling	4.48E-04
						Rising	4.09E-04
	DGWC-69	18	10	2	Bouwer-Rice	Falling	9.84E-05
						Rising	1.93E-04
	B-40	23	10	3	Bouwer-Rice	Falling	3.4E-03
						Rising	2.8E-03
	B-41	45	10	3	Bouwer-Rice	Falling	6.2E-04
B-50	20	10	2	Bouwer-Rice	Falling	7.2E-04	
					Rising	6.4E-04	
B-51	60	10	2	Bouwer-Rice	Falling	5.7E-04	
					Rising	5.1E-04	

**TABLE GW-3**  
**SUMMARY OF AQUIFER TEST DATA**  
 Georgia Power Company - Plant McDonough  
 Atlanta, GA

SCREENED LITHOLOGY	PIEZOMETER IDENTIFICATION	SATURATED AQUIFER THICKNESS VALUE (feet)	SCREEN LENGTH (feet)	PIEZOMETER DIAMETER (inches)	AQUIFER ANALYSIS METHOD	AQUIFER TEST TYPE	HYDRAULIC CONDUCTIVITY (cm/sec)
<b>UPPER BEDROCK</b>	DGWC-14	18	10	3	Bouwer-Rice	Falling	1.4E-03
						Rising	1.3E-03
	B-24	75	10	3	Bouwer-Rice	Falling	4.8E-05
	B-26	35	10	3	Bouwer-Rice	Falling	7.1E-06
	B-27	25	10	3	Bouwer-Rice	Falling	1.8E-03
						Rising	1.3E-03
	DGWC-47	100	10	2	Bouwer-Rice	Falling	3.5E-05
						Rising	2.7E-05
	DGWC-48	20	10	2	Bouwer-Rice	Falling	8.1E-05
						Rising	9.0E-05
	B-101D	100	10	2	Bouwer-Rice	Falling	4.30E-05
						Rising	1.16E-05
	B-102D	100	10	2	Bouwer-Rice	Falling	7.21E-05
						Rising	8.75E-05
	B-104D	100	10	2	Bouwer-Rice	Falling	2.09E-05
						Rising	3.80E-05
	B-105D	100	10	2	Bouwer-Rice	Falling	1.26E-04
						Rising	1.47E-04
	B-106D	100	10	2	Bouwer-Rice	Falling	9.17E-05
						Rising	3.53E-04
B-107D	100	10	2	Bouwer-Rice	Falling	2.44E-05	
					Rising	4.08E-03	
B-108D	100	10	2	Bouwer-Rice	Falling	2.83E-05	
					Rising	1.92E-04	
B-109D	100	10	2	Bouwer-Rice	Falling	3.14E-05	
					Rising	1.99E-05	
B-111D	100	10	2	Bouwer-Rice	Falling	2.2E-04	
					Rising	2.1E-04	

**TABLE GW-3**  
**SUMMARY OF AQUIFER TEST DATA**  
 Georgia Power Company - Plant McDonough  
 Atlanta, GA

SCREENED LITHOLOGY	PIEZOMETER IDENTIFICATION	SATURATED AQUIFER THICKNESS VALUE (feet)	SCREEN LENGTH (feet)	PIEZOMETER DIAMETER (inches)	AQUIFER ANALYSIS METHOD	AQUIFER TEST TYPE	HYDRAULIC CONDUCTIVITY (cm/sec)
<b>BEDROCK</b>	B-112D	100	10	2	Bouwer-Rice	Falling	6.7E-04
						Falling	9.6E-04
	B-113D	100	10	2	Bouwer-Rice	Falling	3.2E-04
						Rising	1.1E-04
						Falling	7.3E-04
						Rising	7.9E-04
	B-115D	100	10	2	Bouwer-Rice	Falling	6.8E-05
						Rising	4.8E-05
	B-116D	100	10	2	Bouwer-Rice	Falling	4.1E-04
						Rising	4.1E-04
	B-117D	100	10	2	Bouwer-Rice	Falling	2.5E-04
						Rising	6.4E-05
	B-118	100	10	2	Bouwer-Rice	Falling	4.2E-04
						Rising	8.0E-04
	B-119D	100	10	2	Bouwer-Rice	Falling	5.7E-05
						Rising	1.4E-05
B-120D	100	10	2	Bouwer-Rice	Falling	1.5E-02	
					Rising	1.5E-02	
					Falling	9.6E-03	
					Rising	1.8E-02	

**NOTES:**

1. Overburden is the material overlying the upper bedrock, including residual soils, saprolite, transitionally weathered rock, and partially weathered rock.
2. Upper Bedrock is based on the depth at which rock quality data showed a significant thickness of fresh, relatively competent bedrock.
3. Geomean = geometric mean
4. cm/sec = centimeter per second
5. Data presented for CCR Unit AP-1 is included for reference only. This data should not be considered for permitting of CCR Units AP-2 and 3/4.

**TABLE GW-4**  
**MONITORING WELL NETWORK SUMMARY**  
 Georgia Power Company - Plant McDonough  
 Atlanta, Georgia

Well-ID	Hydraulic Location	Screened Media	NAD 83 Northing	NAD 83 Easting	Top of Casing Elevation (feet NAVD 88)	Ground Surface Elevation at Concrete Pad (feet NAVD 88)	Ground Surface Elevation (feet NAVD 88)	Total Well Depth (feet bgs)	Top of Screen Elevation (feet NAVD 88)	Bottom of Screen Elevation (feet NAVD 88)	Screen Length (feet)	Date of Installation	Average Hydraulic Conductivity (cm/sec)	Kv/Kh
<b>ASH POND 1 (AP-1) DETECTION MONITORING WELL NETWORK<sup>(6)</sup></b>														
DGWA-53	Upgradient	Upper Bedrock	1393472.8	2201668.8	844.26	841.37	841.3	28.9	823.7	813.7	10	9/24/2016	--	--
DGWA-70A	Upgradient	Overburden	1390481.4	2200591.6	808.52	805.67	805.8	59.3	756.9	746.9	10	5/10/2017	2.02E-04	Kh
DGWA-71	Upgradient	Overburden	1393963.3	2201714.8	863.84	861.22	861.2	43.8	827.8	817.8	10	2/28/2017	3.88E-04	Kh
DGWC-37	Downgradient	Overburden	1390482.2	2200919.8	766.21	763.64	763.7	39.7	734.4	724.4	10	11/28/2012	--	--
DGWC-38	Downgradient	Overburden	1390362.7	2201148.6	757.43	754.67	754.7	25.0	740.0	730.0	10	11/29/2012	--	--
DGWC-39	Downgradient	Overburden	1390303.6	2201540.1	759.89	756.93	757.0	21.2	746.2	736.2	10	11/6/2012	--	--
DGWC-40	Downgradient	Overburden	1390625.7	2201825.9	779.06	776.12	776.2	34.9	751.7	741.7	10	11/5/2012	3.10E-03	Kh
DGWC-67	Downgradient	Overburden	1390953.8	2200830.7	766.70	766.80	767.0	56.3	720.7	710.7	10	3/14/2017	2.58E-04	Kh
DGWC-68A	Downgradient	Overburden	1391301.2	2200734.9	765.33	765.06	765.4	29.8	746.0	736.0	10	4/20/2017	4.29E-04	Kh
DGWC-69	Downgradient	Overburden	1391585.0	2200657.1	763.75	763.99	764.0	24.3	749.7	739.7	10	3/16/2017	1.93E-04	Kh
DGWC-121	Downgradient	Overburden	1390739.7	2200849.4	764.16	764.60	764.5	50.0	724.8	714.8	10	3/22/2022	--	--
<b>ASH POND 1 (AP-1) ASSESSMENT MONITORING WELL NETWORK<sup>(6)</sup></b>														
B-62	Downgradient	Upper Bedrock	1389828.1	2201811.2	760.08	N.A.	760.4	39.9	730.7	720.7	10	10/4/2016	--	--
B-100	Downgradient	Overburden	1390254.8	2202242.1	777.95	775.32	775.3	44.8	740.5	730.5	10	7/8/2020	--	--
B-105D	Downgradient	Upper Bedrock	1390634.5	2201831.9	779.01	776.03	776.0	70.0	716.0	706.0	10	10/19/2020	1.37E-04	Kh
B-112D	Downgradient	Upper Bedrock	1391564.2	2200664.1	765.58	765.98	766.1	55.0	721.4	711.4	10	3/22/2021	--	--
B-113D	Downgradient	Upper Bedrock	1391264.6	2200719.2	758.22	758.87	758.8	85.0	684.4	674.4	10	3/30/2021	--	--

**TABLE GW-4**  
**MONITORING WELL NETWORK SUMMARY**  
 Georgia Power Company - Plant McDonough  
 Atlanta, Georgia

Well-ID	Hydraulic Location	Screened Media	NAD 83 Northing	NAD 83 Easting	Top of Casing Elevation (feet NAVD 88)	Ground Surface Elevation at Concrete Pad (feet NAVD 88)	Ground Surface Elevation (feet NAVD 88)	Total Well Depth (feet bgs)	Top of Screen Elevation (feet NAVD 88)	Bottom of Screen Elevation (feet NAVD 88)	Screen Length (feet)	Date of Installation	Average Hydraulic Conductivity (cm/sec)	Kv/Kh
<b>ASH POND 2 and ASH PONDS 3/4 (AP-2, 3/4) DETECTION MONITORING WELL NETWORK</b>														
DGWA-53	Upgradient	Upper Bedrock	1393472.8	2201668.8	844.26	841.37	841.3	28.9	823.7	813.7	10	9/24/2016	--	--
DGWA-70A	Upgradient	Overburden	1390481.4	2200591.6	808.52	805.67	805.8	59.3	756.9	746.9	10	5/10/2017	2.02E-04	Kh
DGWA-71	Upgradient	Overburden	1393963.3	2201714.8	863.84	861.22	861.2	43.8	827.8	817.8	10	2/28/2017	3.88E-04	Kh
DGWC-2	Downgradient	Overburden/Upper Bedrock	1393958.0	2202119.5	850.88	848.17	848.3	49.0	809.6	799.6	10	10/2/2012	--	--
DGWC-4	Downgradient	Overburden	1394171.5	2202662.4	814.85	812.06	812.1	45.0	777.4	767.4	10	10/3/2012	--	--
DGWC-5	Downgradient	Overburden/Upper Bedrock	1394306.3	2202965.1	791.75	788.64	788.7	30.0	769.0	759.0	10	10/4/2012	--	--
DGWC-8	Downgradient	Overburden	1394322.2	2203882.1	826.38	824.02	824.1	49.1	785.4	775.4	10	10/10/2012	--	--
DGWC-9	Downgradient	Overburden	1394055.9	2204170.0	824.35	821.86	821.8	30.0	802.2	792.2	10	10/10/2012	5.00E-04	Kh
DGWC-10	Downgradient	Overburden	1393818.3	2204201.1	823.55	820.82	820.9	45.4	785.9	775.9	10	10/11/2012	--	--
DGWC-11	Downgradient	Overburden	1393547.1	2204166.2	800.57	797.99	798.1	49.1	759.3	749.3	10	10/15/2012	--	--
DGWC-12	Downgradient	Overburden	1393149.4	2204128.3	773.86	771.10	771.2	25.1	756.5	746.5	10	10/15/2012	--	--
DGWC-13	Downgradient	Overburden	1392881.1	2204084.6	794.10	791.20	791.3	43.8	757.9	747.9	10	11/29/2012	7.45E-04	Kh
DGWC-14	Downgradient	Overburden/Upper Bedrock	1392574.2	2204013.3	792.40	789.69	789.8	34.3	765.9	755.9	10	12/18/2012	1.35E-03	Kh
DGWC-15	Downgradient	Overburden	1392544.1	2203679.0	824.50	821.43	821.5	67.1	764.8	754.8	10	11/29/2012	--	--
DGWC-17	Downgradient	Overburden	1392645.6	2203051.0	837.05	834.14	834.2	44.5	800.0	790.0	10	1/9/2013	--	--
DGWC-19	Downgradient	Overburden	1392342.6	2202601.0	825.46	822.87	822.9	39.8	793.5	783.5	10	3/12/2013	7.90E-04	Kh
DGWC-20	Downgradient	Overburden	1392164.5	2202315.6	822.14	819.66	819.8	39.7	790.7	780.7	10	3/5/2013	--	--
DGWC-21	Downgradient	Overburden/Upper Bedrock	1392067.5	2202063.5	816.28	813.47	813.5	69.0	754.9	744.9	10	10/31/2012	--	--
DGWC-22	Downgradient	Upper Bedrock	1392126.3	2201791.9	816.59	813.69	813.7	60.0	764.0	754.0	10	10/25/2012	--	--
DGWC-23	Downgradient	Upper Bedrock	1392239.7	2201582.0	818.37	815.63	815.7	60.1	765.9	755.9	10	10/25/2012	--	--
DGWC-42	Downgradient	Overburden	1391327.8	2201870.2	804.68	801.98	802.0	50.4	762.1	752.1	10	11/12/2012	--	--
DGWC-47	Downgradient	Overburden/Upper Bedrock	1391553.8	2202610.5	797.45	794.35	794.3	28.8	775.9	765.9	10	6/23/2016	3.10E-05	Kh
DGWC-48	Downgradient	Overburden/Upper Bedrock	1391314.6	2202290.2	788.33	785.21	785.2	30.0	765.6	755.6	10	6/22/2016	8.55E-05	Kh



**TABLE GW-4**  
**MONITORING WELL NETWORK SUMMARY**  
 Georgia Power Company - Plant McDonough  
 Atlanta, Georgia

Well-ID	Hydraulic Location	Screened Media	NAD 83 Northing	NAD 83 Easting	Top of Casing Elevation (feet NAVD 88)	Ground Surface Elevation at Concrete Pad (feet NAVD 88)	Ground Surface Elevation (feet NAVD 88)	Total Well Depth (feet bgs)	Top of Screen Elevation (feet NAVD 88)	Bottom of Screen Elevation (feet NAVD 88)	Screen Length (feet)	Date of Installation	Average Hydraulic Conductivity (cm/sec)	Kv/Kh
<b>ASH POND 2 and ASH PONDS 3/4 (AP-2, 3/4) ASSESSMENT MONITORING WELL NETWORK</b>														
B-56	Downgradient	Overburden	1393957.9	2204187.8	823.59	820.95	821.0	45.0	786.4	776.4	10	10/3/2016	--	--
B-62	Downgradient	Upper Bedrock	1389828.1	2201811.2	760.08	N.A.	760.4	39.9	730.7	720.7	10	10/4/2016	--	--
B-63	Downgradient	Overburden	1390999.1	2202978.1	777.10	777.37	777.3	46.0	741.8	731.8	10	10/6/2016	--	--
B-66	Downgradient	Overburden	1393858.2	2204277.5	815.90	813.33	813.3	55.3	768.3	758.3	10	11/16/2016	--	--
B-77	Downgradient	Overburden	1390948.7	2202942.0	776.86	777.12	777.1	42.0	745.1	735.1	10	9/17/2019	--	--
B-82	Downgradient	Overburden	1393750.0	2204258.1	810.07	807.55	807.5	45.0	773.0	763.0	10	9/21/2019	--	--
B-83	Downgradient	Overburden	1390735.5	2202695.6	776.98	777.17	777.1	48.6	738.5	728.5	10	9/30/2019	--	--
B-88	Downgradient	Overburden	1394401.1	2203738.3	820.07	816.80	817.0	72.0	755.0	745.0	10	11/15/2019	--	--
B-92	Downgradient	Overburden	1394392.7	2203026.7	785.08	785.30	785.3	24.6	770.7	760.7	10	12/11/2019	--	--
B-93	Downgradient	Overburden	1394348.7	2202946.7	789.07	789.19	789.2	28.9	770.3	760.3	10	12/12/2019	--	--
B-97	Downgradient	Overburden/Upper Bedrock	1394430.0	2203008.3	786.29	786.50	786.6	31.0	765.3	755.3	10	2/11/2020	--	--
B-98	Downgradient	Overburden	1394392.5	2202934.0	789.67	789.81	789.8	19.4	780.8	770.8	10	2/10/2020	--	--
B-100	Downgradient	Overburden	1390254.8	2202242.1	777.95	775.32	775.3	44.8	740.5	730.5	10	7/8/2020	--	--
B-101D	Downgradient	Overburden/Upper Bedrock	1394063.6	2204168.2	824.29	821.24	821.2	75.0	756.3	746.3	10	11/12/2020	2.73E-05	Kh
B-102D	Downgradient	Upper Bedrock	1393828.4	2204200.4	823.42	820.64	820.6	85.0	746.2	736.2	10	11/10/2020	1.12E-04	Kh
B-104D	Downgradient	Upper Bedrock	1391318.3	2202298.5	787.90	785.31	785.3	60.0	735.3	725.3	10	10/20/2020	3.18E-05	Kh
B-106D	Downgradient	Upper Bedrock	1394327.1	2203869.2	826.21	823.39	823.5	80.0	754.1	744.1	10	11/13/2020	2.57E-04	Kh
B-107D	Downgradient	Upper Bedrock	1392334.5	2202596.4	823.38	820.44	820.6	85.8	745.5	735.5	10	10/28/2020	1.88E-03	Kh
B-108D	Downgradient	Upper Bedrock	1392156.1	2202312.5	821.13	818.33	818.4	80.0	749.4	739.4	10	10/27/2020	1.70E-04	Kh
B-109D	Downgradient	Upper Bedrock	1393957.5	2202127.0	850.73	847.78	847.8	100.0	758.4	748.4	10	10/31/2020	2.57E-05	Kh
B-111D	Downgradient	Upper Bedrock	1394303.4	2202956.4	791.87	789.04	789.1	85.0	714.9	704.9	10	11/3/2020	1.88E-04	Kh
B-115D	Downgradient	Upper Bedrock	1391265.3	2202580.7	789.17	786.43	786.4	80.0	717.2	707.2	10	3/20/2021	--	--
B-120D	Downgradient	Upper Bedrock	1394047.2	2202436.4	836.42	834.03	834.0	70.0	775.0	765.0	10	3/6/2021	--	--
B-122D	Downgradient	Upper Bedrock	1390992.8	2202975.4	777.03	777.30	777.3	85.0	707.5	697.5	10	3/24/2022	--	--



**TABLE GW-4**  
**MONITORING WELL NETWORK SUMMARY**  
 Georgia Power Company - Plant McDonough  
 Atlanta, Georgia

Well-ID	Hydraulic Location	Screened Media	NAD 83 Northing	NAD 83 Easting	Top of Casing Elevation (feet NAVD 88)	Ground Surface Elevation at Concrete Pad (feet NAVD 88)	Ground Surface Elevation (feet NAVD 88)	Total Well Depth (feet bgs)	Top of Screen Elevation (feet NAVD 88)	Bottom of Screen Elevation (feet NAVD 88)	Screen Length (feet)	Date of Installation	Average Hydraulic Conductivity (cm/sec)	Kv/Kh
<b>PIEZOMETERS</b>														
B-3	Downgradient	Overburden/Upper Bedrock	1394045.1	2202411.5	837.78	834.86	835.0	37.0	808.3	798.3	10	10/3/2012	--	--
B-6	Downgradient	Overburden	1394419.5	2203266.5	789.47	786.45	786.5	35.4	761.5	751.5	10	10/9/2012	--	--
B-7	Downgradient	Overburden	1394374.6	2203596.1	809.16	806.04	806.1	25.2	791.3	781.3	10	10/9/2012	--	--
B-16	Downgradient	Overburden	1392595.1	2203315.4	826.47	823.54	823.6	43.7	790.2	780.2	10	12/19/2012	--	--
B-18	Downgradient	Overburden	1392521.0	2202875.5	826.56	823.89	823.9	32.6	801.5	791.5	10	1/10/2013	--	--
B-24	Downgradient	Upper Bedrock	1392479.9	2201450.0	822.11	819.19	819.3	79.1	751.0	741.0	10	10/24/2012	4.80E-04	Kh
B-25	Downgradient	Upper Bedrock	1392813.3	2201502.7	836.54	833.41	833.5	54.8	789.1	779.1	10	10/24/2012	--	--
B-26	Downgradient	Upper Bedrock	1393105.6	2201550.4	853.60	850.61	850.6	49.3	811.7	801.7	10	10/23/2012	7.10E-06	Kh
B-28	Downgradient	Overburden/Upper Bedrock	1391967.4	2201679.2	816.08	813.28	813.3	69.4	754.3	744.3	10	10/31/2012	--	--
B-29	Downgradient	Overburden	1391890.0	2201422.0	816.43	813.47	813.5	54.4	769.4	759.4	10	1/11/2013	--	--
B-31	Downgradient	Upper Bedrock	1392034.3	2200928.5	797.47	794.84	794.9	45.1	760.2	750.2	10	1/22/2013	--	--
B-41	Downgradient	Overburden	1390920.8	2201751.9	795.20	792.40	792.4	60.0	743.0	733.0	10	11/14/2012	6.20E-04	Kh
B-50	Downgradient	Overburden	1391657.1	2201841.0	809.67	806.49	809.2	36.0	784.4	774.4	10	6/24/2016	6.80E-04	Kh
B-51	Downgradient	Overburden	1390501.2	2200906.5	765.92	763.29	763.3	65.0	708.3	698.3	10	6/27/2016	5.40E-04	Kh
B-52	Downgradient	Overburden	1392308.3	2201314.8	822.89	820.18	820.3	50.0	781.4	771.4	10	9/28/2016	--	--
B-54	Downgradient	Overburden/Upper Bedrock	1394423.5	2203140.7	785.46	782.54	782.6	34.2	758.8	748.8	10	9/26/2016	--	--
B-55	Downgradient	Overburden	1394142.6	2204147.9	825.12	822.86	822.9	52.0	781.9	771.9	10	9/22/2016	--	--
B-56	Downgradient	Overburden	1393957.9	2204187.8	823.59	820.95	821.0	45.0	786.4	776.4	10	10/3/2016	--	--
B-57	Downgradient	Upper Bedrock	1391396.3	2202736.9	789.04	786.03	786.0	50.5	746.0	736.0	10	9/24/2016	--	--
B-58	Downgradient	Overburden	1391125.7	2202426.5	788.17	785.20	785.2	45.0	750.7	740.7	10	9/23/2016	--	--
B-59	Downgradient	Overburden/Upper Bedrock	1394349.1	2203001.1	788.00	785.41	785.5	30.3	765.3	755.3	10	9/23/2016	--	--
B-60	Downgradient	Overburden	1391100.7	2202881.6	782.13	779.25	779.2	49.8	739.9	729.9	10	9/29/2016	--	--
B-61	Downgradient	Overburden	1390957.8	2202505.8	782.09	778.95	779.0	51.9	737.5	727.5	10	9/29/2016	--	--
B-62	Downgradient	Upper Bedrock	1389828.1	2201811.2	760.08	N.A.	760.4	39.9	730.7	720.7	10	10/4/2016	--	--

**TABLE GW-4**  
**MONITORING WELL NETWORK SUMMARY**  
 Georgia Power Company - Plant McDonough  
 Atlanta, Georgia

Well-ID	Hydraulic Location	Screened Media	NAD 83 Northing	NAD 83 Easting	Top of Casing Elevation (feet NAVD 88)	Ground Surface Elevation at Concrete Pad (feet NAVD 88)	Ground Surface Elevation (feet NAVD 88)	Total Well Depth (feet bgs)	Top of Screen Elevation (feet NAVD 88)	Bottom of Screen Elevation (feet NAVD 88)	Screen Length (feet)	Date of Installation	Average Hydraulic Conductivity (cm/sec)	Kv/Kh
<b>PIEZOMETERS</b>														
B-64	Downgradient	Overburden	1394381.9	2203031.3	785.83	785.98	786.1	30.4	766.1	756.1	10	11/2/2016	--	--
B-65	Downgradient	Overburden/Upper Bedrock	1394381.2	2204050.8	821.95	N.A.	822.3	45.4	787.9	777.9	10	11/15/2016	--	--
B-68	Downgradient	Overburden	1391298.2	2200714.2	758.68	759.05	759.0	18.0	751.0	741.0	10	3/16/2017	--	--
B-72	Downgradient	Overburden	1391242.2	2200723.9	758.85	758.45	758.09	21.9	746.6	736.6	10	4/19/2017	--	--
B-73	Downgradient	Overburden	1391352.4	2200697.5	759.46	759.16	758.85	15.8	753.5	743.5	10	4/19/2017	--	--
B-74	Downgradient	Overburden	1391279.8	2200665.3	759.44	759.18	758.96	16.5	748.2	743.2	5	4/25/2017	--	--
B-78	Downgradient	Overburden/Upper Bedrock	1394328.2	2202958.2	790.75	787.79	788.0	30.0	768.0	758.5	10	9/22/2019	--	--
B-79	Downgradient	Overburden	1394458.6	2203223.0	788.66	785.84	785.9	34.9	761.0	751.5	10	9/21/2019	--	--
B-80	Downgradient	Overburden	1394372.6	2203533.9	804.47	801.73	801.8	30.0	782.0	772.5	10	9/20/2019	--	--
B-81	Downgradient	Overburden	1394364.9	2203741.1	820.56	817.64	817.7	50.0	778.5	768.5	10	9/22/2019	--	--
B-84	Downgradient	Overburden	1390411.9	2202241.9	776.34	776.52	776.6	49.1	737.5	727.5	10	10/1/2019	--	--
B-85	Downgradient	Overburden/Upper Bedrock	1394433.4	2203134.5	782.54	782.71	782.7	34.5	758.5	748.5	10	11/18/2019	--	--
B-86	Downgradient	Overburden/Upper Bedrock	1394480.0	2203206.6	784.29	784.52	784.6	34.1	760.5	750.5	10	11/18/2019	--	--
B-87	Downgradient	Overburden	1394401.9	2203531.3	803.37	800.32	800.4	42.0	768.7	758.7	10	11/17/2019	--	--
B-89	Downgradient	Upper Bedrock	1394398.4	2204049.4	822.36	822.53	822.6	49.5	783.1	773.1	10	11/19/2019	--	--
B-90	Downgradient	Overburden	1394501.0	2203212.6	784.00	784.16	784.2	33.4	760.8	750.8	10	12/10/2019	--	--
B-91	Downgradient	Overburden	1394447.1	2203123.9	782.98	N.A.	783.1	34.6	758.5	748.5	10	12/11/2019	--	--
B-94	Downgradient	Overburden	1394402.0	2203513.7	801.74	799.12	799.2	45.2	764.6	754.6	10	1/23/2020	--	--
B-95	Downgradient	Overburden	1394518.6	2203167.7	784.00	784.18	784.3	33.3	761.3	751.3	10	2/11/2020	--	--
B-96	Downgradient	Overburden	1394478.7	2203099.3	784.92	785.19	785.3	33.1	762.2	752.2	10	2/10/2020	--	--
B-99	Downgradient	Overburden	1394524.2	2203084.5	782.39	782.57	782.6	12.3	775.3	770.3	5	7/7/2020	--	--
B-103D	Downgradient	Upper Bedrock	1391543.5	2202614.4	795.96	793.77	793.8	70.0	733.8	723.8	10	10/15/2020	--	--

**TABLE GW-4**  
**MONITORING WELL NETWORK SUMMARY**  
 Georgia Power Company - Plant McDonough  
 Atlanta, Georgia

Well-ID	Hydraulic Location	Screened Media	NAD 83 Northing	NAD 83 Easting	Top of Casing Elevation (feet NAVD 88)	Ground Surface Elevation at Concrete Pad (feet NAVD 88)	Ground Surface Elevation (feet NAVD 88)	Total Well Depth (feet bgs)	Top of Screen Elevation (feet NAVD 88)	Bottom of Screen Elevation (feet NAVD 88)	Screen Length (feet)	Date of Installation	Average Hydraulic Conductivity (cm/sec)	Kv/Kh
<b>PIEZOMETERS</b>														
B-110D	Downgradient	Upper Bedrock	1391294.4	2200736.0	764.61	764.55	764.7	65.0	711.7	701.7	10	11/17/2020	--	--
B-116D	Upgradient	Upper Bedrock	1390483.7	2200611.0	807.82	805.31	805.3	90.0	726.1	716.1	10	3/8/2021	--	--
B-117D	Upgradient	Upper Bedrock	1393963.8	2201727.3	863.82	861.23	861.2	75.0	796.5	786.5	10	3/17/2021	--	--
B-118	Upgradient	Upper Bedrock	1391219.3	2200449.7	807.70	804.99	805.0	75.0	740.2	730.2	10	3/9/2021	--	--
B-119D	Upgradient	Upper Bedrock	1391236.4	2200446.6	807.15	804.53	804.5	105.0	709.8	699.8	10	3/16/2021	--	--
B-123D	Downgradient	Bedrock	1391234.4	2202608.4	781.80	779.00	778.9	160.0	668.9	618.9	50	4/4/2022	--	--

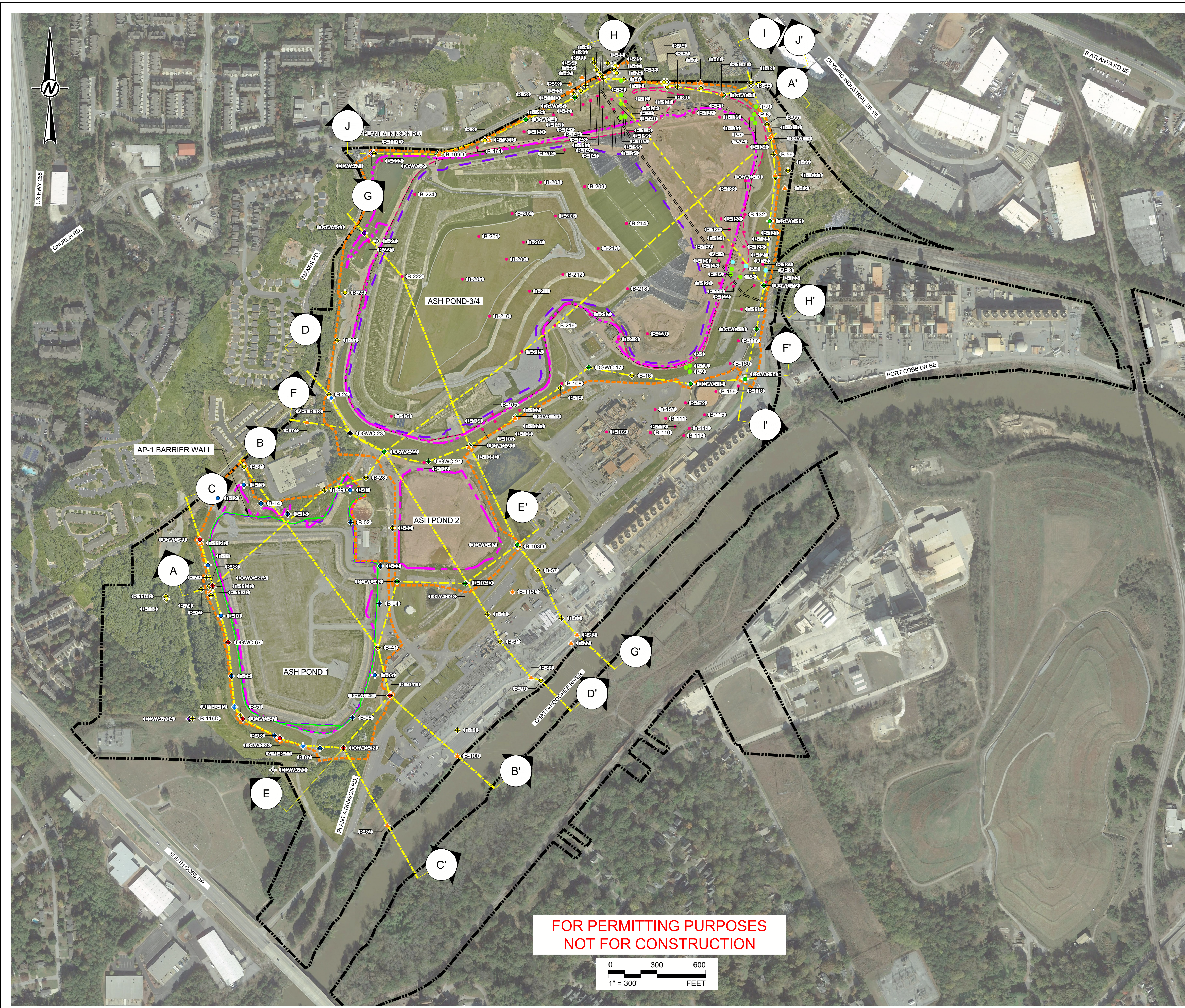
**Notes:**

1. bgs = below ground surface
2. Coordinate System: NAD 1983 State Plane Georgia West (U.S. feet)
3. NAD - North American Datum; NAVD - North American Vertical Datum
4. Groundwater Surface Elevation at Concrete Pad - Ground surface measured at the mag nail in the concrete pad.
5. N.A. - Well is flush mount and no mag nail is present in the concrete apron and therefore is not measured.
6. Data presented for AP-1 are included for reference only as they are used to support the conceptual site model. These data should not be considered for permitting of AP-2 and 3/4.

---

# FIGURES





### LEGEND

- EXISTING CONTOURS (SEE REFERENCE 2)
- PROPERTY BOUNDARY (SEE REFERENCE 1)
- APPROXIMATE PRE-CLOSURE CCR LIMITS
- FINAL CLOSURE CCR LIMITS
- FINAL COVER SYSTEM LIMITS
- PERMIT BOUNDARY
- FUTURE BARRIER WALL OPTION A
- FUTURE BARRIER WALL OPTION B
- CROSS-SECTION LINES
- UPGRADIENT WELL (SEE REFERENCE 6)
- AP-1 MONITORING WELL (SEE REFERENCE 6)
- AP-2, 3/4 MONITORING WELL (SEE REFERENCE 6)
- ASSESSMENT WELLS (SEE REFERENCE 6 AND 8)
- PIEZOMETERS (SEE REFERENCE 6 AND 8)
- GOLDR BORINGS (SEE REFERENCE 7)
- ABANDONED PIEZOMETER OR MONITORING WELL (SEE REFERENCE 7)
- B-202 LAW 1968 BORINGS (SEE REFERENCE 3)
- P-1 P & W 1977 PIEZOMETERS (SEE REFERENCE 4)
- AP-1 AT&E 1981 BORINGS (SEE REFERENCE 5)

**NOTE**  
 1. DATA PRESENTED FOR CCR UNIT AP-1 IS INCLUDED FOR REFERENCE ONLY. THIS DATA SHOULD NOT BE CONSIDERED FOR PERMITTING OF CCR UNITS AP-2 AND AP-3/4.

- ### REFERENCES
1. APPROXIMATE PROPERTY BOUNDARY PROVIDED BY SOUTHERN COMPANY SERVICES (2017).
  2. THE EXISTING TOPOGRAPHY, CONTOUR ELEVATIONS AND PHOTOGRAPHY FOR THE ASH PONDS 1 THROUGH 4 AREAS WERE PROVIDED BY GEORGIA POWER. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS, ON THE AP- 1 THROUGH 4, IS JUNE 2021 - DATE OF PHOTOGRAPHY JUNE 2021. THE TOPOGRAPHIC CONTOUR INTERVALS IS 1 FOOT. THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS FOR THE SURROUNDING AREAS OF ASH PONDS 1 THROUGH 4 WERE PROVIDED BY GEORGIA LAND DEPARTMENT AND METRO ENGINEERING AND SURVEYING CO, INC. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS, AT THE SURROUNDING AREAS, IS 03-18-2018. REFER TO THE SURVEY DRAWING TITLED "TOPOGRAPHIC MAP PREPARED FOR GEORGIA POWER COMPANY PLANT MCDONOUGH - GEORGIA STATE PLANE WEST SURVEY FEET - DATE OF PHOTOGRAPHY 09-07-2018 FOR SURROUNDING AREAS OF ASH PONDS 1 THROUGH 4.
  3. LAW ENGINEERING GEOTECHNICAL INVESTIGATION REPORT (LAW, 1968).
  4. PATTERSON & DEWAR ENGINEERS, PIEZOMETER INSTALLATION REPORT (P&W, 1977).
  5. ATLANTA TESTING AND ENGINEERING, GEOTECHNICAL REPORT (AT&E, 1981).
  6. SCS PLANT MCDONOUGH HYDROGEOLOGICAL INVESTIGATION (2012 TO 2020).
  7. GOLDR ASSOCIATES, PLANT MCDONOUGH SUPPLEMENTAL INVESTIGATION (2017-2021).
  8. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020-2021.
  9. COORDINATES SYSTEM: NAD 1983 STATE PLANE GEORGIA WEST (U.S. FEET); ELEVATIONS DISPLAY IN FEET REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 ( FEET NAVD88).

REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RWV
	2022/07/14	NOTE ADDED FOR AP1 DATA	LS	CRP	RPK	GLH
	2022/02/15	REV. BARRIER WALL ALIGNMENT	DLP	RMS	RPK	GLH
	2021/08/01	ADDED 2021 PIEZOMETERS / UPDATED CONTOURS	CG	AVR	RPK	GLH
	2020/10/20	PROJECT TITLE CHANGE; ADDED CROSS SECTIONS F, G, H, I, J; UPDATED DATA	DLP	CCP	BAS	THR / GLH
	2020/03/06	UPDATED CCR LIMITS & AERIAL; REV NOTE 8	VPM	VPM	JRJ	THR / GLH
	2018/05/04		SEP	DJC	KNJ	RPK / GLH

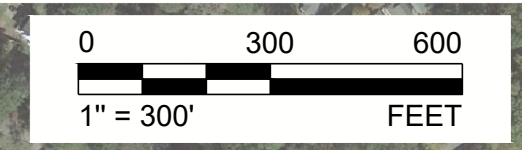
CLIENT  
**GEORGIA POWER COMPANY**  
 PLANT MCDONOUGH

PROJECT  
 HYDROGEOLOGIC ASSESSMENT REPORT (HAR)  
 PLANT MCDONOUGH-ATKINSON  
 ASH POND 2 AND 3/4

TITLE  
**MONITORING WELL AND PIEZOMETER MAP**

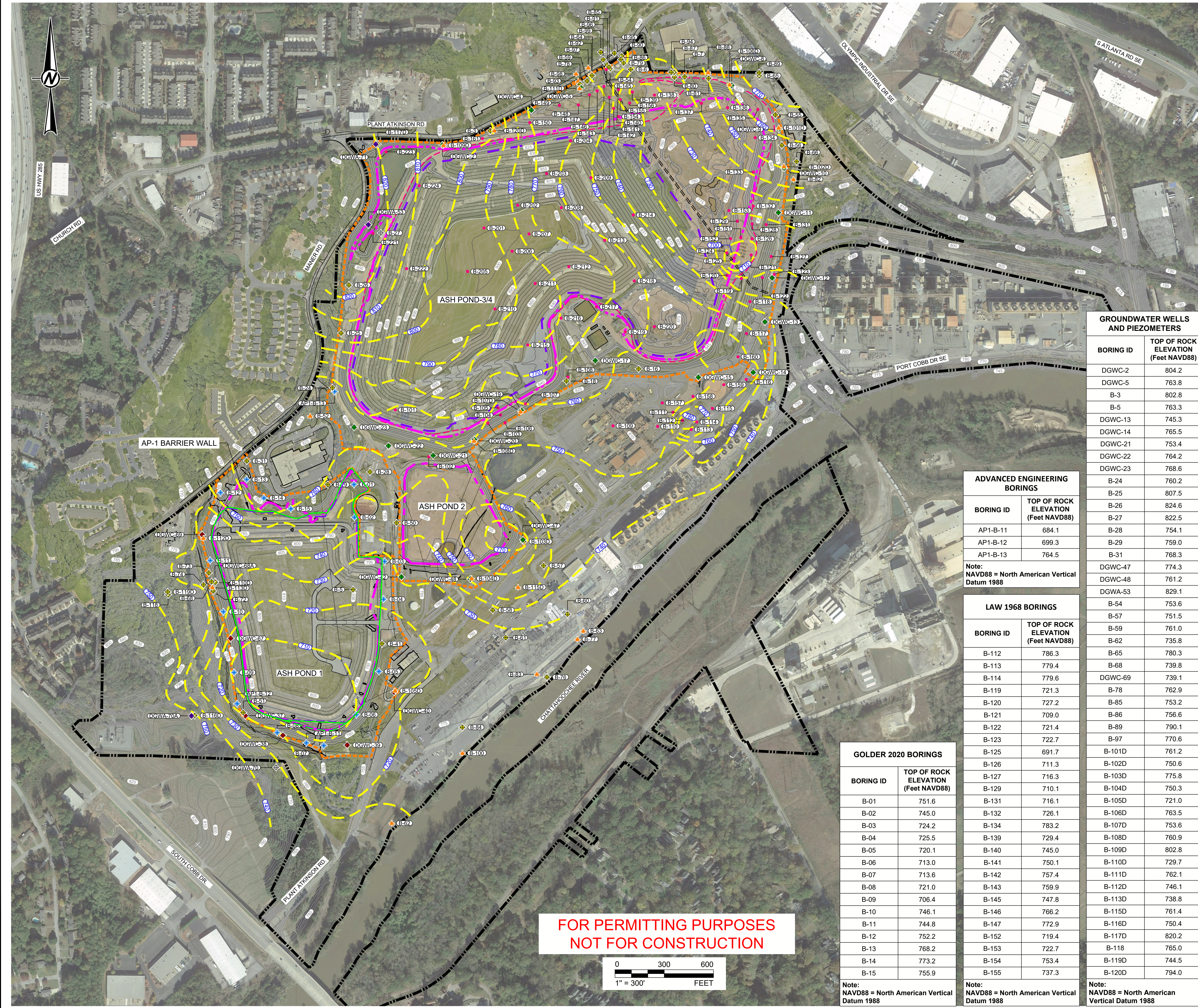
CONSULTANT	YYYY-MM-DD	2018/05/04
<b>GOLDER</b>	DESIGNED	SEP
	PREPARED	DJC
	CHECKED	KNJ
	REVIEWED / APPROVED	RPK / GLH

**FOR PERMITTING PURPOSES  
 NOT FOR CONSTRUCTION**



IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANS/D





### LEGEND

- 880 EXISTING CONTOURS (SEE REFERENCE 2)
- PROPERTY BOUNDARY (SEE REFERENCE 1)
- APPROXIMATE PRE-CLOSURE CCR LIMITS
- FINAL CLOSURE CCR LIMITS
- PERMIT BOUNDARY
- FUTURE BARRIER WALL OPTION A
- FUTURE BARRIER WALL OPTION B
- ESTIMATED TOP OF ROCK SURFACE CONTOURS (FEET MSL)
- UPGRADIENT WELL (SEE REFERENCE 4)
- AP-1 MONITORING WELL (SEE REFERENCE 4)
- AP-2, 3/4 MONITORING WELL (SEE REFERENCE 4)
- ASSESSMENT WELLS (SEE REFERENCE 4 AND 6)
- PIEZOMETER (SEE REFERENCE 4 AND 6)
- GOLDER BORINGS (SEE REFERENCE 5)
- ABANDONED PIEZOMETER OR MONITORING WELL (SEE REFERENCE 5)
- B-202 LAW 1968 BORINGS (SEE REFERENCE 3)

### NOTES

- TOP OF ROCK SURFACE CONTOUR INTERVAL = 10 FEET.
- BEDROCK CONTOURS ARE ESTIMATED BASED ON LINEAR INTERPOLATION BETWEEN AND EXTRAPOLATION FROM KNOWN DATA, TOPOGRAPHIC CONTOURS, KNOWN FIELD CONDITIONS, AND PROFESSIONAL JUDGEMENT.
- DATA PRESENTED FOR CCR UNIT AP-1 IS INCLUDED FOR REFERENCE ONLY. THIS DATA SHOULD NOT BE CONSIDERED FOR PERMITTING OF CCR UNITS AP-2 AND AP-3/4.

### REFERENCES

- APPROXIMATE PROPERTY BOUNDARY PROVIDED BY SOUTHERN COMPANY SERVICES (2017).
- THE EXISTING TOPOGRAPHY, CONTOUR ELEVATIONS AND PHOTOGRAPHY FOR THE ASH PONDS 1 THROUGH 4 AREAS WERE PROVIDED BY GEORGIA POWER. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS, ON THE AP-1 THROUGH 4, IS JUNE 2021 - DATE OF PHOTOGRAPHY JUNE 2021. THE TOPOGRAPHIC CONTOUR INTERVALS IS 1 FOOT. THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS FOR THE SURROUNDING AREAS OF ASH PONDS 1 THROUGH 4 WERE PROVIDED BY GEORGIA LAND DEPARTMENT AND METRO ENGINEERING AND SURVEYING CO., INC. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS, AT THE SURROUNDING AREAS, IS 03-18-2018. REFER TO THE SURVEY DRAWING TITLED "TOPOGRAPHIC MAP PREPARED FOR GEORGIA POWER COMPANY PLANT MCDONOUGH - GEORGIA STATE PLANE WEST SURVEY FEET - DATE OF PHOTOGRAPHY 09-07-2018 FOR SURROUNDING AREAS OF ASH PONDS 1 THROUGH 4.
- LAW ENGINEERING GEOTECHNICAL INVESTIGATION REPORT (LAW, 1968).
- SCS PLANT MCDONOUGH HYDROGEOLOGICAL INVESTIGATIONS (2012 TO 2020).
- GOLDER ASSOCIATES, PLANT MCDONOUGH SUPPLEMENTAL INVESTIGATION (2017-2021).
- SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020 / 2021.
- COORDINATES SYSTEM: NAD 1983 STATE PLANE GEORGIA WEST (U.S. FEET); ELEVATIONS DISPLAY IN FEET REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 ( FEET NAVD88).

#### GROUNDWATER WELLS AND PIEZOMETERS

BORING ID	TOP OF ROCK ELEVATION (Feet NAVD88)
DGWC-2	804.2
DGWC-5	763.8
B-3	802.8
B-5	763.3
DGWC-13	745.3
DGWC-14	765.5
DGWC-21	753.4
DGWC-22	764.2
DGWC-23	768.6
B-24	760.2
B-25	807.5
B-26	824.6
B-27	822.5
B-28	754.1
B-29	759.0
B-31	768.3
DGWC-47	774.3
DGWC-48	761.2
DGWA-53	829.1
B-54	753.6
B-57	751.5
B-59	761.0
B-62	735.8
B-65	780.3
B-68	739.8
DGWC-69	739.1
B-78	762.9
B-85	753.2
B-86	756.6
B-89	790.1
B-97	770.6
B-101D	761.2
B-102D	750.6
B-103D	775.8
B-104D	750.3
B-105D	721.0
B-106D	763.5
B-107D	753.6
B-108D	760.9
B-109D	802.8
B-110D	729.7
B-111D	762.1
B-112D	746.1
B-113D	738.8
B-115D	761.4
B-116D	750.4
B-117D	820.2
B-118	765.0
B-119D	744.5
B-120D	794.0

#### ADVANCED ENGINEERING BORINGS

BORING ID	TOP OF ROCK ELEVATION (Feet NAVD88)
AP1-B-11	684.1
AP1-B-12	699.3
AP1-B-13	764.5

Note: NAVD88 = North American Vertical Datum 1988

#### LAW 1968 BORINGS

BORING ID	TOP OF ROCK ELEVATION (Feet NAVD88)
B-112	786.3
B-113	779.4
B-114	779.6
B-119	721.3
B-120	727.2
B-121	709.0
B-122	721.4
B-123	722.7
B-125	691.7
B-126	711.3
B-127	716.3
B-129	710.1
B-131	716.1
B-132	726.1
B-134	783.2
B-139	729.4
B-140	745.0
B-141	750.1
B-142	757.4
B-143	759.9
B-145	747.8
B-146	766.2
B-147	772.9
B-152	719.4
B-153	722.7
B-154	753.4
B-155	737.3

Note: NAVD88 = North American Vertical Datum 1988

#### GOLDER 2020 BORINGS

BORING ID	TOP OF ROCK ELEVATION (Feet NAVD88)
B-01	751.6
B-02	745.0
B-03	724.2
B-04	725.5
B-05	720.1
B-06	713.0
B-07	713.6
B-08	721.0
B-09	706.4
B-10	746.1
B-11	744.8
B-12	752.2
B-13	768.2
B-14	773.2
B-15	755.9

Note: NAVD88 = North American Vertical Datum 1988

REV	DATE	REVISION DESCRIPTION	DLP	CRP	RPK	GLH
	2022/07/14	NOTE ADDED FOR AP1 DATA				
	2022/02/15	REV. BARRIER WALL ALIGNMENT	DLP	RMS	RPK	GLH
	2021/09/01	ADDED 2021 PIEZOMETERS / UPDATE CONTOURS	BAS	CRP	RPK	GLH
	2020/10/20	PROJECT TITLE CHANGE, UPDATED DATA	DLP	CCP	BAS	THR / GLH
	2020/03/06	DWSG CHANGED FROM GW-4 TO GW-2, UPDATED CCR LIMITS & AERIAL	VPM	VPM	JRJ	THR / GLH
	2018/05/04		SEP	DJC	KNJ	RPK / GLH

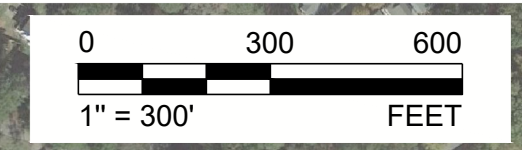
CLIENT  
**GEORGIA POWER COMPANY**  
**PLANT MCDONOUGH**

PROJECT  
**HYDROGEOLOGIC ASSESSMENT REPORT (HAR)**  
**PLANT MCDONOUGH-ATKINSON**  
**ASH POND 2 AND 3/4**

TITLE  
**ESTIMATED TOP OF ROCK MAP**

CONSULTANT	DATE	REVISION
	YYYY-MM-DD	2018/05/04
	DESIGNED	SEP
	PREPARED	DJC
	CHECKED	KNJ
	REVIEWED / APPROVED	RPK / GLH

**FOR PERMITTING PURPOSES  
 NOT FOR CONSTRUCTION**

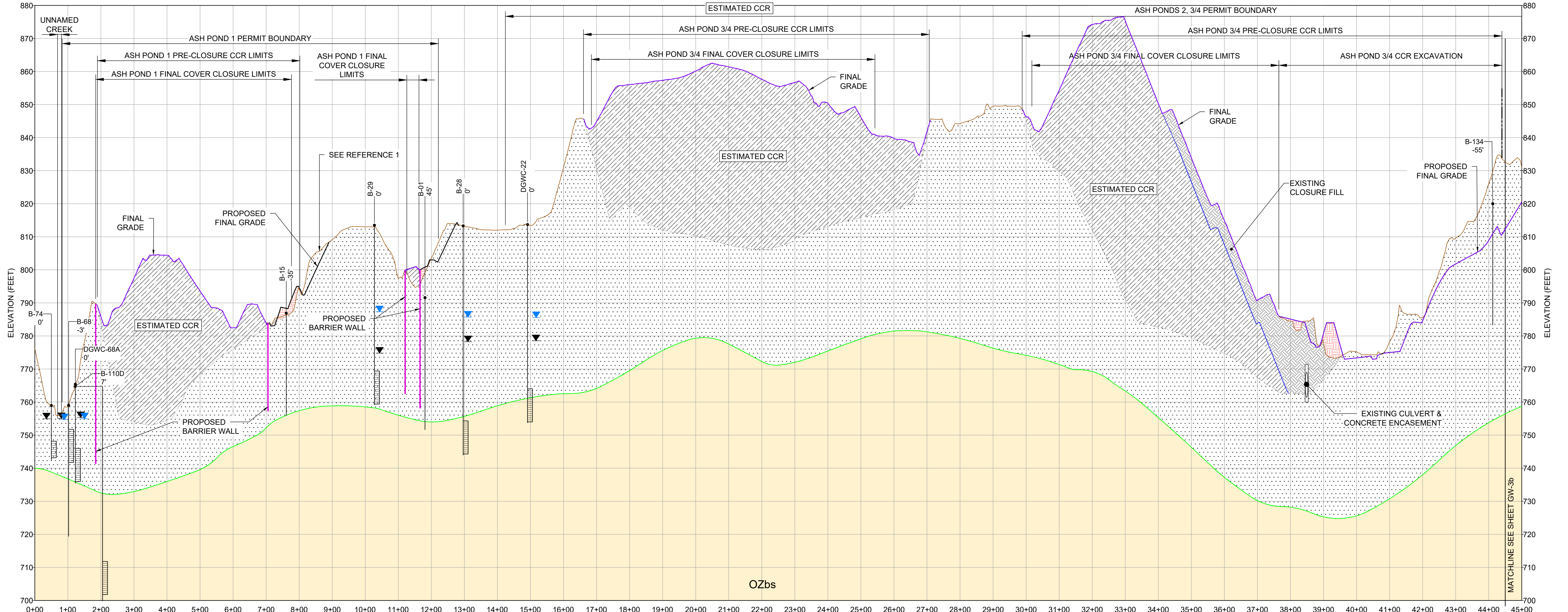


IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANS/D



SW

NE



**LEGEND**

- EXISTING GRADE (SEE REFERENCE 1)
- ESTIMATED TOP OF ROCK SURFACE
- PROPOSED FINAL GRADE
- ESTIMATED PRE-CLOSURE BOTTOM OF CCR LIMITS
- FINAL COVER SYSTEM
- PROPOSED BARRIER WALL
- ESTIMATED CCR TO REMAIN IN PLACE
- PROPOSED FILL
- EXISTING CLOSURE FILL
- OVERBURDEN (COMPRISED OF RESIDUAL SOILS, TRANSITIONALLY WEATHERED ROCK, AND FILL)
- PHYLLOHITE, BUTTON SCHIST, MYLONITE, AND MYLONITIC BIOTITE GNEISS (OZbs)
- BIOTITE GNEISS, LONG ISLAND CREEK GNEISS (OZli)
- ESTIMATED GROUNDWATER SURFACE (10/27/2021)
- PREDICTED POST-CLOSURE GROUNDWATER SURFACE

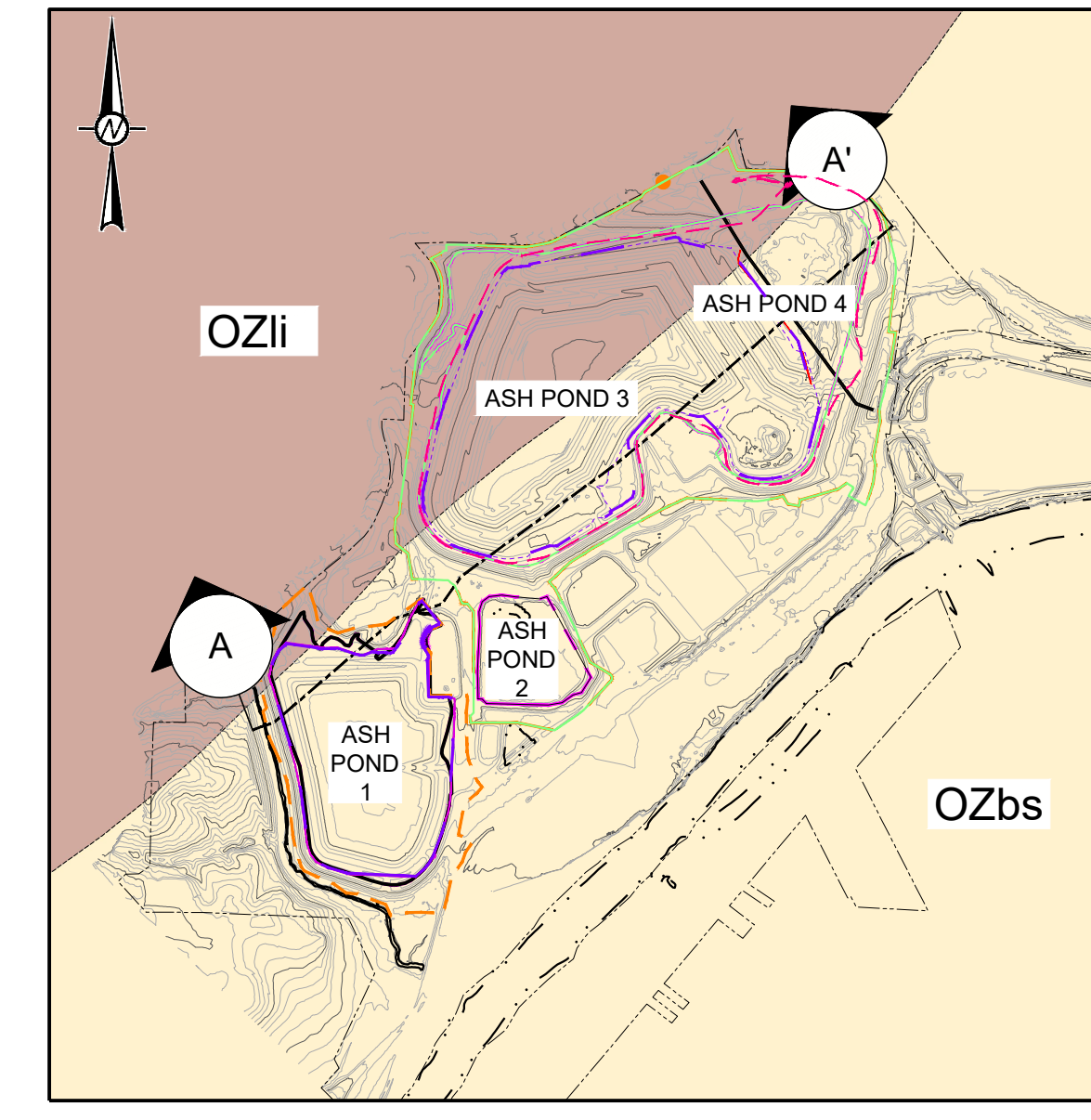
**BORING ID**  
 DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT)  
 GROUND SURFACE ELEVATION  
 SCREEN INTERNAL

**NOTE**  
 1. DATA PRESENTED FOR CCR UNIT AP-1 IS INCLUDED FOR REFERENCE ONLY. THIS DATA SHOULD NOT BE CONSIDERED FOR PERMITTING OF CCR UNITS AP-2 AND AP-3/4.

**REFERENCES**  
 1. THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS WERE PROVIDED BY GEORGIA POWER. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS IS JULY 2021. GEORGIA STATE PLANE WEST SURVEY FEET.  
 2. BORING/WELL/PIEZOMETER LOCATIONS AND ELEVATIONS PROVIDED BY SOUTHERN COMPANY SERVICES, INC. AND 1968 LAW ENGINEERING GEOTECHNICAL INVESTIGATION REPORT.  
 3. GEOLOGIC UNITS TAKEN FROM PETROLOGIC SOLUTIONS GEOLOGIC MAPPING, OCTOBER 2016.  
 4. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED AND/OR RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020 / 2021.



**FOR PERMITTING PURPOSES  
 NOT FOR CONSTRUCTION**



REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	Rvw
2022/07/14		NOTE ADDED FOR AP1 DATA	DLP	CRP	RPK	GLH
2022/02/15		WATER LEVEL UPDATED TO 10/2021	DLP	RMS	RPK	GLH
2021/09/01		ADDED 2021 PIEZOMETERS / UPDATED CONTOURS	CG	AVR	DLP	RPK/GLH
2020/10/20		PROJECT TITLE CHANGE, UPDATED DATA	DLP	CCP	BAS	TJR / GLH
2020/03/06		DWG CHANGED FROM GW-5A TO GW-3A; UPDATED CCR LIMITS & AERIAL	VPM	VPM	JRJ	TJR / GLH
2018/05/04			SEP	DJC	KNJ	RPK / GLH

CLIENT  
**GEORGIA POWER COMPANY  
 PLANT MCDONOUGH**

PROJECT  
**HYDROGEOLOGIC ASSESSMENT REPORT (HAR)  
 PLANT MCDONOUGH-ATKINSON  
 ASH POND 2 AND 3/4**

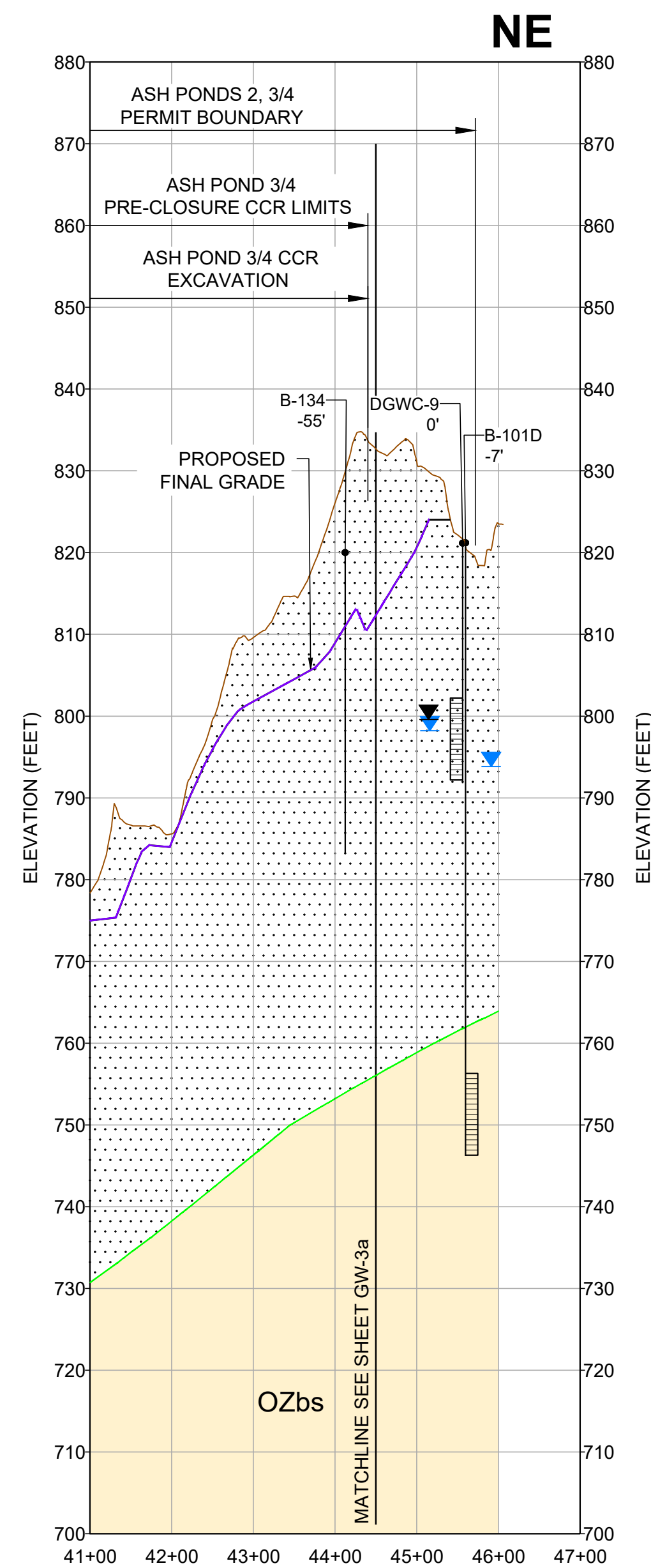
TITLE  
**GEOLOGIC CROSS-SECTION SCHEMATIC A-A'  
 SHEET 1**

CONSULTANT	YYYY-MM-DD	2018/05/04
	DESIGNED	SEP
	PREPARED	DJC
	CHECKED	KNJ
	REVIEWED / APPROVED	RPK / GLH

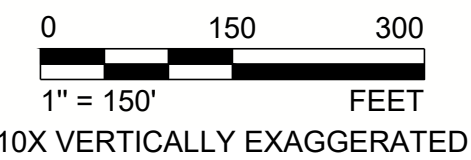
PROJECT NO. 1777449 REV. 5 SHEET GW-3a

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANS/D 11





A - A'



10X VERTICALLY EXAGGERATED

**LEGEND**

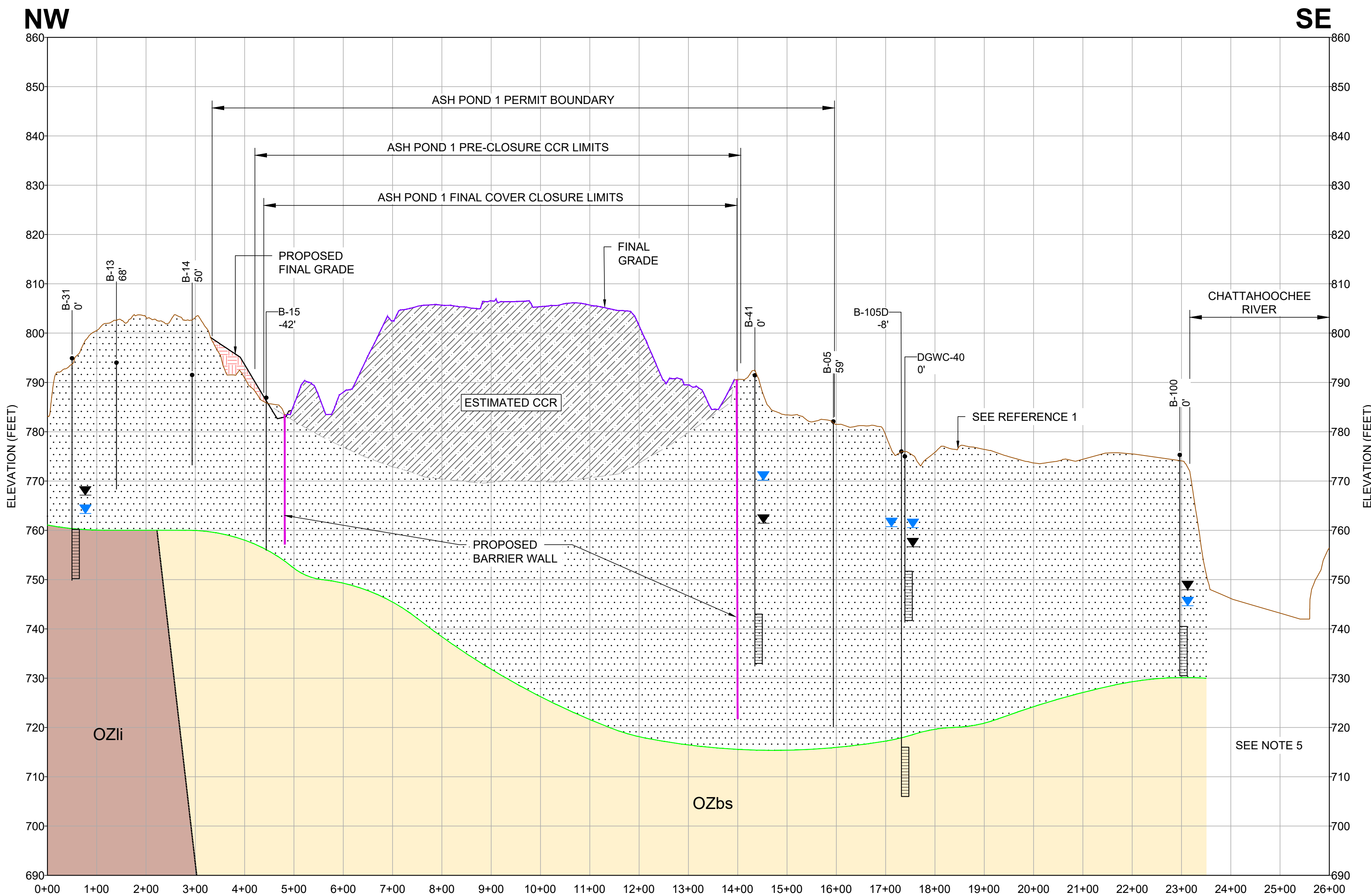
- EXISTING GRADE (SEE REFERENCE 1)
- ESTIMATED TOP OF ROCK SURFACE
- PROPOSED FINAL GRADE
- ESTIMATED PRE-CLOSURE BOTTOM OF CCR LIMITS
- FINAL COVER SYSTEM
- PROPOSED BARRIER WALL
- ESTIMATED CCR TO REMAIN IN PLACE
- PROPOSED FILL
- EXISTING CLOSURE FILL
- OVERBURDEN (COMPRISED OF RESIDUAL SOILS, TRANSITIONALLY WEATHERED ROCK, AND FILL)
- PHYLLOHITE, BUTTON SCHIST, MYLONITE, AND MYLONITIC BIOTITE GNEISS (OZbs)
- BIOTITE GNEISS, LONG ISLAND CREEK GNEISS (OZli)
- ESTIMATED GROUNDWATER SURFACE (10/27/2021)
- PREDICTED POST-CLOSURE GROUNDWATER SURFACE
- BORING ID
- DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT)
- GROUND SURFACE ELEVATION
- SCREEN INTERNAL

**NOTE**

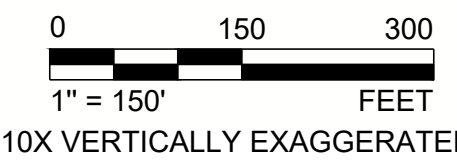
1. DATA PRESENTED FOR CCR UNIT AP-1 IS INCLUDED FOR REFERENCE ONLY. THIS DATA SHOULD NOT BE CONSIDERED FOR PERMITTING OF CCR UNITS AP-2 AND AP-3/4.

**REFERENCES**

1. THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS WERE PROVIDED BY GEORGIA POWER. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS IS JULY 2021. GEORGIA STATE PLANE WEST SURVEY FEET.
2. BORING/WELL/PIEZOMETER LOCATIONS AND ELEVATIONS PROVIDED BY SOUTHERN COMPANY SERVICES, INC. AND 1968 LAW ENGINEERING GEOTECHNICAL INVESTIGATION REPORT.
3. GEOLOGIC UNITS TAKEN FROM PETROLOGIC SOLUTIONS GEOLOGIC MAPPING, OCTOBER 2016.
4. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED AND/OR RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020 / 2021.
5. NO AVAILABLE SUBSURFACE GEOLOGIC DATA.

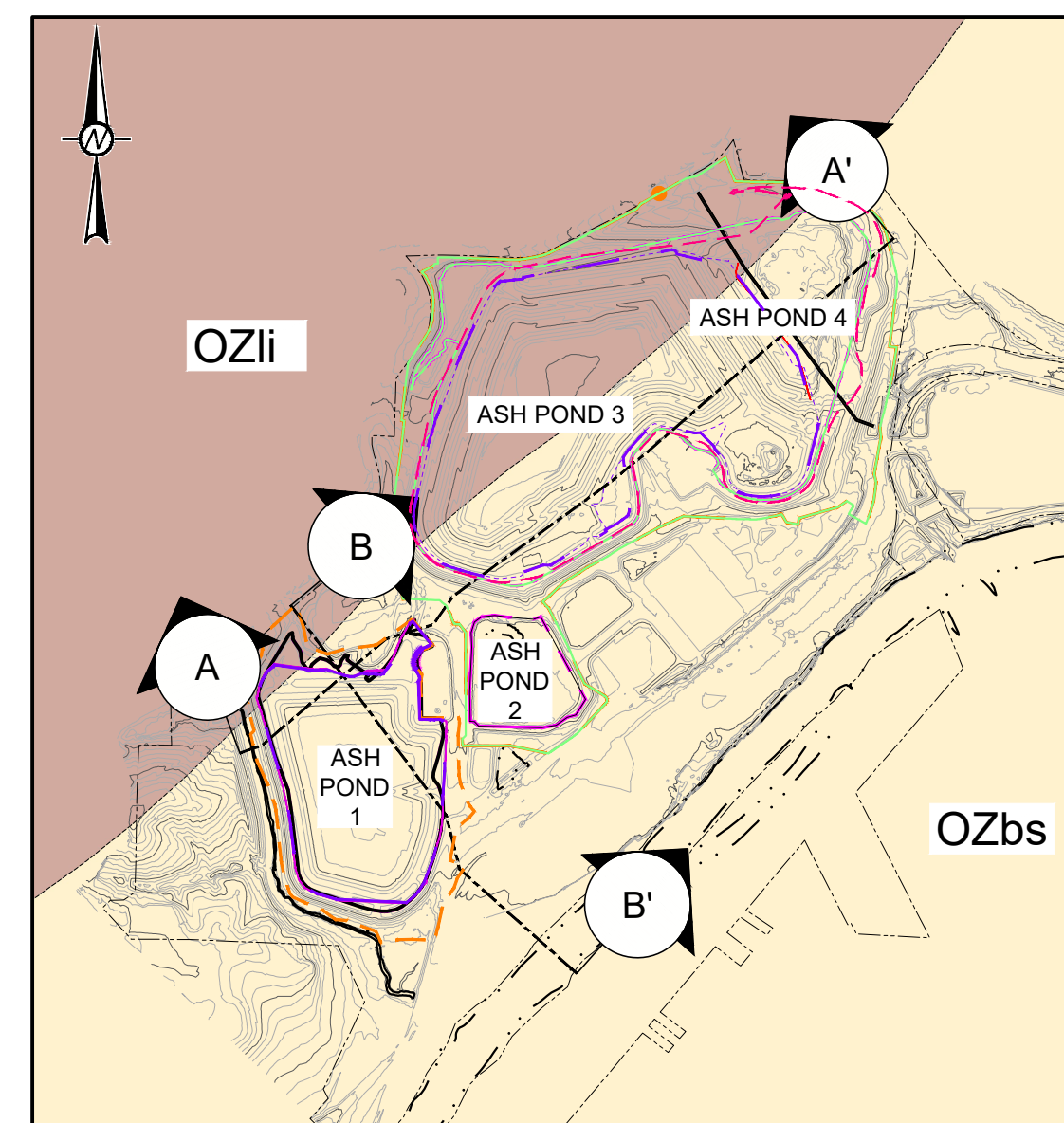


B - B'



10X VERTICALLY EXAGGERATED

**FOR PERMITTING PURPOSES  
NOT FOR CONSTRUCTION**



KEY MAP

REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVP	GLH
2022/07/14		NOTE ADDED FOR AP1 DATA	DLP	CRP	RPK	GLH	
2022/02/15		WATER LEVEL UPDATED TO 10/2021	DLP	RMS	RPK	GLH	
2021/09/01		ADDED 2021 PIEZOMETERS / UPDATED CONTOURS	CG	AVR	DLP	RPK/GLH	
2020/10/20		PROJECT TITLE CHANGE, UPDATED DATA	DLP	CCP	BAS	TR / GLH	
2020/03/06		DWG CHANGED FROM GW-5B TO GW-3B; UPDATED CCR LIMITS & AERIAL	VPM	VPM	JRJ	TR / GLH	
2018/05/04			SEP	DJC	KNJ	RPK / GLH	

CLIENT  
**GEORGIA POWER COMPANY  
PLANT MCDONOUGH**



PROJECT  
**HYDROGEOLOGIC ASSESSMENT REPORT (HAR)  
PLANT MCDONOUGH-ATKINSON  
ASH POND 2 AND 3/4**

TITLE  
**GEOLOGIC CROSS-SECTION SCHEMATIC A-A' AND B-B'  
SHEET 2**

CONSULTANT	YYYY-MM-DD	2018/05/04
	DESIGNED	SEP
	PREPARED	DJC
	CHECKED	KNJ
	REVIEWED / APPROVED	RPK / GLH

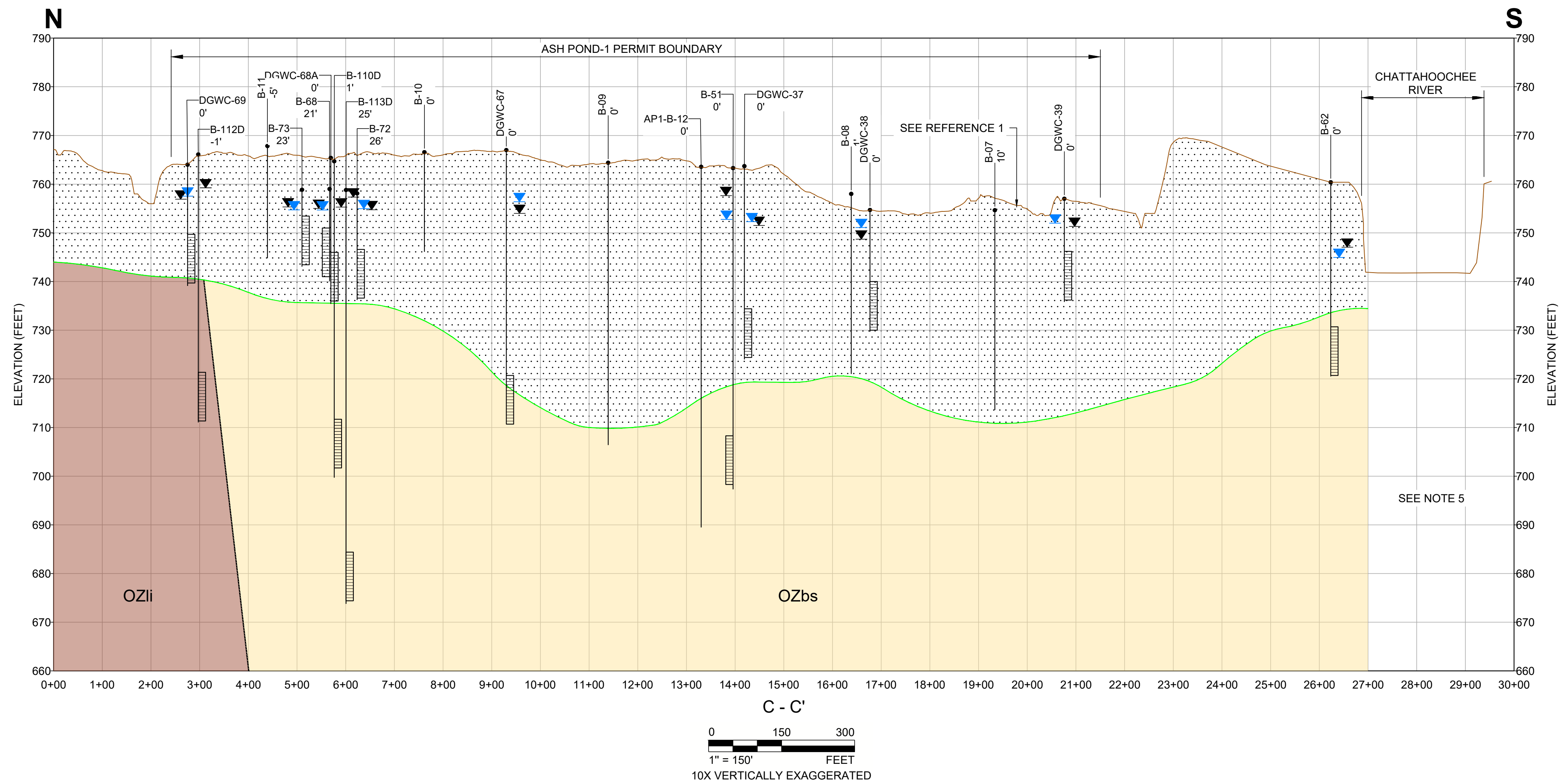
PROJECT NO.  
1777449

REV.  
5

SHEET  
GW-3b

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D



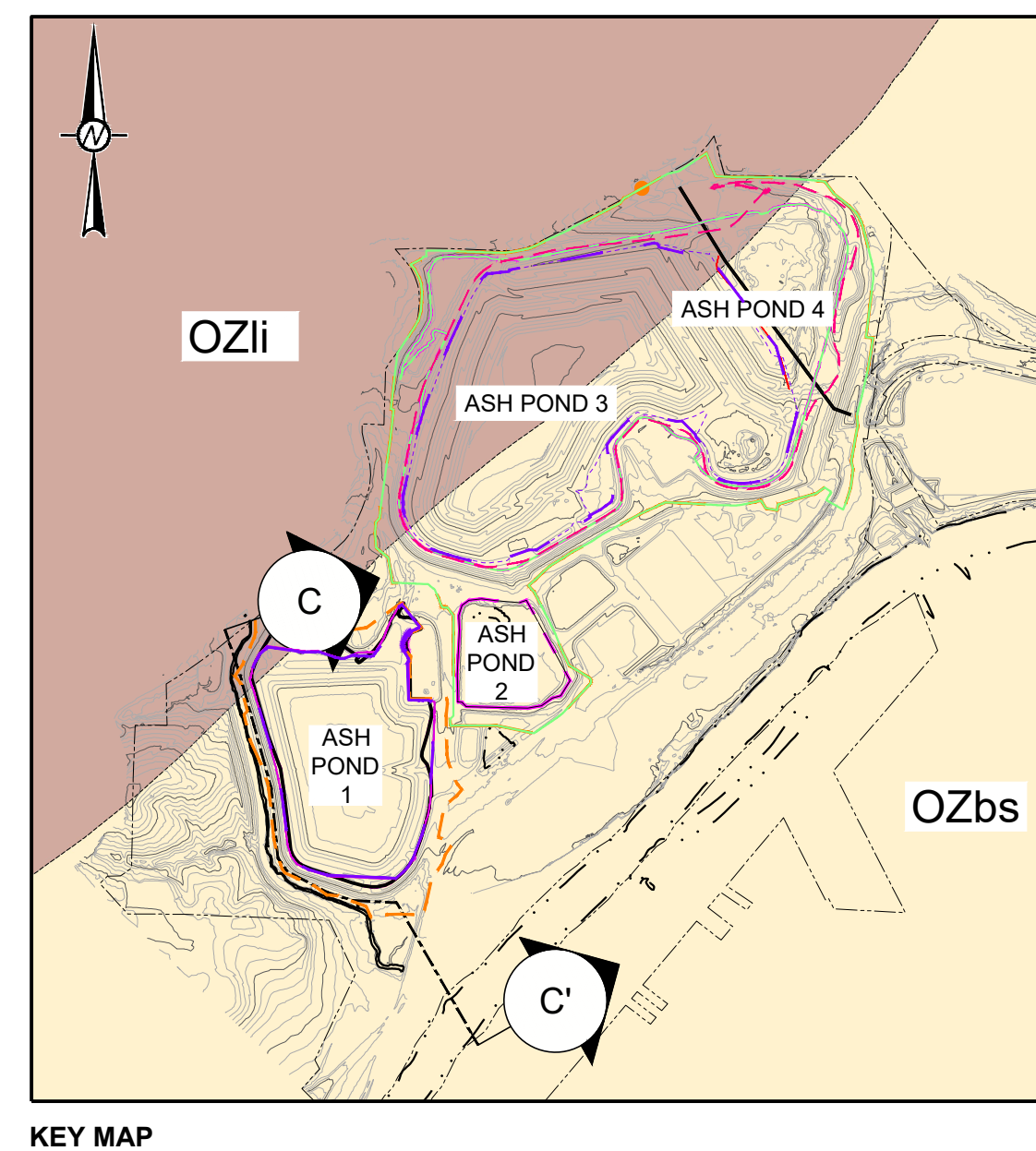


**LEGEND**

- EXISTING GRADE (SEE REFERENCE 1)
- ESTIMATED TOP OF ROCK SURFACE
- PROPOSED FINAL GRADE
- ESTIMATED PRE-CLOSURE BOTTOM OF CCR LIMITS
- OVERBURDEN (COMPRISED OF RESIDUAL SOILS, TRANSITIONALLY WEATHERED ROCK, AND FILL)
- PHYLONITE, BUTTON SCHIST, MYLONITE, AND MYLONITIC BIOTITE GNEISS (OZbs)
- BIOTITE GNEISS, LONG ISLAND CREEK GNEISS (OZli)
- ESTIMATED GROUNDWATER SURFACE (10/27/2021)
- PREDICTED POST-CLOSURE GROUNDWATER SURFACE
- BORING ID
- DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT)
- GROUND SURFACE ELEVATION
- SCREEN INTERNAL

- NOTE**
1. DATA PRESENTED FOR CCR UNIT AP-1 IS INCLUDED FOR REFERENCE ONLY. THIS DATA SHOULD NOT BE CONSIDERED FOR PERMITTING OF CCR UNITS AP-2 AND AP-3/4.
- REFERENCES**
1. THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS WERE PROVIDED BY GEORGIA POWER. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS IS JULY 2021. GEORGIA STATE PLANE WEST SURVEY FEET.
  2. BORING/WELL/PIEZOMETER LOCATIONS AND ELEVATIONS PROVIDED BY SOUTHERN COMPANY SERVICES, INC. AND 1968 LAW ENGINEERING GEOTECHNICAL INVESTIGATION REPORT.
  3. GEOLOGIC UNITS TAKEN FROM PETROLOGIC SOLUTIONS GEOLOGIC MAPPING, OCTOBER 2016.
  4. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED AND/OR RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020 / 2021.
  5. NO AVAILABLE SUBSURFACE GEOLOGIC DATA.

**FOR PERMITTING PURPOSES  
NOT FOR CONSTRUCTION**



REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RW
△	2022/07/14	NOTE ADDED FOR AP1 DATA	DLP	CRP	RPK	GLH
△	2022/02/15	WATER LEVEL UPDATED TO 10/2021	DLP	RMS	RPK	GLH
△	2021/09/01	ADDED 2021 PIEZOMETERS / UPDATED CONTOURS	CG	AVR	DLP	RPK/GLH
△	2020/10/20	PROJECT TITLE CHANGE, UPDATED DATA	DLP	CCP	BAS	TJR / GLH
△	2020/03/06	DWG CHANGED FROM GW-5C TO GW-3C; UPDATED CCR LIMITS & AERIAL	VPM	VPM	JRJ	TJR / GLH
△	2018/05/04		SEP	DJC	KNJ	RPK / GLH

CLIENT  
**GEORGIA POWER COMPANY  
PLANT MCDONOUGH**



PROJECT  
**HYDROGEOLOGIC ASSESSMENT REPORT (HAR)  
PLANT MCDONOUGH-ATKINSON  
ASH POND 2 AND 3/4**

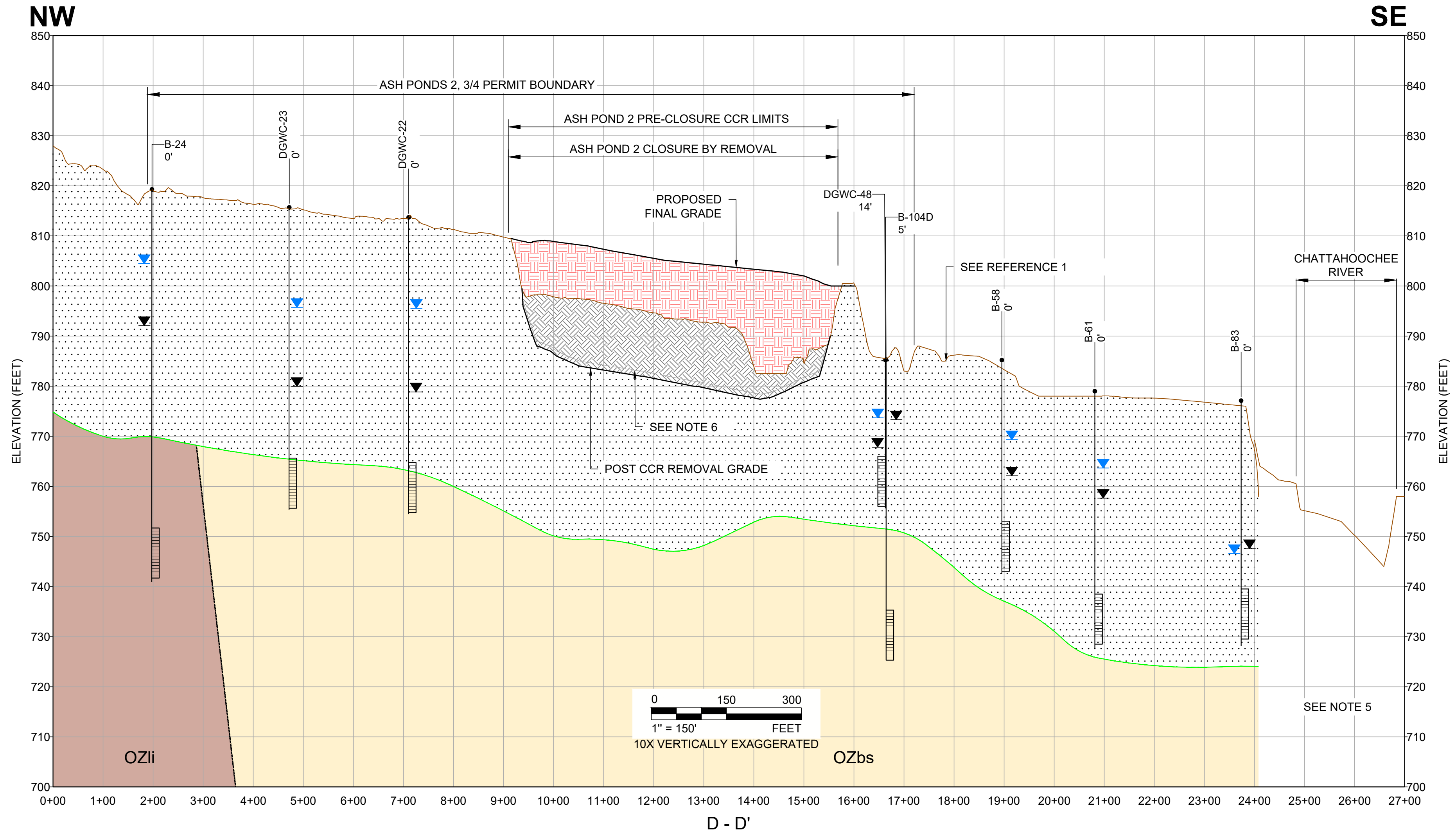
TITLE  
**GEOLOGIC CROSS-SECTION SCHEMATIC C-C'  
SHEET 3**

CONSULTANT	YYYY-MM-DD	2018/05/04
	DESIGNED	SEP
	PREPARED	DJC
	CHECKED	KNJ
	REVIEWED / APPROVED	RPK / GLH

PROJECT NO. 1777449 REV. 5 SHEET GW-3c

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANS/D 11x17

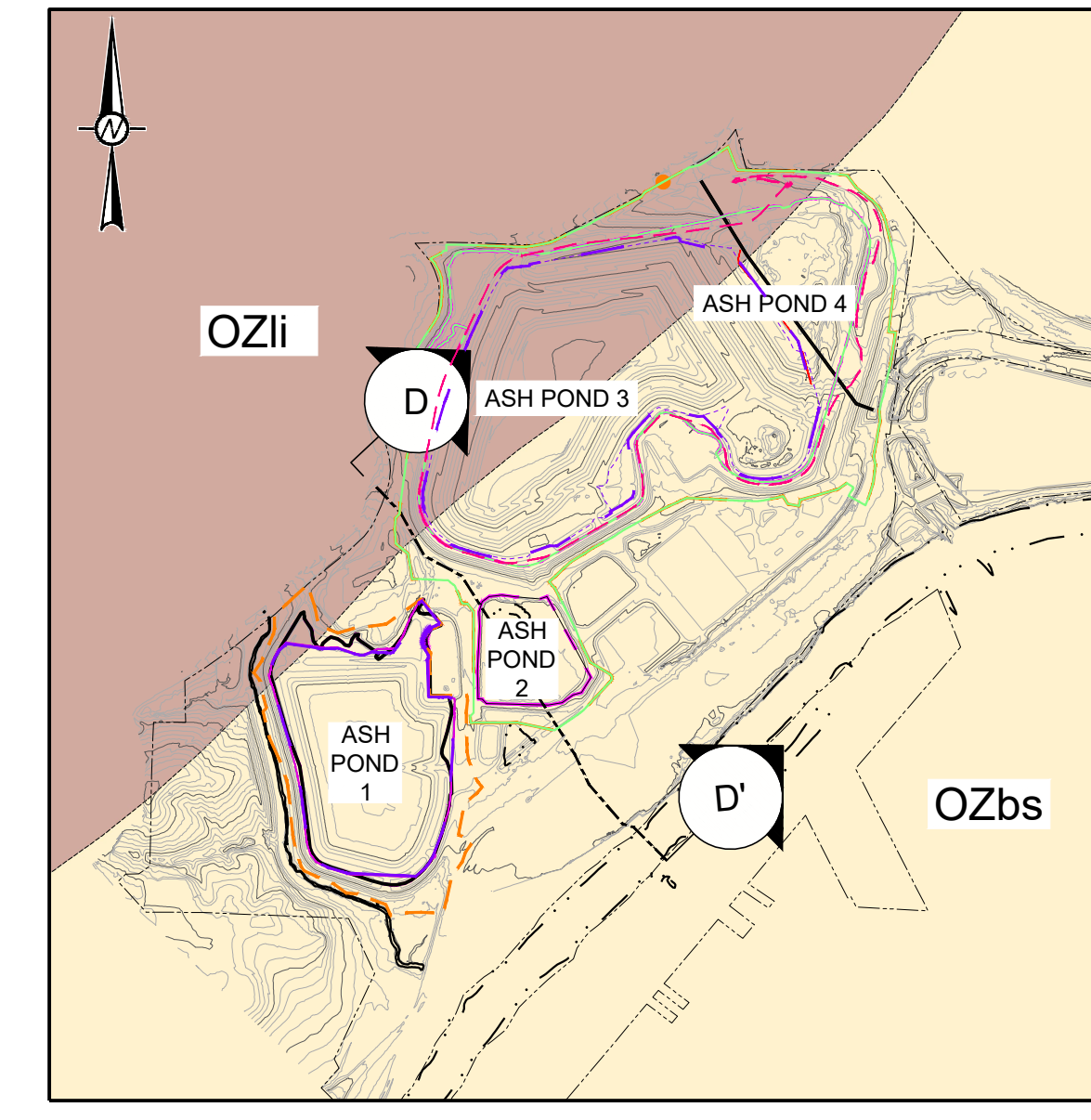




- LEGEND**
- EXISTING GRADE (SEE REFERENCE 1)
  - ESTIMATED TOP OF ROCK SURFACE
  - PROPOSED FINAL GRADE
  - - - ESTIMATED PRE-CLOSURE BOTTOM OF CCR LIMITS
  - OVERBURDEN (COMPRISED OF RESIDUAL SOILS, TRANSITIONALLY WEATHERED ROCK, AND FILL)
  - ▨ EXISTING CLOSURE FILL
  - ▨ PROPOSED FILL
  - PHYLLOHITE, BUTTON SCHIST, MYLONITE, AND MYLONITIC BIOTITE GNEISS (OZbs)
  - BIOTITE GNEISS, LONG ISLAND CREEK GNEISS (OZli)
  - ▼ ESTIMATED GROUNDWATER SURFACE (10/27/2021)
  - ▼ PREDICTED POST-CLOSURE GROUNDWATER SURFACE
  - BORING ID
  - DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT)
  - GROUND SURFACE ELEVATION
  - SCREEN INTERNAL

- NOTE**
1. DATA PRESENTED FOR CCR UNIT AP-1 IS INCLUDED FOR REFERENCE ONLY. THIS DATA SHOULD NOT BE CONSIDERED FOR PERMITTING OF CCR UNITS AP-2 AND AP-3/4.
- REFERENCES**
1. THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS WERE PROVIDED BY GEORGIA POWER. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS IS JULY 2021. GEORGIA STATE PLANE WEST SURVEY FEET.
  2. BORING/WELL/PIEZOMETER LOCATIONS AND ELEVATIONS PROVIDED BY SOUTHERN COMPANY SERVICES, INC. AND 1968 LAW ENGINEERING GEOTECHNICAL INVESTIGATION REPORT.
  3. GEOLOGIC UNITS TAKEN FROM PETROLOGIC SOLUTIONS GEOLOGIC MAPPING, OCTOBER 2016.
  4. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED AND/OR RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020 / 2021.
  5. NO AVAILABLE SUBSURFACE GEOLOGIC DATA.
  6. ESTIMATED PRE-CLOSURE BOTTOM OF CCR LIMITS FOR AP-2 GENERALLY FOLLOW 1 OR MORE FEET ABOVE POST REMOVAL GRADES.

**FOR PERMITTING PURPOSES  
NOT FOR CONSTRUCTION**



REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RPW
△	2022/07/14	NOTE ADDED FOR AP1 DATA	DLP	CRP	RPK	GLH
△	2022/02/15	WATER LEVEL UPDATED TO 10/2021	DLP	RMS	RPK	GLH
△	2021/09/01	ADDED 2021 PIEZOMETERS / UPDATED CONTOURS	CG	AVR	DLP	RPK/GLH
△	2020/10/20	PROJECT TITLE CHANGE, UPDATED DATA	DLP	CCP	BAS	TR / GLH
△	2020/03/06	DWG CHANGED FROM GW-5D TO GW-3D; UPDATED CCR LIMITS & AERIAL	VPM	VPM	JRJ	TR / GLH
△	2018/05/04		SEP	DJC	KNJ	RPK / GLH

CLIENT  
**GEORGIA POWER COMPANY  
PLANT MCDONOUGH**



PROJECT  
**HYDROGEOLOGIC ASSESSMENT REPORT (HAR)  
PLANT MCDONOUGH-ATKINSON  
ASH POND 2 AND 3/4**

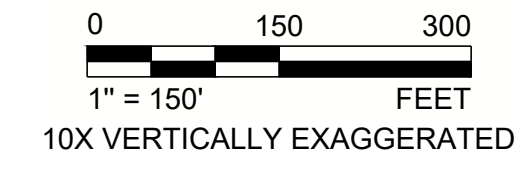
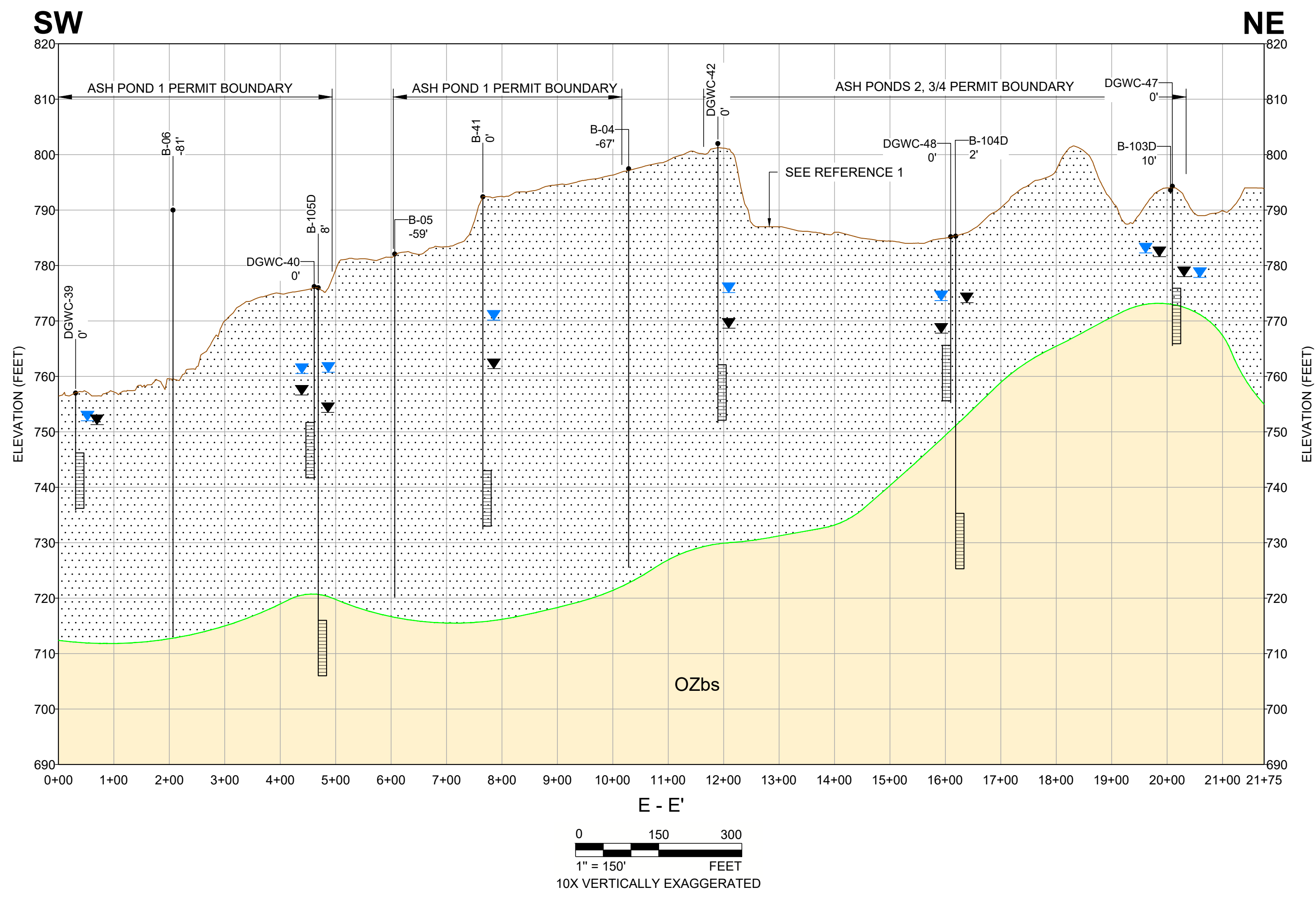
TITLE  
**GEOLOGIC CROSS-SECTION SCHEMATIC D-D'  
SHEET 4**

CONSULTANT	YYYY-MM-DD	2018/05/04
DESIGNED	SEP	
PREPARED	DJC	
CHECKED	KNJ	
REVIEWED / APPROVED	RPK / GLH	

PROJECT NO. 1777449 REV. 5 SHEET GW-3d

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI D





**LEGEND**

- EXISTING GRADE (SEE REFERENCE 1)
- ESTIMATED TOP OF ROCK SURFACE
- PROPOSED FINAL GRADE
- ESTIMATED PRE-CLOSURE BOTTOM OF CCR LIMITS
- OVERBURDEN (COMPRISED OF RESIDUAL SOILS, TRANSITIONALLY WEATHERED ROCK, AND FILL)
- PHYLLONITE, BUTTON SCHIST, MYLONITE, AND MYLONITIC BIOTITE GNEISS (OZbs)
- BIOTITE GNEISS, LONG ISLAND CREEK GNEISS (OZli)
- ESTIMATED GROUNDWATER SURFACE (10/27/2021)
- PREDICTED POST-CLOSURE GROUNDWATER SURFACE
- BORING ID
- DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT)
- GROUND SURFACE ELEVATION
- SCREEN INTERNAL

**NOTE**

1. DATA PRESENTED FOR CCR UNIT AP-1 IS INCLUDED FOR REFERENCE ONLY. THIS DATA SHOULD NOT BE CONSIDERED FOR PERMITTING OF CCR UNITS AP-2 AND AP-3/4.

**REFERENCES**

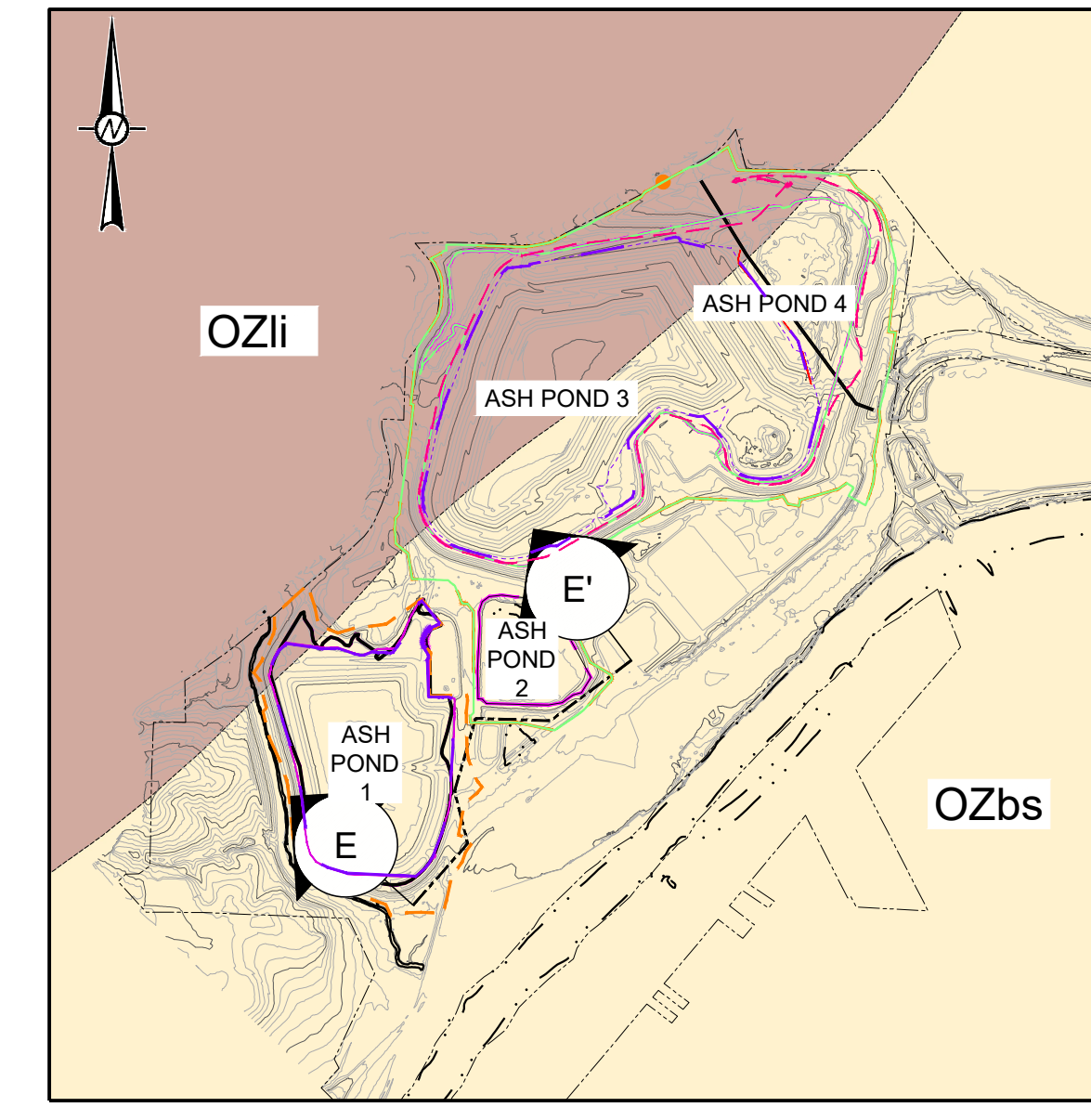
1. THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS WERE PROVIDED BY GEORGIA POWER. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS IS JULY 2021. GEORGIA STATE PLANE WEST SURVEY FEET.

2. BORING/WELL/PIEZOMETER LOCATIONS AND ELEVATIONS PROVIDED BY SOUTHERN COMPANY SERVICES, INC. AND 1968 LAW ENGINEERING GEOTECHNICAL INVESTIGATION REPORT.

3. GEOLOGIC UNITS TAKEN FROM PETROLOGIC SOLUTIONS GEOLOGIC MAPPING, OCTOBER 2016.

4. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED AND/OR RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020 / 2021.

**FOR PERMITTING PURPOSES  
NOT FOR CONSTRUCTION**



KEY MAP

REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW
△	2022/07/14	NOTE ADDED FOR AP1 DATA	DLP	CRP	RPK	GLH
△	2022/02/15	WATER LEVEL UPDATED TO 10/2021	DLP	RMS	RPK	GLH
△	2021/09/01	ADDED 2021 PIEZOMETERS / UPDATED CONTOURS	CG	AVR	DLP	RPK/GLH
△	2020/10/20	PROJECT TITLE CHANGE, UPDATED DATA	DLP	CCP	BAS	TR / GLH
△	2020/03/06	DWG CHANGED FROM GW-5E TO GW-3E; UPDATED CCR LIMITS & AERIAL	VPM	VPM	JRJ	TR / GLH
△	2018/05/04		SEP	DJC	KNJ	RPK / GLH

CLIENT  
**GEORGIA POWER COMPANY  
PLANT MCDONOUGH**

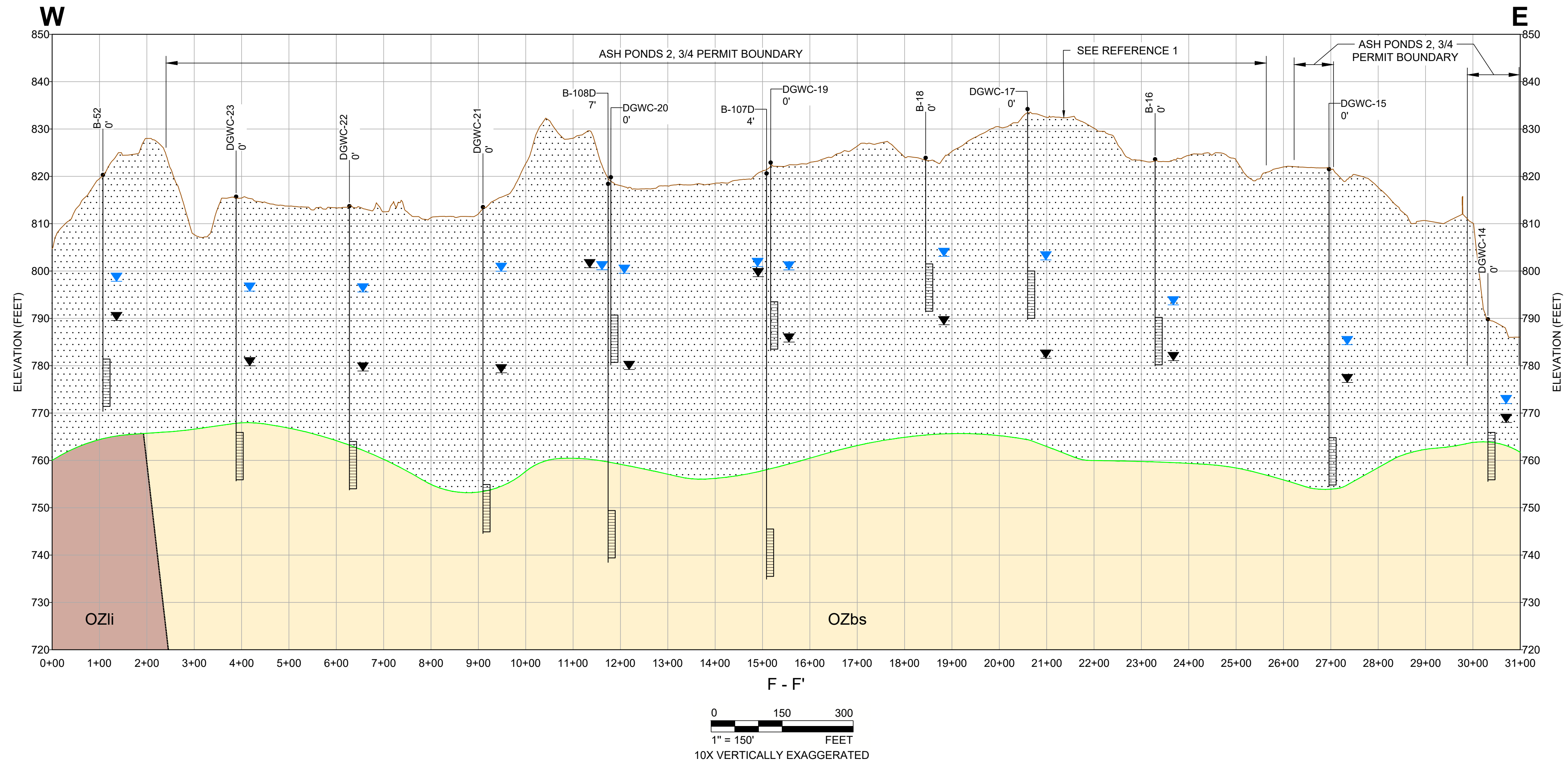
PROJECT  
**HYDROGEOLOGIC ASSESSMENT REPORT (HAR)  
PLANT MCDONOUGH-ATKINSON  
ASH POND 2 AND 3/4**

TITLE  
**GEOLOGIC CROSS-SECTION SCHEMATIC E-E'  
SHEET 5**

CONSULTANT	YYYY-MM-DD	2018/05/04
	DESIGNED	SEP
	PREPARED	DJC
	CHECKED	KNJ
	REVIEWED / APPROVED	RPK / GLH

PROJECT NO. 1777449 REV. 5 SHEET GW-3e

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANS/D 11



**LEGEND**

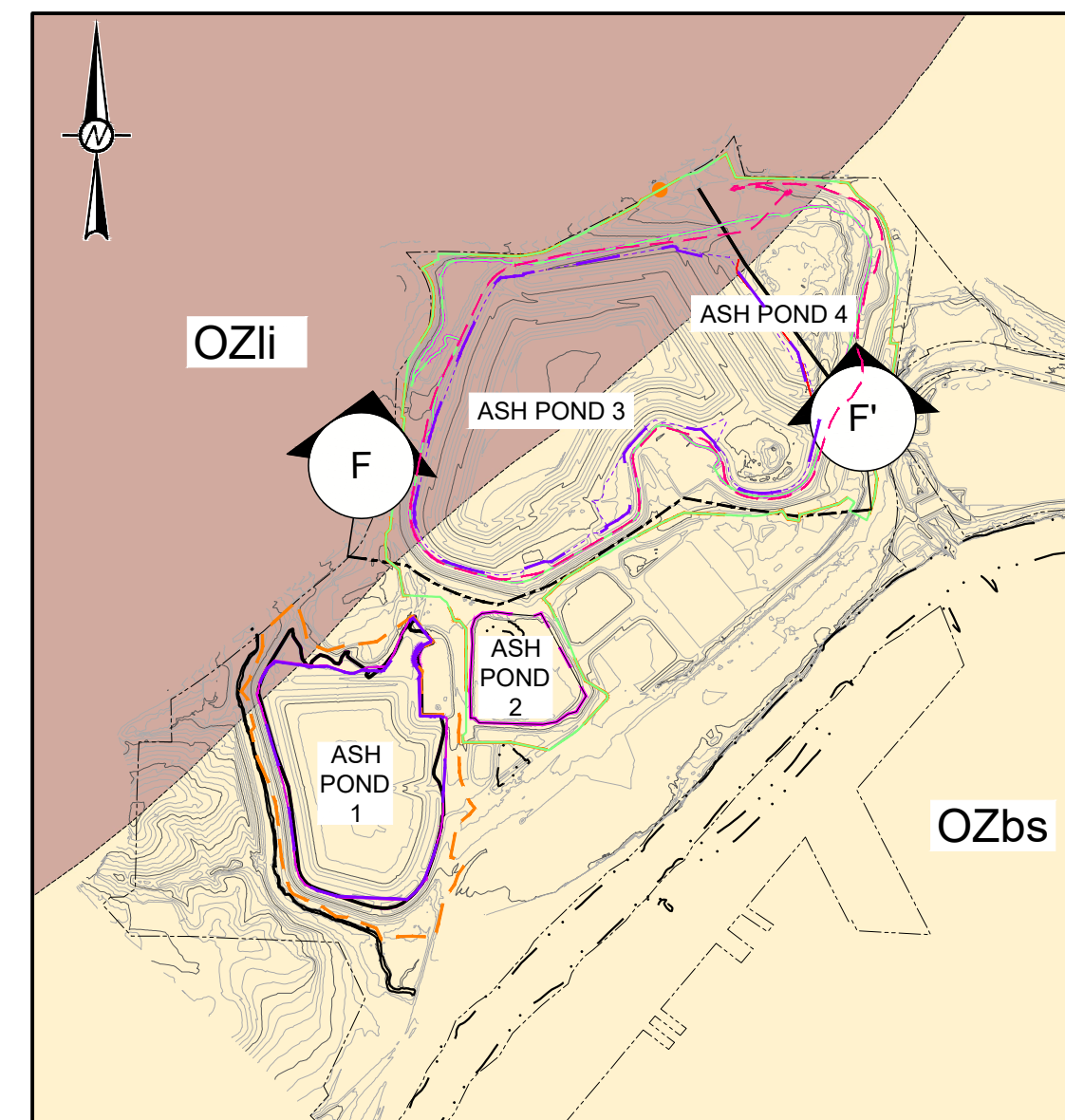
- EXISTING GRADE (SEE REFERENCE 1)
- ESTIMATED TOP OF ROCK SURFACE
- PROPOSED FINAL GRADE
- ESTIMATED PRE-CLOSURE BOTTOM OF CCR LIMITS
- OVERBURDEN (COMPRISED OF RESIDUAL SOILS, TRANSITIONALLY WEATHERED ROCK, AND FILL)
- PHYLLOHITE, BUTTON SCHIST, MYLONITE, AND MYLONITIC BIOTITE GNEISS (OZbs)
- BIOTITE GNEISS, LONG ISLAND CREEK GNEISS (OZli)
- ESTIMATED GROUNDWATER SURFACE (10/27/2021)
- PREDICTED POST-CLOSURE GROUNDWATER SURFACE

**BORING ID**  
 B-29  
 -144

- DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT)
- GROUND SURFACE ELEVATION
- SCREEN INTERNAL

- NOTE**
1. DATA PRESENTED FOR CCR UNIT AP-1 IS INCLUDED FOR REFERENCE ONLY. THIS DATA SHOULD NOT BE CONSIDERED FOR PERMITTING OF CCR UNITS AP-2 AND AP-3/4.
- REFERENCES**
1. THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS WERE PROVIDED BY GEORGIA POWER. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS IS JULY 2021. GEORGIA STATE PLANE WEST SURVEY FEET.
  2. BORING/WELL/PIEZOMETER LOCATIONS AND ELEVATIONS PROVIDED BY SOUTHERN COMPANY SERVICES, INC. AND 1968 LAW ENGINEERING GEOTECHNICAL INVESTIGATION REPORT.
  3. GEOLOGIC UNITS TAKEN FROM PETROLOGIC SOLUTIONS GEOLOGIC MAPPING, OCTOBER 2016.
  4. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED AND/OR RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020 / 2021.

**FOR PERMITTING PURPOSES  
NOT FOR CONSTRUCTION**



REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	R/W
△	2022/07/14	NOTE ADDED FOR AP1 DATA	DLP	CRP	RPK	GLH
△	2022/02/15	WATER LEVELS UPDATE 10/2021	DLP	RMS	RPK	GHL
△	2021/09/01	ADDED 2021 PIEZOMETERS / UPDATED CONTOURS	CG	AVR	DLP	RPK/GLH
△	2020/10/20	ADD CROSS-SECTIONS AND WELL DATA	DLP	CCP	BAS	TIR / GLH

CLIENT  
**GEORGIA POWER COMPANY**  
 PLANT MCDONOUGH

PROJECT  
 HYDROGEOLOGIC ASSESSMENT REPORT (HAR)  
 PLANT MCDONOUGH-ATKINSON  
 ASH POND 2 AND 3/4

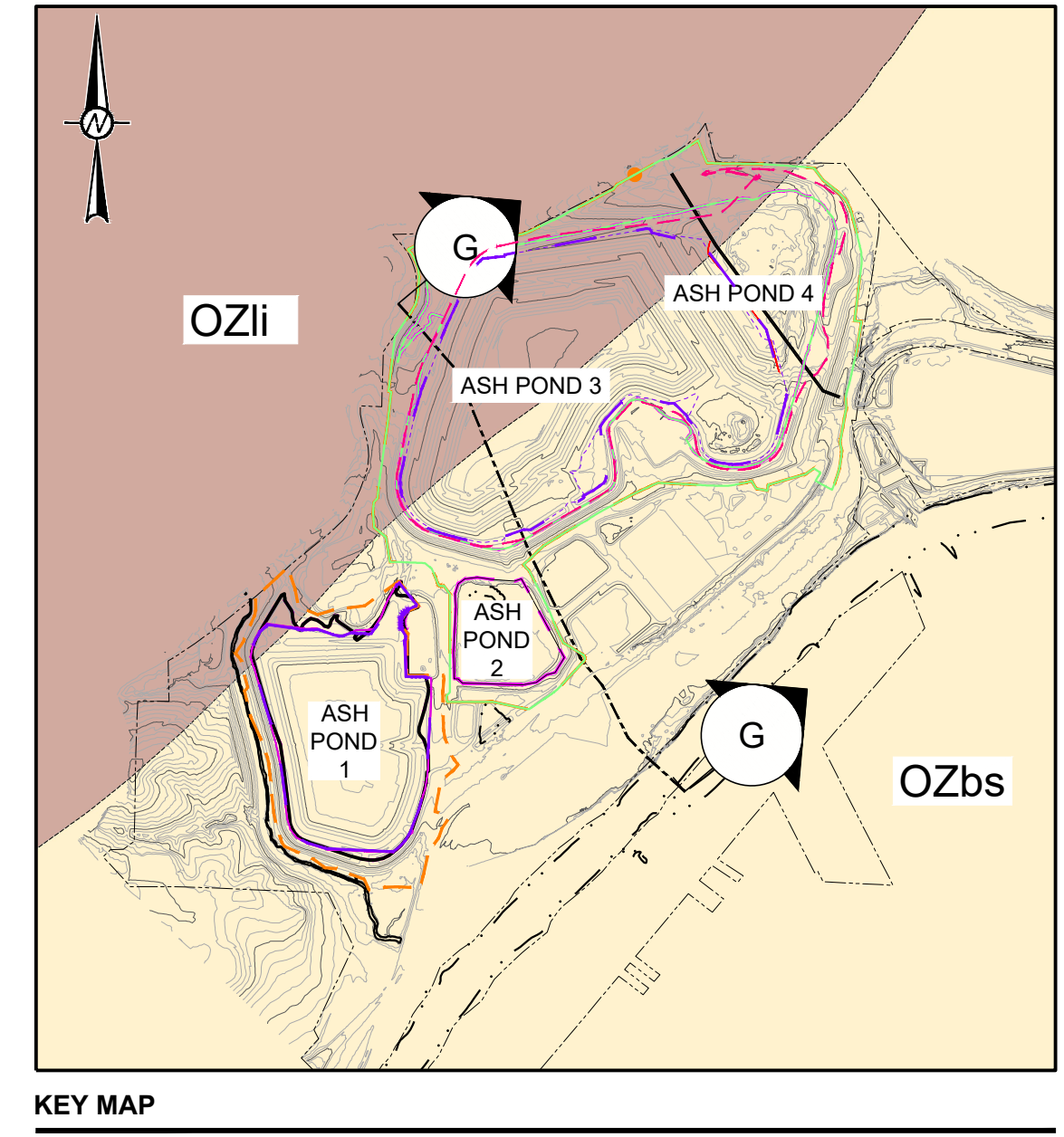
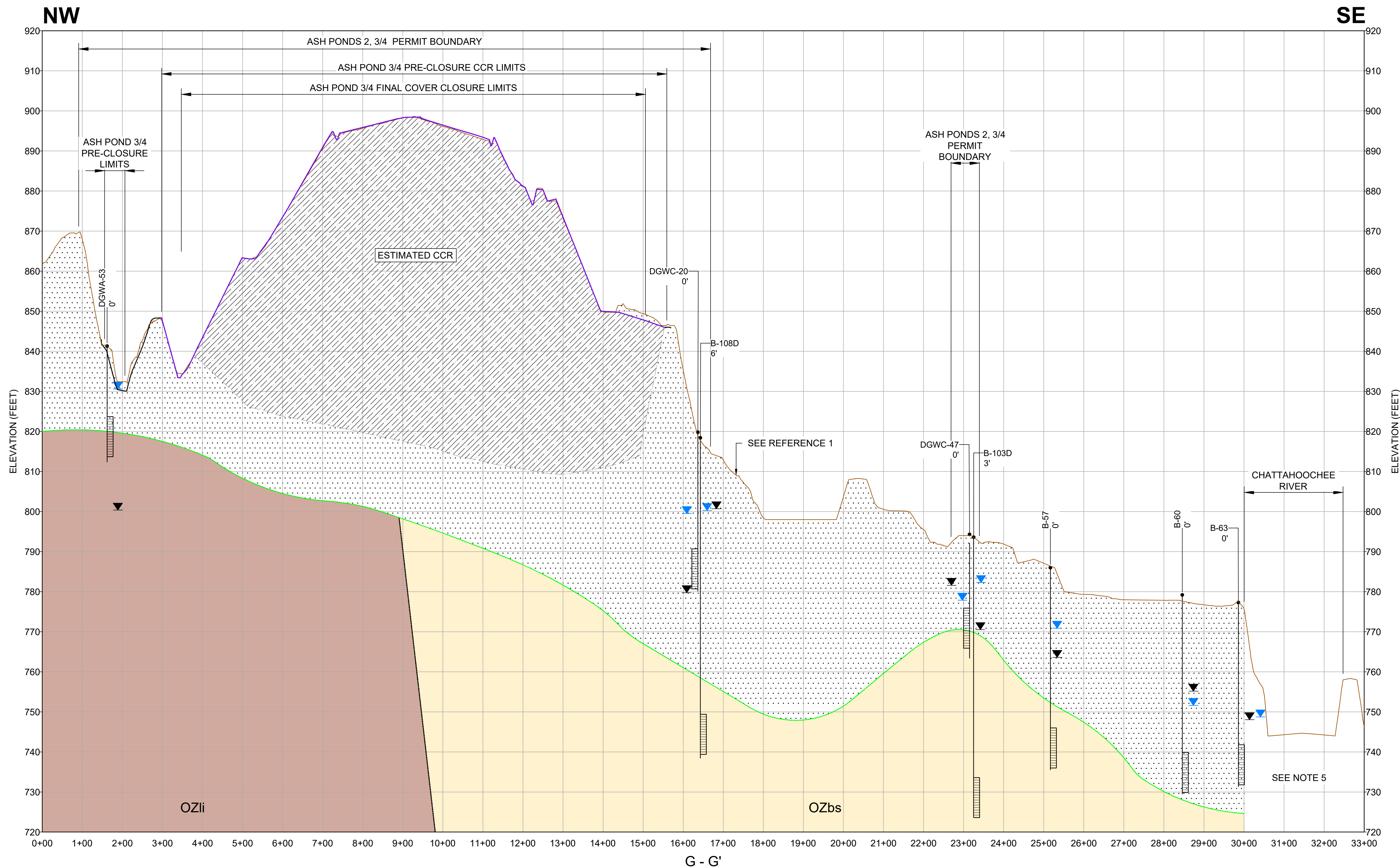
TITLE  
**GEOLOGIC CROSS-SECTION SCHEMATIC F-F'**  
**SHEET 6**

CONSULTANT	YYYY-MM-DD	2020/10/20
	DESIGNED	DLP
	PREPARED	CCP
	CHECKED	BAS
	REVIEWED / APPROVED	TIR / GLH

PROJECT NO. 1777449      REV. 3      SHEET GW-3f

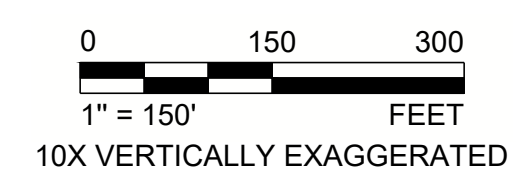
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANS/D 11





- LEGEND**
- EXISTING GRADE (SEE REFERENCE 1)
  - ESTIMATED TOP OF ROCK SURFACE
  - PROPOSED FINAL GRADE
  - - - ESTIMATED PRE-CLOSURE BOTTOM OF CCR LIMITS
  - FINAL COVER SYSTEM
  - /// ESTIMATED CCR TO REMAIN IN PLACE
  - ..... OVERBURDEN (COMPRISED OF RESIDUAL SOILS, TRANSITIONALLY WEATHERED ROCK, AND FILL)
  - PHYLLOHITE, BUTTON SCHIST, MYLONITE, AND MYLONITIC BIOTITE GNEISS (OZbs)
  - BIOTITE GNEISS, LONG ISLAND CREEK GNEISS (OZli)
  - ▼ ESTIMATED GROUNDWATER SURFACE (10/27/2021)
  - ▼ PREDICTED POST-CLOSURE GROUNDWATER SURFACE
- BORING ID  
 DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT)  
 GROUND SURFACE ELEVATION  
 SCREEN INTERNAL

- NOTE**
1. DATA PRESENTED FOR CCR UNIT AP-1 IS INCLUDED FOR REFERENCE ONLY. THIS DATA SHOULD NOT BE CONSIDERED FOR PERMITTING OF CCR UNITS AP-2 AND AP-3/4.
- REFERENCES**
1. THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS WERE PROVIDED BY GEORGIA POWER. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS IS JULY 2021. GEORGIA STATE PLANE WEST SURVEY FEET.
  2. BORING/WELL/PIEZOMETER LOCATIONS AND ELEVATIONS PROVIDED BY SOUTHERN COMPANY SERVICES, INC. AND 1968 LAW ENGINEERING GEOTECHNICAL INVESTIGATION REPORT.
  3. GEOLOGIC UNITS TAKEN FROM PETROLOGIC SOLUTIONS GEOLOGIC MAPPING, OCTOBER 2016.
  4. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED AND/OR RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020 / 2021.
  5. NO AVAILABLE SUBSURFACE GEOLOGIC DATA.



**FOR PERMITTING PURPOSES  
NOT FOR CONSTRUCTION**

△	2022/07/14	NOTE ADDED FOR AP1 DATA	DLP	CRP	RPK	GLH
△	2022/02/15	WATER LEVELS UPDATE 10/2021	DLP	RMS	RPK	GHL
△	2021/09/01	ADDED 2021 PIEZOMETERS / UPDATED CONTOURS	CG	AVR	DLP	RPK/GLH
△	2020/10/20	ADD CROSS-SECTIONS AND WELL DATA	DLP	CCP	BAS	TIR / GLH
REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RWV

CLIENT  
**GEORGIA POWER COMPANY**  
 PLANT MCDONOUGH

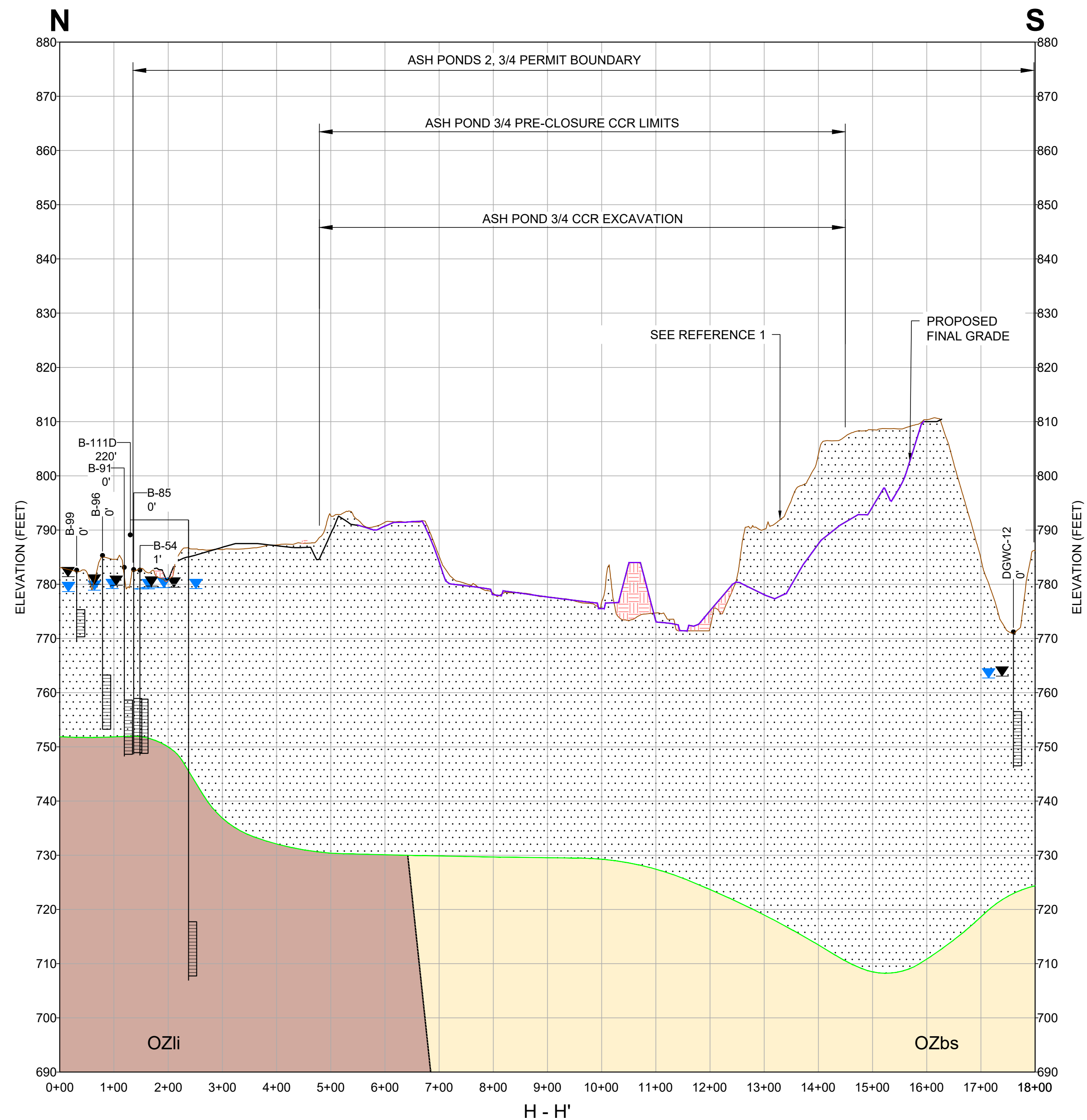
PROJECT  
 HYDROGEOLOGIC ASSESSMENT REPORT (HAR)  
 PLANT MCDONOUGH-ATKINSON  
 ASH POND 2 AND 3/4

TITLE  
**GEOLOGIC CROSS-SECTION SCHEMATIC G-G'**  
**SHEET 7**

CONSULTANT	YYYY-MM-DD	2020/10/20
DESIGNED	DLP	
PREPARED	CCP	
CHECKED	BAS	
REVIEWED / APPROVED	TIR / GLH	

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANS/D 11in





**LEGEND**

- EXISTING GRADE (SEE REFERENCE 1)
- ESTIMATED TOP OF ROCK SURFACE
- PROPOSED FINAL GRADE
- ESTIMATED PRE-CLOSURE BOTTOM OF CCR LIMITS
- FINAL COVER SYSTEM
- PROPOSED FILL
- OVERBURDEN (COMPRISED OF RESIDUAL SOILS, TRANSITIONALLY WEATHERED ROCK, AND FILL)
- PHYLONITE, BUTTON SCHIST, MYLONITE, AND MYLONITIC BIOTITE GNEISS (OZbs)
- BIOTITE GNEISS, LONG ISLAND CREEK GNEISS (OZli)
- ESTIMATED GROUNDWATER SURFACE (10/27/2021)
- PREDICTED POST-CLOSURE GROUNDWATER SURFACE
- BORING ID
- DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT)
- GROUND SURFACE ELEVATION
- SCREEN INTERNAL

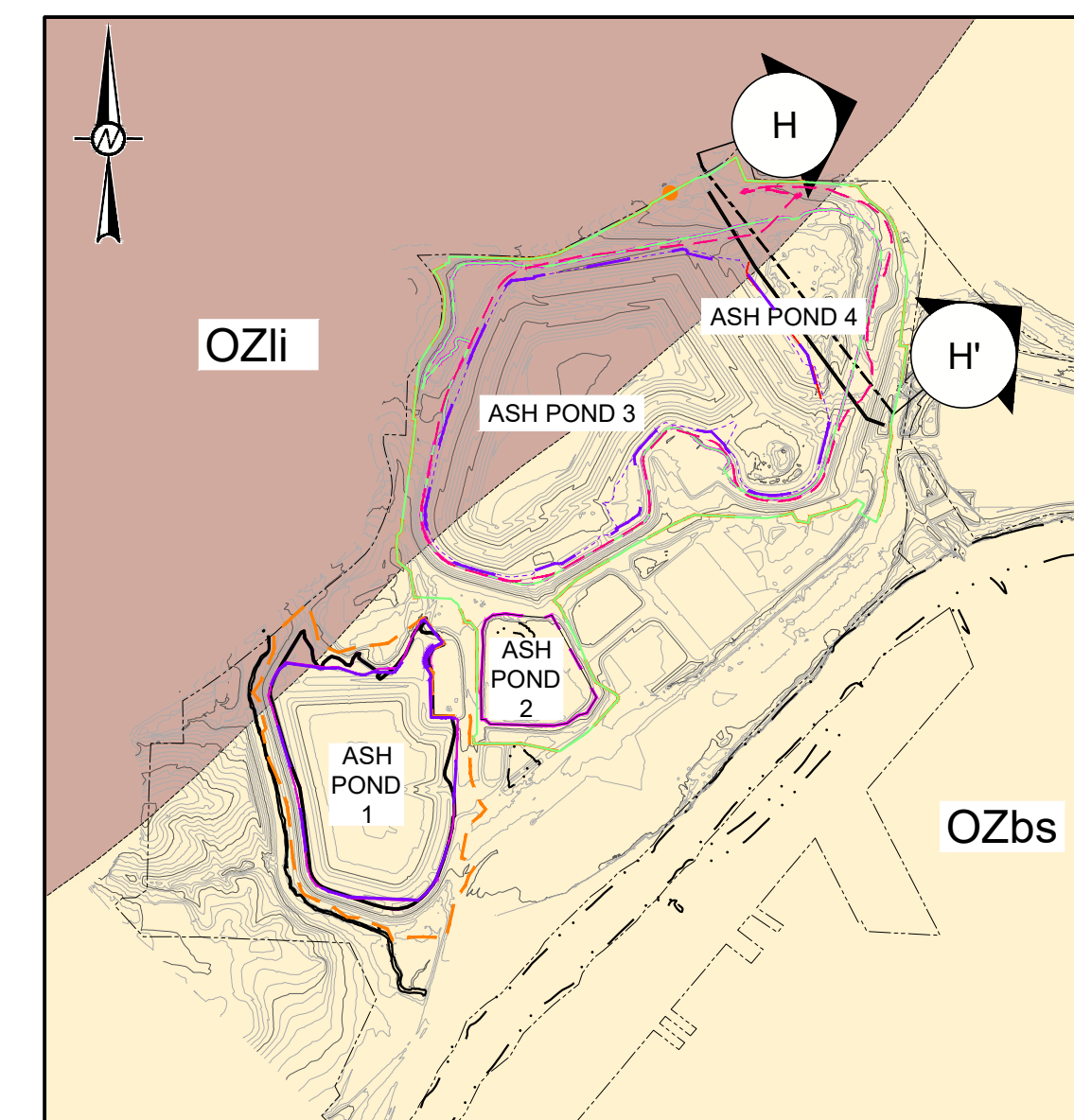
**NOTE**

1. DATA PRESENTED FOR CCR UNIT AP-1 IS INCLUDED FOR REFERENCE ONLY. THIS DATA SHOULD NOT BE CONSIDERED FOR PERMITTING OF CCR UNITS AP-2 AND AP-3/4.

**REFERENCES**

1. THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS WERE PROVIDED BY GEORGIA POWER. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS IS JULY 2021. GEORGIA STATE PLANE WEST SURVEY FEET.
2. BORING/WELL/PIEZOMETER LOCATIONS AND ELEVATIONS PROVIDED BY SOUTHERN COMPANY SERVICES, INC. AND 1968 LAW ENGINEERING GEOTECHNICAL INVESTIGATION REPORT.
3. GEOLOGIC UNITS TAKEN FROM PETROLOGIC SOLUTIONS GEOLOGIC MAPPING, OCTOBER 2016.
4. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED AND/OR RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020 / 2021.

**FOR PERMITTING PURPOSES  
NOT FOR CONSTRUCTION**



KEY MAP

REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RWV
	2022/07/14	NOTE ADDED FOR AP1 DATA	DLP	CRP	RPK	GLH
	2022/02/15	WATER LEVELS UPDATE 10/2021	DLP	RMS	RKP	GHL
	2021/09/01	ADDED 2021 PIEZOMETERS / UPDATED CONTOURS	CG	AVR	DLP	RPK/GLH
	2020/10/20	ADD CROSS-SECTIONS AND WELL DATA	DLP	CCP	BAS	TIR / GLH

CLIENT  
**GEORGIA POWER COMPANY  
PLANT MCDONOUGH**



PROJECT  
**HYDROGEOLOGIC ASSESSMENT REPORT (HAR)  
PLANT MCDONOUGH-ATKINSON  
ASH POND 2 AND 3/4**

TITLE  
**GEOLOGIC CROSS-SECTION SCHEMATIC H-H'  
SHEET 8**

CONSULTANT	YYYY-MM-DD	2020/10/20
	DESIGNED	DLP
	PREPARED	CCP
	CHECKED	BAS
	REVIEWED / APPROVED	TIR / GLH

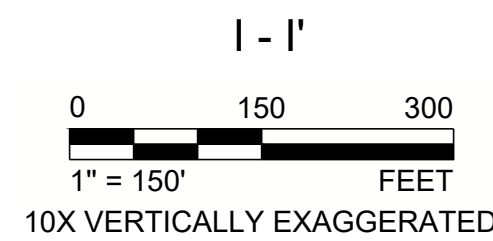
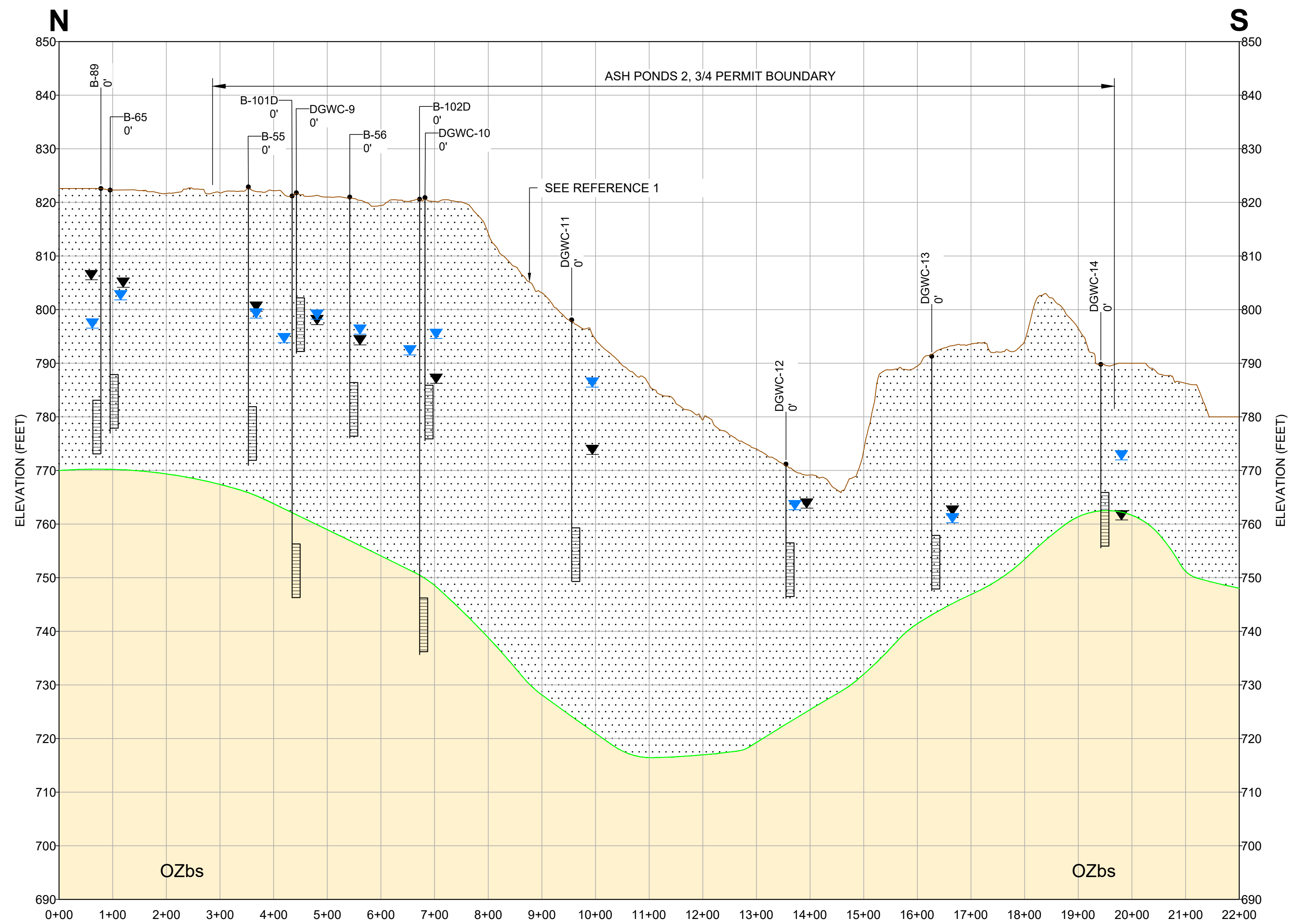
PROJECT NO.  
1777449

REV.  
3

SHEET  
GW-3h

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANS/D 11

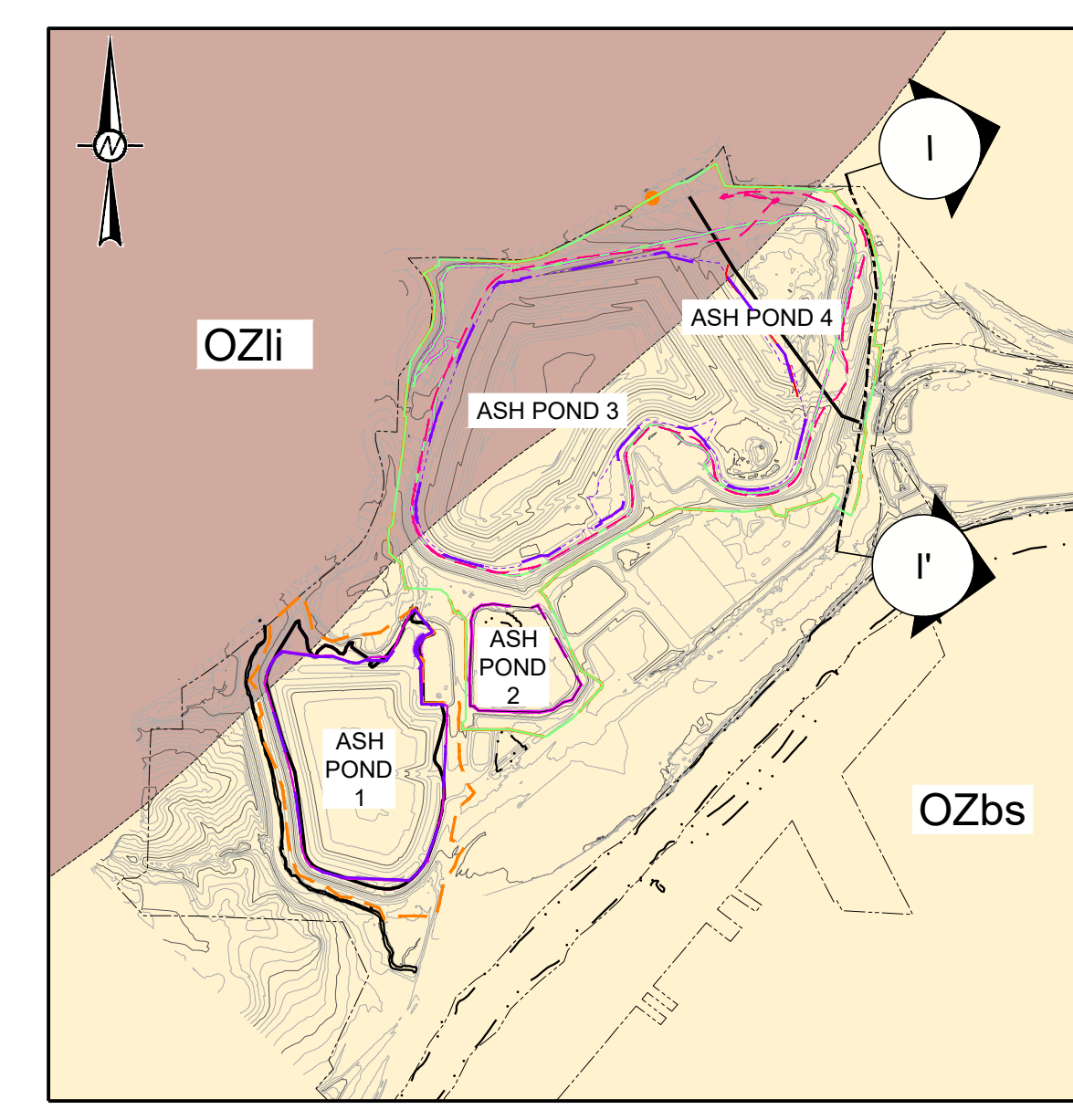




- LEGEND**
- EXISTING GRADE (SEE REFERENCE 1)
  - ESTIMATED TOP OF ROCK SURFACE
  - PROPOSED FINAL GRADE
  - - - ESTIMATED PRE-CLOSURE BOTTOM OF CCR LIMITS
  - ..... OVERBURDEN (COMPRISED OF RESIDUAL SOILS, TRANSITIONALLY WEATHERED ROCK, AND FILL)
  - PHYLONITE, BUTTON SCHIST, MYLONITE, AND MYLONITIC BIOTITE GNEISS (OZbs)
  - BIOTITE GNEISS, LONG ISLAND CREEK GNEISS (OZli)
  - ▲ ESTIMATED GROUNDWATER SURFACE (10/27/2021)
  - ▼ PREDICTED POST-CLOSURE GROUNDWATER SURFACE
  - B-28 -144 BORING ID
  - 144 DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT)
  - GROUND SURFACE ELEVATION
  - SCREEN INTERNAL

- NOTE**
- DATA PRESENTED FOR CCR UNIT AP-1 IS INCLUDED FOR REFERENCE ONLY. THIS DATA SHOULD NOT BE CONSIDERED FOR PERMITTING OF CCR UNITS AP-2 AND AP-3/4.
- REFERENCES**
- THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS WERE PROVIDED BY GEORGIA POWER. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS IS JULY 2021. GEORGIA STATE PLANE WEST SURVEY FEET.
  - BORING/WELL/PIEZOMETER LOCATIONS AND ELEVATIONS PROVIDED BY SOUTHERN COMPANY SERVICES, INC. AND 1968 LAW ENGINEERING GEOTECHNICAL INVESTIGATION REPORT.
  - GEOLOGIC UNITS TAKEN FROM PETROLOGIC SOLUTIONS GEOLOGIC MAPPING, OCTOBER 2016.
  - SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED AND/OR RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020 / 2021.

**FOR PERMITTING PURPOSES  
NOT FOR CONSTRUCTION**



REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	R/W
△	2022/07/14	NOTE ADDED FOR AP1 DATA	DLP	CRP	RPK	GLH
△	2022/02/15	WATER LEVELS UPDATE 10/2021	DLP	RMS	RPK	GLH
△	2021/09/01	ADDED 2021 PIEZOMETERS / UPDATED CONTOURS	CG	AVR	DLP	RPK/GLH
△	2020/10/20	ADD CROSS-SECTIONS AND WELL DATA	DLP	CCP	BAS	TIR / GLH

CLIENT  
**GEORGIA POWER COMPANY  
PLANT MCDONOUGH**



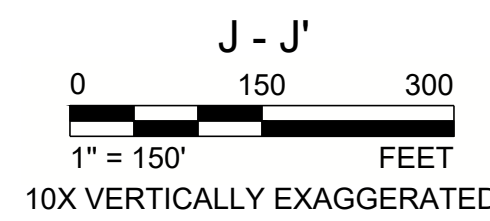
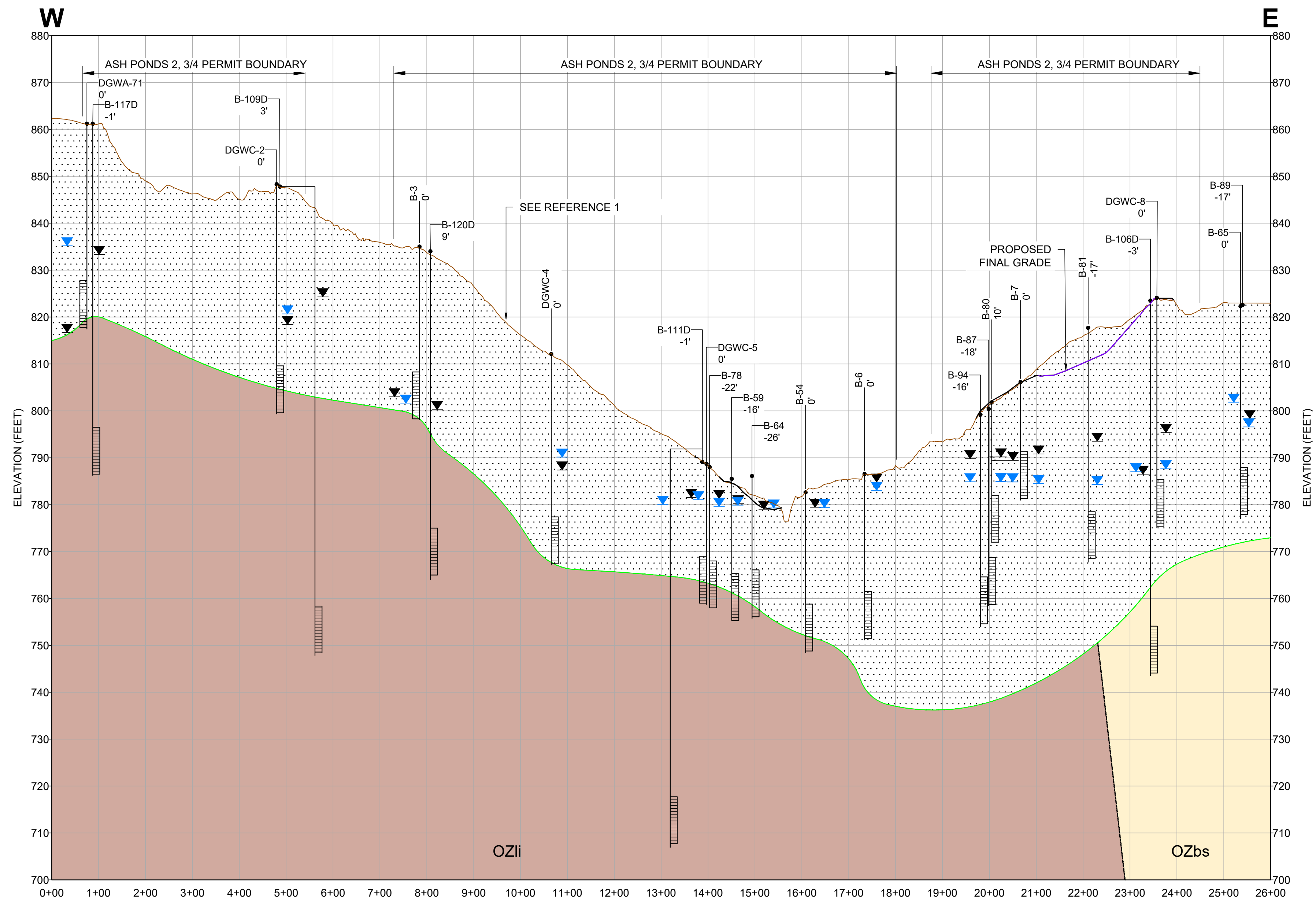
PROJECT  
**HYDROGEOLOGIC ASSESSMENT REPORT (HAR)  
PLANT MCDONOUGH-ATKINSON  
ASH POND 2 AND 3/4**

TITLE  
**GEOLOGIC CROSS-SECTION SCHEMATIC I-I'  
SHEET 9**

CONSULTANT	YYYY-MM-DD	2020/10/20
<b>wsp GOLDER</b>	DESIGNED	DLP
	PREPARED	CCP
	CHECKED	BAS
	REVIEWED / APPROVED	TIR / GLH

PROJECT NO. 1777449 REV. 3 SHEET GW-3i

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANS/D 11



**LEGEND**

- EXISTING GRADE (SEE REFERENCE 1)
- ESTIMATED TOP OF ROCK SURFACE
- PROPOSED FINAL GRADE
- - - ESTIMATED PRE-CLOSURE BOTTOM OF CCR LIMITS
- FINAL COVER SYSTEM
- OVERBURDEN (COMPRISED OF RESIDUAL SOILS, TRANSITIONALLY WEATHERED ROCK, AND FILL)
- PHYLLONITE, BUTTON SCHIST, MYLONITE, AND MYLONITIC BIOTITE GNEISS (OZbs)
- BIOTITE GNEISS, LONG ISLAND CREEK GNEISS (OZli)
- ▼ ESTIMATED GROUNDWATER SURFACE (10/27/2021)
- ▼ PREDICTED POST-CLOSURE GROUNDWATER SURFACE
- BORING ID
- DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT)
- GROUND SURFACE ELEVATION
- | SCREEN INTERNAL

**NOTE**

1. DATA PRESENTED FOR CCR UNIT AP-1 IS INCLUDED FOR REFERENCE ONLY. THIS DATA SHOULD NOT BE CONSIDERED FOR PERMITTING OF CCR UNITS AP-2 AND AP-3/4.

**REFERENCES**

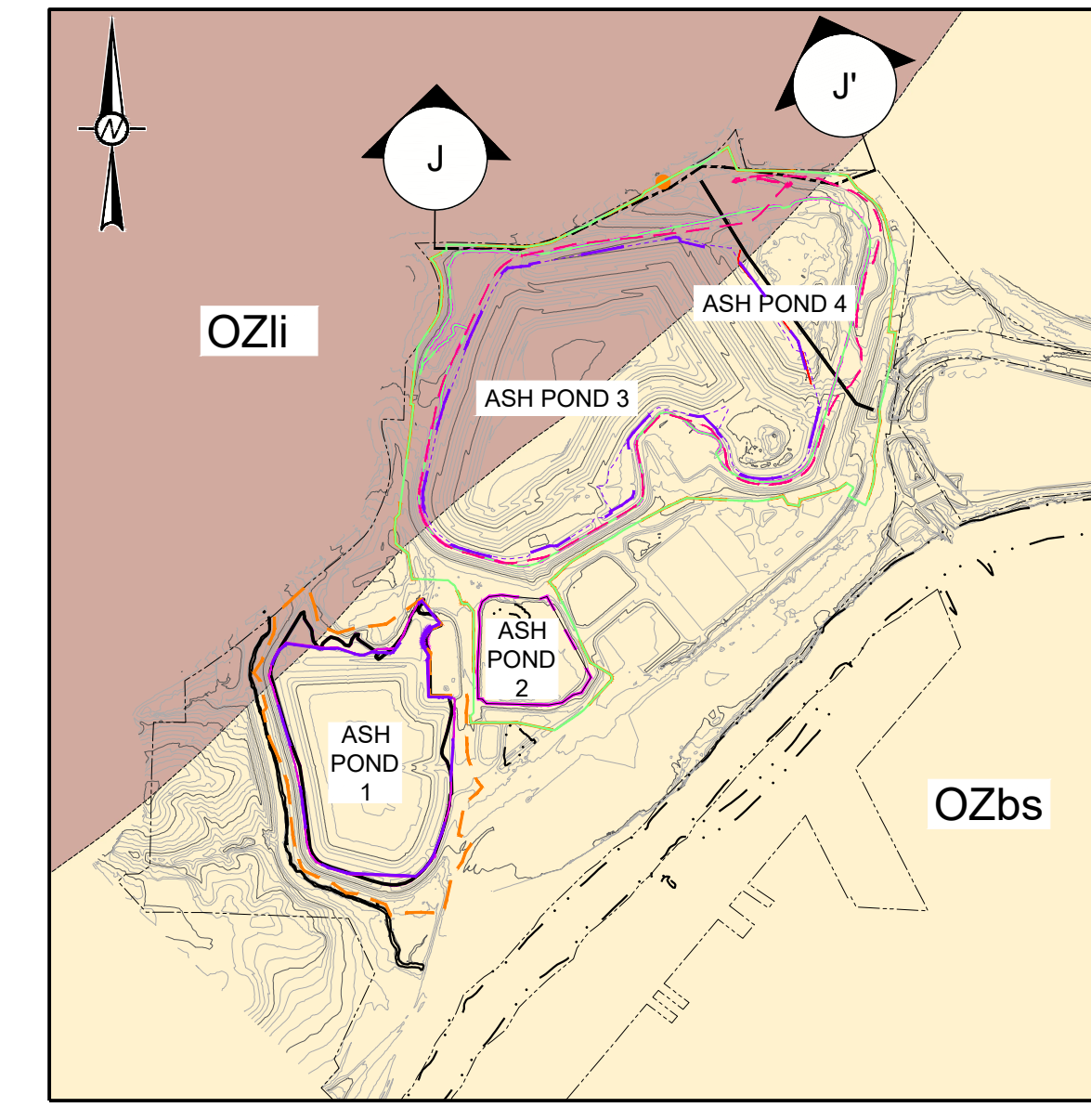
1. THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS WERE PROVIDED BY GEORGIA POWER. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS IS JULY 2021. GEORGIA STATE PLANE WEST SURVEY FEET.

2. BORING/WELL/PIEZOMETER LOCATIONS AND ELEVATIONS PROVIDED BY SOUTHERN COMPANY SERVICES, INC. AND 1968 LAW ENGINEERING GEOTECHNICAL INVESTIGATION REPORT.

3. GEOLOGIC UNITS TAKEN FROM PETROLOGIC SOLUTIONS GEOLOGIC MAPPING, OCTOBER 2016.

4. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED AND/OR RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020 / 2021.

**FOR PERMITTING PURPOSES  
NOT FOR CONSTRUCTION**



REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	R/W
△	2022/07/14	NOTE ADDED FOR AP1 DATA	DLP	CRP	RPK	GLH
△	2022/02/15	WATER LEVELS UPDATE 10/2021	DLP	RMS	RPK	GLH
△	2021/09/01	ADDED 2021 PIEZOMETERS / UPDATED CONTOURS	CG	AVR	DLP	RPK/GLH
△	2020/10/20	ADD CROSS-SECTIONS AND WELL DATA	DLP	CCP	BAS	TIR / GLH

CLIENT  
**GEORGIA POWER COMPANY  
PLANT MCDONOUGH**



PROJECT  
**HYDROGEOLOGIC ASSESSMENT REPORT (HAR)  
PLANT MCDONOUGH-ATKINSON  
ASH POND 2 AND 3/4**

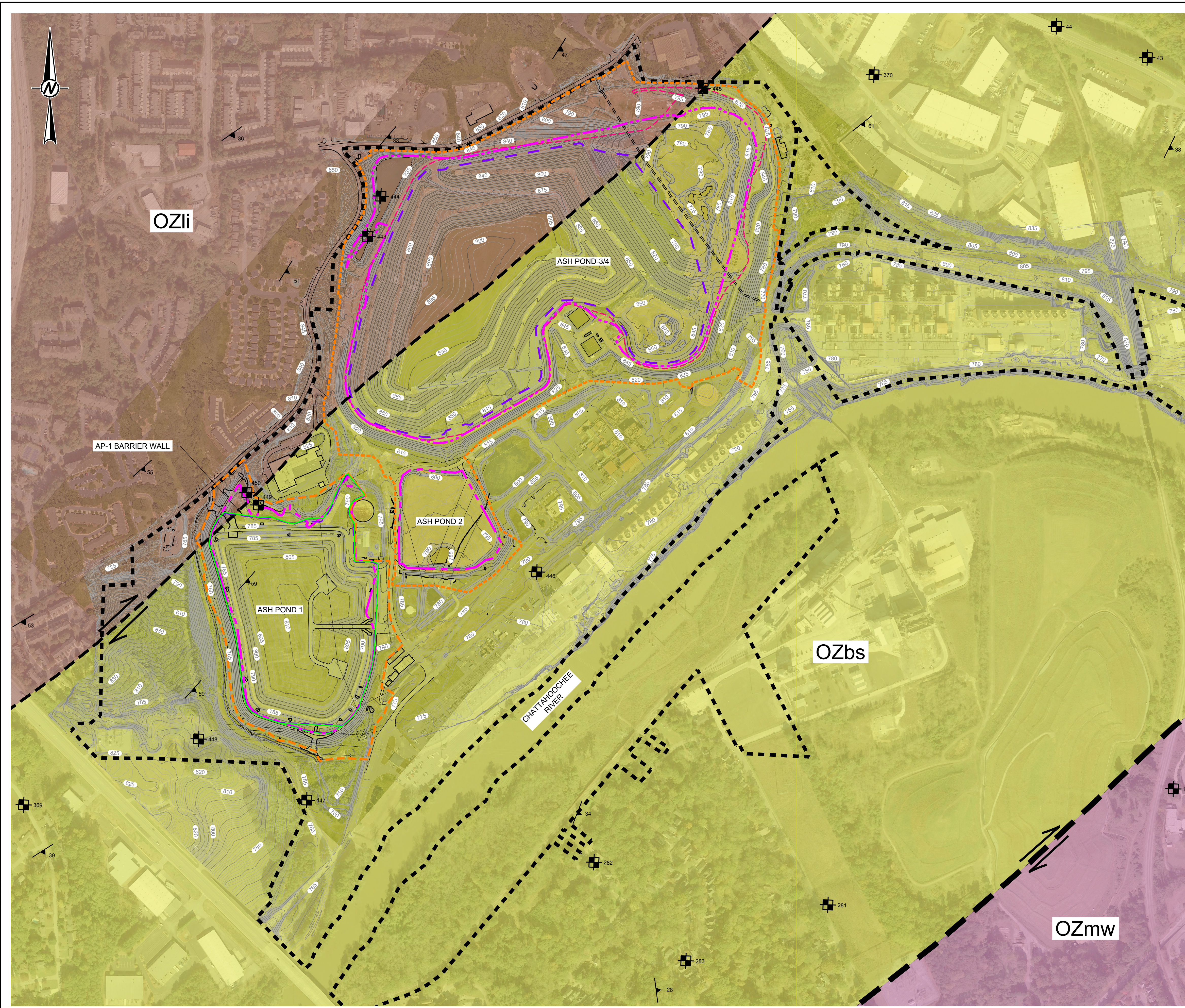
TITLE  
**GEOLOGIC CROSS-SECTION SCHEMATIC J-J'  
SHEET 10**

CONSULTANT	YYYY-MM-DD	2020/10/20
<b>wsp GOLDER</b>	DESIGNED	DLP
	PREPARED	CCP
	CHECKED	BAS
	REVIEWED / APPROVED	TIR / GLH

PROJECT NO. 1777449      REV. 3      SHEET GW-3i

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANS/D 11





- LEGEND**
- 880 EXISTING CONTOURS (SEE REFERENCE 2)
  - PROPERTY BOUNDARY (SEE REFERENCE 1)
  - APPROXIMATE PRE-CLOSURE CCR LIMITS
  - FINAL CLOSURE CCR LIMITS
  - PERMIT BOUNDARY
  - FUTURE BARRIER WALL OPTION A
  - FUTURE BARRIER WALL OPTION B

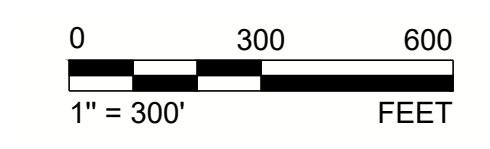
- GEOLOGIC LEGEND**
- OZli - BIOTITE GNEISS (LONG ISLAND)
  - OZbs - PHYLONITE, BUTON SCHIST, MYLONITE, AND MYLONITE BIOTITE GNEISS
  - OZmw - BREVARD ZONE MYLONITE - WHITE
  - INTERPRETED GEOLOGIC CONTACT
  - FAULT (STRIKE / SLIP) - APPROXIMATE LOCATION
  - STRIKE AND DIP OF FOLIATION
  - GEOLOGIC MAP STATION

**NOTE**

1. DATA PRESENTED FOR CCR UNIT AP-1 IS INCLUDED FOR REFERENCE ONLY. THIS DATA SHOULD NOT BE CONSIDERED FOR PERMITTING OF CCR UNITS AP-2 AND AP-3/4.

- REFERENCES**
1. APPROXIMATE PROPERTY BOUNDARY PROVIDED BY SOUTHERN COMPANY SERVICES (2017).
  2. THE EXISTING TOPOGRAPHY, CONTOUR ELEVATIONS AND PHOTOGRAPHY FOR THE ASH PONDS 1 THROUGH 4 AREAS WERE PROVIDED BY GEORGIA POWER. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS, ON THE AP- 1 THROUGH 4, IS JUNE 2021 - DATE OF PHOTOGRAPHY JUNE 2021. THE TOPOGRAPHIC CONTOUR INTERVALS IS 1 FOOT. THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS FOR THE SURROUNDING AREAS OF ASH PONDS 1 THROUGH 4 WERE PROVIDED BY GEORGIA LAND DEPARTMENT AND METRO ENGINEERING AND SURVEYING CO, INC. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS, AT THE SURROUNDING AREAS, IS 03-18-2018. REFER TO THE SURVEY DRAWING TITLED "TOPOGRAPHIC MAP PREPARED FOR GEORGIA POWER COMPANY PLANT MCDONOUGH - GEORGIA STATE PLANE WEST SURVEY FEET - DATE OF PHOTOGRAPHY 09-07-2018 FOR SURROUNDING AREAS OF ASH PONDS 1 THROUGH 4.
  3. GEOLOGIC MAPPING PERFORMED BY PETROLLOGIC SOLUTIONS, OCTOBER 2016.

**FOR PERMITTING PURPOSES  
NOT FOR CONSTRUCTION**



REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RWV
	2022/07/14	NOTE ADDED FOR AP1 DATA	DLP	CRP	RPK	GLH
	2021/09/01	UPDATED FINAL CLOSURE CCR LIMITS, CONTOURS	BAS	CRP	RPK	GLH
	2020/10/20	PROJECT TITLE CHANGE	DLP	CCP	BAS	THR / GLH
	2020/03/06	GEOLOGIC MAP CHANGED FROM GW-2 TO NOW GW-4	VPM	VPM	JRJ	THR / GLH
	2018/05/04		SEP	DJC	KNJ	RPK / GLH

CLIENT  
**GEORGIA POWER COMPANY  
PLANT MCDONOUGH**

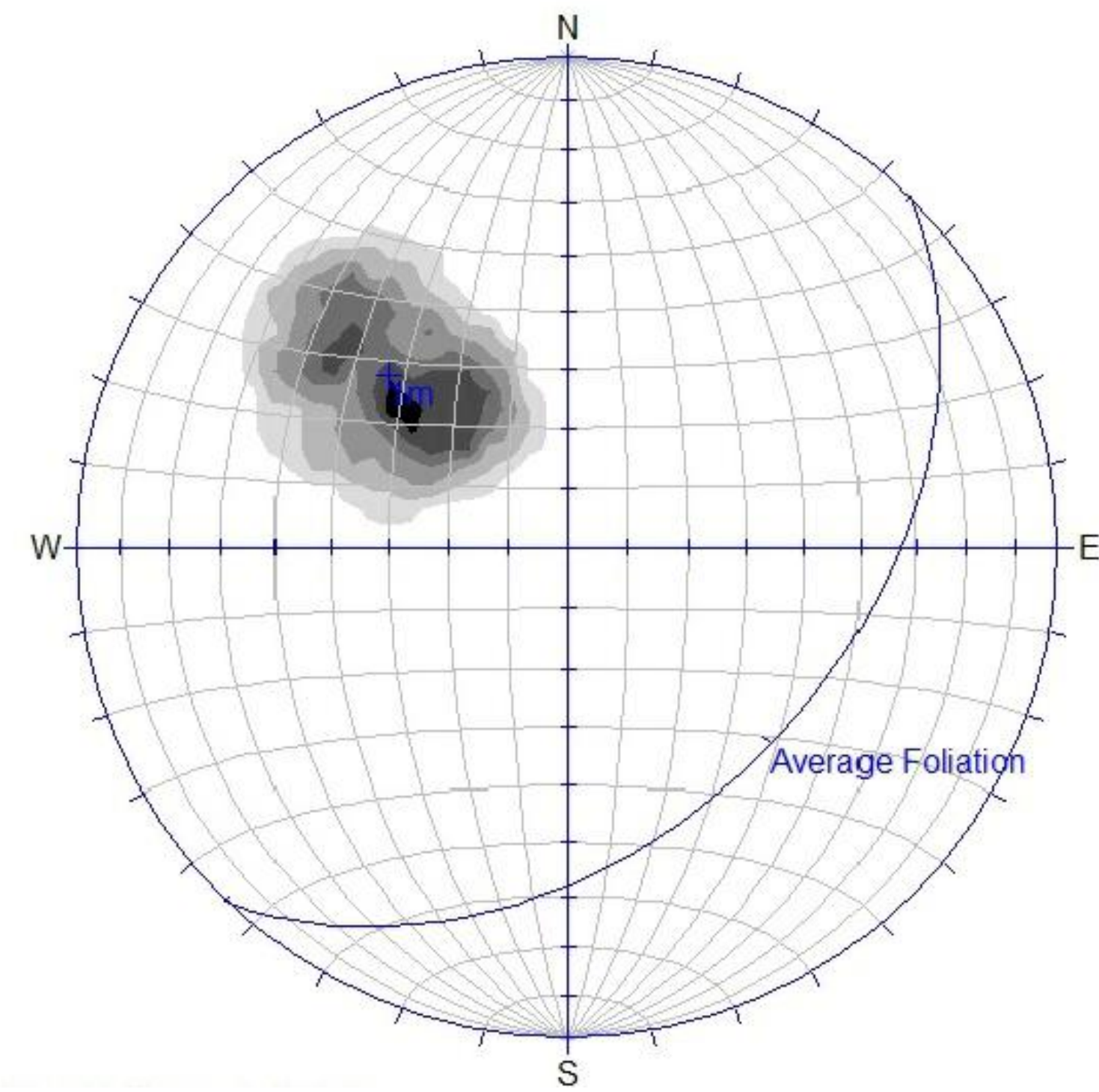
PROJECT  
**HYDROGEOLOGIC ASSESSMENT REPORT (HAR)  
PLANT MCDONOUGH-ATKINSON  
ASH POND 2 AND 3/4**

TITLE  
**GEOLOGIC MAP**

CONSULTANT	YYYY-MM-DD	2018/05/04
	DESIGNED	SEP
	PREPARED	DJC
	CHECKED	KNJ
	REVIEWED / APPROVED	RPK / GLH

1 in IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANS/D



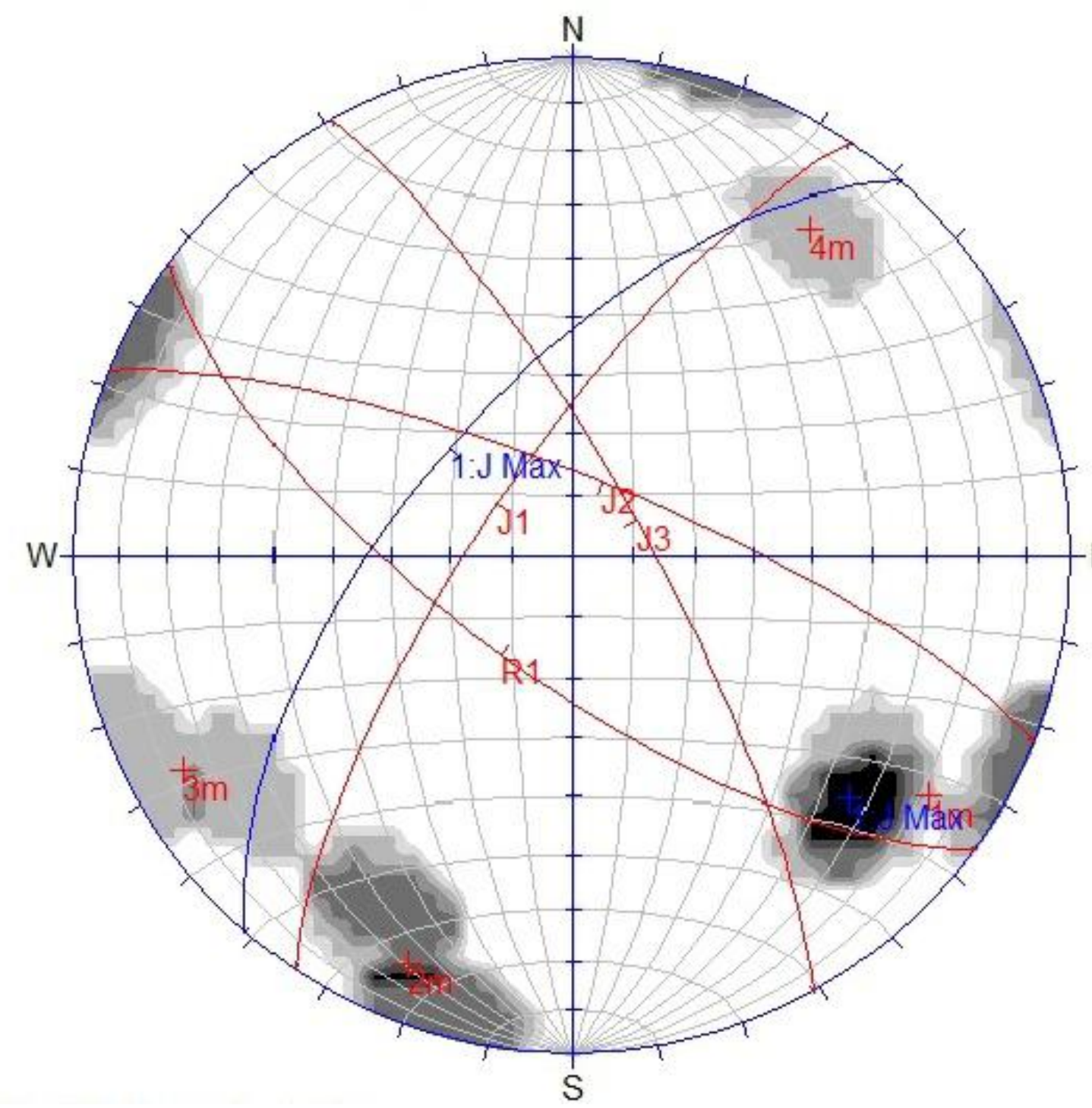


PLANT McDONOUGH - FOLIATION

ORIENTATIONS

ID	STRIKE / DIP RIGHT
1 M	044 / 42

EQUAL AREA  
LOWER HEMISPHERE  
40 POLES  
40 ENTRIES



PLANT McDONOUGH - JOINTS

ORIENTATIONS

ID	STRIKE / DIP RIGHT
1	221 / 63
1 M	214 / 75
2 M	292 / 77
3 M	331 / 78
4 M	126 / 70

EQUAL AREA  
LOWER HEMISPHERE  
12 POLES  
12 ENTRIES

**NOTE**

1. DATA PRESENTED FOR CCR UNIT AP-1 IS INCLUDED FOR REFERENCE ONLY. THIS DATA SHOULD NOT BE CONSIDERED FOR PERMITTING OF CCR UNITS AP-2 AND AP-3/4.

**REFERENCES**

1. DISCONTINUITY DATA COLLECTED AND ANALYZED BY PETROLOGIC SOLUTIONS, OCTOBER 2016.

REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RPK	GLH	RVP
△	2022/07/14	NOTE ADDED FOR AP1 DATA	DLP	CRP	RPK	GLH		
△	2020/10/20	PROJECT TITLE CHANGE	DLP	CCP	BAS	TIR / GLH		
△	2020/03/06	DISCONTINUITY DATA FROM GEOLOGIC MAPPING CHANGED FROM GW-3 TO GW-5	VPM	VPM	JRJ	TIR / GLH		
△	2018/05/04		SEP	DJC	KNJ	RPK / GLH		

CLIENT  
GEORGIA POWER COMPANY  
PLANT MCDONOUGH



PROJECT  
HYDROGEOLOGIC ASSESSMENT REPORT (HAR)  
PLANT MCDONOUGH-ATKINSON  
ASH POND 2 AND 3/4

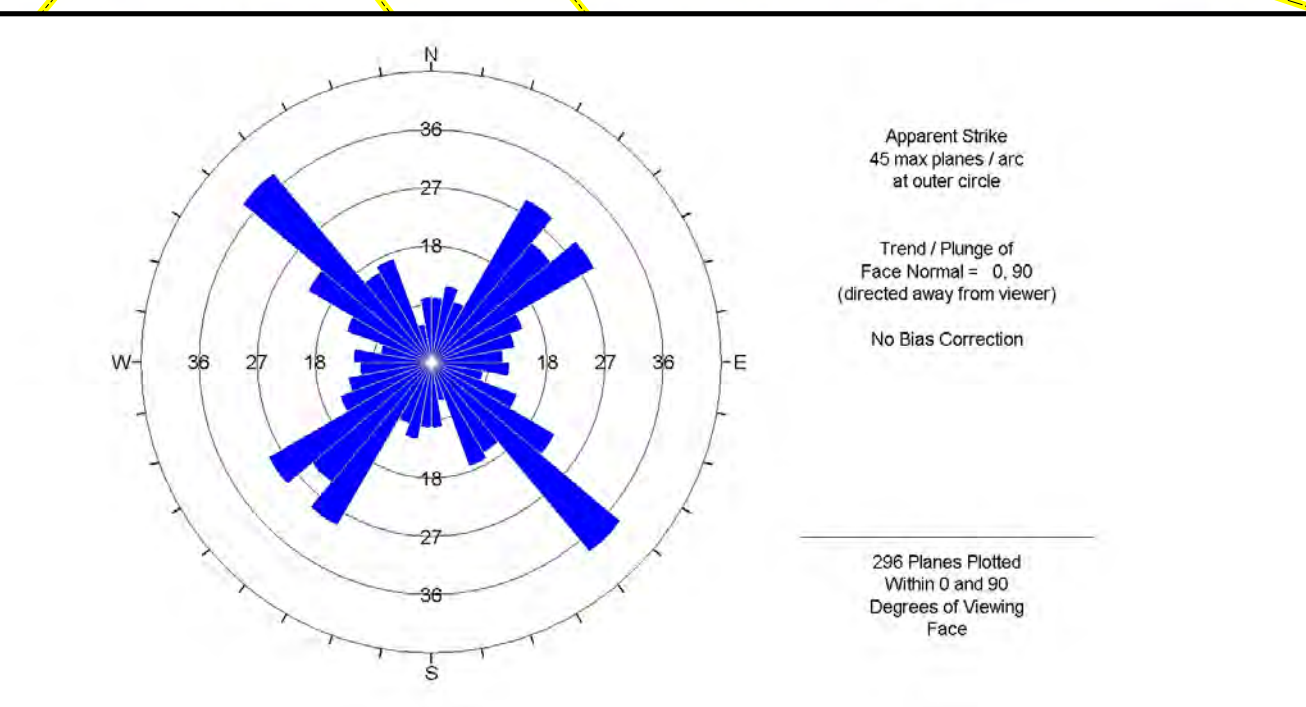
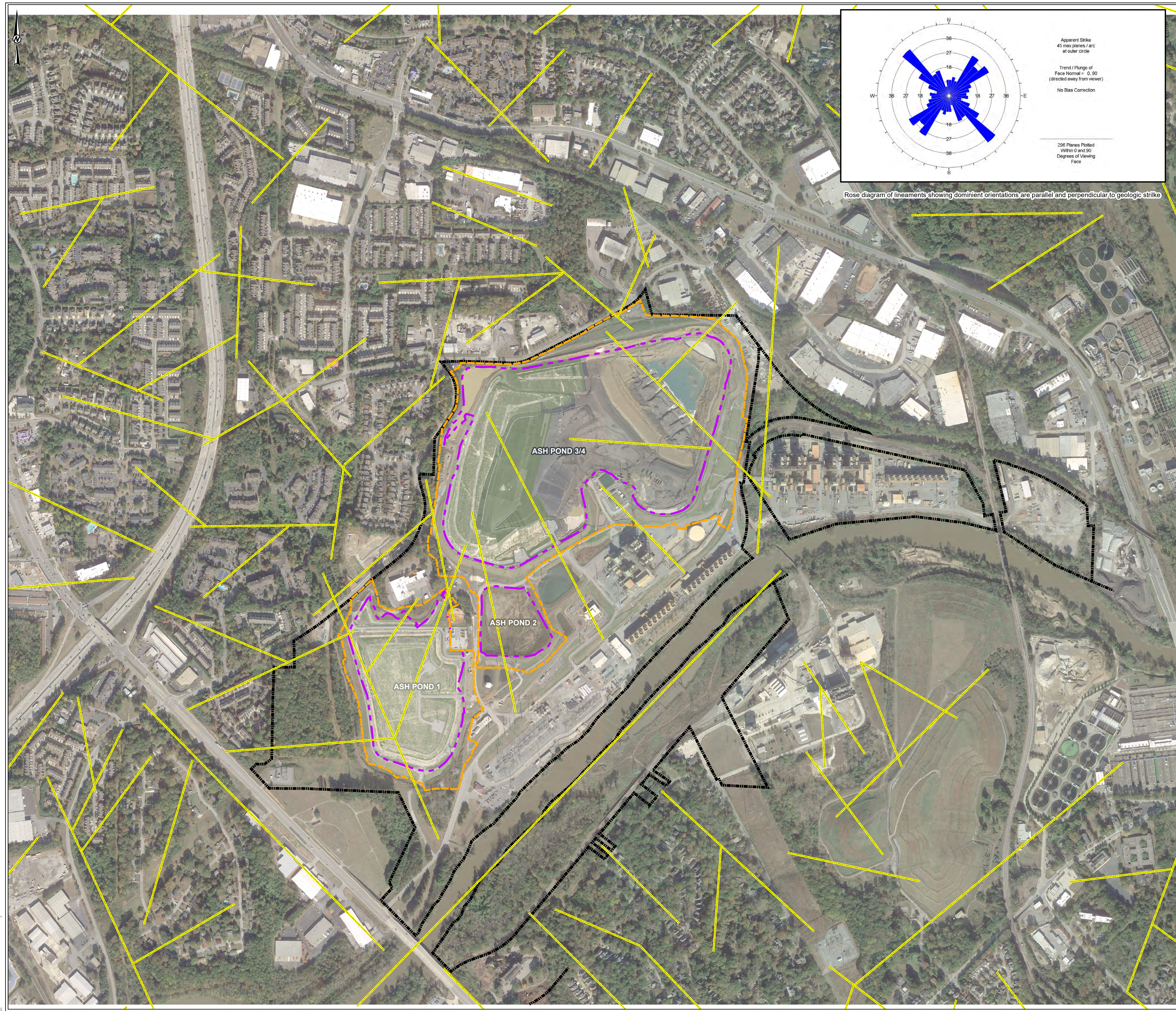
TITLE  
**DISCONTINUITY DATA FROM GEOLOGIC MAPPING**

CONSULTANT	YYYY-MM-DD	2018/05/04
<b>wsp</b> GOLDER	DESIGNED	SEP
	PREPARED	DJC
	CHECKED	KNJ
	REVIEWED / APPROVED	RPK / GLH

**FOR PERMITTING PURPOSES  
NOT FOR CONSTRUCTION**

1 in IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANS/D





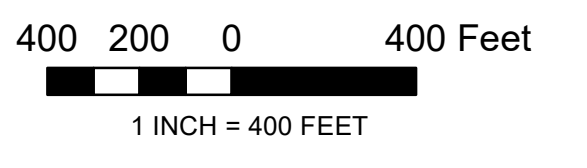
Rose diagram of lineaments showing dominant orientations are parallel and perpendicular to geologic strike

- LEGEND**
- ▬ PROPERTY BOUNDARY (SEE REFERENCE 1)
  - LINEAMENTS
  - PERMIT BOUNDARY
  - APPROXIMATE PRE-CLOSURE CCR LIMITS

- NOTES**
1. REMOTE SENSING / LINEAMENT ANALYSIS WAS COMPLETED BY EXPERIENCED GOLDER PERSONNEL USING SHADED RELIEF MAPS GENERATED FROM DIGITAL ELEVATION DATA, AERIAL PHOTOGRAPHS, AND USGS TOPOGRAPHIC MAPS FROM 1954 AND 1997.
  2. DATA PRESENTED FOR CCR UNIT AP-1 IS INCLUDED FOR REFERENCE ONLY. THIS DATA SHOULD NOT BE CONSIDERED FOR PERMITTING OF CCR UNITS AP-2 AND AP-3/4.

- REFERENCE**
1. APPROXIMATE PROPERTY BOUNDARY PROVIDED BY SOUTHERN COMPANY SERVICES (2017)
  2. AERIAL PHOTOGRAPHY PROVIDED BY ESRI.
  3. DIGITAL TOPOGRAPHIC MAP OF THE 1954 NORTHWEST ATLANTA QUADRANGLE (1:24,000). PROJECTION: NAD 83 STATE PLANE FOR GEORGIA WEST IN FEET

**FOR PERMITTING PURPOSES  
NOT FOR CONSTRUCTION**



REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RWW
1	2020/10/20	UPDATED LEGEND & AERIAL	LS	VN	JDG	TIR / GLH
2	2018/05/04		SEP	DJC	KNJ	RPK / GLH

CLIENT  
**GEORGIA POWER COMPANY**

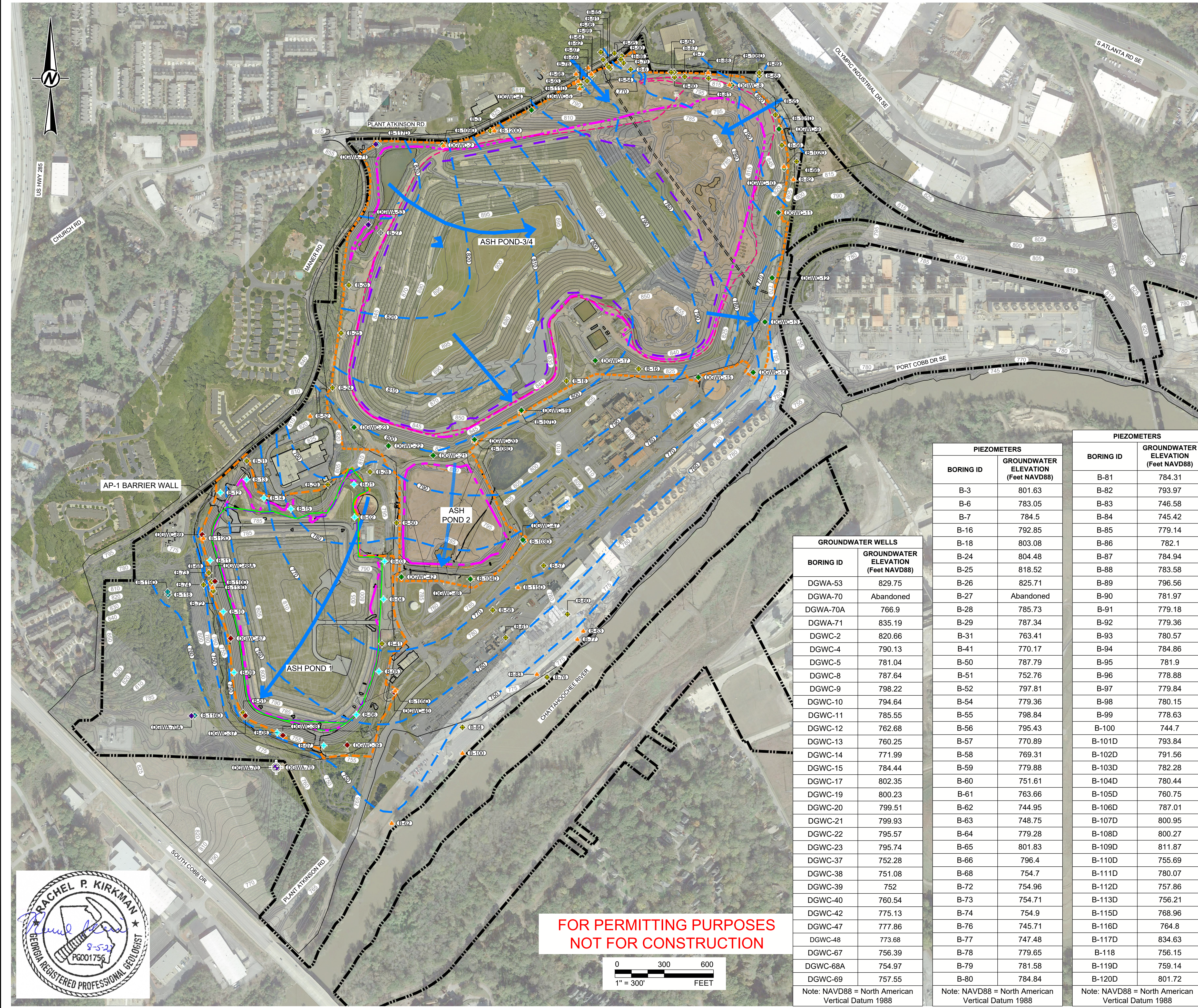


PROJECT  
**HYDROGEOLOGIC ASSESSMENT REPORT (HAR)  
PLANT MCDONOUGH-ATKINSON  
ASH POND 2 AND 3/4**

TITLE  
**REMOTE SENSING LINEAMENT MAP / COMPARISON OF  
MEASURED DISCONTINUITIES AND LINEAMENTS**

CONSULTANT	YYYY/MM/DD	DATE
	DESIGNED	2018/10/16
	PREPARED	BBW
	CHECKED	JDG
	REVIEWED / APPROVED	KNJ
		TIR/GLH





### LEGEND

- 880 EXISTING CONTOURS (SEE REFERENCE 2 & 3)
- PROPERTY BOUNDARY (SEE REFERENCE 1)
- APPROXIMATE PRE-CLOSURE CCR LIMITS
- FINAL CLOSURE CCR LIMITS
- PERMIT BOUNDARY
- FUTURE BARRIER WALL OPTION A
- FUTURE BARRIER WALL OPTION B
- GROUNDWATER SURFACE CONTOURS (FEET MSL)
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- UPGRADIENT WELL (SEE REFERENCE 3)
- AP-1 MONITORING WELL (SEE REFERENCE 3)
- AP-2, 3/4 MONITORING WELL (SEE REFERENCE 3)
- ASSESSMENT WELLS (SEE REFERENCE 3 AND 4)
- PIEZOMETER (SEE REFERENCE 3 AND 4)
- ABANDONED PIEZOMETER OR MONITORING WELL

### NOTES

- GROUNDWATER ELEVATIONS ARE BASED ON WATER LEVELS MEASURED ON OCTOBER 27, 2021.
- DATA PRESENTED FOR CCR UNIT AP-1 IS INCLUDED FOR REFERENCE ONLY. THIS DATA SHOULD NOT BE CONSIDERED FOR PERMITTING OF CCR UNITS AP-2 AND AP-3/4.

### REFERENCES

- APPROXIMATE PROPERTY BOUNDARY PROVIDED BY SOUTHERN COMPANY SERVICES (2017).
- THE EXISTING TOPOGRAPHY, CONTOUR ELEVATIONS AND PHOTOGRAPHY FOR THE ASH PONDS 1 THROUGH 4 AREAS WERE PROVIDED BY GEORGIA POWER. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS, ON THE AP- 1 THROUGH 4, IS JUNE 2021 - DATE OF PHOTOGRAPHY JUNE 2021. THE TOPOGRAPHIC CONTOUR INTERVALS IS 1 FOOT. THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS FOR THE SURROUNDING AREAS OF ASH PONDS 1 THROUGH 4 WERE PROVIDED BY GEORGIA LAND DEPARTMENT AND METRO ENGINEERING AND SURVEYING CO, INC. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS, AT THE SURROUNDING AREAS, IS 03-18-2018. REFER TO THE SURVEY DRAWING TITLED "TOPOGRAPHIC MAP PREPARED FOR GEORGIA POWER COMPANY PLANT MCDONOUGH - GEORGIA STATE PLANE WEST SURVEY FEET - DATE OF PHOTOGRAPHY 09-07-2018 FOR SURROUNDING AREAS OF ASH PONDS 1 THROUGH 4.
- SCS PLANT MCDONOUGH HYDROGEOLOGICAL INVESTIGATION (2012 TO 2020).
- SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020-2021.
- COORDINATES SYSTEM: NAD 1983 STATE PLANE GEORGIA WEST (U.S. FEET); ELEVATIONS DISPLAY IN FEET REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 ( FEET NAVD88).

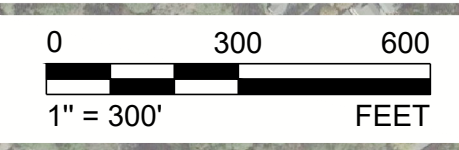
PIEZOMETERS		PIEZOMETERS	
BORING ID	GROUNDWATER ELEVATION (Feet NAVD88)	BORING ID	GROUNDWATER ELEVATION (Feet NAVD88)
B-3	801.63	B-81	784.31
B-6	783.05	B-82	793.97
B-7	784.5	B-83	746.58
B-16	792.85	B-84	745.42
B-18	803.08	B-85	779.14
B-24	804.48	B-86	782.1
B-25	818.52	B-87	784.94
B-26	825.71	B-88	783.58
B-27	Abandoned	B-89	796.56
B-28	785.73	B-90	781.97
B-29	787.34	B-91	779.18
B-31	763.41	B-92	779.36
B-41	770.17	B-93	780.57
B-50	787.79	B-94	784.86
B-51	752.76	B-95	781.9
B-52	797.81	B-96	778.88
B-54	779.36	B-97	779.84
B-55	798.84	B-98	780.15
B-56	795.43	B-99	778.63
B-57	770.89	B-100	744.7
B-58	769.31	B-101D	793.84
B-59	779.88	B-102D	791.56
B-60	751.61	B-103D	782.28
B-61	763.66	B-104D	780.44
B-62	744.95	B-105D	760.75
B-63	748.75	B-106D	787.01
B-64	779.28	B-107D	800.95
B-65	801.83	B-108D	800.27
B-66	796.4	B-109D	811.87
B-68	754.7	B-110D	755.69
B-72	754.96	B-111D	780.07
B-73	754.71	B-112D	757.86
B-74	754.9	B-113D	756.21
B-76	745.71	B-115D	768.96
B-77	747.48	B-116D	764.8
B-78	779.65	B-117D	834.63
B-79	781.58	B-118	756.15
B-80	784.84	B-119D	759.14
		B-120D	801.72

GROUNDWATER WELLS	
BORING ID	GROUNDWATER ELEVATION (Feet NAVD88)
DGWA-53	829.75
DGWA-70	Abandoned
DGWA-70A	766.9
DGWA-71	835.19
DGWC-2	820.66
DGWC-4	790.13
DGWC-5	781.04
DGWC-8	787.64
DGWC-9	798.22
DGWC-10	794.64
DGWC-11	785.55
DGWC-12	762.68
DGWC-13	760.25
DGWC-14	771.99
DGWC-15	784.44
DGWC-17	802.35
DGWC-19	800.23
DGWC-20	799.51
DGWC-21	799.93
DGWC-22	795.57
DGWC-23	795.74
DGWC-37	752.28
DGWC-38	751.08
DGWC-39	752
DGWC-40	760.54
DGWC-42	775.13
DGWC-47	777.86
DGWC-48	773.68
DGWC-67	756.39
DGWC-68A	754.97
DGWC-69	757.55

Note: NAVD88 = North American Vertical Datum 1988

FOR PERMITTING PURPOSES  
NOT FOR CONSTRUCTION



REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RWV
△	2022/01/14	NOTE ADDED FOR AP1 DATA	DLP	CRP	RPK	GLH
△	2022/01/07	UPDATED FOR OCTOBER 2021	SB	CRP	RPK	
△	2021/09/01	UPDATED FOR FEBRUARY 2021	DLP	CRP	RPK/GLH	
△	2020/10/20	UPDATED FOR AUGUST 2020	DLP	VPM	BAS	THR / GLH
△	2020/03/06	UPDATED FOR AUGUST 2019	VPM	VPM	JRJ	THR / GLH
△	2022/01/10		SEP	DJC	KNJ	RPK / GLH

CLIENT  
**GEORGIA POWER COMPANY  
PLANT MCDONOUGH**

PROJECT  
**HYDROGEOLOGIC ASSESSMENT REPORT (HAR)  
PLANT MCDONOUGH-ATKINSON  
ASH POND 2 AND 3/4**

TITLE  
**OCTOBER 27, 2021 POTENTIOMETRIC SURFACE MAP**

CONSULTANT	YYYY-MM-DD	2022/01/10
	DESIGNED	SEP
	PREPARED	DJC
	CHECKED	KNJ
	REVIEWED / APPROVED	RPK / GLH

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM A NS/D





# APPENDIX A

## THREE-DIMENSIONAL NUMERICAL GROUNDWATER MODELING SUMMARY REPORT





GOLDER

# Appendix A-Three-Dimensional Numerical Groundwater Modeling Summary Report

*Georgia Power- Plant McDonough, Cobb County, Georgia*

Submitted to:

**Georgia Power**

Environmental Affairs  
241 Ralph McGill Boulevard  
Atlanta, Georgia 30308

Submitted by:

**Golder Associates Inc.**

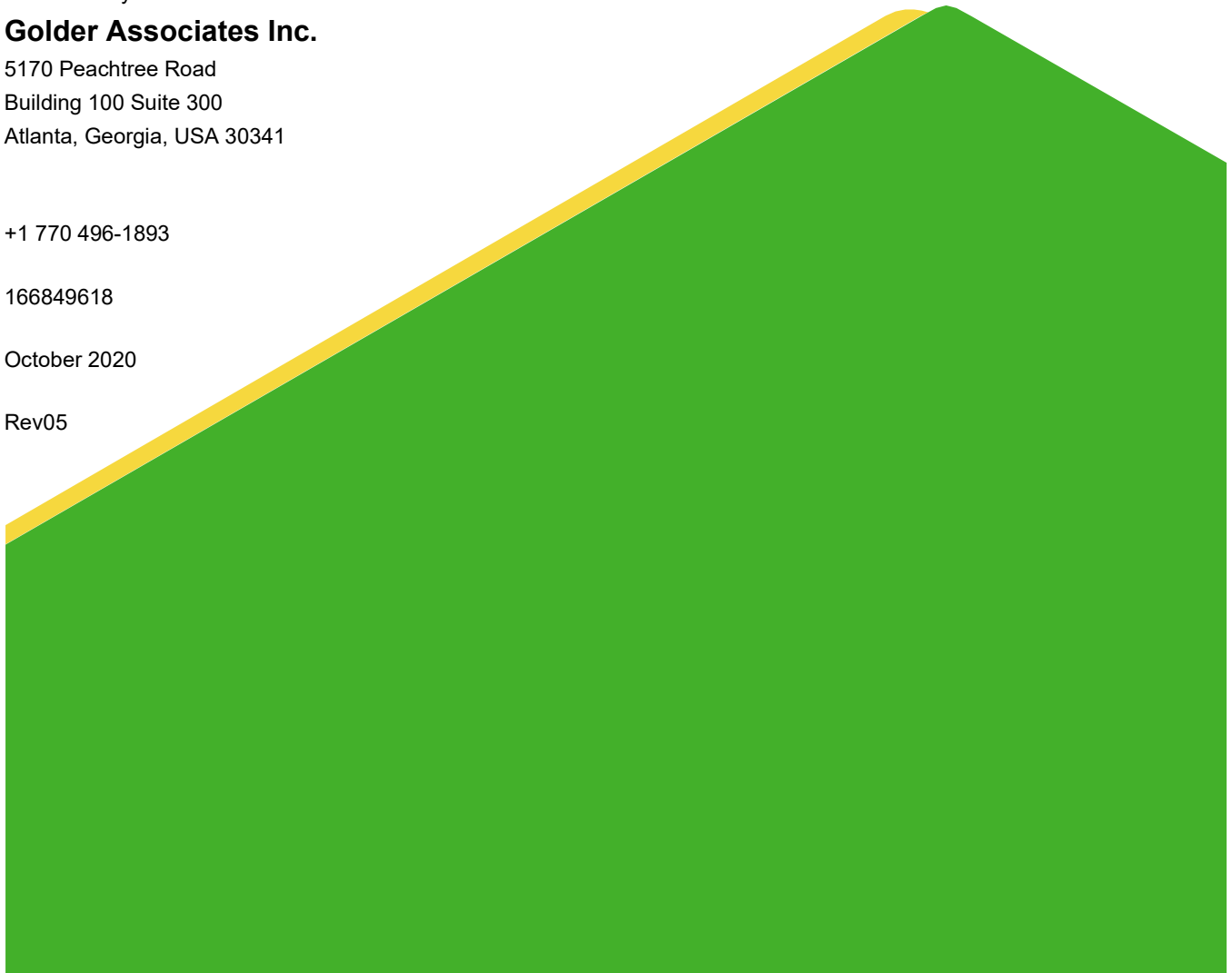
5170 Peachtree Road  
Building 100 Suite 300  
Atlanta, Georgia, USA 30341

+1 770 496-1893

166849618

October 2020

Rev05



# Table of Contents

<b>1.0 INTRODUCTION .....</b>	<b>1</b>
1.1 Site History .....	1
1.2 Current Conditions .....	1
<b>2.0 GROUNDWATER MODEL CONSTRUCTION .....</b>	<b>2</b>
2.1 Geologic and Hydrogeologic conditions .....	2
2.2 Model Code .....	2
2.3 Model Grid .....	2
2.4 Model Layers .....	2
2.5 Boundary Conditions .....	3
2.5.1 Drain Boundaries .....	3
2.5.2 Unused Model Cells .....	3
2.5.3 River Boundaries .....	3
2.5.4 Wall Boundaries .....	3
2.6 Recharge .....	3
2.6.1 Baseline Conditions Recharge .....	4
2.6.2 Closure Conditions Recharge .....	4
2.7 Aquifer Parameters .....	4
2.7.1 Hydraulic Conductivity .....	4
2.7.1.1 Model Hydraulic Conductivity .....	4
<b>3.0 MODEL CALIBRATION .....</b>	<b>5</b>
3.1 Calibration Points .....	5
3.2 Comparison of Observed and Predicted Heads .....	6
3.3 Sensitivity Analysis .....	7
<b>4.0 FLOW MODEL RESULTS .....</b>	<b>8</b>
4.1 Baseline Conditions Model .....	8
4.2 Closure Conditions Model .....	9
<b>5.0 SUMMARY OF GROUNDWATER MODEL FINDINGS .....</b>	<b>9</b>
<b>6.0 REFERENCES .....</b>	<b>10</b>

**TABLES**

Table 2-1 – Model Hydraulic Conductivity

Table 3-1 – Calibration Targets

Table 3-2 – PEST Sensitivity Results

**FIGURES**

Figure 1-1 – Site Location Map

Figure 2-1 – Model Domain and Boundary Conditions

Figure 2-2 – Model Cross Sections – East-West & North-South

Figure 2-3 – Baseline Conditions Model Recharge Zones (Layer 1)  
Figure 2-4 – Closure Model Recharge Zones (Layer 1)

Figure 2-4 – Closure Conditions Model Recharge Zones (Layer 1)

Figure 2-5 – Model Layer 1 Hydraulic Conductivity

Figure 3-1 – Calibration Target Locations and Baseline Conditions Model Simulated Groundwater Elevations

Figure 3-2 – 2016 Observed Groundwater Elevations and Contours

Figure 3-3 – Model Calibration Summary

Figure 4-1 – Baseline Conditions Modeled Groundwater Elevation Contours

Figure 4-2 – Closure Conditions Model Conditions Water Table and Model Layer 2 Modeled Groundwater Elevation Contours

Figure 4-3 – Closure Conditions Model Conditions Model Layer 3 and 4 Modeled Groundwater Elevation Contours

Figure 4-4 – Closure Conditions Model versus Baseline Modeled Groundwater Elevation Change

## 1.0 INTRODUCTION

This document presents a summary of Golder Associates Inc. (Golder) groundwater modeling for Georgia Power Company (GPC) Plant McDonough (Site) located in Cobb County, Georgia (Figure 1-1). The summary is developed from Golder model files and model descriptions available in Golder project files. Golder understands that Southern Company Services (SCS) is aiding in finalizing closure for four Coal Combustion Residual (CCR) ponds at the Site. The primary objectives of the groundwater modeling are to compare groundwater flow conditions at closure to baseline groundwater flow conditions and to evaluate the monitoring well network relative to the groundwater flow at the Site. To meet these objectives a groundwater flow model was developed to evaluate the following conditions at the Site:

- Baseline Groundwater Flow Conditions - August 2016 (Baseline Conditions) – Steady state flow conditions after the initial capping of Ash Pond 1 (AP-1). At the time of model development, groundwater data only includes data measured up to August 2016. As such, calibration and development of this model utilizes the August 2016 dataset.
- Groundwater Flow Conditions at Closure (Closure Conditions) – Capping of Combined Unit AP-3/4 (previously AP-3 and AP-4), barrier wall installed completely around AP-1, and installation of an underdrain at AP-3/4.

### 1.1 Site History

Plant McDonough is located in southeast Cobb County, Georgia (GA), and is owned and operated by the GPC. The Site operated as a coal-fired power plant until 2012 when the coal-fired units were replaced with three 840 megawatt combined cycle natural gas units. The property occupies approximately 390 acres and is bounded on the southeast by the Chattahoochee River. There are currently four ash ponds; Ash Pond 1 (AP-1), Ash Pond 2 (AP-2), and Combined Unit AP-3/4.

### 1.2 Current Conditions

The Site is currently in the process of closing its four ash ponds (AP-1, AP-2 and AP-3/4). The planned closure strategy for each pond is as follows:

- AP-1, inactive since 1968, has recently been closed in place with a Subtitle D Compliant engineered turf system for the closure cap.
- AP-2 was closed through removal of CCR. The majority of CCR removal from AP-2 was completed in 2016 and remnant CCR removal from AP-2 was completed in 2019.
- Ash Pond 3/4 are currently undergoing closure by a combination of closure by removal and closure in place with partial removal of ash. Ash will be removed from a line extending from 50 feet west of the existing stream diversion culvert beneath Ash Pond 4 and all points east of the culvert within AP-4, and from the areas in the northwest corner of AP-3 is being removed and consolidated in the remaining AP-3/4 footprint. The ponds were used for dry ash stacking operation from 1995 until the plant conversion to natural gas was completed in 2012.

## 2.0 GROUNDWATER MODEL CONSTRUCTION

### 2.1 Geologic and Hydrogeologic conditions

Refer to the Hydrogeologic Assessment Report for details regarding the conceptual site hydrogeologic model, local geologic conditions, and general background information.

### 2.2 Model Code

Model input files were created using a combination of Environmental System Research Institute ArcMAP-10.4.1 and the Environmental Simulations Inc. Groundwater Vistas 7 (GV) graphical user interface. A steady state groundwater flow model was developed using the MODFLOW-NWT finite difference model code (Niswonger, Panday, & Ibaraki, 2011), which is an enhanced version of the MODFLOW code (McDonald & Harbaugh, 1988). The MODFLOW-NWT code is designed to better solve problems involving unconfined aquifers, cell drying and rewetting and surface water/groundwater interactions.

### 2.3 Model Grid

The full model domain is 3.23 square miles (2,066 acres) and consists of a finite difference grid with 500 rows and 450 columns (900,000 total cells; 600,705 active cells) (Figure 2-1). The primary axis of the model grid is oriented north to south (0-degree rotation), parallel to the inferred groundwater flow direction. The grid cell length and width are a uniform 20 feet (ft) x 20 ft. Grid cell thickness is variable based on observed geologic unit thicknesses from historical monitoring/piezometer installation. The model layers are discussed in greater detail in Section 2.4.

### 2.4 Model Layers

Based on geologic and hydrogeologic conditions previously discussed, the model was divided into four hydrogeologic layers to represent ash, overburden, partially weathered rock (PWR), and bedrock as summarized below:

- **Model Top** – Represents surface topography of the ash and ground surface plus 1.0 ft outside ash boundaries; ranges in elevation from approximately 744 to 955 ft-mean sea level (msl). The elevations for the model top were determined using a combination of 2-ft contour survey data provided by GPC Land Department and Metro Engineering and Surveying from 10-16-2012 and Cobb County LiDAR data provided by Cobb County in April 2015. For Closure Conditions, the proposed final AP-3/4 closure grading was also used in conjunction with the previously listed sources.
- **Layer 1** – Ash; variable thickness based on as-built drawings. Layer 1 cells beyond ash pond boundaries are unused and constant thickness except at drain and river cells.
- **Layer 2** – Overburden; variable thickness based on historical subsurface investigation activities.
- **Layer 3** – PWR; variable thickness based on historical subsurface investigation activities.
- **Layer 4** - Bedrock; variable thickness based on historical subsurface investigation activities.
- **Model Bottom** – Bottom of model set at elevation 670 ft-msl.

South-North (model column 250) and West-East cross-sections through AP-3/4 (model row 210; Figure 2-2) depict the model stratigraphy and model layer geometry.

## 2.5 Boundary Conditions

The following sections describe the boundary conditions used in the model, including drains, unused cell boundaries, river boundaries, and wall boundaries (Figure 2-1).

### 2.5.1 Drain Boundaries

Drain boundaries were used to represent creeks, drainage ditches, and ash impoundment toe drains. Drain boundaries were defined using a combination of 2-ft contour survey data provided by GPC Land Department and Metro Engineering and Surveying from 10-16-2012 and Cobb County LiDAR data provided by Cobb County in April 2015.

### 2.5.2 Unused Model Cells

The model implicitly places unused cells (inactive) on the bottom, top, and sides of the model unless another boundary condition is specified. This is due to the fact that MODFLOW does not compute inter-cell flow through the outside edge of the grid. In areas within the grid, cells can also be specified as unused. Unused cells are used in the following manner within the Site model:

- **Northeast Corner** – Unused cells are placed at a groundwater divide. These unused cells are present in Layers 1 through 4.
- **Southern Corner** – Unused cells are placed south of a hydraulic feature and river boundary . These unused cells are present in Layers 1 through 4.
- **Layer 1** – In order to explicitly model the ash, separate from other lithologic units, cells are unused outside of ash pond limits. These used cells are present in Layer 1. The active model boundary can be viewed in Figure 2-1.

### 2.5.3 River Boundaries

A river boundary was placed in Layer 2 of the model representing a hydraulic feature south of the Site area (Golder, 2019). Water levels in the river boundary vary linearly and the slope is defined using USGS stage data from an upstream gage and a downstream gage. The river boundary stage within the model boundary ranges from 745.47 to 741.90 ft-msl. An additional river boundary was included to characterize an unnamed hydraulic feature to the west of the site. This river boundary was defined using Cobb County LiDAR data provided by Cobb County in April 2015.

### 2.5.4 Wall Boundaries

A wall boundary is defined as a horizontal flow barrier that is placed into the model along cell boundaries. The boundary condition is inserted into layer 2 of the Closure Conditions simulation to simulate a barrier wall from ground surface to the top of PWR that completely surrounds AP-1.

## 2.6 Recharge

Recharge rates were applied to the highest active layer of the model. Three zones are defined based on current land use:

- All areas outside of ponds,
- Capped ponds,

- Uncapped ponds or uncapped portions of ponds.

The parameter values in these zones vary for each scenario as follows:

### 2.6.1 Baseline Conditions Recharge

Recharge for all areas outside the ponds is 2.41 inches per year (in/yr) based on average annual rainfall data for the Atlanta area and the topography variations within the model domain. The site is not in a recharge zone that provides significant recharge to the local aquifer as defined by Georgia Department of Natural Resources' Digital Environmental Atlas of Georgia. AP-1 recharge is zero, representing a capped condition. AP-3/4 recharge is 10.73 in/yr (Figure 2-3).

### 2.6.2 Closure Conditions Recharge

Recharge for all areas outside the ponds is 2.41 in/yr. AP-1 is closed in the baseline conditions and the recharge is set to zero. AP-3/4 pond recharge is zero except at the stormwater pond within the AP-3/4 footprint where the recharge is 10.73 in/yr (Figure 2-4).

## 2.7 Aquifer Parameters

The following sections describe the aquifer parameters used in the modeling.

### 2.7.1 Hydraulic Conductivity

The hydraulic conductivity (K) terms used in the model include  $K_x$  (longitudinal K),  $K_y$  (transverse K), and  $K_z$  (vertical K). Longitudinal and transverse K were considered equivalent in all layers of the model and are hereafter combined into a single term ( $K_{xy}$ ). The hydraulic conductivity terms used for each scenario are described in the following sections.

#### 2.7.1.1 Model Hydraulic Conductivity

Hydraulic conductivity zone values are the same in all models and are summarized in Table 2-1 below. Information regarding field measured values can be seen in sources as cited in addition to Table GW-2 in the Hydrogeologic Assessment Report.

**Table 2-1 – Model Hydraulic Conductivity**

Zone	Layer	Hydraulic Conductivity (ft/d)	Source
Ash	1	0.55 (horizontal) 0.037 (vertical)	AP-3/4 CPT dissipation and aquifer testing data (Golder,2016)
Overburden	1 & 2	0.70 (horizontal) 0.14 (vertical)	Historical slug testing (Golder, 2016)
PWR	3	0.2 (horizontal) 0.02 (vertical)	Model calibration
Bedrock	4	0.16 (horizontal) 0.016 (vertical)	Model calibration

**Notes:**

ft/d = feet per day

The layer 1 areal zone extent varies between models. Conductivity zones include:

- Ash - Limited to within footprint of ash ponds.



- Overburden - Includes northern portion of AP-1 and fringes of AP-1 and AP-3/4 in Layer 1 and all of Layer 2.
- PWR – Includes all of model layer 3.
- Bedrock – Includes all of model layer 4.

The overburden zone value is assigned to all of layer 2. The PWR zone value is assigned to all of layer 3. The bedrock zone value is assigned to all of layer 4. The areal extent of zone values in layer 1 varies between models.

The ash conductivity value is assigned to the entire AP-3/4 area in the Baseline Conditions model. At AP-1 the northern portion of the pond is assigned the overburden value and the southern portion is assigned the ash value (Figure 2-5). Two hydraulic conductivity zones are assigned to AP-3/4 in the Baseline Conditions model and Closure Conditions model. The eastern portion is assigned the overburden value, the western portion is assigned the ash value. AP-1 conductivity zones in the Baseline Conditions model and Closure Conditions Model are unchanged from the Baseline Conditions model.

### 3.0 MODEL CALIBRATION

Model calibration consists of successive refinement of the model input data from initial assumptions/estimates to improve the fit between observed and model-predicted results. Model calibration should consider parameters such as hydraulic head, hydraulic conductivity, spatial boundary conditions (head/stage and fluxes), and the location and magnitude of applied stresses, such as recharge and drainage.

The purpose of the calibration effort for the Site was to simulate "steady-state" groundwater flow conditions that approximate the general flow patterns inferred from groundwater level measurements collected in August 2016. The model was calibrated through trial-and-error adjustment of model parameter values within reasonable ranges based on available site-specific data and literature references. Parameters that were included in model calibration include: hydraulic conductivity, recharge, drain boundary conductance, and river boundary conductance. The resultant calibrated model is described in the following sections.

#### 3.1 Calibration Points

Groundwater level data for 35 monitoring points were entered as calibration points. Calibration target locations are shown on Figure 3-1. Measured water levels from August 2016 were used for calibration and are presented in Table 3-1 and on Figure 3-2. The calibration point elevations were assigned to the model row, column, and layer corresponding to the well location and screened interval for comparison to model groundwater level elevations.

**Table 3-1 - Calibration Targets**

Target Name	Easting (NAD 83 ft)	Northing (NAD 83 ft)	Model Layer	Observed Head Aug. 2016 (ft) <sup>(1)</sup>	Computed Head (ft NAVD 88)	Weight	Group	Residual (ft)
<b>USGS-10EE02</b>	2204179.513	1395565.891	2	824	823.02	1	1	0.98
<b>B25</b>	2201479.84	1392826.91	2	821.63	811.78	1	1	9.85
<b>B2</b>	2202118.693	1393956.841	2	822.66	823.58	1	1	-0.92
<b>B3</b>	2202411.143	1394043.541	2	811.85	814.08	1	1	-2.23
<b>B4</b>	2202662.203	1394170.481	2	797.89	797.51	1	1	0.38
<b>B5</b>	2202962.793	1394309.251	2	785.98	789.55	1	1	-3.57

Target Name	Easting (NAD 83 ft)	Northing (NAD 83 ft)	Model Layer	Observed Head Aug. 2016 (ft) <sup>[1]</sup>	Computed Head (ft NAVD 88)	Weight	Group	Residual (ft)
B6	2203255.163	1394424.071	2	787.4	787.50	1	1	-0.10
B7	2203595.173	1394373.411	2	799.54	802.44	1	1	-2.90
B8	2203881.823	1394325.091	2	812	808.59	1	1	3.41
B9	2204166.953	1394056.261	2	810.4	805.77	1	1	4.63
B10	2204197.803	1393818.471	2	802.79	798.70	1	1	4.09
B11	2204167.653	1393547.501	2	791.49	789.44	1	1	2.05
B12	2204125.013	1393151.161	2	765.72	767.96	1	1	-2.24
B13	2204084.663	1392881.611	2	760.19	770.78	1	1	-10.59
B14	2204013.213	1392575.341	2	770.41	772.35	1	1	-1.94
B15	2203675.773	1392544.701	2	786.06	789.44	1	1	-3.38
B16	2203313.213	1392596.211	2	802.6	802.75	1	1	-0.15
B17	2203049.043	1392645.881	2	809.35	809.35	1	1	0.00
B18	2202874.993	1392521.151	2	809.19	809.90	1	1	-0.71
B19	2202875.673	1392380.731	2	804.25	805.67	1	1	-1.42
B20	2202315.153	1392164.351	2	802.21	806.60	1	1	-4.39
B21	2202062.543	1392068.121	2	802.74	802.95	1	1	-0.21
B22	2201790.513	1392124.821	2	805.02	802.35	1	1	2.67
B23	2201582.863	1392242.101	2	804.61	802.52	1	1	2.09
B24	2201451.513	1392480.231	2	806.65	805.11	1	1	1.54
B27	2201744.773	1393423.511	2	830.16	827.61	1	1	2.55
B28	2201677.593	1391970.421	2	793.3	796.47	1	1	-3.17
B29	2201420.25	1391891.93	3	790.87	788.62	1	1	2.25
B31	2200926.823	1392035.971	3	764.17	773.46	1	1	-9.29
B37	2200919.393	1390483.941	2	753.01	751.89	1	1	1.12
B38	2201147.653	1390364.531	2	751.24	749.57	1	1	1.67
B39	2201538.453	1390303.391	2	751.82	752.07	1	1	-0.25
B40	2201826.763	1390625.631	2	760.98	759.75	1	1	1.23
B41	2201749.843	1390922.381	3	774.74	766.81	1	1	7.93
B42	2201866.973	1391328.161	2	778.08	778.91	1	1	-0.83

**Notes:**

ft = feet

NAD 83 = North American Datum of 1983 (Georgia West State Plane Coordinate System)

NAVD 88 = North American Vertical Datum of 1988

**[1]** Observed Head recorded for USGS-10EE02 was recorded on June 16, 1992.

## 3.2 Comparison of Observed and Predicted Heads

Observed hydraulic head elevations were compared to simulated hydraulic head elevations. The groundwater flow model was considered calibrated when the following criteria were met:

- Residual mean (RM; mean of the value of target residuals):
  - Target = 0.0 ft

- Model Result = 0.0 ft
- Absolute residual mean (ARM; mean of the absolute value of target residuals):
  - Target = 7.89 ft (less than 10% of the observed range in hydraulic head [78.92 ft]).
  - Model Result = 2.76 ft
- Root mean square error (RMSE; square root of the mean of the squared value of target residuals):
  - Target = 7.89 ft (less than 10% of the observed range in hydraulic head [78.92 ft]).
  - Model Result = 3.87 ft
- Mass balance discrepancy (Md):
  - Target = less than 1%.
  - Model Result = -0.04%.
- Residual Distribution:
  - Target = Hydraulic head errors randomly distributed in space.
  - Model Result = Hydraulic head errors randomly distributed in space.

Figure 3-1 depicts the simulated groundwater elevation contours for the Baseline Conditions for Layer 2 (Overburden). Modeled Baseline Conditions and observed potentiometric heads for August 2016 are summarized in Table 3-1. Model residual values plotted on Figure 3-3, show that the predicted potentiometric heads closely match the observed head conditions. Simulated groundwater elevations are consistent with the interpreted water table contour map presented in the Hydrogeologic Assessment Report.

### 3.3 Sensitivity Analysis

The parameter estimation (PEST) code (Watermark Numerical Computing, 2016) was used to assess the model's sensitivity to changes in aquifer parameters. The PEST code contains an algorithm that uses the sensitivity of targets to guide the selection of model parameter values. The goal of PEST is minimization of a mathematical objective function, typically the residual sum of squares (RSS; phi in PEST terms), to achieve a close fit between observed and model-calculated groundwater levels while maintaining reasonable values for model parameters and stresses. A lower value of phi represents a better match between the model and target observations.

PEST was used to evaluate the following model parameters in the Baseline Conditions presented in Table 3-2:

- $K_{xy}$ : Overburden, PWR, Ash, Bedrock
- Recharge Zones 1 and 3 (areas outside the pond limits)
- Recharge Zone 6 (AP-3/4)

PEST results are evaluated using the overall reduction in phi as well as the overall sensitivity of each parameter (reported as a percentage by PEST). Parameters with a sensitivity greater than 1% are generally considered sensitive.

Sensitivity analysis results (Table 3-2) indicate that the model is sensitive to the  $K_{xy}$  of the Layer 2 (overburden) and recharge in Zones 3 (vegetated pervious areas) and 6 (AP-3/4). The model is less sensitive to  $K_{xy}$  of Zones 3, 4 and 5 and recharge in Zone 1.

**Table 3-2: PEST Sensitivity Results**

Parameter	Model Value (feet/day)	Sensitivity (%)	Comment
<b>Kx Zone 2 (Overburden)</b>	8.68E-01	3.69	Sensitive
<b>Kx Zone 3 (Saprolite)</b>	2.81E-03	0.02	Not sensitive
<b>Kx Zone 4 (Ash)</b>	7.00E-01	0.17	Not sensitive
<b>Kx Zone 5 (Bedrock)</b>	1.00E-04	0.01	Not sensitive
<b>Recharge Zone 1 (Vegetated Pervious Areas)</b>	2.70E-06	0.01	Not sensitive
<b>Recharge Zone 3 (Vegetated Pervious Areas)</b>	6.26E-04	1.82	Sensitive
<b>Recharge Zone 6 (AP-3/4)</b>	1.00E-03	2.27	Sensitive

## 4.0 FLOW MODEL RESULTS

The following sections summarize the results of the groundwater flow modeling.

### 4.1 Baseline Conditions Model

The Baseline Conditions simulates August 2016 site conditions. The model is steady state which conceptually represents long-term average hydraulic conditions with no changes in hydraulic stress within the model domain. North of the facility model predicted flow is from the northwest corner of the model domain to the south and southeast toward simulated river boundary condition cells. Predicted flow in the southern portion of the model is from the southeast corner of the model north and northwest toward simulated river boundary condition cells. Model predicted water table elevation contours are shown on Figure 4-1. Figure 4-1 shows simulated groundwater elevations are affected by surface water and drainage features and AP-3/4. Simulated groundwater flow is captured by river boundary condition cells to the west and south of the facility. Simulated groundwater is also captured by drain boundary condition cells that represent smaller scale features in the model.

A large groundwater sink is present north of AP-3/4. The sink is associated with the unnamed creek immediately north of the pond and with an ash impoundment toe drain adjoining the pond. The sink extends into the bedrock and to the bottom of the model domain. The sink captures groundwater in a portion of the model domain north of AP-3/4, including groundwater in a portion of AP-3/4.

The model predicts groundwater mounding in the northwest corner of AP-3/4. The predicted mound is caused by a combination of higher recharge in the pond compared to other portions of the model and a higher pond bottom elevation. The effect of the mound extends to the bottom of the model.

Layer 3 and 4 model predicted water level elevations have a similar pattern to layer 2. The layer 2 groundwater sink and mound extend through layer 3 to the bottom of layer 4. Model predicted layer 3 and 4 water level

elevation contours are shown on Figure 4-1. A model-wide mass balance was completed and resulted in a model-wide mass balance error for both the Baseline Conditions and the Closure Conditions models of less than 1%.

## 4.2 Closure Conditions Model

The Closure Conditions model simulates a steady state representation of the capping of AP-3/4 and AP-1 and a barrier wall installed around AP-1. The barrier wall is simulated as extending from ground surface to the bottom of layer 2, the bottom of the saprolite-soil unit. The wall is assigned a thickness of 3 ft and a hydraulic conductivity of  $2.6 \times 10^{-4}$  ft/d. Assigned recharge for AP-3/4 is zero, except for a small area in the northeast portion of the pond which represents a stormwater detention basin.

The results of the simulation of Layer 1 and Layer 2 are shown on Figure 4-2. The results of the simulation of Layer 3 and Layer 4 are shown on Figure 4-3. The direction of groundwater flow is expected to transition from semi-radial to southerly. Two small groundwater sinks are present to occur in Layer 2, within the same area as the single large sink within the Baseline Conditions model. One of the sinks extends to Layer 3 covering a very small area. The sink does not extend to Layer 4.

The pond capping of AP-3/4 and AP-1 are predicted to reduce water table elevations over a large portion of the site as shown on Figure 4-4. Figure 4-4 shows simulated water table elevation reductions in layer 2, which corresponds to the layer where the water table is present outside the ponds. The reductions are relative to the steady-state, Baseline Conditions model predictions. Simulated water level reductions greater than 40 ft occur beneath and in the vicinity of AP-3/4. Simulated water level elevation reductions in layers 3 and 4 are similar in magnitude and extent to layer 2. The maximum layer 4 simulated water level elevation reduction is 39 ft. Layer 3 and 4 water level simulated elevation reductions are shown on Figure 4-4.

The wall is predicted to reduce flow across the western side of AP-1 in the overburden (Layer 2) by 74 percent compared to the Baseline Conditions model. The wall is predicted to reduce flow across the southern side of AP-1 in the overburden (Layer 2) by 70 percent compared to the Baseline Conditions model. The model predicts that the construction of a barrier wall will increase flow in the PWR (Layer 3). GPC plans to update and refine the model by incorporating data collected at the site since August 2016. The model report will be updated as appropriate.

## 5.0 SUMMARY OF GROUNDWATER MODEL FINDINGS

Model simulated groundwater flow patterns are consistent with the conceptual model of groundwater flow in the Site area. The models simulate groundwater flow from north to south across the Site. Key findings from model results are summarized as follows:

- Model calibration results show that the predicted potentiometric heads closely match the observed heads.
- Installation of a cap over AP-3/4 will reduce recharge in the AP-3/4 area. Simulated water level elevations are predicted to decline across the plant site by up to 40 ft with the maximum decline occurring under AP-3/4. The simulated water level declines are great enough to desaturate large portions of the overburden and saprolite beneath the plant.
- AP-3/4 capping and installation of a wall around AP-1 are predicted to decrease groundwater flow through AP-1 CCR material. Simulated flow through AP-1 CCR material is reduced by 74 percent when AP-3/4 is

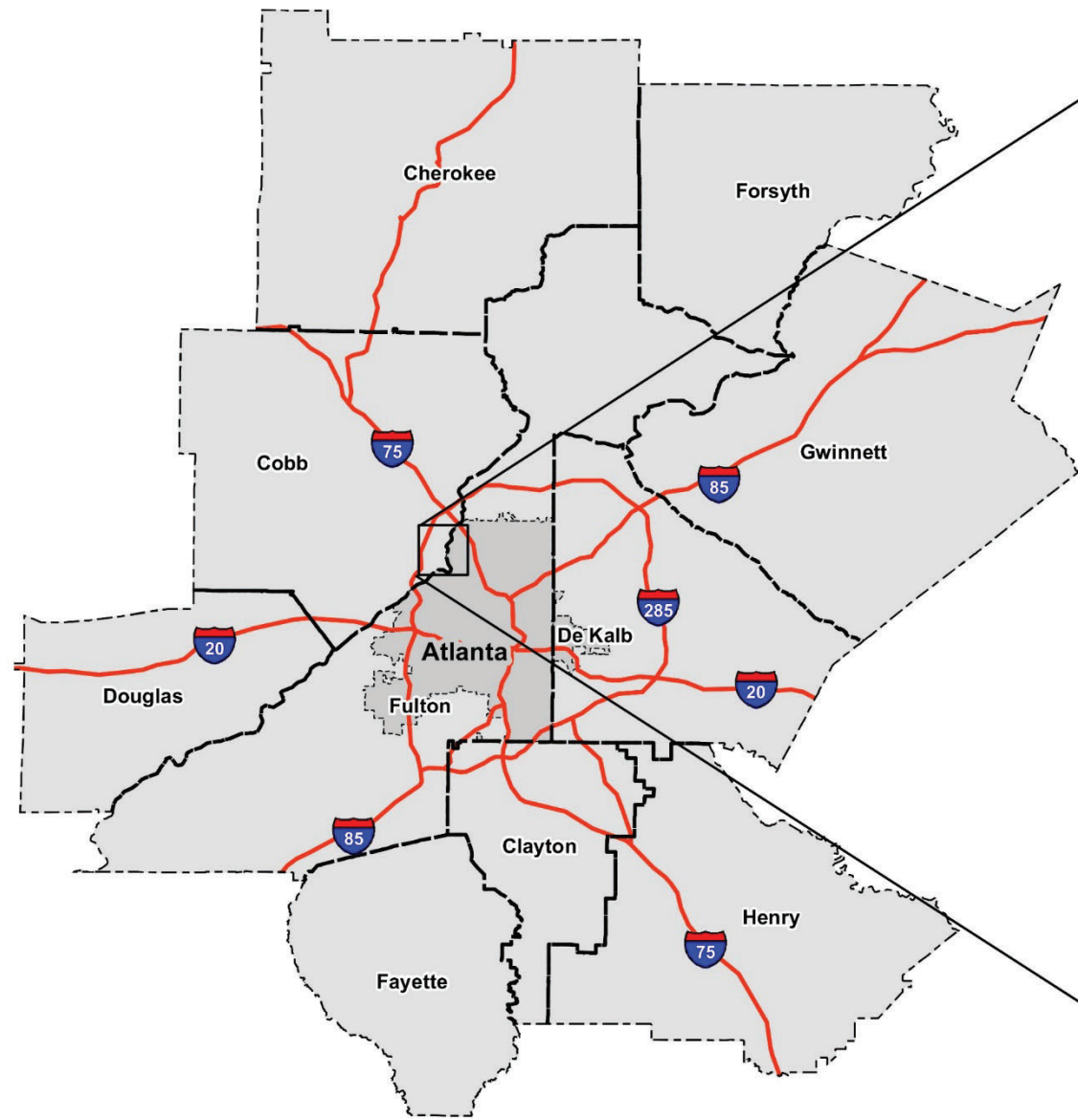
capped and a wall is installed around AP-1. Water levels are predicted to drop up to 10 ft, in the AP-1 area and up to 40 ft in the AP-3/4 area.

## 6.0 REFERENCES

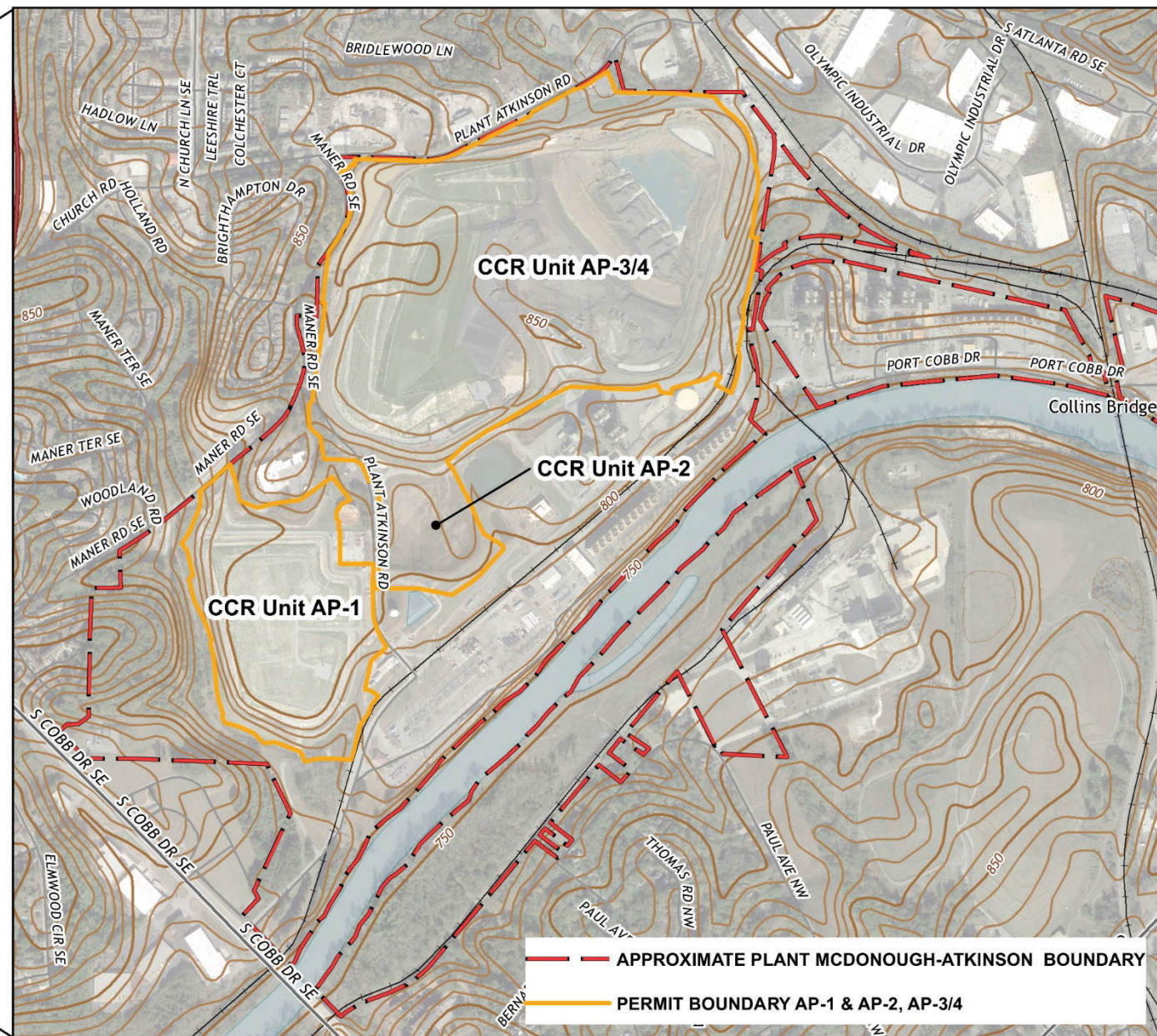
- Fetter, C. (2001). *Applied Hydrogeology*, Fourth Edition. Upper Saddle River, New Jersey: Prentice Hall.
- Freeze, R.A. and Cherry, J.A. (1979). *Groundwater*. Englewood Cliffs, NJ: Prentice Hall, 604 p.
- Golder Associates, Inc. (2016). *Data Report on Investigations for Closure of AP-3/4 Plant McDonough-Atkinson, Atlanta, GA*.
- Golder Associates, Inc. (2019). Plant McDonough-Atkinson (CCR Unit AP-1, CCR Unit AP-2, and Combined CCR Unit AP-3/4, Hydrogeologic Assessment Report, October 2020.
- McDonald, M. G., & Harbaugh, A. W. (1988). Chapter A1, A Modular Three-Dimensional Finite-Difference Ground-Water Flow Model. In *Techniques of Water-Resources Investigations of the United States Geological Survey* (p. 586). Washington: United States Geological Survey Printing Office.
- Niswonger, R. G., Panday, S., & Ibaraki, M. (2011). MODFLOW-NWT, A Newton Formulation for MODFLOW 2005: U.S. Geological Survey Techniques and Methods 6-A37. Reston, Virginia: United States Geological Survey.
- Peck, M., & Painter, J. (2016). Groundwater conditions in Georgia, 2012–14: U.S. Geological Survey Scientific Investigations Report 2016–5161. 55 p.
- Watermark Numerical Computing. (2016). *PEST, Model-Independent Parameter Estimation, User Manual Part I: PEST, SENSAN and Global Optimisers, 6th Edition*.

## Figures



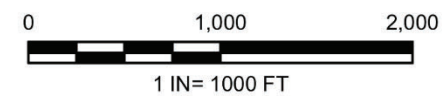


**SITE VICINITY MAP**



REF: USGS 7.5 MINUTE SERIES TOPOGRAPHIC QUADRANGLE:  
 MABLETON, GA 1992 & NORTHWEST ATLANTA, GA 1993

**SITE LOCATION MAP**



CLIENT  
 GEORGIA POWER COMPANY/  
 SOUTHERN COMPANY SERVICES



PROJECT  
 PLANT MCDONOUGH

CONSULTANT

YYYY-MM-DD 2019-10-11  
 DESIGNED JRJ  
 PREPARED JRJ  
 CHECKED WEG  
 REVIEWED/APPROVED GLH

TITLE

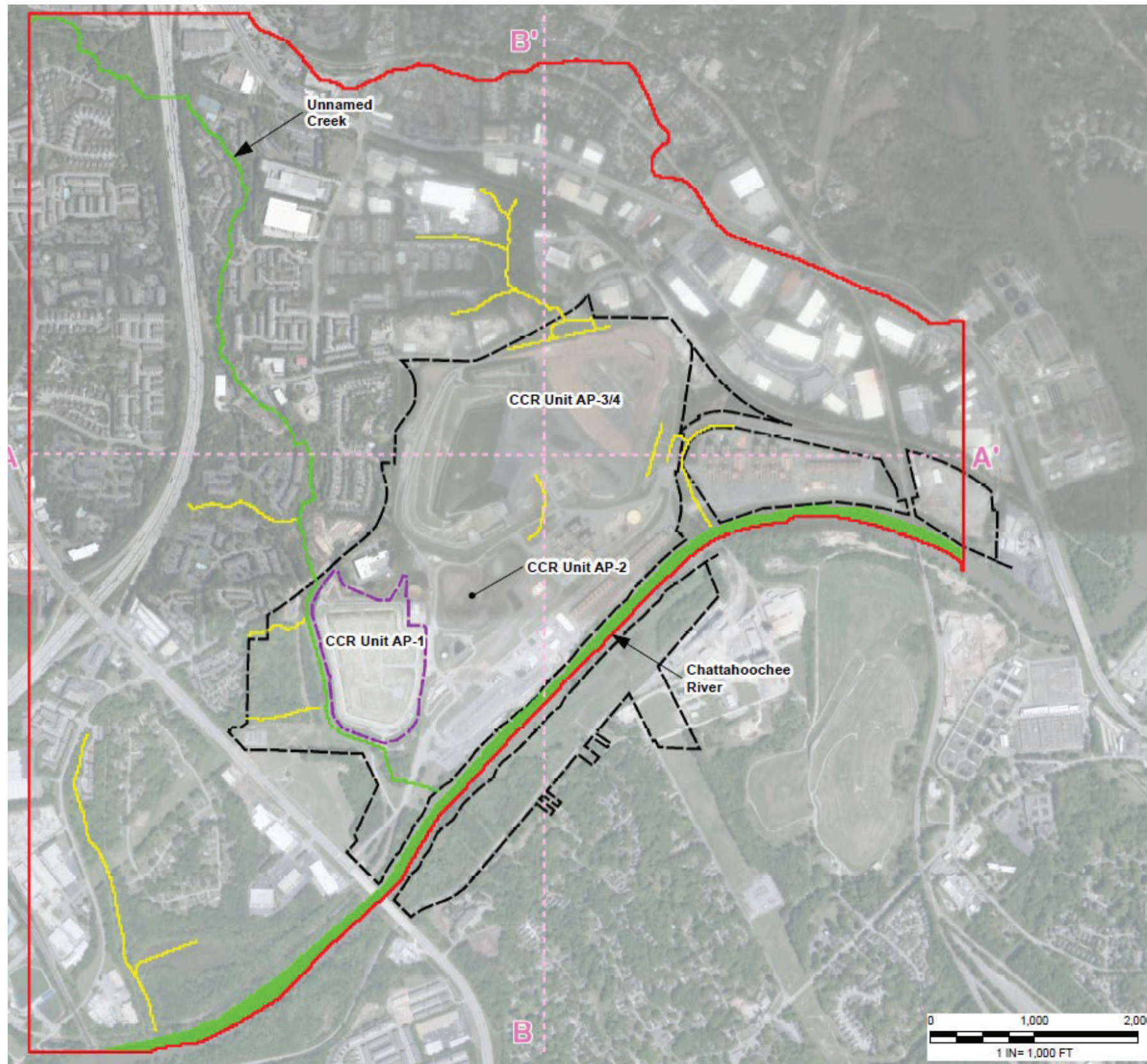
**SITE LOCATION MAP**



PROJECT NO.	CONTROL	REV.	FIGURE
1668496		A	1-1

1 in. THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN. THE STREET SIZE HAS BEEN MODIFIED FROM ANS B





### Legend

- Drain Boundary
- River Boundary
- Constant Head Boundary
- Active Model Boundary
- · - Plant Boundary (Approximate)
- ⋯ Model Cross Section Transect
- ⋯ AP-1 Barrier Wall

CLIENT  
 GEORGIA POWER COMPANY/  
 SOUTHERN COMPANY SERVICES



CONSULTANT



YYYY-MM-DD 2019-10-11  
 DESIGNED JRJ  
 PREPARED JRJ  
 CHECKED WEG  
 REVIEWED/APPROVED GLH

PROJECT  
 PLANT MCDONOUGH

TITLE

**MODEL DOMAIN AND BOUNDARY CONDITIONS**

PROJECT NO.  
 1668496

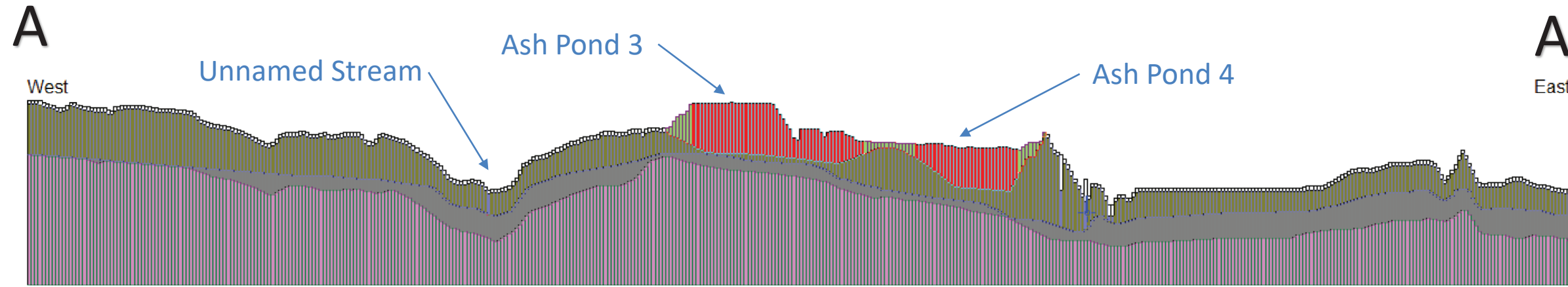
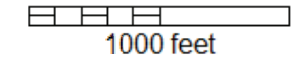
CONTROL

REV.  
 A

FIGURE  
 2-1

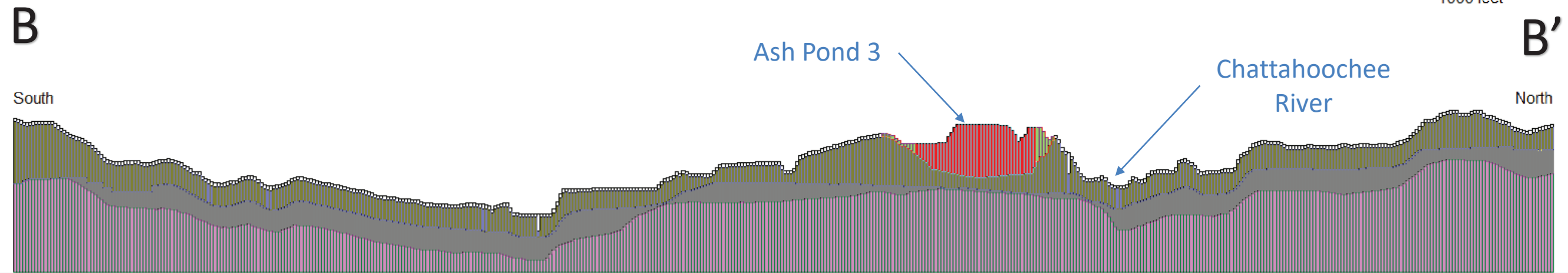
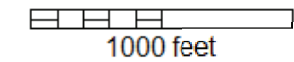
1 in. THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN. THE SHEET SIZE HAS BEEN MODIFIED FROM A3S B

### Model Cross Section – West to East (Row 210)



5 times Vertical Exaggeration

### Model Cross Section – South to North (Column 250)



5 times Vertical Exaggeration

#### Legend

#### Hydraulic Conductivity (feet/day)

- Ash – 0.55 ft/d
- Overburden – 0.73 ft/d
- Bedrock - 0.16 ft/d
- Weathered Bedrock – 0.2 ft/d

CLIENT  
GEORGIA POWER COMPANY/  
SOUTHERN COMPANY SERVICES



CONSULTANT



YYYY-MM-DD 2019-10-11  
DESIGNED JRJ  
PREPARED JRJ  
CHECKED WEG  
REVIEWED/APPROVED GLH

PROJECT  
PLANT MCDONOUGH

TITLE  
**MODEL CROSS SECTIONS – EAST-WEST & NORTH-SOUTH**

PROJECT NO.  
1668496

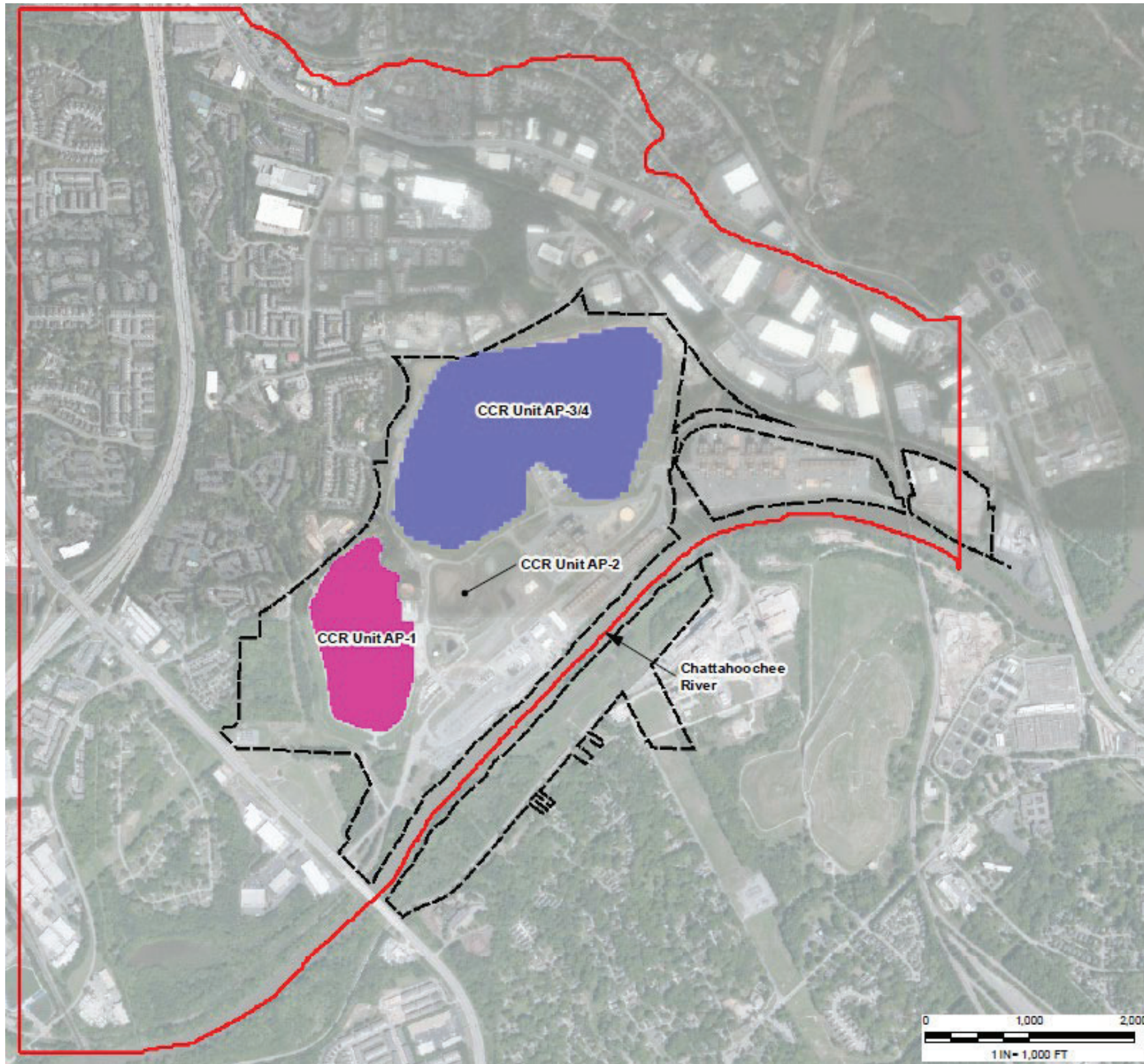
CONTROL

REV.  
A

FIGURE  
2-2

TIP: THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN. THE SHEET SIZE HAS BEEN MODIFIED FROM A4S18





**Legend**

- Ash Pond 1: No Recharge
- Ash Ponds 3 & 4:  
Recharge = 10.73 in/yr
- Rest of Model Domain:  
Recharge = 2.41 in/yr
- Active Model Boundary
- Plant Boundary (Approximate)

CLIENT  
 GEORGIA POWER COMPANY/  
 SOUTHERN COMPANY SERVICES



CONSULTANT



YYYY-MM-DD 2019-10-11  
 DESIGNED JRJ  
 PREPARED JRJ  
 CHECKED WEG  
 REVIEWED/APPROVED GLH

PROJECT  
 PLANT MCDONOUGH

TITLE  
**PRE-CLOSURE MODEL RECHARGE ZONES (LAYER 1)**

PROJECT NO.  
 1668496

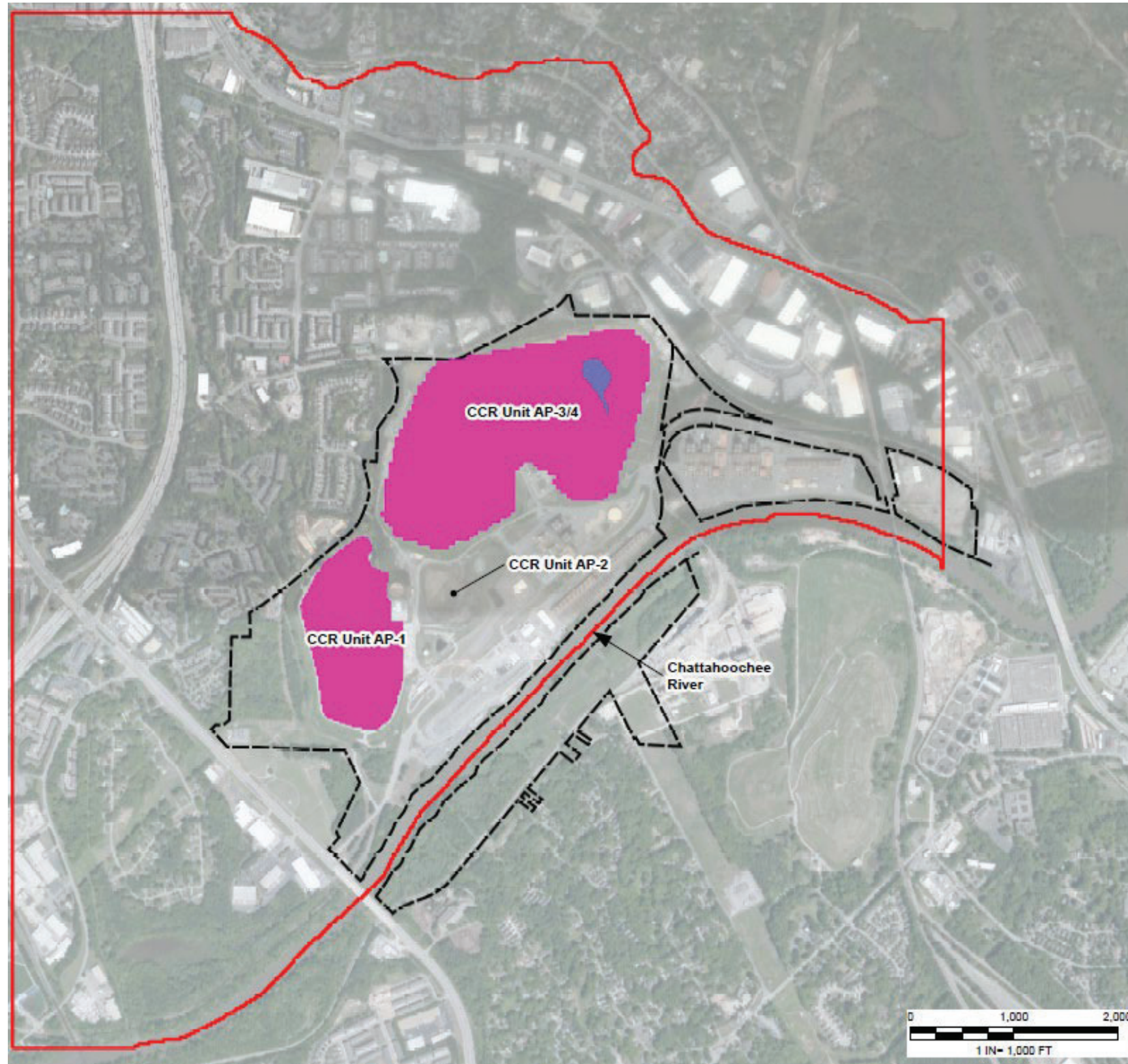
CONTROL

REV.  
 A

FIGURE  
 2-3

1 in. THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN. THE SHEET SIZE HAS BEEN MODIFIED FROM ANS B





**Legend**

- No Recharge
- Recharge = 10.73 in/yr
- Rest of Model Domain:  
Recharge = 2.41 in/yr
- Active Model Boundary
- Plant Boundary  
(Approximate)

CLIENT  
 GEORGIA POWER COMPANY/  
 SOUTHERN COMPANY SERVICES



PROJECT  
 PLANT MCDONOUGH

CONSULTANT



YYYY-MM-DD 2019-10-11  
 DESIGNED JRJ  
 PREPARED JRJ  
 CHECKED WEG  
 REVIEWED/APPROVED GLH

TITLE  
**AP-1 BARRIER WALL CLOSURE MODEL RECHARGE ZONES (LAYER 1)**

PROJECT NO. 1668496	CONTROL	REV. A	FIGURE 2-4
------------------------	---------	-----------	---------------

1 in. THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN. THE SHEET SIZE HAS BEEN MODIFIED FROM ANS B



## Legend

■ **Ash (Model Zone 1)**  
 $K_{xy} = 0.73 \text{ ft/d}$   
 $K_z = 0.14 \text{ ft/d}$

■ **Ash (Model Zone 4)**  
 $K_{xy} = 0.55 \text{ ft/d}$   
 $K_z = 0.037 \text{ ft/d}$

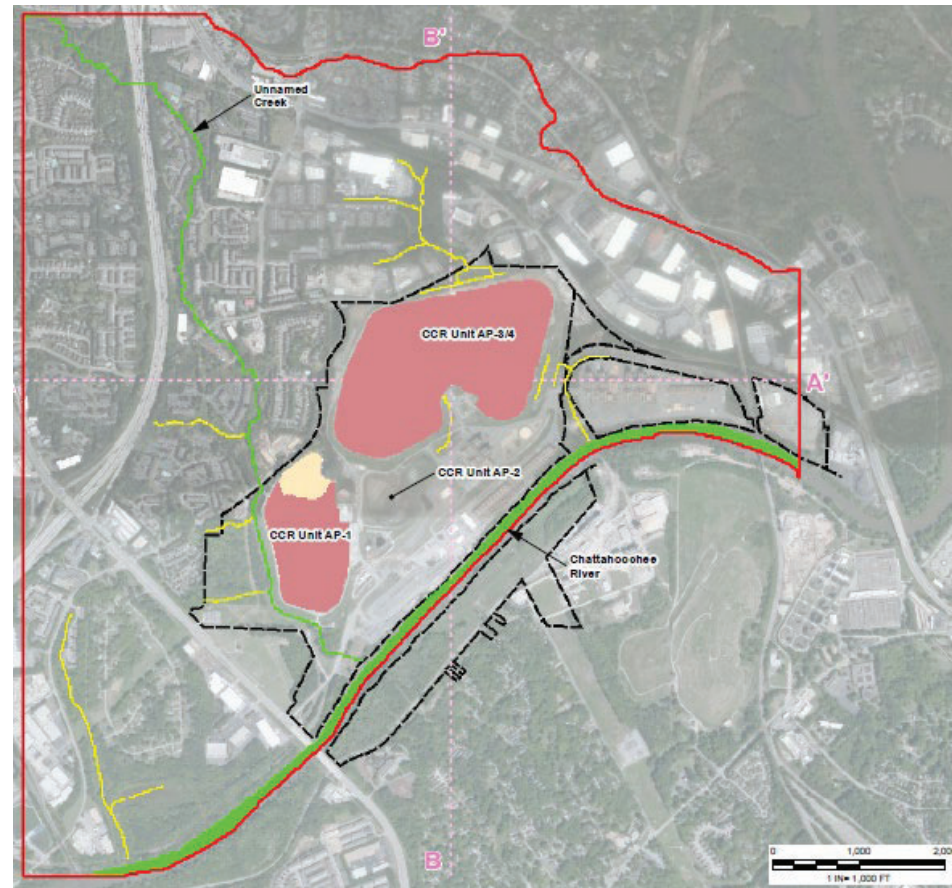
**Overburden (Model Layer 2 - not depicted)**  
 $K_{xy} = 0.73 \text{ ft/d}$   
 $K_z = 0.14 \text{ ft/d}$

**Saprolite (Model Layer 3 - not depicted)**  
 $K_{xy} = 0.2 \text{ ft/d}$   
 $K_z = 0.02 \text{ ft/d}$

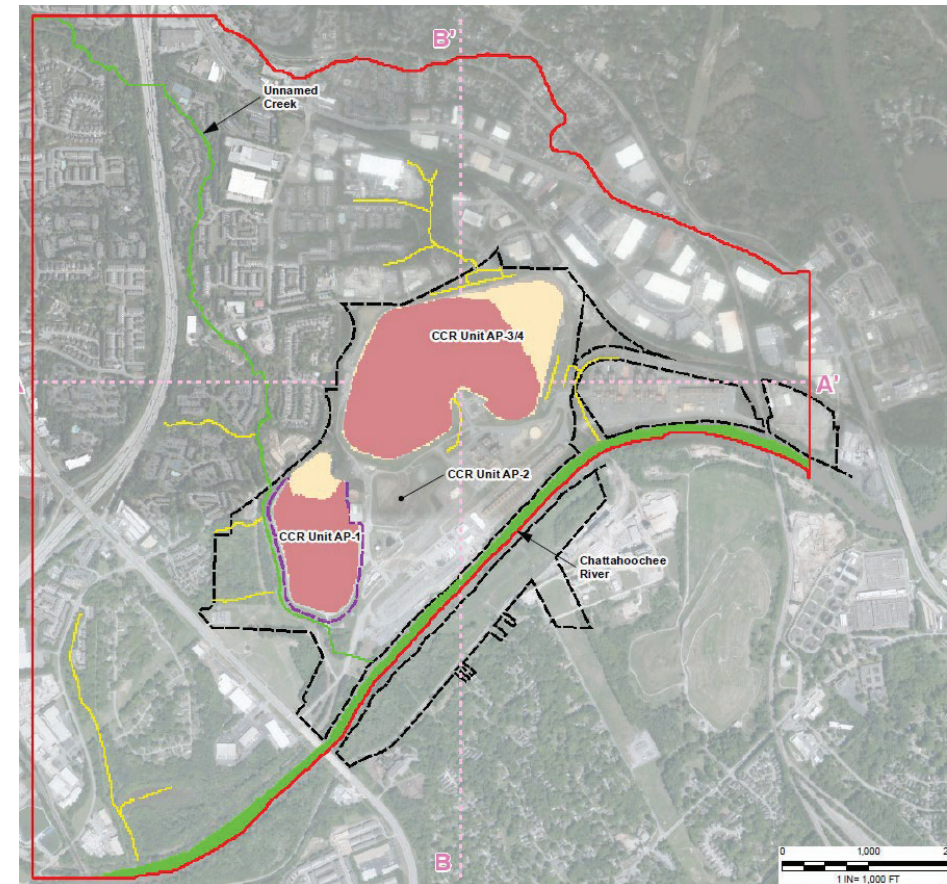
**Bedrock (Model Layer 4 - not depicted)**  
 $K_{xy} = 0.16 \text{ ft/d}$   
 $K_z = 0.016 \text{ ft/d}$

— Active Model Boundary

Plant Boundary (Approximate)



Base Model - Layer 1 Hydraulic Conductivity



AP-1 Barrier Wall Closure Model - Layer 1 Hydraulic Conductivity

### Notes:

$K_{xy}$  = Horizontal and transverse hydraulic conductivity

$K_z$  = Vertical hydraulic conductivity

CLIENT  
 GEORGIA POWER COMPANY/  
 SOUTHERN COMPANY SERVICES



CONSULTANT



YYYY-MM-DD 2019-10-11  
 DESIGNED JRJ  
 PREPARED JRJ  
 CHECKED WEG  
 REVIEWED/APPROVED GLH

PROJECT  
 PLANT MCDONOUGH

TITLE  
**MODEL LAYER 1 HYDRAULIC CONDUCTIVITY**

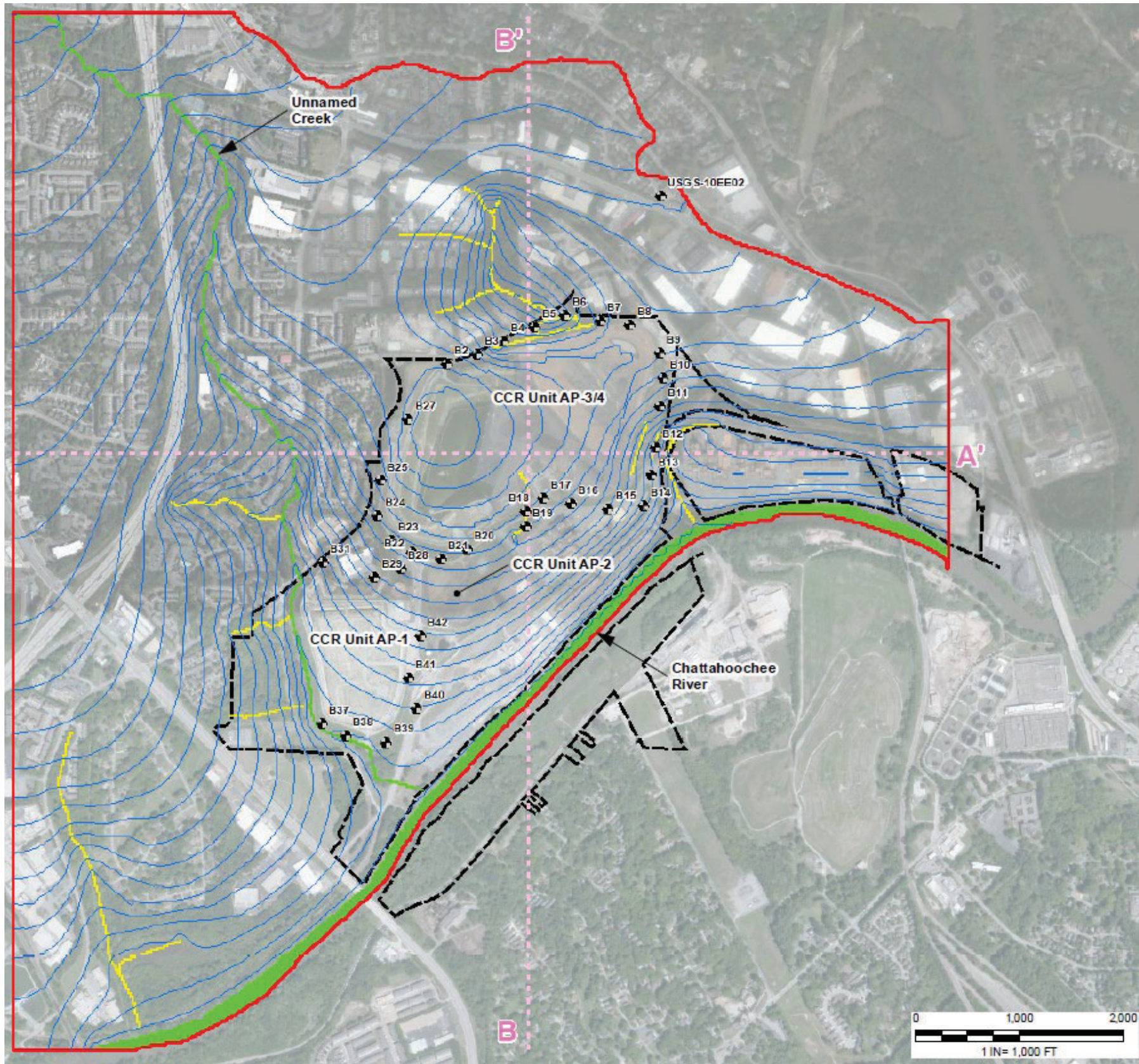
PROJECT NO.  
 1668496

CONTROL

REV.  
 A

FIGURE  
 2-5





### Legend

- Monitoring Well
- Drain Boundary
- River Boundary
- Constant Head Boundary
- Active Model Boundary
- Plant Boundary (Approximate)
- Simulated Groundwater Elevation (ft)

CLIENT  
 GEORGIA POWER COMPANY/  
 SOUTHERN COMPANY SERVICES



CONSULTANT



YYYY-MM-DD 2019-10-11  
 DESIGNED JRJ  
 PREPARED JRJ  
 CHECKED WEG  
 REVIEWED/APPROVED GLH

PROJECT  
 PLANT MCDONOUGH

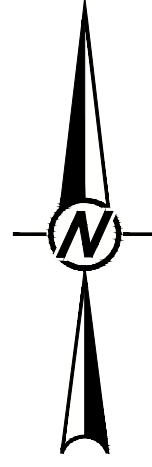
TITLE

**CALIBRATION TARGET LOCATIONS AND PRE-CLOSURE BASE MODEL  
 LAYER 2 SIMULATED GROUNDWATER ELEVATIONS**

PROJECT NO. 1668496	CONTROL	REV. A	FIGURE 3-1
------------------------	---------	-----------	---------------

TIP: THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN. THE STREET SIZE HAS BEEN MODIFIED FROM ANS.B





### LEGEND

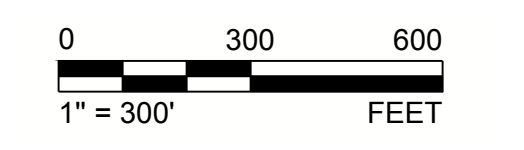
- EXISTING CONTOURS
- PROPERTY BOUNDARY MARKERS/LIMITS
- APPROXIMATE CELL LIMITS
- GROUNDWATER SURFACE CONTOURS
- P & W 1977 PIEZOMETERS (SEE REFERENCE)
- AT&E 1981 BORINGS (SEE REFERENCE)
- E&CE 2012 GROUNDWATER MONITORING WELLS (SEE REFERENCE)
- E&CS 2013 GROUNDWATER MONITORING WELLS (SEE REFERENCE)
- GOLDER 2015 BORING LOCATIONS
- GOLDER 2015 CPT LOCATIONS
- PZ-1 GOLDER 2015 PIEZOMETER LOCATION
- GOLDER 2015 ASH DEWATERING WELLS
- B-51 GOLDER MONITORING WELLS
- GOLDER PIPE CORRIDOR DEWATERING WELL
- MTP-3 MORETRENCH PIEZOMETER
- MORETRENCH DEWATERING WELL

### NOTES

1. GROUNDWATER SURFACE CONTOUR INTERVAL = 10 FEET
2. GROUNDWATER CONTOURS BASED ON LINEAR INTERPOLATION BETWEEN AND EXTRAPOLATION FROM KNOWN DATA, TOPOGRAPHIC CONTOURS, AND KNOWN FIELD CONDITIONS, THEREFORE, GROUNDWATER CONTOURS MAY NOT REFLECT ACTUAL CONDITIONS.

### REFERENCES

1. THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS WERE PROVIDED BY GEORGIA LAND DEPARTMENT AND METRO ENGINEERING AND SURVEYING CO, INC. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS IS 10-16-2012. REFER TO THE SURVEY DRAWING TITLED "TOPOGRAPHIC MAP PREPARED FOR GEORGIA POWER COMPANY PLANT MCDONOUGH - GEORGIA STATE PLANE WEST SURVEY FEET - DATE OF PHOTOGRAPHY 10-26-12. PROJECT NO. 13225 - 01-13-2013."
2. THE REVISED TOPOGRAPHY & CONTOUR ELEVATIONS WERE PROVIDED BY GEORGIA POWER LAND DEPARTMENT. THE DATA SHOWN IS AN UPDATE TO THE PLANS DONE ON 10-16-2012 & THE ONSITE CHANGES SINCE THAT 2012 SURVEY. THE REVISED SURVEY WAS DONE ON 1-12-2016 & MERGED WITH THE DATA ON 10-16-2012.
3. GEORGIA POWER COMPANY PLANT MCDONOUGH ASH PONDS - GEORGIA STATE PLANE WEST SURVEY FEET - DATE OF SURVEY 1-12-2016 - LAND ENG. PROJECT # 20160020.
4. LAW ENGINEERING GEOTECHNICAL INVESTIGATION REPORT (1968).
5. PATTERSON AND DEWAR ENGINEERS PIEZOMETER INSTALLATION REPORT (1977).
6. ATLANTA TESTING AND ENGINEERING GEOTECHNICAL REPORT (1981).
7. GOLDER ASSOCIATES SITE INVESTIGATION (2006).
8. E AND CS PLANT MCDONOUGH HYDROGEOLOGICAL INVESTIGATION (2012).
9. E AND CS ASH POND 3 AND 4 CLOSURE BORINGS (2013).
10. GOLDER 2015 INVESTIGATION LOCATIONS SURVEYED BY LOWERY AND ASSOCIATES ON 11/12/15.



REV	DATE	REVISION DESCRIPTION	GLH	AVR	LS	GLH
	2020-11-02	UPDATE TITLE BLOCK	GLH	AVR	LS	GLH
	2016-09-27	ISSUED	SEP	KNJ	GLH	GLH

CLIENT  
**GEORGIA POWER COMPANY / SOUTHERN COMPANY SERVICES**

PROJECT  
**PLANT MCDONOUGH**

### TITLE

**2016 OBSERVED GROUNDWATER ELEVATIONS AND CONTOURS**

CONSULTANT	DATE	REVISION
	YYYY-MM-DD	2016/09/27
	DESIGNED	KNJ
	PREPARED	SEP
	CHECKED	GLH
	REVIEWED/APPROVED	GLH

Golder Piezometer Identification	Groundwater Elevation (feet AMSL) 10/06/2016
PZ-1	809.02
PZ-2	808.78
PZ-3	806.98
PZ-4	806.29
PZ-5	-
PZ-6	811.92
PZ-7	811.80

Notes:  
 1. AMSL = above mean sea level  
 2. -- = no data available

P&W Piezometer Identification	Groundwater Elevation (feet AMSL) 09/28/2016
AP-3	773.91
P-1	DRY
P-1A	797.95
P-2	793.86
P-4	788.26
P-4A	787.51
P-5	782.10
P-7	DRY
P-7A	813.07
P-9	815.68
P-10A	799.07
P-10B	799.77
P-11	791.61
P-12	787.98
P-13	784.77
AP-2	782.42

Notes:  
 1. AMSL = above mean sea level  
 2. -- = no data available

Moretrench Piezometer Identification	Groundwater Elevation (feet AMSL) 10/06/2016
MTP-8	812.56
MTP-7	819.82
MTP-4	821.58
MTP-3	807.48
MTP-2	819.26
MTP-6	826.56
MTP-5	828.38
MTP-1	823.49
MTP-0	825.75

Notes:  
 1. AMSL = above mean sea level  
 2. -- = no data available

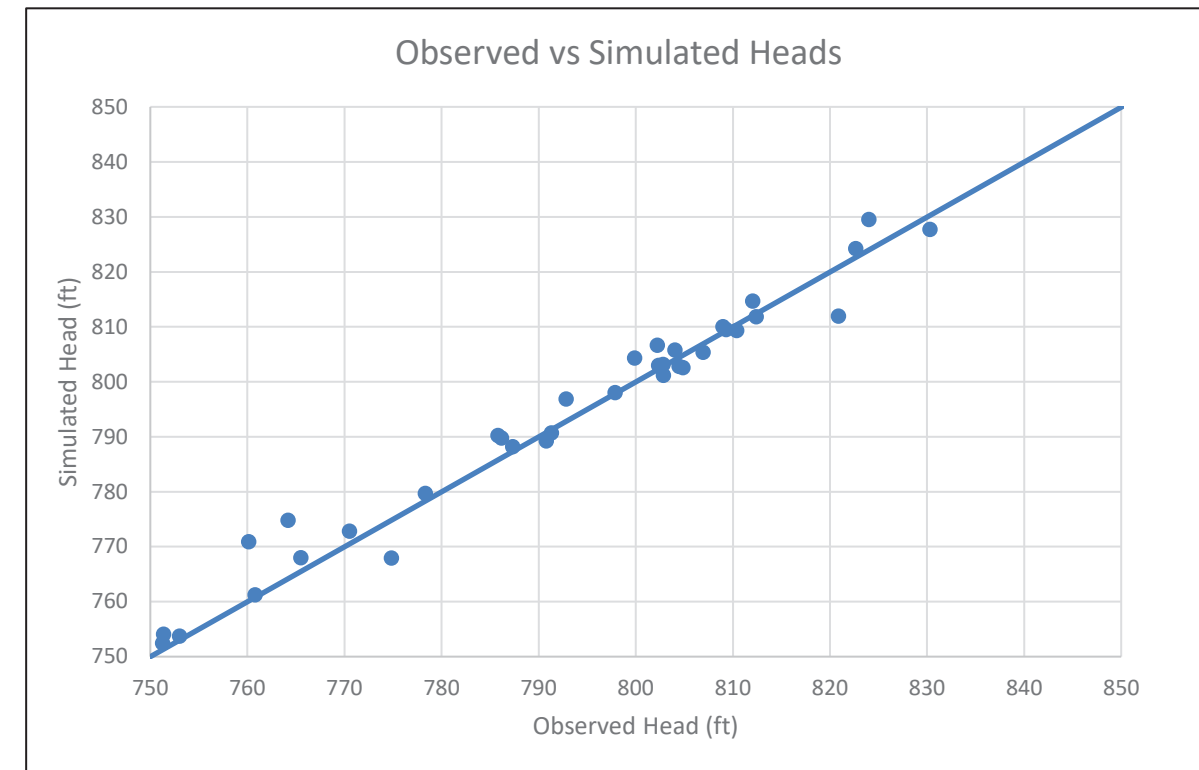
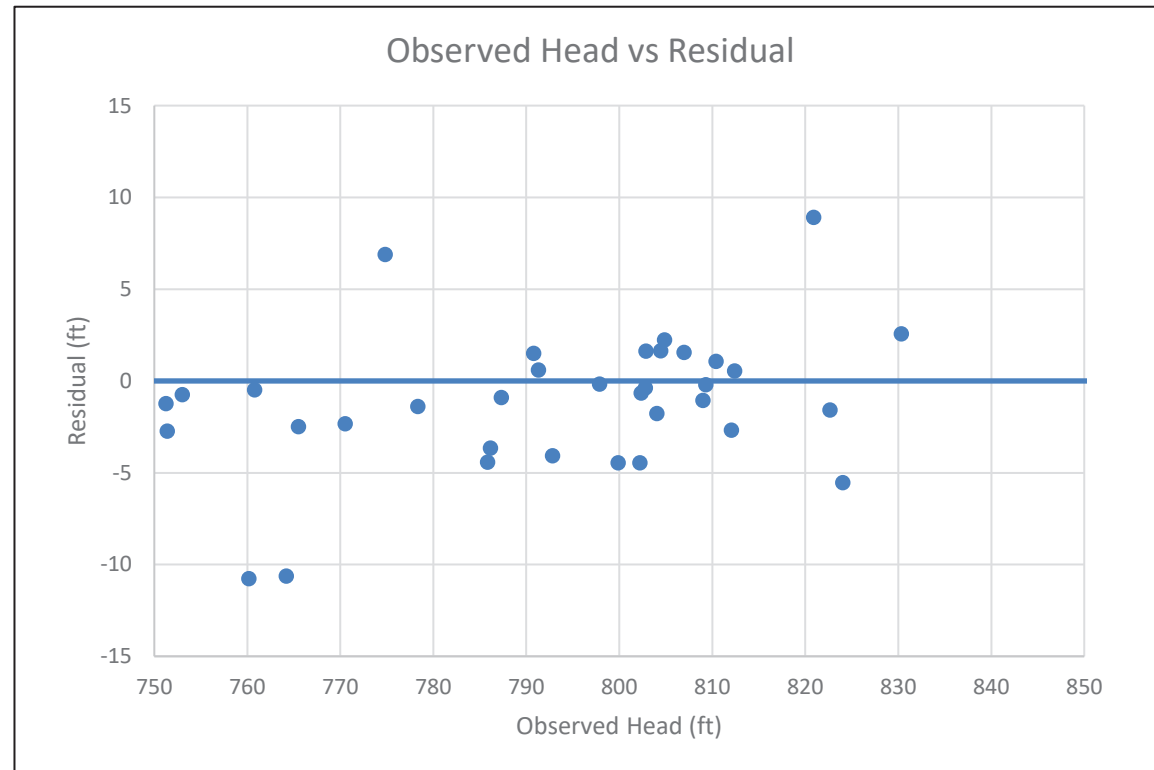
E&CE Piezometer Identification	Groundwater Elevation (feet AMSL) 10/06/2016
B-2	822.29
B-3	811.10
B-4	797.53
DGWC-5	785.92
B-6	787.32
B-7	798.52
DGWA-8	810.49
DGWA-9	809.47
DGWC-10	802.15
DGWC-11	791.42
DGWC-12	765.63
DGWC-13	760.01
DGWC-14	770.13
DGWC-15	785.78
B-16	802.41
DGWC-17	809.12
B-18	809.44
DGWC-19	804.57
DGWC-20	801.97
DGWC-21	802.31
DGWC-22	804.02
B-23	803.97
B-24	805.95
B-25	822.05
DGWA-26	828.35
DGWA-27	829.38
B-28	792.37
B-29	790.48
B-31	763.68
DGWC-37	752.85
DGWC-38	751.16
DGWC-39	751.94
DGWC-40	761.44
B-41	774.12
DGWC-42	777.08
AP1-14	-
AP4-01	-
B-47	778.10
B-48	771.34
B-50	782.17
B-51	753.57
B-52	797.50
B-53	840.66
B-54	781.03
B-55	813.06
B-56	807.31
B-57	767.73
B-58	765.90
B-59	782.60
B-60	748.68
B-61	759.87
B-62	741.77

Notes:  
 1. AMSL = above mean sea level  
 2. -- = no data available

Path: \\lantra\asdfsouthern\Company\65527B Plant McDonough Well Installation\August 2016 Surface Contour Map.dwg

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM A3/D





CLIENT  
 GEORGIA POWER COMPANY/  
 SOUTHERN COMPANY SERVICES



PROJECT  
 PLANT MCDONOUGH

CONSULTANT



YYYY-MM-DD 2019-10-11  
 DESIGNED JRJ  
 PREPARED JRJ  
 CHECKED WEG  
 REVIEWED/APPROVED GLH

TITLE

**MODEL CALIBRATION SUMMARY**

PROJECT NO.  
 1668496

CONTROL

REV.  
 A

FIGURE  
 3-3

TIP: THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN. THE SHEET SIZE HAS BEEN MODIFIED FROM ANS B



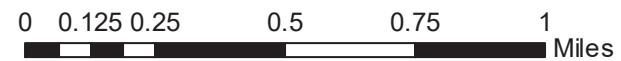


NOTES:

SERVICE LAYER CREDITS: SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY

LEGEND

- River Boundary Conditions
- Drain Boundary
- Groundwater Elevation Contour (ft)
- Model Area



CLIENT  
 GEORGIA POWER COMPANY/  
 SOUTHERN COMPANY SERVICES



YYYY-MM-DD 2020-02-26  
 DESIGNED CB  
 PREPARED JRJ  
 CHECKED CB  
 REVIEWED/APPROVED CB

PROJECT  
 PLANT MCDONOUGH

TITLE  
**Baseline Conditions Modeled Groundwater Elevation Contours**

PROJECT NO. 1661841 PHASE 3 REV. 0

FIGURE  
**4-1**

PATH: C:\Users\jrbones\Desktop\1661841\_3\_001\_E\_S\_1\_Rev0\_GW\_Levels\_Baseline.mxd PRINTED ON 2020-03-03 AT 2:28:51 PM

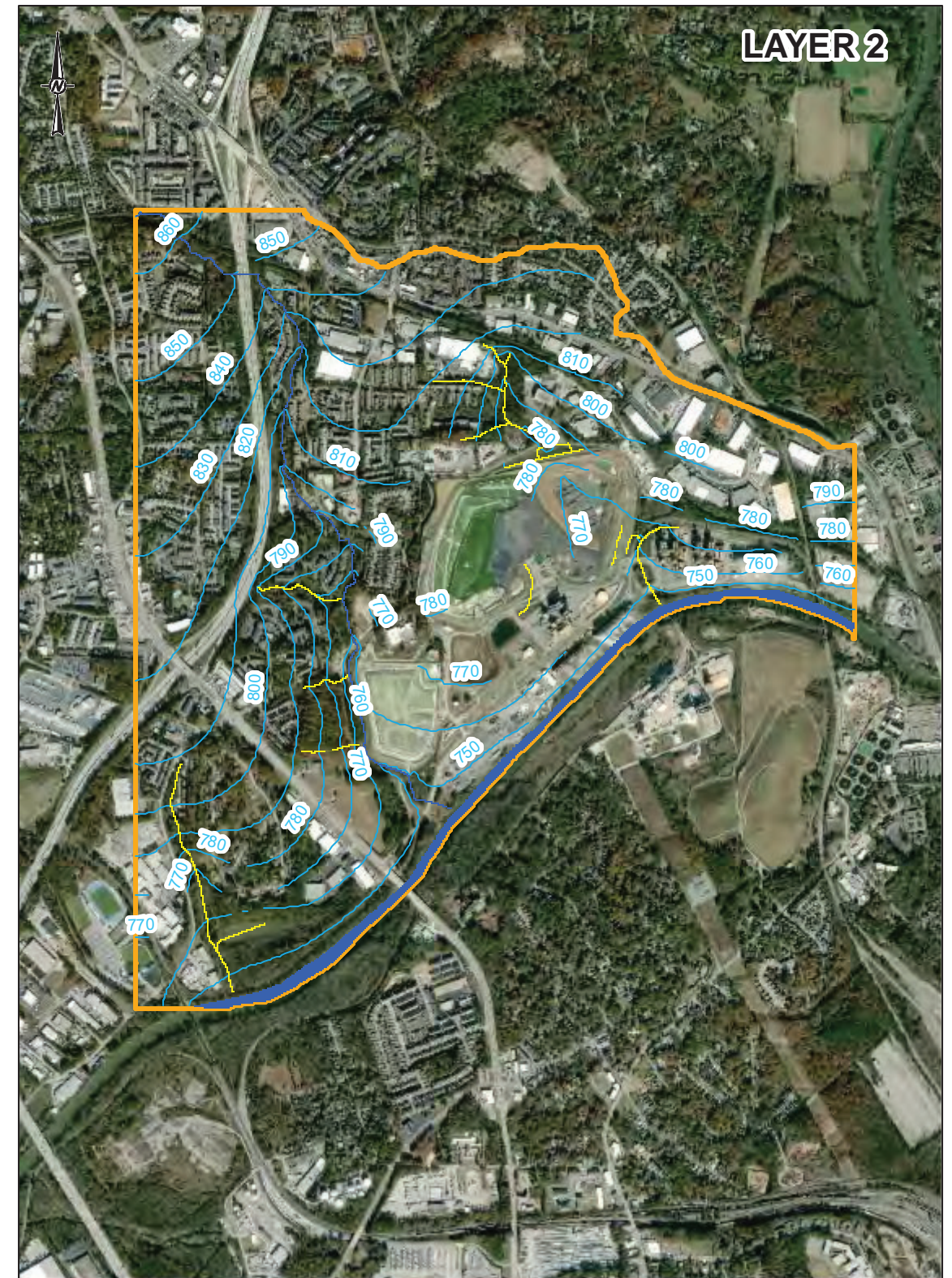
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS18



# WATERTABLE AND DEWATERED CELLS IN LAYER 1



# LAYER 2



NOTES:

### LEGEND

- River Boundary Conditions
- Drain Boundary
- Groundwater Elevation Contour (ft)
- Model Area

SERVICE LAYER CREDITS: SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY



CLIENT  
 GEORGIA POWER COMPANY/  
 SOUTHERN COMPANY SERVICES



PROJECT  
 PLANT MCDONOUGH

CONSULTANT

YYYY-MM-DD 2020-02-26

TITLE

**Closure Conditions Model Conditions Water Table and Model Layer 2 Modeled Groundwater Elevation Contours**



DESIGNED CB

PREPARED JRJ

CHECKED CB

REVIEWED/APPROVED CB

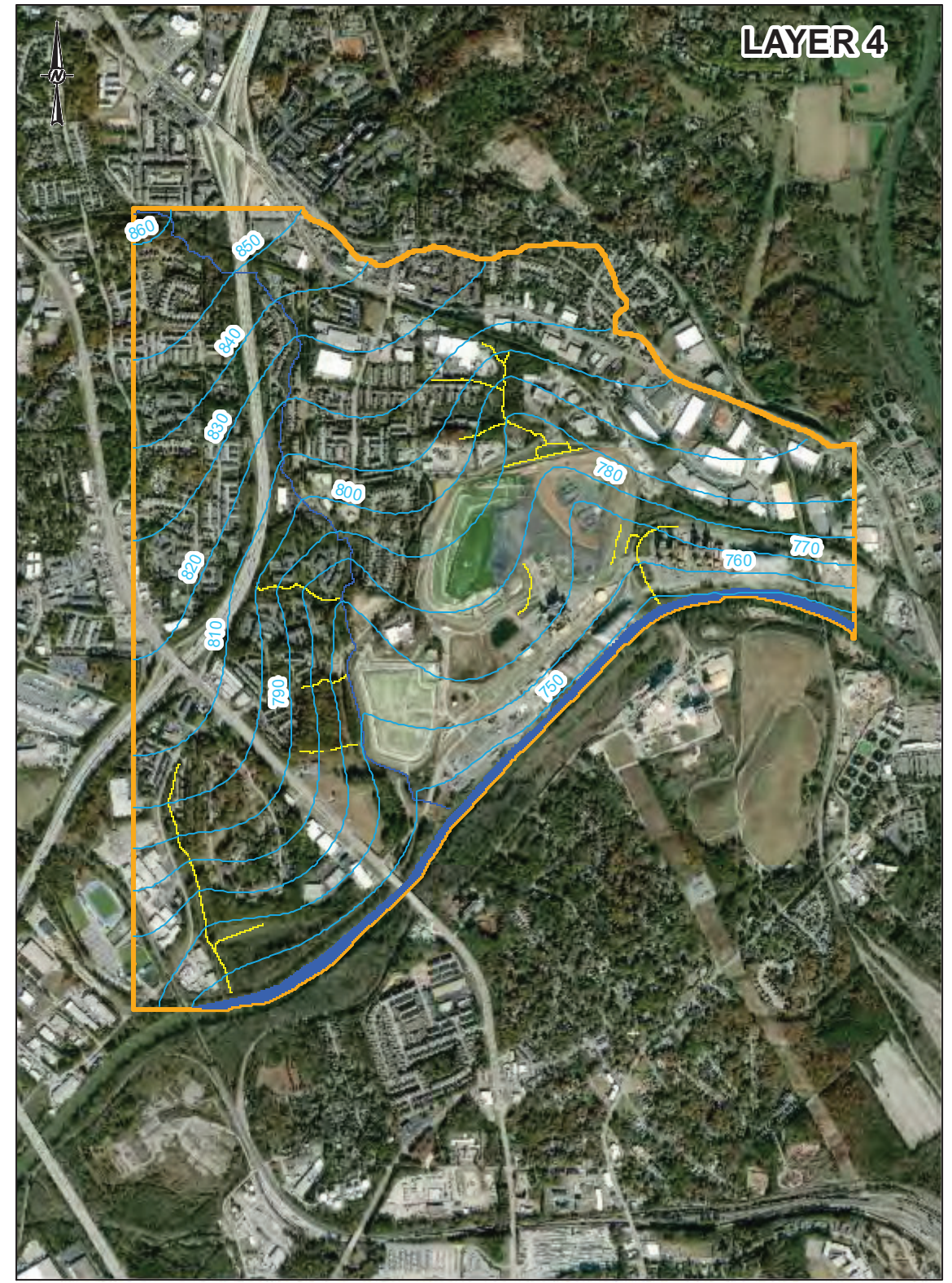
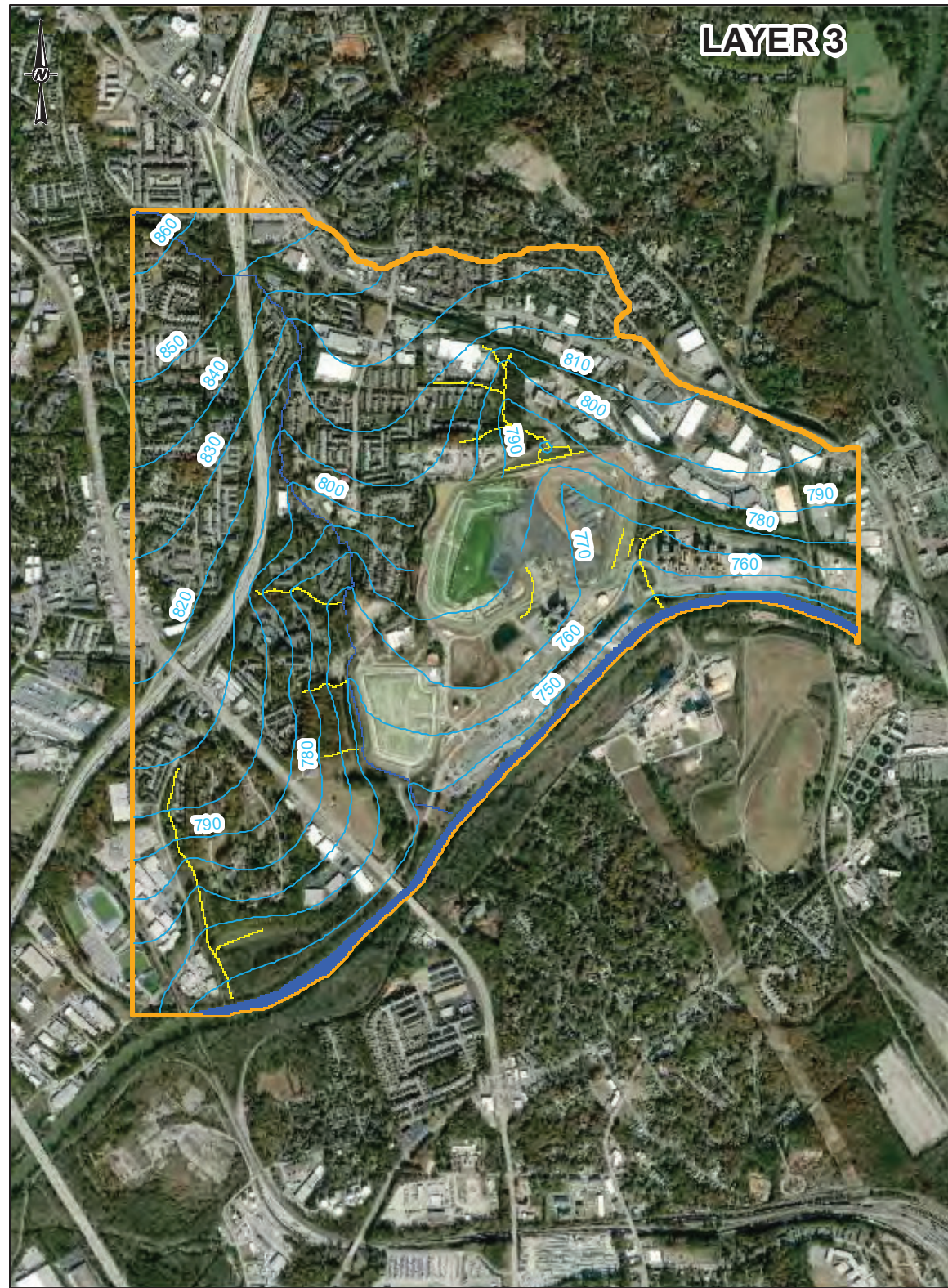
PROJECT NO.  
 1661841

PHASE  
 3

REV.  
 0

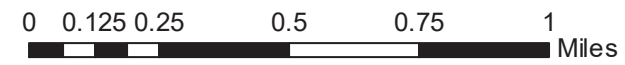
FIGURE  
**4-2**





LEGEND

- River Boundary Conditions
- Drain Boundary
- Groundwater Elevation Contour (ft)
- Model Area



CLIENT	GEORGIA POWER COMPANY/ SOUTHERN COMPANY SERVICES	
CONSULTANT	YYYY-MM-DD	2020-02-26
	DESIGNED	CB
	PREPARED	JRJ
	CHECKED	CB
	REVIEWED/APPROVED	CB

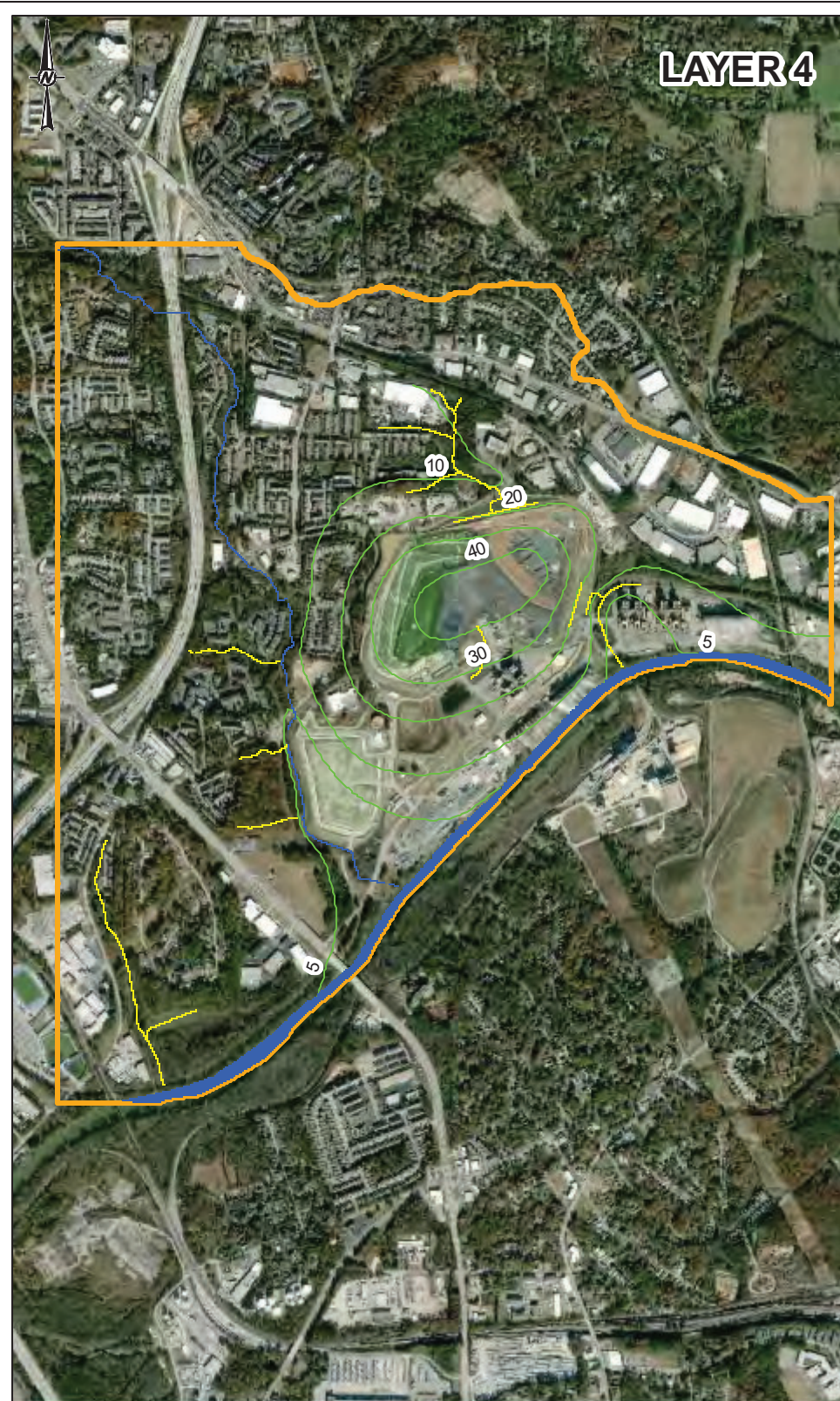
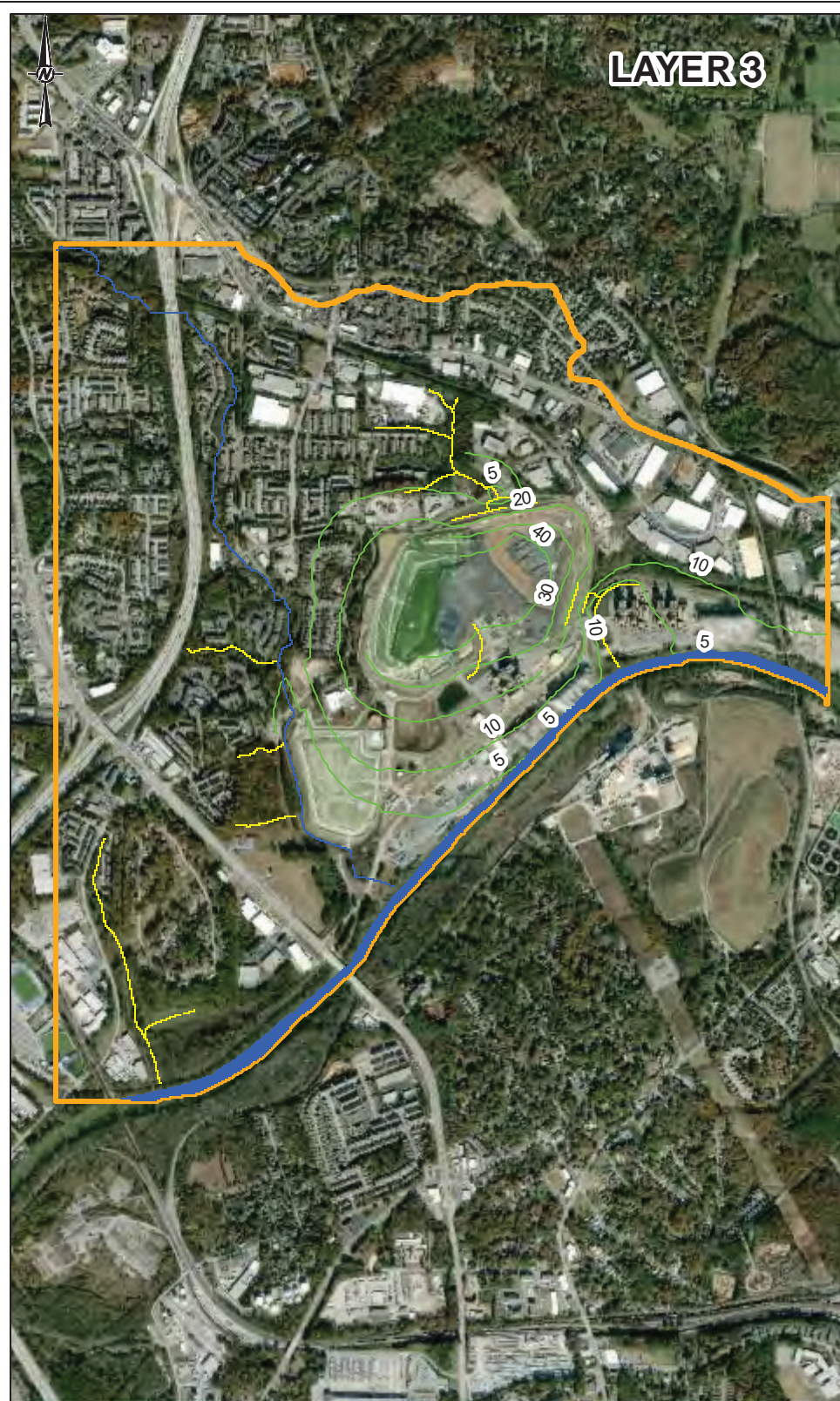
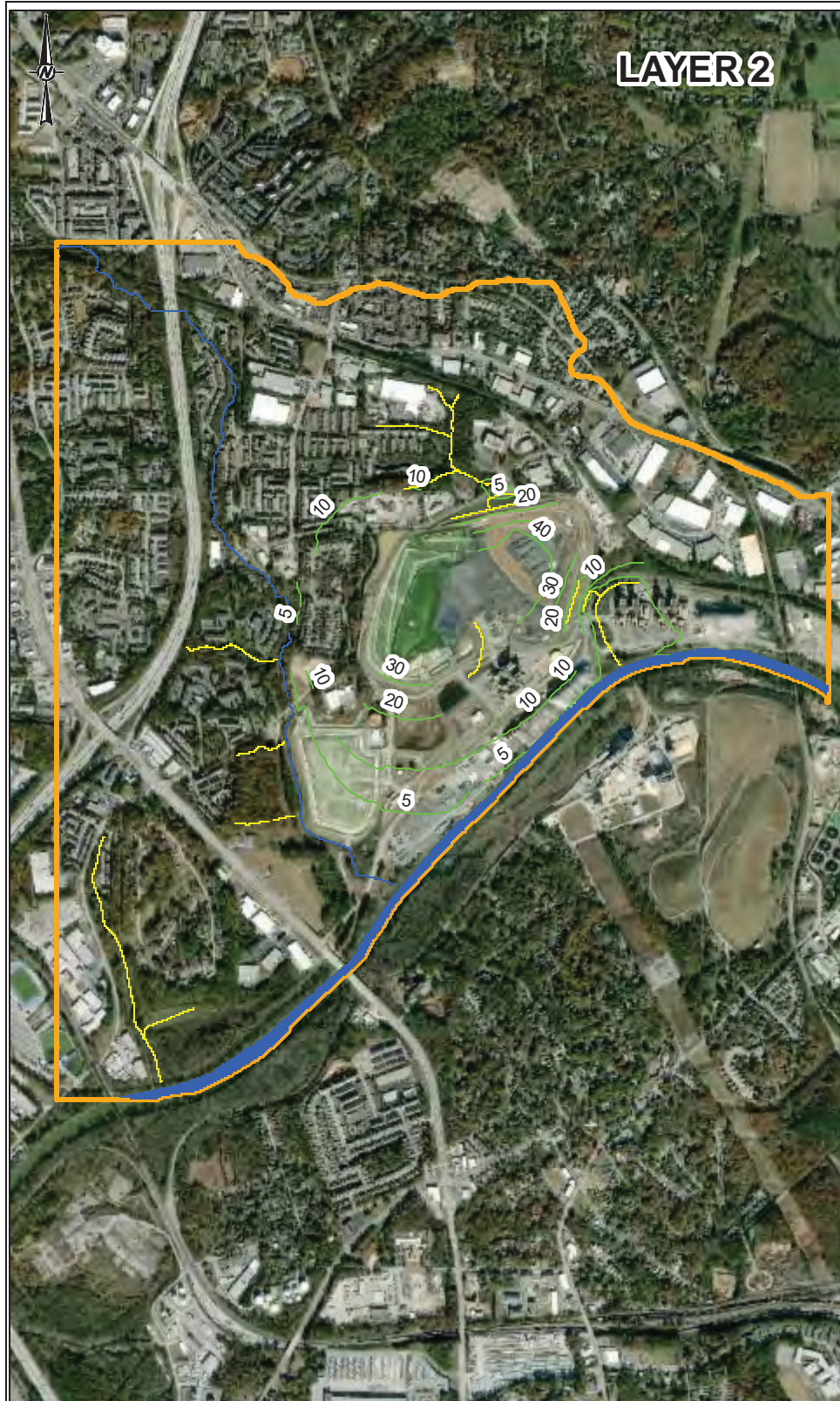
PROJECT	PLANT MCDONOUGH	
TITLE	<b>Closure Conditions Model Conditions Model Layer 3 and 4 Modeled Groundwater Elevation Contours</b>	
PROJECT NO.	PHASE	REV.
1661841	3	0

PATH: C:\Users\jrbones\Desktop\1661841\_3\_006\_F\_5\_6\_Rev0\_GW\_Levels\_Offset\_48\_L3\_L4.mxd PRINTED ON: 2020-03-03 AT 2:20:07 PM

SERVICE LAYER CREDITS: SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRIID, IGN, AND THE GIS USER COMMUNITY

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSIS



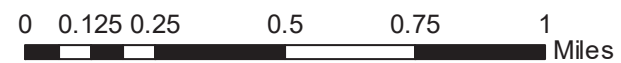


NOTES:

SERVICE LAYER CREDITS: SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY

LEGEND

- River Boundary Conditions
- Drain Boundary
- Drawdown (ft)
- Model Area



CLIENT  
 GEORGIA POWER COMPANY/  
 SOUTHERN COMPANY SERVICES



CONSULTANT



YYYY-MM-DD 2020-02-26  
 DESIGNED CB  
 PREPARED JRJ  
 CHECKED CB  
 REVIEWED/APPROVED CB

PROJECT  
 PLANT MCDONOUGH

TITLE  
**Closure Conditions Model versus Baseline Modeled  
 Groundwater Elevation Change**

PROJECT NO. 1661841      PHASE 3      REV. 0

FIGURE  
**4-4**

PATH: C:\Users\jrbones\Desktop\1661841\_3\_004\_F\_4\_4\_Rev0\_Downloads\_BASELINE vs CLOSURE.mxd PRINTED ON: 2020-03-03 AT: 2:29:51 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS18





# APPENDIX B

## DRILLERS BOND



PERFORMANCE BOND FOR WATER WELL CONTRACTORSAND DRILLERS

Bond No. 4993104

WATER WELL CONTRACTOR OR DRILLER \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS.

That we SOUTHERN COMPANY SERVICES, INC., as Principal, and SAFECO INSURANCE COMPANY OF AMERICA, as Surety, are held and firmly bound unto the Director of the Environmental Protection Division ("Director"), Department of Natural Resources, State of Georgia and his successor or successors in office, as Obligees, in the full sum of TEN THOUSAND & No/100 Dollars (\$10,000.00), for the payment of which well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, by these presents.

WHEREAS, the Water Well Standards Act of 1985 (Ga. Laws 1985, p. 1192) (the "Act") requires that water well contractors and drillers file performance bonds with the Director to ensure compliance with the Act; and

WHEREAS, the above bound principal is subject to the terms and provisions of said Act.

NOW, THEREFORE, the conditions of this obligation are such that if the above bound Principal shall fully and faithfully perform the duties and in all things comply with the procedures and standards set forth in the Act as now or hereafter amended, and the rules and regulations promulgated pursuant thereto, including but not limited to the correction of any violation of such procedures and standards upon discovery, irrespective of whether such discovery is made before completion of any well subject to this bond, then this obligation shall be void; otherwise of full force and effect.

And Surety, for value received, agrees that no amendment to existing laws, rules or regulations, or adoption of new laws, rules or regulations shall in any way discharge its obligation on this bond, and does hereby waive notice of any such amendment, adoption, or modification.

This bond shall be effective from date of issuance or, in the case of a water well contractor, date of licensure and shall continue in effect until terminated by expiration, mutual agreement or cancellation upon 60 days written notice to Principal and Obligees; provided that the rights of the Obligees and beneficiaries under this bond which arose prior to such termination shall continue.

Unless sooner terminated, this bond shall terminate June 30, 2003

IN WITNESS WHEREOF the Principal and Surety have caused these presents to be duly signed and sealed, this 30th day of October,

2001 -



Principal, By: [Signature] (L.S.)

Title: SAM H. DABBS, JR.

ASSISTANT SECRETARY

Approved as to sufficiency  
and accepted:

Environmental Protection  
Division,

Department of Natural  
Resources

SAFECO INSURANCE COMPANY OF AMERICA

Trusty, By: Sandra J. Mathis (L.S.)

Sandra J. Mathis, Attorney-in-Fact





POWER OF ATTORNEY

SAFECO INSURANCE COMPANY OF AMERICA  
GENERAL INSURANCE COMPANY OF AMERICA  
HOME OFFICE: SAFECO PLAZA  
SEATTLE WASHINGTON 98185

No. 6724

KNOW ALL BY THESE PRESENTS:

That SAFECO INSURANCE COMPANY OF AMERICA and GENERAL INSURANCE COMPANY OF AMERICA, each a Washington corporation, does each hereby appoint  
.....SANDRA S. CARTER; JUDY GAY CERA; GARY D. EKLUND; JUDY S. FLEMING; VIRGINIA B. MCMANUS; BARBARA S. MACARTHUR; SANDRA J. MATHEIS;  
EDWARD L. MITCHELL; NANCY NIX; BARBARA THOMPSON; CYNTHIA I. RODOLPH; Atlanta, Georgia.....

its true and lawful attorney(s)-in-fact, with full authority to execute on its behalf fidelity and surety bonds or undertakings and other documents of a similar character issued in the course of its business, and to bind the respective company thereby.

IN WITNESS WHEREOF, SAFECO INSURANCE COMPANY OF AMERICA and GENERAL INSURANCE COMPANY OF AMERICA have each executed and attested these presents

this 2nd day of February 2001

*R.A. Pierson*

R.A. PIERSON, SECRETARY

*Boh A. Dickey*

BOH A. DICKEY, PRESIDENT

CERTIFICATE

Extract from the By-Laws of SAFECO INSURANCE COMPANY OF AMERICA  
and of GENERAL INSURANCE COMPANY OF AMERICA:

"Article V, Section 13. - FIDELITY AND SURETY BONDS ... the President, any Vice President, the Secretary, and any Assistant Vice President appointed for that purpose by the officer in charge of surety operations, shall each have authority to appoint individuals as attorneys-in-fact or under other appropriate titles with authority to execute on behalf of the company fidelity and surety bonds and other documents of similar character issued by the company in the course of its business... On any instrument making or evidencing such appointment, the signatures may be affixed by facsimile. On any instrument conferring such authority or on any bond or making of the company, the seal, or a facsimile thereof, may be impressed or affixed or in any other manner reproduced; provided, however, that the seal shall not be necessary to the validity of any such instrument or undertaking."

Extract from a Resolution of the Board of Directors of SAFECO INSURANCE COMPANY OF AMERICA  
and of GENERAL INSURANCE COMPANY OF AMERICA adopted July 28, 1970.

"On any certificate executed by the Secretary or an assistant secretary of the Company setting out,  
(i) The provisions of Article V, Section 13 of the By-Laws, and  
(ii) A copy of the power-of-attorney appointment, executed pursuant thereto, and  
(iii) Certifying that said power-of-attorney appointment is in full force and effect,  
the signature of the certifying officer may be by facsimile, and the seal of the Company may be a facsimile thereof."

I, R.A. Pierson, Secretary of SAFECO INSURANCE COMPANY OF AMERICA and of GENERAL INSURANCE COMPANY OF AMERICA, do hereby certify that the foregoing extracts of the By-Laws and of a Resolution of the Board of Directors of these corporations, and of a Power of Attorney issued pursuant thereto, are true and correct, and that both the By-Laws, the Resolution and the Power of Attorney are still in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the facsimile seal of said corporation

this 30th day of October 2001



*R.A. Pierson*

R.A. PIERSON, SECRETARY



AND DRILLERS

BOND NO. 1450-17-087281

WATER WELL CONTRACTOR OR DRILLER QORE, INC.

KNOW ALL MEN BY THESE PRESENTS.

That we Qore, Inc., as Principal, and Employers Insurance of Wausau, A Mutual Company, as Surety, are held and firmly bound unto the Director of the Environmental Protection Division ("Director"), Department of Natural Resources, State of Georgia and his successor or successors in office, as Obligees, in the full sum of Ten Thousand and No/100 Dollars (\$10,000.00) for the payment of which well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, by these presents.

WHEREAS, the Water Well Standards Act of 1985 (Ga. Laws 1985, p. 1192) (the "Act") requires that water well contractors and drillers file performance bonds with the Director to ensure compliance with the Act; and

WHEREAS, the above bound principal is subject to the terms and provisions of said Act.

NOW, THEREFORE, the conditions of this obligation are such that if the above bound Principal shall fully and faithfully perform the duties and in all things comply with the procedures and standards set forth in the Act as now or hereafter amended, and the rules and regulations promulgated pursuant thereto, including but not limited to the correction of any violation of such procedures and standards upon discovery, irrespective of whether such discovery is made before completion of any well subject to this bond, then this obligation shall be void; otherwise of full force and effect.

And Surety, for value received, agrees that no amendment to existing laws, rules or regulations, or adoption of new laws, rules or regulations shall in any way discharge its obligation on this bond, and does hereby waive notice of any such amendment, adoption, or modification.

This bond shall be effective from date of issuance or, in the case of a water well contractor, date of licensure and shall continue in effect until terminated by expiration, mutual agreement or cancellation upon 60 days written notice to Principal and Obligees; provided that the rights of the Obligees and beneficiaries under this bond which arose prior to such termination shall continue.

Unless sooner terminated, this bond shall terminate June 30, 2003

IN WITNESS WHEREOF the Principal and Surety have caused these presents to be duly signed and sealed, this 15th day of May, 2001.

QORE, INC.  
Principal, by: \_\_\_\_\_ (L.S.)

Approved as to sufficiency and accepted:

Environmental Protection Division,  
Department of Natural Resources

EMPLOYERS INSURANCE OF WAUSAU, A MUTUAL COMPANY  
Surety, by: Barbara S. MacArthur (L.S.)  
Barbara S. MacArthur, Attorney-in-Fact





# Western Surety Company

## CONTINUATION CERTIFICATE

Western Surety Company hereby continues in force Bond No. 68616636  
briefly described as Water Well Contractor  
for EVERETT ENVIRONMENTAL, INC.  
\_\_\_\_\_, as Principal,  
in the sum of TEN THOUSAND AND NO/100 Dollars, for the term beginning  
July 01, 2002, and ending June 30, 2003, subject to all  
the covenants and conditions of the original bond referred to above.

This continuation is issued upon the express condition that the liability of Western Surety Company under said Bond and this and all continuations thereof shall not be cumulative and shall in no event exceed the total sum above written.

Dated this 07 day of March, 2002.



WESTERN SURETY COMPANY

By Stephen T. Pate  
Stephen T. Pate, Executive Vice President

THIS "Continuation Certificate" MUST BE FILED WITH THE ABOVE BOND.



FROM : LOGAN MARTIN  
Jul 23 02 09:03a

PHONE NO. : 8 236 4015  
Starr-Mathews Rome, GA

Jul. 24 2002 06:15AM P4  
706-291-0579 P.4

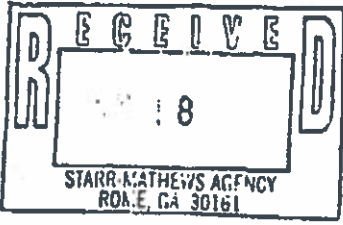
Transaction Report & Invoice



**CNA SURETY**  
CNA SURETY  
101 SO. PHILLIPS AVENUE  
SIOUX FALLS, S.D. 57192

**Principal Information:** ID: 003019252  
EVERETT ENVIRONMENTAL, INC.  
P.O. BOX 763  
ARMUCHEE, GA 30105-0763

STARR-MATHEWS AGENCY INC  
P O BOX 1642  
ROME GA 30162-1642



Agency Code: 10-01912

Transaction Description: RENEWAL

Transaction Effective Date: 07/01/2002

Number: 60616636

SF

Written By: WESTERN SURETY COMPANY  
Description: WATER WELL CONTRACTOR

Obligee: DEPT. OF NATURAL RESOURCES  
205 BUTLER ST., STE. 1346  
ATLANTA, GA 30334

Effective Date: 07-01-2002  
Expiration Date: 06-30-2003  
Current Penalty: \$10,000.00  
Renewal Method: CC

PREMIUM	\$200.00	20.000%
Gross Premium Charge:	\$200.00	
Commission Amount:	\$40.00	
Net Premium Due:	\$160.00	

Change Detail:

Agent: You may remove stub below to use as a billing/ credit invoice

CNA Surety

INVOICE

FILE NO.	EFFECTIVE DATE	ANNIVERSARY DATE	PROCESS DATE	PENALTY
0601 60616636	07-01-02	06-30-03	03-07-02	\$10,000.00
PRINCIPAL	EVERETT ENVIRONMENTAL, INC. P.O. BOX 763 ARMUCHEE, GA 30105-0763			
RISK STATE	GA	<del>WESTERN SURETY COMPANY</del>		
DESCRIPTION	WATER WELL CONTRACTOR			
OBLIGEE	STATE OF GEORGIA			
AGENCY CODE	CHARGE	\$200.00		
10-01912				

Your agent is:

STARR-MATHEWS AGENCY INC  
P O BOX 1642  
ROME GA 30162-1642





# Western Surety Company

## POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS:

That WESTERN SURETY COMPANY, a corporation organized and existing under the laws of the State of South Dakota, and authorized and licensed to do business in the States of Alabama, Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, District of Columbia, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming, and the United States of America, does hereby make, constitute and appoint

Stephen T. Pate of Sioux Falls  
State of South Dakota, its regularly elected Executive Vice President,  
as Attorney-in-Fact, with full power and authority hereby conferred upon him to sign, execute, acknowledge and deliver for and on its behalf as Surety and as its act and deed, all of the following classes of documents to-wit:

Indemnity Surety and undertakings that may be desired by contract, or may be given in any action or proceeding in any court of law or equity, policies indemnifying employers against loss or damage caused by the misconduct of their employees, official, bail, and surety and fidelity bonds. Indemnity in all cases where indemnity may be lawfully given, and with full power and authority to execute consents and waivers to modify or change or extend any bond or document executed for this Company, and to compromise and settle any and all claims or demands made or existing against said Company.

Western Surety Company further certifies that the following is a true and exact copy of Section 7 of the by-laws of Western Surety Company duly adopted and now in force, to-wit:

Section 7. All bonds, policies, undertakings, Powers of Attorney, or other obligations of the corporation shall be executed in the corporate name of the Company by the President, Secretary, any Assistant Secretary, Treasurer, or any Vice President, or by such other officers as the Board of Directors may authorize. The President, any Vice President, Secretary, any Assistant Secretary, or the Treasurer may appoint Attorneys-in-Fact or agents who shall have authority to issue bonds, policies, or undertakings in the name of the Company. The corporate seal is not necessary for the validity of any bonds, policies, undertakings, Powers of Attorney or other obligations of the corporation. The signature of any such officer and the corporate seal may be printed by facsimile.

In Witness Whereof, the said WESTERN SURETY COMPANY has caused these presents to be executed by its Executive Vice President with the corporate seal affixed this 07 day of March, 2002

ATTEST

L. Nelson  
Assistant Secretary

WESTERN SURETY COMPANY  
By Stephen T. Pate  
Stephen T. Pate, Executive Vice President

STATE OF SOUTH DAKOTA }  
COUNTY OF MINNEHAHA } ss

On this 07 day of March, 2002, before me, a Notary Public, personally appeared Stephen T. Pate and L. Nelson

who, being by me duly sworn, acknowledged that they signed the above Power of Attorney as Executive Vice President and Assistant Secretary, respectively, of the said WESTERN SURETY COMPANY, and acknowledged said instrument to be the voluntary act and deed of said Corporation.

D. KRELL  
NOTARY PUBLIC  
SOUTH DAKOTA

My Commission Expires November 30, 2006

D. Krell  
Notary Public





Cells 122

**COPY**

Bond Number K08315607

**Performance Bond For Water Well Contractors And Drillers**

Name of Water Well Contractor or Driller Michael C. Rice/Cascade Drilling, L.P.

Know All Men By These Present

That we Michael C. Rice/Cascade Drilling, L.P. AND ANY AND ALL EMPLOYEES, OFFICERS AND PARTNERS, as Principal, and Westchester Fire Insurance Company as Surety, are held and firmly bound unto the Director of the Environmental Protection Division (Director), Department of Natural Resources, State of Georgia and his or her Successor or Successors in office, as Oblige, in the full sum of **TWENTY THOUSAND AND NO/00 DOLLARS (\$20,000.00)** for the payment of which will and truly to be made, we bind ourselves, our heir, administrators, successors and assigns, jointly and severally, by the present.

WHEREAS, the WATER WELL STANDARDS ACT OF 1985 (Ga. Laws 1985, p. 1192) (the "ACT") requires that water well contractors and drillers file performance bonds with the director to ensure compliance with the ACT; and WHEREAS the above bound PRINCIPAL is subject to the terms and provisions of said ACT. NOW, THEREFORE, the conditions of this obligation are such that if the above bound PRINCIPAL shall fully and faithfully perform the duties and in all things comply with the procedures and standards set forth in the ACT as now and hereafter amended, and the rules and regulations promulgated pursuant thereto, including but not limited to the correction of any violation of such procedures and standards upon discovery, irrespective of whether such discovery is made before completion of any well subject to this bond, then this obligation shall be void; otherwise of full force and effect.

And Surety, for value received, agrees that no amendment to existing laws, rules or regulations, or adoption of new laws, rules or regulations shall in anyway discharge its obligation on this bond, and does hereby waive notice of any such amendment, adoption or modification.

This bond shall be effective from date of issuance and shall continue in effect until terminated by expiration, mutual agreement or cancellation upon sixty (60) days written notice to Principal and Oblige; provided that the rights of the oblige and beneficiaries under this bond which arose prior to such termination shall continue.

The bond is effective 9/20/13 and unless sooner terminated, this bond shall terminate June 30, 2015. In Witness Thereof the Principal and Surety have caused these present to be duly signed and sealed, this 20th day of September 2013.

Michael C. Rice/Cascade Drilling, L.P.

PRINCIPAL, BY \_\_\_\_\_ (L.S.) TITLE: \_\_\_\_\_  
Westchester Fire Insurance Company

SURETY BY: Roxana Palacios  
Roxana Palacios, Attorney-in-Fact

GEORGIA REGISTERED AGENT N/A SEAL:

Revised December 2012



CONTINUATION  
CERTIFICATE

**SAFECO Insurance Company of America**

, Surety upon

a certain Bond No. **4993104**

dated effective **June 30, 1987**  
(MONTH-DAY-YEAR)

on behalf of **Southern Company Services, Inc.**  
(PRINCIPAL)

and in favor of **Georgia - Dept. of Natural Resources**  
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on **June 30, 2014**  
(MONTH-DAY-YEAR)

and ending on **June 30, 2015**  
(MONTH-DAY-YEAR)

Amount of bond **\$10,000.00**

Description of bond **Water Well Contractors & Drillers**

Premium: **\$100.00**

**PROVIDED:** That this continuation certificate does not create a new obligation and is executed upon the express condition and provision that the Surety's liability under said bond and this and all Continuation Certificates issued in connection therewith shall not be cumulative and that the said Surety's aggregate liability under said bond and this and all such Continuation Certificates on account of all defaults committed during the period (regardless of the number of years) said bond had been and shall be in force, shall not in any event exceed the amount of said bond as hereinbefore set forth.

Signed and dated on April 09, 2014  
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

By   
D-Ann Kleidosty, Attorney-In-Fact



**THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.**

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Certificate No. 6125754

First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

**POWER OF ATTORNEY**

KNOWN ALL PERSONS BY THESE PRESENTS: That First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Chaun M. Wilson; D-Ann Kleidosty; Gary D. Eklund; Sharon J. Potts; Sylvia M. Ogle; Tracey D. Watson; William G. Moody

all of the city of Atlanta, state of GA each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 15th day of May, 2013.



First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

By: [Signature]  
Gregory W. Davenport, Assistant Secretary

STATE OF WASHINGTON ss  
COUNTY OF KING

On this 15th day of May, 2013, before me personally appeared Gregory W. Davenport, who acknowledged himself to be the Assistant Secretary of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Seattle, Washington, on the day and year first above written.



By: [Signature]  
KD Riley, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, which are now in full force and effect reading as follows:

**ARTICLE IV – OFFICERS – Section 12. Power of Attorney.** Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

**Certificate of Designation –** The President of the Company, acting pursuant to the Bylaws of the Company, authorizes Gregory W. Davenport, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

**Authorization –** By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, David M. Carey, the undersigned, Assistant Secretary, of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 9th day of April, 2014.



By: [Signature]  
David M. Carey, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.







**THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.**

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Certificate No. 6125754

First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

**POWER OF ATTORNEY**

KNOWN ALL PERSONS BY THESE PRESENTS: That First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Chaun M. Wilson; D-Ann Keldosty; Gary D. Eklund; Sharon J. Potts; Sylvia M. Ogle; Tracey D. Watson; William G. Moody

all of the city of Atlanta, state of GA each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surely and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 15th day of May, 2013.



First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

By: Gregory W. Davenport  
Gregory W. Davenport, Assistant Secretary

STATE OF WASHINGTON ss  
COUNTY OF KING

On this 15th day of May, 2013, before me personally appeared Gregory W. Davenport, who acknowledged himself to be the Assistant Secretary of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Seattle, Washington, on the day and year first above written.



By: KD Riley  
KD Riley, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, which are now in full force and effect reading as follows:

**ARTICLE IV - OFFICERS - Section 12. Power of Attorney.** Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surely any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

**Certificate of Designation -** The President of the Company, acting pursuant to the Bylaws of the Company, authorizes Gregory W. Davenport, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surely any and all undertakings, bonds, recognizances and other surety obligations.

**Authorization -** By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, David M. Carey, the undersigned, Assistant Secretary, of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 9th day of April, 2014.



By: David M. Carey  
David M. Carey, Assistant Secretary

Not valid for mortgage, note, interest rate, interest rate or resale value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.



**Southern Company Services, Inc.**  
30 Ivan Allen Jr. Boulevard NW  
Atlanta, Georgia 30308



May 2, 2011

Mr. Tony McCook  
Georgia Geologic Survey  
19 Martin Luther King Jr. Dr. SW  
Room 400  
Atlanta, GA 30334

Re: Performance Bond for Water Well Contractors and Drillers  
Safeco Bond #4993104

Attached is the original signed Continuation Certificate for the above referenced bond on behalf of Southern Company Services, Inc. This certificate keeps this bond in force until June 30, 2012.

Please let us know if you need additional information.

Sincerely,

A handwritten signature in cursive script that reads "Clementine Broaders".

Clementine Broaders  
Southern Company Services, Inc.  
Risk Management Department

/cb

Enclosure

cc: Stacy Sprayberry, SCS





CONTINUATION  
CERTIFICATE

SAFECO Insurance Company of America

, Surety upon

a certain Bond No. 4993104

dated effective June 30, 2005  
(MONTH-DAY-YEAR)

on behalf of Southern Company Services, Inc.  
(PRINCIPAL)

and in favor of State of Georgia - Dept. of Natural Resources  
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on June 30, 2011  
(MONTH-DAY-YEAR)

and ending on June 30, 2012  
(MONTH-DAY-YEAR)

Amount of bond \$10,000.00

Description of bond License Bond - Water Well Contractors & Drillers

Premium: \$100.00

**PROVIDED:** That this continuation certificate does not create a new obligation and is executed upon the express condition and provision that the Surety's liability under said bond and this and all Continuation Certificates issued in connection therewith shall not be cumulative and that the said Surety's aggregate liability under said bond and this and all such Continuation Certificates on account of all defaults committed during the period (regardless of the number of years) said bond had been and shall be in force, shall not in any event exceed the amount of said bond as hereinbefore set forth.

Signed and dated on April 21, 2011  
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

By Barbara S. MacArthur  
Barbara S. MacArthur, Attorney-In-Fact



THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.

4178633

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

SAFECO INSURANCE COMPANY OF AMERICA  
SEATTLE, WASHINGTON  
POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS: That Safeco Insurance Company of America (the "Company"), a Washington stock insurance company, pursuant to and by authority of the By-law and Authorization hereinafter set forth, does hereby name, constitute and appoint **VIRGINIA B. MCMANUS, GARY D. EKLUND, BARBARA S. MACARTHUR, CHAUN M. WILSON, MICHAEL F. YADACH, ALL OF THE CITY OF ATLANTA, STATE OF GEORGIA**

each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations in the penal sum not exceeding **ONE HUNDRED MILLION AND 00/100** DOLLARS (\$ 100,000,000.00) each, and the execution of such undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents, shall be as binding upon the Company as if they had been duly signed by the president and attested by the secretary of the Company in their own proper persons.

That this power is made and executed pursuant to and by authority of the following By-law and Authorization:

ARTICLE IV- Execution of Contracts: Section 12- Surety Bonds and Undertakings.

Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitations as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the president and attested by the secretary.

By the following instrument the chairman or the president has authorized the officer or other official named therein to appoint attorneys-in-fact:

Pursuant to Article IV, Section 12 of the By-laws, Garnet W. Elliott, Assistant Secretary of Safeco Insurance Company of America, is authorized to appoint such attorneys-in-fact as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

That the By-law and the Authorization set forth above are true copies thereof and are now in full force and effect.

I WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Company and the corporate seal of Safeco Insurance Company of America has been affixed thereto in Plymouth Meeting, Pennsylvania this 14th day of October 2010



SAFECO INSURANCE COMPANY OF AMERICA

By Garnet W. Elliott  
Garnet W. Elliott, Assistant Secretary

COMMONWEALTH OF PENNSYLVANIA  
COUNTY OF MONTGOMERY

On this 14th day of October 2010, before me, a Notary Public, personally came Garnet W. Elliott, to me known, and acknowledged that he is an Assistant Secretary of Safeco Insurance Company of America; that he knows the seal of said corporation; and that he executed the above Power of Attorney and affixed the corporate seal of Safeco Insurance Company of America thereto with the authority and at the direction of said corporation.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Plymouth Meeting, Pennsylvania, on the day and year first above written.



Notarial Seal  
Teresa Pastella, Notary Public  
Plymouth Twp., Montgomery County  
My Commission Expires Mar. 28, 2013  
Member, Pennsylvania Association of Notaries

By Teresa Pastella  
Teresa Pastella, Notary Public

CERTIFICATE

I, the undersigned, Assistant Secretary of Safeco Insurance Company of America, do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy, is in full force and effect on the date of this certificate; and I do further certify that the officer or official who executed the said power of attorney is an Assistant Secretary specially authorized by the chairman or the president to appoint attorneys-in-fact as provided in Article IV, Section 12 of the By-laws of Safeco Insurance Company of America.

This certificate and the above power of attorney may be signed by facsimile or mechanically reproduced signatures under and by authority of the following vote of the board of directors of Safeco Insurance Company of America at a meeting duly called and held on the 18th day of September, 2009.

VOTED that the facsimile or mechanically reproduced signature of any assistant secretary of the company, wherever appearing upon a certified copy of any power of attorney issued by the company in connection with surety bonds, shall be valid and binding upon the company with the same force and effect as though manually affixed.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seal of the said company, this 21st day of April 2011



By David M. Casey  
David M. Casey, Assistant Secretary

Not valid for mortgage, not currency rate, interest rate, bank deposit, value guarantee.

To confirm the validity of this Power of Attorney call 1-800-832-8240 between 9:00 am and 4:30 pm EST on any business day.



**MARSH**

**Barbara S. MacArthur**  
Assistant Vice President

Marsh USA Inc.  
3560 Lenox Road, NE, Ste. 2400  
Atlanta, GA 30326  
404 995 2776 FAX: 404 760 5673  
Barbara.Macarthur@marsh.com  
www.marsh.com

April 21, 2011

**RECEIVED**

APR 20 2011

Risk Management  
Department

Ms. Clementine B. Broaders  
Southern Company Services  
30 Ivan Allen Jr. Blvd. NW  
Bin SC1404  
Atlanta, GA 30308

**Subject: Renewal Continuation Certificate**  
**Principal: Southern Company Services, Inc.**  
**Obligee: State of Georgia - Dept. of Natural Resources**  
**Bond Description: License Bond - Water Well Contractors & Drillers**  
**Bond Amount: \$ 10,000.00**  
**Bond Number: 4993104**  
**Indemnity: The Southern Company (Parental)**

Dear C.B.:

I am enclosing your continuation certificate for the above-referenced bond. I ask that you recheck the continuation certificate for accuracy before you file it with the obligee.

We will be sending you our invoice for the renewal premium due for this transaction in the amount of \$100.00. Marsh will receive 27.50 % of this amount from the surety company. Your payment of this invoice constitutes your agreement to our compensation for this bond.

In the event that your organization no longer requires this bond, please return the enclosed documents to Marsh so that we may advise the surety company that this bond is no longer required and obtain a clean flat cancellation on this bond on your behalf.

If you have any questions, please feel free to contact me. Thank you for allowing Marsh to service your surety needs.

Best regards,

*Barbara*  
Barbara S. MacArthur  
Assistant Vice President

Enclosure

/bsm



# MARSH

Marsh USA Inc.  
 Atlanta, GA - 242  
 (404) 995-3000

Invoice No.
382424

BNA

Date: 4/21/11

Southern Company Services, Inc  
 RM Dept - BIN SC1404  
 30 Ivan Allen Jr. Blvd NW  
 Atlanta, GA 30308

Effective Date	Expiration Date	Client No.
6/30/11	6/30/12	J21970

Policyholder: Southern Compa

ORIGINAL Billing Effective Date: 6/30/11

Insurer	Policy No.	Type of Coverage / Item	Amount
SAFECO	4993104	MISC SURETY PREMIUM	100.00
REMIT IN: UNITED STATES DOLLARS			
RENEWAL Principal(s): Southern Company Services, Inc. Oblige(e)s: Georgia - Dept. of Natural Resources Bond Amount: \$10,000.00 Bond Type - Water Well Contractors & Drillers Requester: Clementine B. Broaders Thank you! MacArthur/Atlanta/Surety			
Please indicate Invoice # 382424 on your remittance to:  Marsh USA Inc. P.O. Box 100357 Atlanta, GA 30384-0357			
<b>TOTAL:</b>			100.00

**Invoice is Payable In Full Upon Receipt**

Marsh earns and retains interest income on premium payments held by Marsh on behalf of insurers during the period between receipt of such payments from clients and the time such payments are remitted to the applicable insurer, where permitted by law.




**CONTINUATION  
CERTIFICATE**
**SAFECO Insurance Company of America**
**, Surety upon**

 a certain Bond No. **4993104**

 dated effective **June 30, 2005**  
(MONTH-DAY-YEAR)

 on behalf of **Southern Company Services, Inc.**  
(PRINCIPAL)

 and in favor of **State of Georgia - Dept. of Natural Resources**  
(OBLIGEE)

does hereby continue said bond in force for the further period

 beginning on **June 30, 2011**  
(MONTH-DAY-YEAR)

 and ending on **June 30, 2012**  
(MONTH-DAY-YEAR)

 Amount of bond **\$10,000.00**

 Description of bond **License Bond - Water Well Contractors & Drillers**

 Premium: **\$100.00**

**PROVIDED:** That this continuation certificate does not create a new obligation and is executed upon the express condition and provision that the Surety's liability under said bond and this and all Continuation Certificates issued in connection therewith shall not be cumulative and that the said Surety's aggregate liability under said bond and this and all such Continuation Certificates on account of all defaults committed during the period (regardless of the number of years) said bond had been and shall be in force, shall not in any event exceed the amount of said bond as hereinbefore set forth.

 Signed and dated on **April 21, 2011**  
(MONTH-DAY-YEAR)

**SAFECO Insurance Company of America**

 By   
Barbara S. MacArthur, Attorney-In-Fact



4178633

THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

**SAFECO INSURANCE COMPANY OF AMERICA  
SEATTLE, WASHINGTON  
POWER OF ATTORNEY**

KNOW ALL PERSONS BY THESE PRESENTS: That Safeco Insurance Company of America (the "Company"), a Washington stock insurance company, pursuant to and by authority of the By-law and Authorization hereinafter set forth, does hereby name, constitute and appoint **VIRGINIA B. MCMANUS, GARY D. EKLUND, BARBARA S. MACARTHUR, CHAUN M. WILSON, MICHAEL F. YADACH, ALL OF THE CITY OF ATLANTA, STATE OF GEORGIA**.....

..... each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations in the penal sum not exceeding **ONE HUNDRED MILLION AND 00/100** DOLLARS (\$ 100,000,000.00) each, and the execution of such undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents, shall be as binding upon the Company as if they had been duly signed by the president and attested by the secretary of the Company in their own proper persons.

That this power is made and executed pursuant to and by authority of the following By-law and Authorization:

**ARTICLE IV - Execution of Contracts: Section 12. Surety Bonds and Undertakings.**  
Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitations as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the president and attested by the secretary.

By the following instrument the chairman or the president has authorized the officer or other official named therein to appoint attorneys-in-fact:

Pursuant to Article IV, Section 12 of the By-laws, Garnet W. Elliott, Assistant Secretary of Safeco Insurance Company of America, is authorized to appoint such attorneys-in-fact as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

That the By-law and the Authorization set forth above are true copies thereof and are now in full force and effect.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Company and the corporate seal of Safeco Insurance Company of America has been affixed thereto in Plymouth Meeting, Pennsylvania this 14th day of October 2010.



SAFECO INSURANCE COMPANY OF AMERICA

By Garnet W. Elliott  
Garnet W. Elliott, Assistant Secretary

COMMONWEALTH OF PENNSYLVANIA ss  
COUNTY OF MONTGOMERY

On this 14th day of October, 2010, before me, a Notary Public, personally came Garnet W. Elliott, to me known, and acknowledged that he is an Assistant Secretary of Safeco Insurance Company of America; that he knows the seal of said corporation; and that he executed the above Power of Attorney and affixed the corporate seal of Safeco Insurance Company of America thereto with the authority and at the direction of said corporation.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Plymouth Meeting, Pennsylvania, on the day and year first above written.



Notarie/Not  
Teresa Pastella, Notary Public  
Plymouth Twp., Montgomery County  
My Commission Expires Mar. 29, 2013  
Member, Pennsylvania Association of Notaries

By Teresa Pastella  
Teresa Pastella, Notary Public

**CERTIFICATE**

I, the undersigned, Assistant Secretary of Safeco Insurance Company of America, do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy, is in full force and effect on the date of this certificate; and I do further certify that the officer or official who executed the said power of attorney is an Assistant Secretary specially authorized by the chairman or the president to appoint attorneys-in-fact as provided in Article IV, Section 12 of the By-laws of Safeco Insurance Company of America.

This certificate and the above power of attorney may be signed by facsimile or mechanically reproduced signatures under and by authority of the following vote of the board of directors of Safeco Insurance Company of America at a meeting duly called and held on the 18th day of September, 2009.

VOTED that the facsimile or mechanically reproduced signature of any assistant secretary of the company, wherever appearing upon a certified copy of any power of attorney issued by the company in connection with surety bonds, shall be valid and binding upon the company with the same force and effect as though manually affixed.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seal of the said company, this 21st day of April, 2011.



David M. Carse  
David M. Carse, Assistant Secretary

Not valid for mortgage, note, currency rate, interest rate or value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.



Bond Number KO8418809

**Performance Bond For Water Well Contractors And Drillers**

Name of Water Well Contractor or Driller Michael C. Rice dba Boart Longyear Company

Know All Men By These Present.

That we Michael C. Rice dba Boart Longyear Company and any and all Employees, Officers and Partners, as Principal, and Westchester Fire Insurance Company as Surety, are held and firmly bound unto the Director of the Environmental Protection Division (Director), Department of Natural Resources, State of Georgia and his or her Successor or Successors in office, as Obligee, in the full sum of **TWENTY THOUSAND AND NO/00 DOLLARS (\$20,000.00)** for the payment of which will and truly to be made, we bind ourselves, our heir, administrators, successors and assigns, jointly and severally, by the present.

WHEREAS, the WATER WELL STANDARDS ACT OF 1985 (Ga. Laws 1985.P 1192) (the "ACT") requires that water well contractors and drillers file performance bonds with the director to ensure compliance with the ACT; and WHEREAS the above bound PRINCIPAL is subject to the terms and provisions of said ACT. NOW, THEREFORE, the conditions of this obligation are such that if the above bound PRINCIPAL shall fully and faithfully perform the duties and in all things comply with the procedures and standards set forth in the ACT as now and hereafter amended, and the rules and regulations promulgated pursuant thereto, including but not limited to the correction of any violation of such procedures and standards upon discovery, irrespective of whether such discovery is made before completion of any well subject to this bond, then this obligation shall be void; otherwise of full force and effect.

And Surety, for value received, agrees that no amendment to existing laws, rules or regulations, or adoption of new laws, rules or regulations shall in anyway discharge its obligation on this bond, and does hereby waive notice of any such amendment, adoption or modification.

This bond shall be effective from date of issuance or, in the case of a water well contractor, date of licensure and shall continue in effect until terminated by expiration, mutual agreement or cancellation upon 60 days written notice to Principal and Obligee; provided that the rights of the obligee and beneficiaries under this bond which arose prior to such termination shall continue.

The bond is effective July 1, 2010 and unless sooner terminated, this bond shall terminate June 30, 2011. In Witness Thereof the Principal and Surety have caused these present to be duly signed and sealed, this 6th day of, July 2010.  
Michael C. Rice dba Boart Longyear Company

PRINCIPAL, BY [Signature] (L.S.)

TITLE: Franchise Manager  
Westchester Fire Insurance Company

SURETY BY: [Signature]  
Cynthia L. Choren, Attorney-In-Fact Non-Resident License No. 747470

GEORGIA REGISTERED AGENT N/A SEAL:



ACKNOWLEDGMENT BY SURETY

STATE OF Missouri  
County of St. Charles } ss.

On this 6th day of July, 2010, before me personally appeared Cynthia L. Choren, known to me to be the Attorney-in-Fact of Westchester Fire Insurance Company

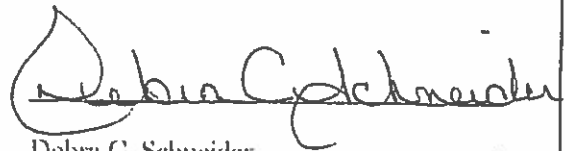
\_\_\_\_\_ , the corporation that executed the within instrument, and acknowledged to me that such corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, at my office in the aforesaid County, the day and year in this certificate first above written.

My Commission Expires: November 5, 2011

(Seal)

DEBRA C. SCHNEIDER  
Notary Public/Notary Seal  
State of Missouri  
St. Charles County  
COMMISSION #07419088  
My Commission Expires: 11/05/2011



Debra C. Schneider  
Notary Public in the State of Missouri  
County of St. Charles



# Power of Attorney

## WESTCHESTER FIRE INSURANCE COMPANY

Know all men by these presents: That WESTCHESTER FIRE INSURANCE COMPANY, a corporation of the State of New York, having its principal office in the City of Atlanta, Georgia pursuant to the following Resolution, adopted by the Board of Directors of the said Company on December 11, 2006, to wit:

"RESOLVED, that the following authorizations relate to the execution, for and on behalf of the Company, of bonds, undertakings, recognizances, contracts and other written commitments of the Company entered into the ordinary course of business (each a "Written Commitment"):

- (1) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise.
- (2) Each duly appointed attorney-in-fact of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise, to the extent that such action is authorized by the grant of powers provided for in such persons written appointment as such attorney-in-fact.
- (3) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the attorney-in-fact of the Company with full power and authority to execute, for and on behalf of the Company, under the seal of the Company or otherwise, such Written Commitments of the Company as may be specified in such written appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
- (4) Each of the Chairman, the President and Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to delegate in writing any other officer of the Company the authority to execute, for and on behalf of the Company, under the Company's seal or otherwise, such Written Commitments of the Company as are specified in such written delegation, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
- (5) The signature of any officer or other person executing any Written Commitment or appointment or delegation pursuant to this Resolution, and the seal of the Company, may be affixed by facsimile on such Written Commitment or written appointment or delegation.

FURTHER RESOLVED, that the foregoing Resolution shall not be deemed to be an exclusive statement of the powers and authority of officers, employees and other persons to act for and on behalf of the Company, and such Resolution shall not limit or otherwise affect the exercise of any such power or authority otherwise validly granted or vested.

FURTHER RESOLVED, that the Resolution of the Board of Directors of the Company adopted at the meeting held on November 8, 1999 relating to the authorization of certain persons to execute, for and on behalf of the Company, Written Commitments and appointments and delegations, is hereby rescinded.

Does hereby nominate, constitute and appoint Cynthia L. Choren, Debra C. Schneider, Heidi A. Notheisen, JoAnn R. Frank, Karen L. Roifler, Pamela A. Beelman, Sandra L. Ham, all of the City of SAINT LOUIS, Missouri, each individually if there be more than one named, its true and lawful attorney-in-fact, to make, execute, seal and deliver on its behalf, and as its act and deed any and all bonds, undertakings, recognizances, contracts and other writings in the nature thereof in penalties not exceeding Twenty million dollars & zero cents (\$20,000,000.00) and the execution of such writings in pursuance of these presents shall be as binding upon said Company, as fully and amply as if they had been duly executed and acknowledged by the regularly elected officers of the Company at its principal office.

IN WITNESS WHEREOF, the said Stephen M. Haney, Vice-President, has hereunto subscribed his name and affixed the Corporate seal of the said WESTCHESTER FIRE INSURANCE COMPANY this 1 day of December 2009.

WESTCHESTER FIRE INSURANCE COMPANY



Stephen M. Haney, Vice President

COMMONWEALTH OF PENNSYLVANIA  
COUNTY OF PHILADELPHIA ss.

On this 1 day of December, AD. 2009 before me, a Notary Public of the Commonwealth of Pennsylvania in and for the County of Philadelphia came Stephen M. Haney, Vice-President of the WESTCHESTER FIRE INSURANCE COMPANY to me personally known to be the individual and officer who executed the preceding instrument, and he acknowledged that he executed the same, and that the seal affixed to the preceding instrument is the corporate seal of said Company; that the said corporate seal and his signature were duly affixed by the authority and direction of the said corporation, and that Resolution, adopted by the Board of Directors of said Company, referred to in the preceding instrument, is now in force.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal at the City of Philadelphia the day and year first above written.



COMMONWEALTH OF PENNSYLVANIA  
NOTARIAL SEAL  
KAREN E. BRANDT, Notary Public  
City of Philadelphia, Phila. County  
My Commission Expires September 26, 2010

Notary Public

I, the undersigned Assistant Secretary of the WESTCHESTER FIRE INSURANCE COMPANY, do hereby certify that the original POWER OF ATTORNEY, of which the foregoing is a substantially true and correct copy, is in full force and effect.

In witness whereof, I have hereunto subscribed my name as Assistant Secretary, and affixed the corporate seal of the Corporation, this 6th day of July, 2010.



William L. Kelly, Assistant Secretary

THIS POWER OF ATTORNEY MAY NOT BE USED TO EXECUTE ANY BOND WITH AN INCEPTION DATE AFTER December 01, 2011.



**CLIENT'S COPY**

**SURETY BOND CONTINUATION CERTIFICATE**

TO: State of Georgia  
Division of Environmental Protection  
2 Martin Luther King Jr. Drive SE  
Suite 1252  
Atlanta, GA 30334

To be attached to and form a part of: Performance Bond for Well Contractors and Drillers

Principal on the Bond: Michael C. Rice/Cascade Drilling, L.P.

Surety Bond Number: K08315607

Bond Amount: Twenty Thousand and 00/100 Dollars ( \$20,000.00)

In consideration of the agreed premium charged for this bond, it is understood and agreed that the following change shall be made to this obligation:

**CONTINUATION CERTIFICATE**

This certificate extends the life of the bond to June 30, 2017. It is executed upon the express condition that the surety's liability under said bond, together with this and all previous continuation certificates, shall not be cumulative and shall in no event exceed the amount specifically set forth in said bond or any existing certificate changing the amount of said bond.

Signed, sealed and dated this 26th day of May , 2015 .

Westchester Fire Insurance Company

By: Katie S

Katie Snider, Attorney-in-Fact

Surety of Record: Westchester Fire Insurance Company  
436 Walnut Street  
Philadelphia, PA 19106  
Phone: (415) 547-4513

Agent of Record: Kibble & Prentice, a USI Company  
601 Union Street, Suite 1000  
Seattle, WA 98101  
Phone: (206) 441-6300



# Power of Attorney

## WESTCHESTER FIRE INSURANCE COMPANY

Know all men by these presents: That WESTCHESTER FIRE INSURANCE COMPANY, a corporation of the Commonwealth of Pennsylvania pursuant to the following Resolution, adopted by the Board of Directors of the said Company on December 11, 2006, to wit:

"RESOLVED, that the following authorizations relate to the execution, for and on behalf of the Company, of bonds, undertakings, recognizances, contracts and other written commitments of the Company entered into the ordinary course of business (each a "Written Commitment"):

- (1) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise.
- (2) Each duly appointed attorney-in-fact of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise, to the extent that such action is authorized by the grant of powers provided for in such persons written appointment as such attorney-in-fact.
- (3) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the attorney-in-fact of the Company with full power and authority to execute, for and on behalf of the Company, under the seal of the Company or otherwise, such Written Commitments of the Company as may be specified in such written appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
- (4) Each of the Chairman, the President and Vice Presidents of the Company in hereby authorized, for and on behalf of the Company, to delegate in writing any other officer of the Company the authority to execute, for and on behalf of the Company, under the Company's seal or otherwise, such Written Commitments of the Company as are specified in such written delegation, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
- (5) The signature of any officer or other person executing any Written Commitment or appointment or delegation pursuant to this Resolution, and the seal of the Company, may be affixed by facsimile on such Written Commitment or written appointment or delegation.

FURTHER RESOLVED, that the foregoing Resolution shall not be deemed to be an exclusive statement of the powers and authority of officers, employees and other persons to act for and on behalf of the Company, and such Resolution shall not limit or otherwise affect the exercise of any such power or authority otherwise validly granted or vested.

Does hereby nominate, constitute and appoint Heather Allen, Holly E Ulfers, Katie Snider, Nancy N Hill, Roxana Palacios, Steven W Palmer, all of the City of SEATTLE, Washington, each individually if there be more than one named, its true and lawful attorney-in-fact, to make, execute, seal and deliver on its behalf, and as its act and deed any and all bonds, undertakings, recognizances, contracts and other writings in the nature thereof in penalties not exceeding Fifteen million dollars & zero cents (\$15,000,000.00) and the execution of such writings in pursuance of these presents shall be as binding upon said Company, as fully and amply as if they had been duly executed and acknowledged by the regularly elected officers of the Company at its principal office,

IN WITNESS WHEREOF, the said Stephen M. Haney, Vice-President, has hereunto subscribed his name and affixed the Corporate seal of the said WESTCHESTER FIRE INSURANCE COMPANY this 22 day of December 2014.

WESTCHESTER FIRE INSURANCE COMPANY



*Stephen M. Haney*  
Stephen M. Haney, Vice President

COMMONWEALTH OF PENNSYLVANIA  
COUNTY OF PHILADELPHIA

ss.

On this 22 day of December, AD. 2014 before me, a Notary Public of the Commonwealth of Pennsylvania in and for the County of Philadelphia came Stephen M. Haney, Vice-President of the WESTCHESTER FIRE INSURANCE COMPANY to me personally known to be the individual and officer who executed the preceding instrument, and he acknowledged that he executed the same, and that the seal affixed to the preceding instrument is the corporate seal of said Company; that the said corporate seal and his signature were duly affixed by the authority and direction of the said corporation, and that Resolution, adopted by the Board of Directors of said Company, referred to in the preceding instrument, is now in force.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal at the City of Philadelphia the day and year first above written.



COMMONWEALTH OF PENNSYLVANIA  
NOTARIAL SEAL  
KAREN E. BRANDT, Notary Public  
City of Philadelphia, Phila. County  
My Commission Expires Sept. 26, 2018

*Karen E. Brandt*  
Notary Public

I, the undersigned Assistant Secretary of the WESTCHESTER FIRE INSURANCE COMPANY, do hereby certify that the original POWER OF ATTORNEY, of which the foregoing is a substantially true and correct copy, is in full force and effect.

In witness whereof, I have hereunto subscribed my name as Assistant Secretary, and affixed the corporate seal of the Corporation, this 26<sup>th</sup> day of May, 2015.



*William L. Kelly*  
William L. Kelly, Assistant Secretary

THIS POWER OF ATTORNEY MAY NOT BE USED TO EXECUTE ANY BOND WITH AN INCEPTION DATE AFTER December 22, 2016.





CONTINUATION  
CERTIFICATE

SAFECO Insurance Company of America

, Surety upon

a certain Bond No. 4993104

dated effective June 30, 1987  
(MONTH-DAY-YEAR)

on behalf of Southern Company Services, Inc.  
(PRINCIPAL)

and in favor of Georgia - Dept. of Natural Resources  
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on June 30, 2016  
(MONTH-DAY-YEAR)

and ending on June 30, 2017  
(MONTH-DAY-YEAR)

Amount of bond \$10,000.00

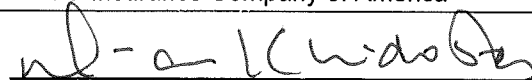
Description of bond Water Well Contractors & Drillers

**PROVIDED:** That this continuation certificate does not create a new obligation and is executed upon the express condition and provision that the Surety's liability under said bond and this and all Continuation Certificates issued in connection therewith shall not be cumulative and that the said Surety's aggregate liability under said bond and this and all such Continuation Certificates on account of all defaults committed during the period (regardless of the number of years) said bond had been and shall be in force, shall not in any event exceed the amount of said bond as hereinbefore set forth.

Signed and dated on April 07, 2016  
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

By



D-Ann Kleidosty, Attorney-in-Fact



**THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.**

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Certificate No. 7310252

First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

**POWER OF ATTORNEY**

KNOWN ALL PERSONS BY THESE PRESENTS: That First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Brooke A. Sharp; Christine Doczy; D-Ann Kleidosty; Gary D. Eklund; Sharon J. Potts; Sylvia M. Ogle; William G. Moody

all of the city of Atlanta, state of GA each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 1st day of April, 2016.



First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

By: David M. Carey  
David M. Carey, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

STATE OF PENNSYLVANIA ss  
COUNTY OF MONTGOMERY

On this 1st day of April, 2016, before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Plymouth Meeting, Pennsylvania, on the day and year first above written.



COMMONWEALTH OF PENNSYLVANIA  
Notarial Seal  
Teresa Pastella, Notary Public  
Plymouth Twp., Montgomery County  
My Commission Expires March 28, 2017  
Member, Pennsylvania Association of Notaries

By: Teresa Pastella  
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, which are now in full force and effect reading as follows:

**ARTICLE IV - OFFICERS** - Section 12. Power of Attorney. Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

**Certificate of Designation** - The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

**Authorization** - By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Gregory W. Davenport, the undersigned, Assistant Secretary, of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 7th day of April, 2016.



By: Gregory W. Davenport  
Gregory W. Davenport, Assistant Secretary

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.



CONTINUATION  
CERTIFICATE

SAFECO Insurance Company of America

, Surety upon

a certain Bond No. 4993104

dated effective June 30, 1987  
(MONTH-DAY-YEAR)

on behalf of Southern Company Services, Inc.  
(PRINCIPAL)

and in favor of Georgia - Dept. of Natural Resources  
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on June 30, 2016  
(MONTH-DAY-YEAR)

and ending on June 30, 2017  
(MONTH-DAY-YEAR)

Amount of bond \$10,000.00

Description of bond Water Well Contractors & Drillers

**PROVIDED:** That this continuation certificate does not create a new obligation and is executed upon the express condition and provision that the Surety's liability under said bond and this and all Continuation Certificates issued in connection therewith shall not be cumulative and that the said Surety's aggregate liability under said bond and this and all such Continuation Certificates on account of all defaults committed during the period (regardless of the number of years) said bond had been and shall be in force, shall not in any event exceed the amount of said bond as hereinbefore set forth.

Signed and dated on April 07, 2016  
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

By 

D-Ann Kleidosty, Attorney-in-Fact



**THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.**

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Certificate No. 7310252

First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

**POWER OF ATTORNEY**

KNOWN ALL PERSONS BY THESE PRESENTS: That First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Brooke A. Sharp; Christine Doczy; D-Ann Kleidosty; Gary D. Eklund; Sharon J. Potts; Sylvia M. Ogle; William G. Moody

all of the city of Atlanta, state of GA each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 1st day of April, 2016.



First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

By: David M. Carey  
David M. Carey, Assistant Secretary

STATE OF PENNSYLVANIA ss  
COUNTY OF MONTGOMERY

On this 1st day of April, 2016, before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Plymouth Meeting, Pennsylvania, on the day and year first above written.



COMMONWEALTH OF PENNSYLVANIA  
Notarial Seal  
Teresa Pastella, Notary Public  
Plymouth Twp., Montgomery County  
My Commission Expires March 28, 2017  
Member, Pennsylvania Association of Notaries

By: Teresa Pastella  
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, which are now in full force and effect reading as follows:

**ARTICLE IV - OFFICERS** - Section 12. Power of Attorney. Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

**Certificate of Designation** - The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

**Authorization** - By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Gregory W. Davenport, the undersigned, Assistant Secretary, of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 7th day of April, 2016.



By: Gregory W. Davenport  
Gregory W. Davenport, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.



GENERAL PURPOSE RIDER

To be attached to and form part of Bond Number 09157828 effective June 30, 2015 issued by the Fidelity and Deposit Company of Maryland in the amount of Twenty Thousand and No/100 (\$20,000.00), on behalf of Craig Penton dba Terracon Consultants, Inc. as Principal, and in favor of Director of the Environmental Protection Division, Department of Natural Resources, State of Georgia as Obligee:

NOW Therefore, it is agreed that:

**The expiration date of the bond is hereby amended to:**

**June 30, 2017**

It is further understood and agreed that all other terms and conditions of this bond shall remain unchanged.

This rider is to be effective the 30th day of June , 2015 .

Signed, sealed and dated this 4th day of November , 2015 .

Craig Penton dba Terracon Consultants, Inc.  
Principal

\_\_\_\_\_

Fidelity and Deposit Company of Maryland  
Surety

\_\_\_\_\_

Christy M. Braile, Attorney-in-Fact



6/4/14 sent to  
Craig Penton  
(Stacy Adams)

FOR YOUR RECORDS

Bond Number 09157828

**Performance Bond For Water Well Contractors And Drillers**

Name of Water Well Contractor or Driller Craig Penton dba Terracon Consultants, Inc.

Know All Men By These Present

That we Craig Penton dba Terracon Consultants, Inc. AND ANY AND ALL EMPLOYEES, OFFICERS AND PARTNERS, as Principal, and Fidelity and Deposit Company of Maryland as Surety, are held and firmly bound unto the Director of the Environmental Protection Division (Director), Department of Natural Resources, State of Georgia and his or her Successor or Successors in office, as Obligee, in the full sum of **TWENTY THOUSAND AND NO/00 DOLLARS (\$20,000.00)** for the payment of which will and truly to be made, we bind ourselves, our heir, administrators, successors and assigns, jointly and severally, by the present.

WHEREAS, the WATER WELL STANDARDS ACT OF 1985 (Ga. Laws 1985, p. 1192) (the "ACT") requires that water well contractors and drillers file performance bonds with the director to ensure compliance with the ACT; and WHEREAS the above bound PRINCIPAL is subject to the terms and provisions of said ACT. NOW, THEREFORE, the conditions of this obligation are such that if the above bound PRINCIPAL shall fully and faithfully perform the duties and in all things comply with the procedures and standards set forth in the ACT as now and hereafter amended, and the rules and regulations promulgated pursuant thereto, including but not limited to the correction of any violation of such procedures and standards upon discovery, irrespective of whether such discovery is made before completion of any well subject to this bond, then this obligation shall be void; otherwise of full force and effect.

And Surety, for value received, agrees that no amendment to existing laws, rules or regulations, or adoption of new laws, rules or regulations shall in anyway discharge its obligation on this bond, and does hereby waive notice of any such amendment, adoption or modification.

This bond shall be effective from date of issuance and shall continue in effect until terminated by expiration, mutual agreement or cancellation upon sixty (60) days written notice to Principal and Obligee; provided that the rights of the obligee and beneficiaries under this bond which arose prior to such termination shall continue.

The bond is effective June 4, 2014 and unless sooner terminated, this bond shall terminate June 30, 2015. In Witness Thereof the Principal and Surety have caused these present to be duly signed and sealed, this 4th day of, June 2014.

PRINCIPAL, BY \_\_\_\_\_ (L.S.) TITLE: \_\_\_\_\_

SURETY BY: Christy M. McCart, Attorney-in-Fact

GEORGIA REGISTERED AGENT N/A SEAL:

Revised December 2012



**COPY**

CONTINUATION  
CERTIFICATE

Atlantic Specialty Insurance Company

, Surety upon

a certain Bond No. **800031223**

dated effective June 30, 2017  
(MONTH-DAY-YEAR)

on behalf of Michael C. Rice and Cascade Drilling, L.P., any and all employees, officers and partners  
(PRINCIPAL)

and in favor of State of Georgia  
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on June 30, 2019  
(MONTH-DAY-YEAR)

and ending on June 30, 2021  
(MONTH-DAY-YEAR)

Amount of bond Thirty Thousand and Zero/100 (\$30,000.00)

Description of bond Water Well Contractor Performance Bond

Premium: \$1,200.00

**PROVIDED: That this continuation certificate does not create a new obligation and is executed upon the express condition and provision that the Surety's liability under said bond and this and all Continuation Certificates issued in connection therewith shall not be cumulative and that the said Surety's aggregate liability under said bond and this and all such Continuation Certificates on account of all defaults committed during the period (regardless of the number of years) said bond had been and shall be in force, shall not in any event exceed the amount of said bond as hereinbefore set forth.**

Signed and dated on May 9, 2019  
(MONTH-DAY-YEAR)  
Atlantic Specialty Insurance Company

By \_\_\_\_\_  
Attorney-in-Fact Elizabeth R. Hahn

Parker, Smith & Feek, Inc.  
Agent

2233 112th Ave NE Bellevue, WA 98004  
Address of Agent

(425) 709-3600  
Telephone Number of Agent



## Power of Attorney

KNOW ALL MEN BY THESE PRESENTS, that ATLANTIC SPECIALTY INSURANCE COMPANY, a New York corporation with its principal office in Plymouth, Minnesota, does hereby constitute and appoint: **Deanna M. French, Susan B. Larson, Elizabeth R. Hahn, Jana M. Roy, Scott McGilvray, Mindee L. Rankin, Ronald J. Lange, John R. Claeys, Roger Kaltenbach, Guy Armfield, Scott Fisher, Andrew P. Larsen, Nicholas Fredrickson**, each individually if there be more than one named, its true and lawful Attorney-in-Fact, to make, execute, seal and deliver, for and on its behalf as surety, any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof; provided that no bond or undertaking executed under this authority shall exceed in amount the sum of: **sixty million dollars (\$60,000,000)** and the execution of such bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof in pursuance of these presents, shall be as binding upon said Company as if they had been fully signed by an authorized officer of the Company and sealed with the Company seal. This Power of Attorney is made and executed by authority of the following resolutions adopted by the Board of Directors of ATLANTIC SPECIALTY INSURANCE COMPANY on the

Resolved: That the President, any Senior Vice President or Vice-President (each an "Authorized Officer") may execute for and in behalf of the Company any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof, and affix the seal of the Company thereto; and that the Authorized Officer may appoint and authorize an Attorney-in-Fact to execute on behalf of the Company any and all such instruments and to affix the Company seal thereto; and that the Authorized Officer may at any time remove any such Attorney-in-Fact and revoke all power and authority given to any such Attorney-in-Fact.

Resolved: That the Attorney-in-Fact may be given full power and authority to execute for and in the name and on behalf of the Company any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof, and any such instrument executed by any such Attorney-in-Fact shall be as binding upon the Company as if signed and sealed by an Authorized Officer and, further, the Attorney-in-Fact is hereby authorized to verify any affidavit required to be attached to bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof.

This power of attorney is signed and sealed by facsimile under the authority of the following Resolution adopted by the Board of Directors of ATLANTIC SPECIALTY INSURANCE COMPANY on the twenty-fifth day of September, 2012:

Resolved: That the signature of an Authorized Officer, the signature of the Secretary or the Assistant Secretary, and the Company seal may be affixed by facsimile to any power of attorney or to any certificate relating thereto appointing an Attorney-in-Fact for purposes only of executing and sealing any bond, undertaking, recognizance or other written obligation in the nature thereof, and any such signature and seal where so used, being hereby adopted by the Company as the original signature of such officer and the original seal of the Company, to be valid and binding upon the Company with the same force and effect as though manually affixed.

IN WITNESS WHEREOF, ATLANTIC SPECIALTY INSURANCE COMPANY has caused these presents to be signed by an Authorized Officer and the seal of the Company to be affixed this twenty-sixth day of October, 2017.

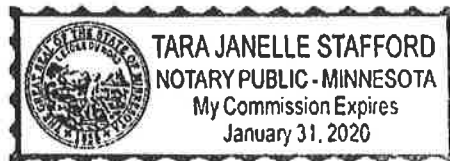
STATE OF MINNESOTA  
HENNEPIN COUNTY



By

Paul J. Brehm, Senior Vice President

On this twenty-sixth day of October, 2017, before me personally came Paul J. Brehm, Senior Vice President of ATLANTIC SPECIALTY INSURANCE COMPANY, to me personally known to be the individual and officer described in and who executed the preceding instrument, and he acknowledged the execution of the same, and being by me duly sworn, that he is the said officer of the Company aforesaid, and that the seal affixed to the preceding instrument is the seal of said Company and that the said seal and the signature as such officer was duly affixed and subscribed to the said instrument by the authority and at the direction of the Company.



Notary Public

I, the undersigned, Secretary of ATLANTIC SPECIALTY INSURANCE COMPANY, a New York Corporation, do hereby certify that the foregoing power of attorney is in full force and has not been revoked, and the resolutions set forth above are now in force.

Signed and sealed. Dated 9 day of May, 2019

This Power of Attorney expires  
October 1, 2019



Christopher V. Jerry, Secretary



CONTINUATION  
CERTIFICATE

SAFECO Insurance Company of America

, Surety upon

a certain Bond No. **4993104**

dated effective June 30, 1987  
(MONTH-DAY-YEAR)

on behalf of Southern Company Services, Inc.  
(PRINCIPAL)

and in favor of Georgia Department of Natural Resources, Environmental Protection Division  
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on June 30, 2019  
(MONTH-DAY-YEAR)

and ending on June 30, 2020  
(MONTH-DAY-YEAR)

Amount of bond Fifteen Thousand Dollars and 00/100 (\$15,000.00)

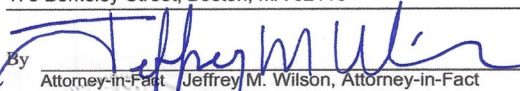
Description of bond Water Well Contractors & Drillers

Premium: \$100.00

**PROVIDED: That this continuation certificate does not create a new obligation and is executed upon the express condition and provision that the Surety's liability under said bond and this and all Continuation Certificates issued in connection therewith shall not be cumulative and that the said Surety's aggregate liability under said bond and this and all such Continuation Certificates on account of all defaults committed during the period (regardless of the number of years) said bond had been and shall be in force, shall not in any event exceed the amount of said bond as hereinbefore set forth.**

Signed and dated on 11/10/2020  
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America  
175 Berkeley Street, Boston, MA 02116

By   
Attorney-in-Fact Jeffrey M. Wilson, Attorney-in-Fact

McGriff, Seibels & Williams, Inc.  
Agent

2211 7th Avenue South, Birmingham, AL 35233  
Address of Agent

(205) 252-9871

Telephone Number of Agent





This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

American States Insurance Company
First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

Certificate No: 8201221-016032

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That American States Insurance Company is a corporation duly organized under the laws of the State of Indiana, that First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Anna Childress; Richard H. Mitchell; Sam Audia; Mark W. Edwards, II; Alisa B. Ferris; Robert R. Freel; William M. Smith; Jeffrey M. Wilson

all of the city of Birmingham state of AL each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 8th day of May, 2019.

American States Insurance Company
First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

By: David M. Carey

David M. Carey, Assistant Secretary



State of PENNSYLVANIA
County of MONTGOMERY

On this 8th day of May, 2019 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Upper Merion Twp., Montgomery County
My Commission Expires March 28, 2021
Member, Pennsylvania Association of Notaries

By: Teresa Pastella
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, which are now in full force and effect reading as follows:

ARTICLE IV - OFFICERS: Section 12. Power of Attorney.

Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorney-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

Certificate of Designation - The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization - By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 10th day of November, 2020.



By: Renee C. Llewellyn

Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.



CONTINUATION  
CERTIFICATE

SAFECO Insurance Company of America

, Surety upon

a certain Bond No. **4993104**

dated effective June 30, 1987  
(MONTH-DAY-YEAR)

on behalf of Southern Company Services, Inc.  
(PRINCIPAL)

and in favor of Georgia Department of Natural Resources, Environmental Protection Division  
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on June 30, 2020  
(MONTH-DAY-YEAR)

and ending on June 30, 2021  
(MONTH-DAY-YEAR)

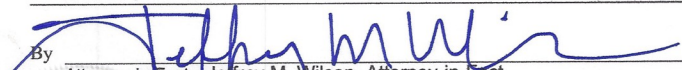
Amount of bond Fifteen Thousand Dollars and 00/100 (\$15,000.00)

Description of bond Water Well Contractors & Drillers

Premium: \$100.00

**PROVIDED: That this continuation certificate does not create a new obligation and is executed upon the express condition and provision that the Surety's liability under said bond and this and all Continuation Certificates issued in connection therewith shall not be cumulative and that the said Surety's aggregate liability under said bond and this and all such Continuation Certificates on account of all defaults committed during the period (regardless of the number of years) said bond had been and shall be in force, shall not in any event exceed the amount of said bond as hereinbefore set forth.**

Signed and dated on 11/10/2020  
(MONTH-DAY-YEAR)  
SAFECO Insurance Company of America  
175 Berkeley Street, Boston, MA 02116

By   
Attorney-in-Fact Jeffrey M. Wilson, Attorney-in-Fact

McGriff, Seibels & Williams, Inc.  
Agent  
2211 7th Avenue South, Birmingham, AL 35233  
Address of Agent  
(205) 252-9871  
Telephone Number of Agent





This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

American States Insurance Company
First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

Certificate No: 8201221-016032

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That American States Insurance Company is a corporation duly organized under the laws of the State of Indiana, that First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Anna Childress, Richard H. Mitchell, Sam Audia; Mark W. Edwards, II; Alisa B. Ferris; Robert R. Freel; William M. Smith; Jeffrey M. Wilson

all of the city of Birmingham state of AL each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 8th day of May, 2019.

American States Insurance Company
First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

By: [Signature of David M. Carey]

David M. Carey, Assistant Secretary



State of PENNSYLVANIA
County of MONTGOMERY ss

On this 8th day of May, 2019 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Upper Merion Twp., Montgomery County
My Commission Expires March 28, 2021
Member, Pennsylvania Association of Notaries

By: [Signature of Teresa Pastella]
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, which are now in full force and effect reading as follows:

ARTICLE IV - OFFICERS: Section 12. Power of Attorney.

Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorney-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

Certificate of Designation - The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization - By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 10th day of November, 2020.



By: [Signature of Renee C. Llewellyn]

Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-800-832-8240 between 9:00 am and 4:30 pm EST on any business day.



CONTINUATION  
CERTIFICATE

SAFECO Insurance Company of America

, Surety upon

a certain Bond No. 4993104

dated effective 6/30/1987  
(MONTH-DAY-YEAR)

on behalf of Southern Company Services, Inc.  
(PRINCIPAL)

and in favor of Georgia Department of Natural Resources, Environmental Protection Division  
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on June 30, 2019  
(MONTH-DAY-YEAR)

and ending on June 30, 2020  
(MONTH-DAY-YEAR)

Amount of bond \$15,000.00

Description of bond Water Well Contractors & Drillers

**PROVIDED:** That this continuation certificate does not create a new obligation and is executed upon the express condition and provision that the Surety's liability under said bond and this and all Continuation Certificates issued in connection therewith shall not be cumulative and that the said Surety's aggregate liability under said bond and this and all such Continuation Certificates on account of all defaults committed during the period (regardless of the number of years) said bond had been and shall be in force, shall not in any event exceed the amount of said bond as hereinbefore set forth.

Signed and dated on June 05, 2019  
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

By   
Loretta M. Jones, Attorney-in-fact





This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

American States Insurance Company
First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

Certificate No. 8200528-969358

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That American States Insurance Company is a corporation duly organized under the laws of the State of Indiana, that First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Julie Karnes, Andrea Allman, Rachel A. Chaveriat, Jessica Frederick, Rebecca J. Hobbs, Loretta M. Jones, Sandra King, Thelma M. Lett, Michelle Lute-Heatherly, Sandy McElhane, Vicki Nobinger, Bonnie Rice, Mariah Smith, Mary Y. Volmar, Carolyn E. Wheeler, Joy M. Williams

all of the city of Knoxville state of TN each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 15th day of February, 2019.



American States Insurance Company
First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

By: [Signature]
David M. Carey, Assistant Secretary

State of PENNSYLVANIA
County of MONTGOMERY ss

On this 15th day of February, 2019 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Upper Merion Twp. Montgomery County
My Commission Expires March 28, 2021
Member, Pennsylvania Association of Notaries

By: [Signature]
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, which are now in full force and effect reading as follows:

ARTICLE IV - OFFICERS: Section 12. Power of Attorney.

Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorney-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

Certificate of Designation - The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization - By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 5th day of June, 2019.



By: [Signature]
Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

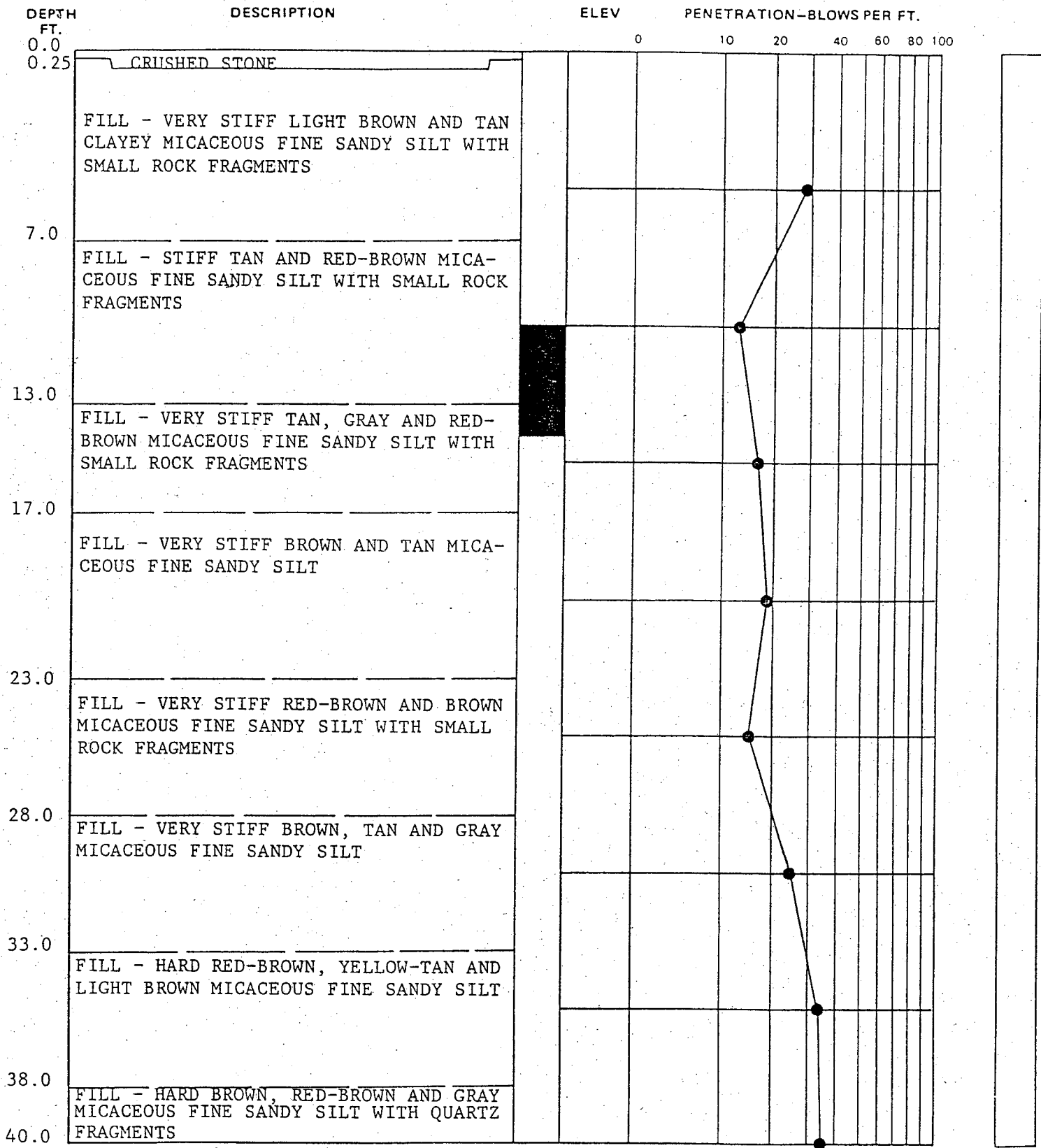




# APPENDIX C

## BORING LOGS





CONTINUED

atlanta testing & engineering

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

UNDISTURBED SAMPLE  
 50% ROCK CORE RECOVERY

WATER TABLE, 24 HR.  
 WATER TABLE, 1 HR.  
 LOSS OF DRILLING WATER

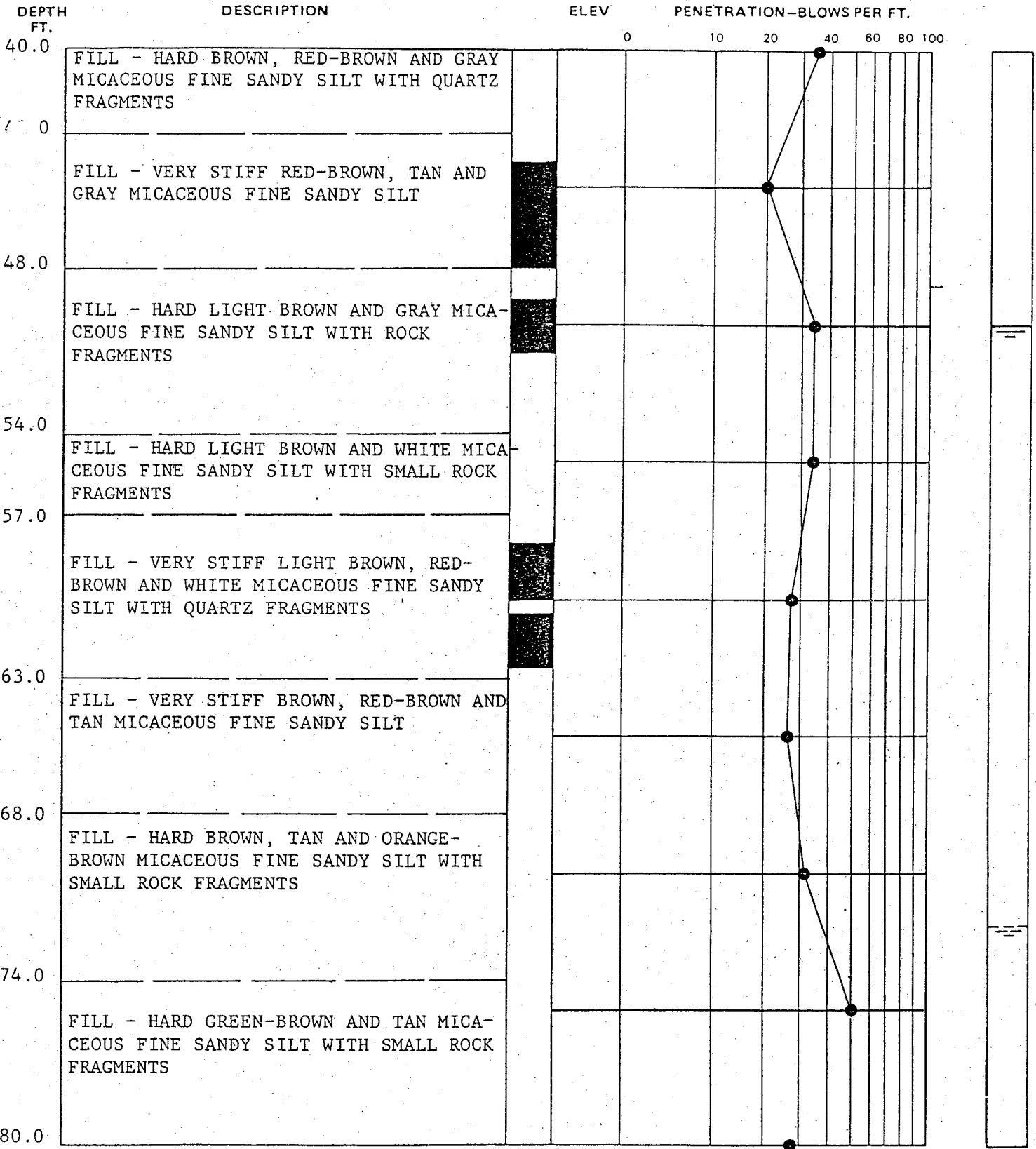
TEST BORING RECORD

BORING NO. AP-1 (pg. 1 of 3)  
DATE DRILLED 8/13-14/81  
LAB NO. 80500  
JOB NO. 4083

ATE 117

*SAC*  
*2/26*  
*764*





CONTINUED

atlanta testing & engineering

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

TEST BORING RECORD

BORING NO. AP-1 (pg. 2 of 3)  
 DATE DRILLED 8/13-14/81  
 LAB NO. 80500  
 JOB NO. 4083

- UNDISTURBED SAMPLE
- WATER TABLE, 24 HR.
- WATER TABLE, 1 HR.
- LOSS OF DRILLING WATER
- 50% ROCK CORE RECOVERY



DEPTH  
FT.  
80.0

DESCRIPTION

ELEV

PENETRATION—BLOWS PER FT.

0 10 20 40 60 80 100

88.0

93.0

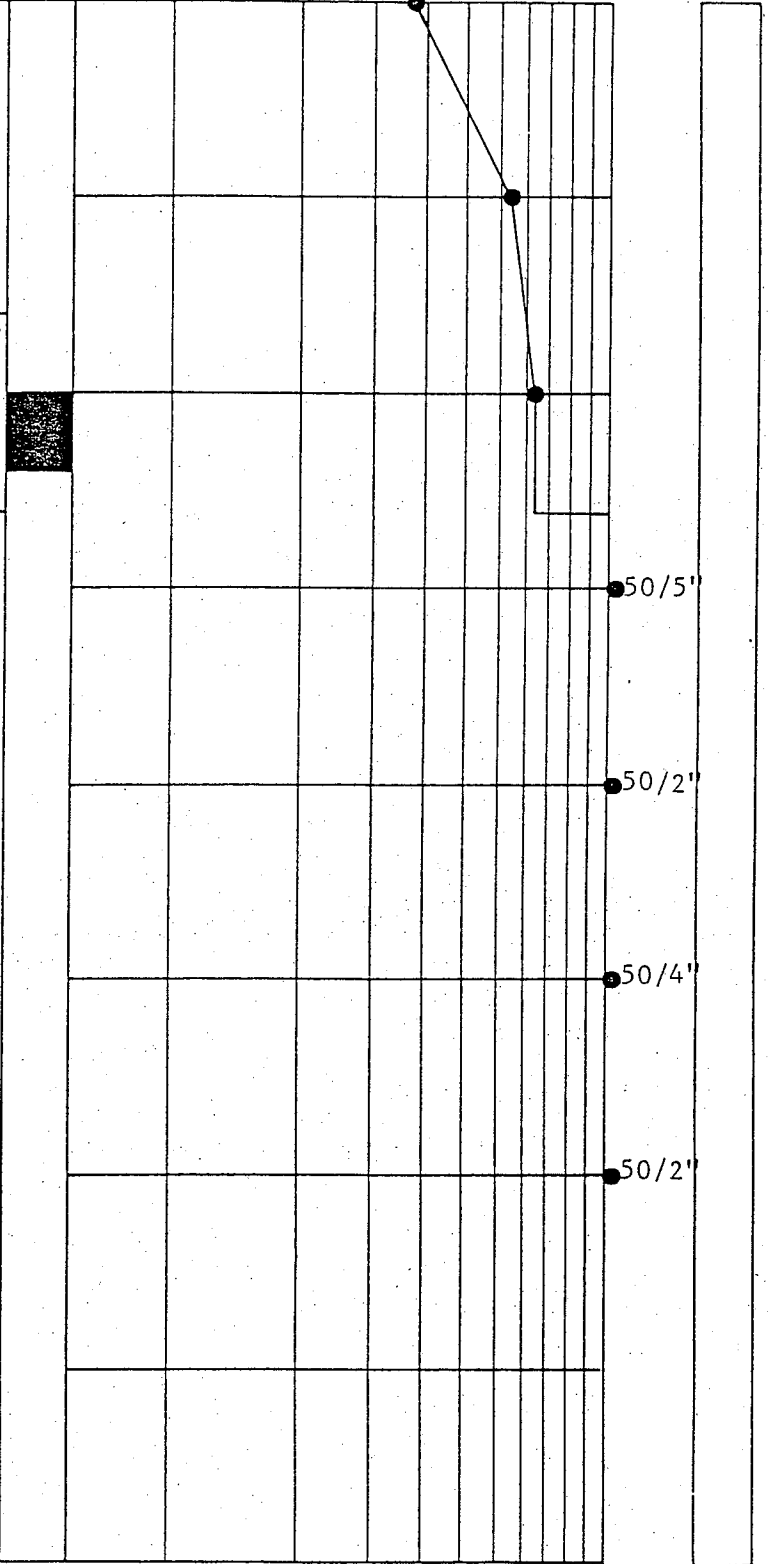
110.0

VERY STIFF TO HARD BROWN, RED-BROWN  
AND TAN MICACEOUS FINE SANDY SILT

HARD GRAY AND TAN MICACEOUS FINE SANDY  
SILT

VERY HARD BROWN, GRAY AND TAN HIGHLY  
MICACEOUS FINE SANDY SILT (PARTIALLY  
WEATHERED ROCK)

BORING TERMINATED



atlanta testing & engineering

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

UNDISTURBED SAMPLE  
| 50 | % ROCK CORE RECOVERY

WATER TABLE, 24 HR.  
WATER TABLE, 1 HR.  
▲ LOSS OF DRILLING WATER

TEST BORING RECORD

BORING NO. AP-1 (pg. 3 of 3)  
DATE DRILLED 8/13-14/81  
LAB NO. 80500  
JOB NO. 4083 ATE 117

8/16 116 734



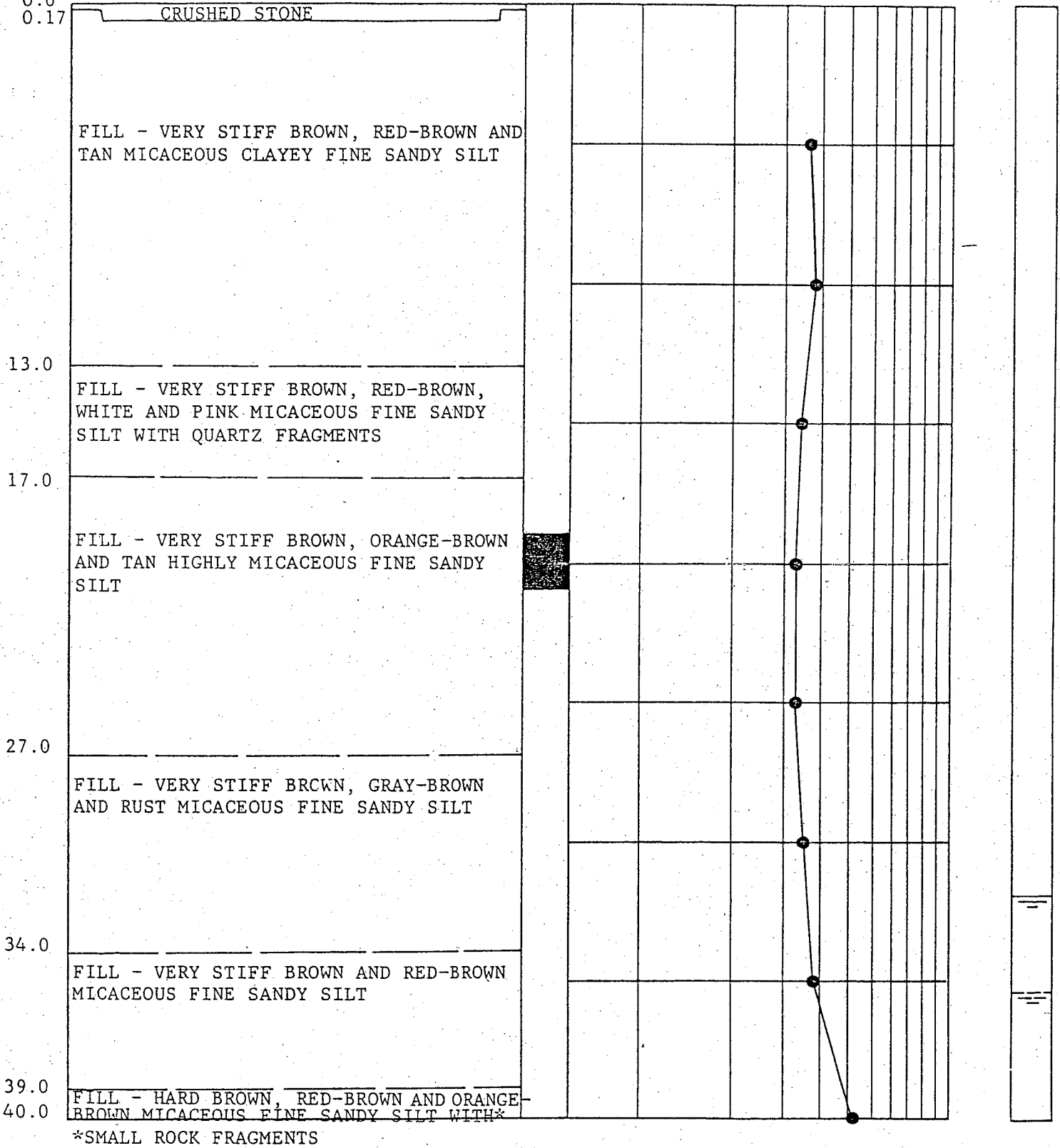
DEPTH  
FT.  
0.0  
0.17

DESCRIPTION

ELEV

PENETRATION-BLOWS PER FT.

0 10 20 40 60 80 100



CONTINUED

atlanta testing & engineering

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

TEST BORING RECORD

BORING NO. AP-2 (pg. 1 of 3)  
DATE DRILLED 8/19-20/81  
LAB NO. 80500  
JOB NO. 4083

UNDISTURBED SAMPLE  
| 50 | % ROCK CORE RECOVERY

WATER TABLE, 24 HR.  
WATER TABLE, 1 HR.  
LOSS OF DRILLING WATER







DEPTH FT.	DESCRIPTION	ELEV	PENETRATION—BLOWS PER FT.																	
			0	10	20	40	60	80	100											
80.0	VERY HARD GREEN-GRAY, BROWN AND YELLOW-BROWN HIGHLY MICACEOUS FINE SANDY SILT																			
85.0	VERY HARD GREEN-GRAY AND TAN MICACEOUS FINE SANDY SILT (PARTIALLY WEATHERED ROCK)																			
	BORING TERMINATED																			

50/5'

atlanta testing & engineering

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

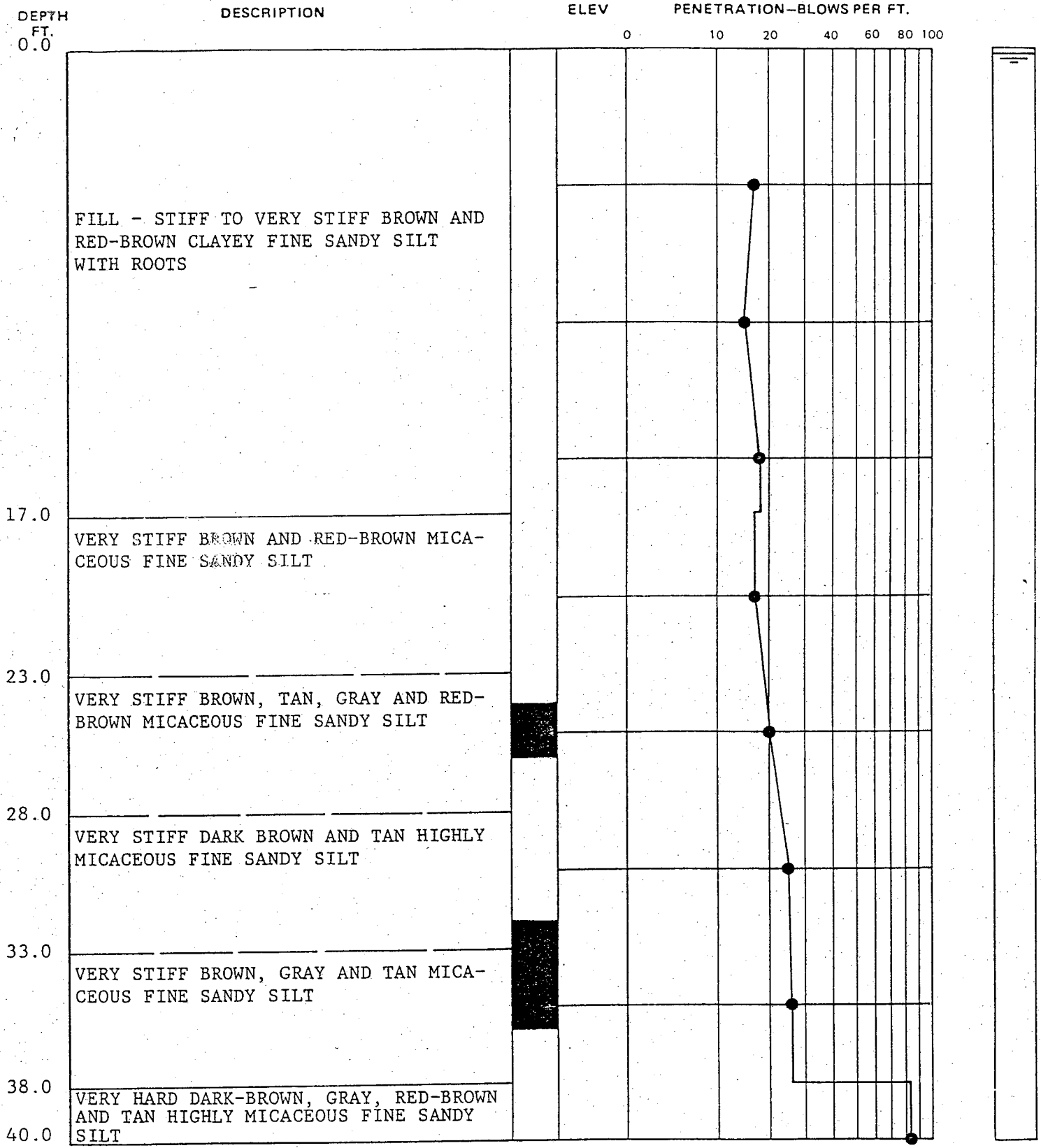
TEST BORING RECORD

BORING NO. AP-2 (pg. 3 of 3)  
 DATE DRILLED 8/19-20/81  
 LAB NO. 80500  
 JOB NO. 4083

UNDISTURBED SAMPLE  
 % ROCK CORE RECOVERY

WATER TABLE, 24 HR.  
 WATER TABLE, 1 HR.  
 LOSS OF DRILLING WATER





CONTINUED

atlanta testing & engineering

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

TEST BORING RECORD

BORING NO. AP-3 (pg. 1 of 2)  
 DATE DRILLED 8/21-24/81  
 LAB NO. 80500  
 JOB NO. 4083

 UNDISTURBED SAMPLE  
 WATER TABLE, 24 HR.  
 WATER TABLE, 1 HR.  
 LOSS OF DRILLING WATER  
 50% ROCK CORE RECOVERY



DEPTH  
FT.

DESCRIPTION

ELEV

PENETRATION—BLOWS PER FT.

0 10 20 40 60 80 100

40.0

VERY HARD DARK-BROWN, GRAY, RED-BROWN  
AND TAN HIGHLY MICACEOUS FINE SANDY  
SILT

50.0

BORING TERMINATED

50/5'

atlanta testing & engineering

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

TEST BORING RECORD

BORING NO. AP-3 (pg. 2 of 2)  
DATE DRILLED 8/21-24/81  
LAB NO. 80500  
JOB NO. 4083

ATE 117

UNDISTURBED SAMPLE

WATER TABLE, 24 HR.

50 % ROCK CORE RECOVERY

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER





# LOG OF TEST BORING

**BORING AP3-08**  
PAGE 1 OF 1  
ES 2207

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond 3 and 4 Closure Borings  
LOCATION Plant McDonough

DATE STARTED 2/13/2013 COMPLETED 2/13/2013 SURF. ELEV. 841.6 COORDINATES: N:1,393,839.37 E:2,202,026.83

CONTRACTOR Ranger Consulting EQUIPMENT \_\_\_\_\_ METHOD Direct Push

DRILLED BY B. Ozment LOGGED BY G. Dyer CHECKED BY \_\_\_\_\_ ANGLE \_\_\_\_\_ BEARING \_\_\_\_\_

BORING DEPTH 25 ft. GROUND WATER DEPTH: DURING \_\_\_\_\_ COMP. \_\_\_\_\_ DELAYED \_\_\_\_\_

NOTES \_\_\_\_\_

2012 GEOTECH ENGINEERING LOGS - ESEE2012DATABASE.GDT - 3/14/13 16:02 - T:\ESEE MAJOR PROJECTS\PROJECTS\MCDONOUGH - ATKINSON\2012\ES2207 ASH POND\CLOSURES AP1-3-4\ASH POND 4 DATA\ASH POND3AND4\CLOSUREBORINGS.GPJ

DEPTH (ft) GRAPHIC LOG	STRATA DESCRIPTION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
				PERCENT RECOVERY (RQD)	
5	Coal Combustion Byproduct (ASH) - gray, moist, loose				poor recovery till natural soil - ash inferred where no recovery.
20	Silt (ML) - tan, moist, dense		821.6		
25			816.6		

Bottom of borehole at 25.0 feet.









# LOG OF TEST BORING

**BORING AP3-10**  
PAGE 1 OF 1  
ES 2207

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond 3 and 4 Closure Borings  
LOCATION Plant McDonough

DATE STARTED 2/13/2013 COMPLETED 2/13/2013 SURF. ELEV. 840.1 COORDINATES: N:1,393,806.79 E:2,201,848.05

CONTRACTOR Ranger Consulting EQUIPMENT \_\_\_\_\_ METHOD Direct Push

DRILLED BY B. Ozment LOGGED BY G. Dyer CHECKED BY \_\_\_\_\_ ANGLE \_\_\_\_\_ BEARING \_\_\_\_\_

BORING DEPTH 15 ft. GROUND WATER DEPTH: DURING \_\_\_\_\_ COMP. \_\_\_\_\_ DELAYED \_\_\_\_\_

NOTES \_\_\_\_\_

2012 GEOTECH ENGINEERING LOGS - ESEE2012DATABASE.GDT - 3/14/13 16:02 - T:\ESEE MAJOR PROJECTS\MCDONOUGH - ATKINSON\2012\ES2207 ASH POND\CLOSURES AP1-3-4\ASH POND 4 DATA\ASH POND3AND4\CLOSUREBORINGS.GPJ

DEPTH (ft) GRAPHIC LOG	STRATA DESCRIPTION  ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
				PERCENT RECOVERY (RQD)	
5	Coal Combustion Byproduct (ASH) - gray, moist, loose				poor recovery till natural soil - ash inferred where no recovery.
10					
15					Terminated due to refusal at 15 feet.
	Silt (ML) - tan, moist, dense Bottom of borehole at 15.0 feet.				





# LOG OF TEST BORING

**BORING AP3-11**  
PAGE 1 OF 1  
ES 2207

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond 3 and 4 Closure Borings  
LOCATION Plant McDonough

DATE STARTED 2/13/2013 COMPLETED 2/13/2013 SURF. ELEV. 847.0 COORDINATES: N:1,393,906.65 E:2,202,116.07

CONTRACTOR Ranger Consulting EQUIPMENT \_\_\_\_\_ METHOD Direct Push

DRILLED BY B. Ozment LOGGED BY G. Dyer CHECKED BY \_\_\_\_\_ ANGLE \_\_\_\_\_ BEARING \_\_\_\_\_

BORING DEPTH 20 ft. GROUND WATER DEPTH: DURING \_\_\_\_\_ COMP. \_\_\_\_\_ DELAYED \_\_\_\_\_

NOTES \_\_\_\_\_

2012 GEOTECH ENGINEERING LOGS - ESEE2012DATABASE.GDT - 3/14/13 16:02 - T:\ESEE MAJOR PROJECTS\PROJECTS\MCDONOUGH - ATKINSON\2012\ES2207 ASH POND\CLOSURES AP1-3-4\ASH POND 4 DATA\ASH POND3AND4\CLOSUREBORINGS.GPJ

DEPTH (ft) GRAPHIC LOG	STRATA DESCRIPTION  ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
				PERCENT RECOVERY (RQD)	
0 5 10 15 20	<p><b>Coal Combustion Byproduct (ASH)</b> - gray, moist, loose</p> <p>836.0</p> <p><b>Silt (MH)</b> - tan, moist, dense</p> <p>827.0</p>				poor recovery till natural soil - ash inferred where no recovery.

Bottom of borehole at 20.0 feet.





# LOG OF TEST BORING

**BORING AP3-H01**  
PAGE 1 OF 1  
ES 2207

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond 3 and 4 Closure Borings  
LOCATION Plant McDonough

DATE STARTED 1/30/2013 COMPLETED 1/30/2013 SURF. ELEV. 839.6 COORDINATES: N:1,393,936.85 E:2,202,018.96

CONTRACTOR ESEE EQUIPMENT Hand METHOD 3" manual bucket auger

DRILLED BY B. Gallagher LOGGED BY B. Gallagher CHECKED BY \_\_\_\_\_ ANGLE \_\_\_\_\_ BEARING \_\_\_\_\_

BORING DEPTH 9 ft. GROUND WATER DEPTH: DURING \_\_\_\_\_ COMP. \_\_\_\_\_ DELAYED \_\_\_\_\_

NOTES \_\_\_\_\_

2012 GEOTECH ENGINEERING LOGS - ESEE2012DATABASE.GDT - 3/14/13 16:02 - T:\ESEE MAJOR PROJECTS\PROJECTS\MCDONOUGH - ATKINSON\2012\ES2207 ASH POND\CLOSURES AP1-3-4\ASH POND 4 DATA\ASH POND3AND4\CLOSUREBORINGS.GPJ

DEPTH (ft) GRAPHIC LOG	STRATA DESCRIPTION  ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
				PERCENT RECOVERY (RQD)	
5	<b>Coal Combustion Byproduct (ASH)</b> - gray, moist, loose, fly ash  - with layers of bottom ash and brown clayey soil from 1.8 to 4.5 ft				
	831.1				
	<b>Silt (ML)</b> - tan, moist, dense, silty, micaceous residual soil Bottom of borehole at 9.0 feet.				
	830.6				





# LOG OF TEST BORING

**BORING AP3-H02**  
PAGE 1 OF 1  
ES 2207

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond 3 and 4 Closure Borings  
LOCATION Plant McDonough

DATE STARTED 1/30/2013 COMPLETED 1/30/2013 SURF. ELEV. 841.1 COORDINATES: N:1,393,855.54 E:2,202,036.88

CONTRACTOR ESEE EQUIPMENT Hand METHOD 3" manual bucket auger

DRILLED BY B. Gallagher LOGGED BY B. Gallagher CHECKED BY \_\_\_\_\_ ANGLE \_\_\_\_\_ BEARING \_\_\_\_\_

BORING DEPTH 17 ft. GROUND WATER DEPTH: DURING \_\_\_\_\_ COMP. \_\_\_\_\_ DELAYED \_\_\_\_\_

NOTES \_\_\_\_\_

2012 GEOTECH ENGINEERING LOGS - ESEE2012DATABASE.GDT - 3/14/13 16:02 - T:\ESEE MAJOR PROJECTS\PROJECTS\MCDONOUGH - ATKINSON\2012\ES2207 ASH POND\CLOSURES AP1-3-4\ASH POND 4 DATA\ASH POND3 AND 4\CLOSUREBORINGS.GPJ

DEPTH (ft) GRAPHIC LOG	STRATA DESCRIPTION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
				PERCENT RECOVERY (RQD)	
5	<p><b>Coal Combustion Byproduct (ASH)</b> - gray, moist, loose, fly ash</p> <p>- with layers of bottom ash and brown clayey soil from 1.8 to 4.5 ft</p>				
10					
15					
					Terminated at 17 ft due to limits of hand auger equipment.

ELEV. 824.1

Bottom of borehole at 17.0 feet.





# LOG OF TEST BORING

**BORING AP3-H03**  
PAGE 1 OF 1  
ES 2207

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond 3 and 4 Closure Borings  
LOCATION Plant McDonough

DATE STARTED 1/30/2013 COMPLETED 1/30/2013 SURF. ELEV. 842.0 COORDINATES: N:1,393,935.87 E:2,201,780.72

CONTRACTOR ESEE EQUIPMENT Hand METHOD 3" manual bucket auger

DRILLED BY B. Gallagher LOGGED BY B. Gallagher CHECKED BY \_\_\_\_\_ ANGLE \_\_\_\_\_ BEARING \_\_\_\_\_

BORING DEPTH 5.2 ft. GROUND WATER DEPTH: DURING \_\_\_\_\_ COMP. \_\_\_\_\_ DELAYED \_\_\_\_\_

NOTES \_\_\_\_\_

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
						PERCENT RECOVERY (RQD)	
...		Coal Combustion Byproduct (ASH) - gray, moist, loose, fly ash					
...		- with layers of brown sandy soil from 3.5 to 4.5 ft					
5		Silt (ML) - tan, moist, dense, silty, micaceous residual soil	837.3 836.8				
		Bottom of borehole at 5.2 feet.					

2012 GEOTECH ENGINEERING LOGS - ESEE2012DATABASE.GDT - 3/14/13 16:02 - T:\ESEE MAJOR PROJECTS\PROJECTS\MCDONOUGH - ATKINSON\2012\ES2207 ASH POND\CLOSURES AP1-3-4\ASH POND 4 DATA\ASH POND3AND4\CLOSUREBORINGS.GPJ





# LOG OF TEST BORING

**BORING AP3-H04**  
PAGE 1 OF 1  
ES 2207

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond 3 and 4 Closure Borings  
LOCATION Plant McDonough

DATE STARTED 1/30/2013 COMPLETED 1/30/2013 SURF. ELEV. 838.0 COORDINATES: N:1,393,573.77 E:2,201,730.16

CONTRACTOR ESEE EQUIPMENT Hand METHOD 3" manual bucket auger

DRILLED BY B. Gallagher LOGGED BY B. Gallagher CHECKED BY \_\_\_\_\_ ANGLE \_\_\_\_\_ BEARING \_\_\_\_\_

BORING DEPTH 7.5 ft. GROUND WATER DEPTH: DURING \_\_\_\_\_ COMP. \_\_\_\_\_ DELAYED \_\_\_\_\_

NOTES \_\_\_\_\_

DEPTH (ft) GRAPHIC LOG	STRATA DESCRIPTION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
				PERCENT RECOVERY (RQD)	
			ELEV.		
	<b>Coal Combustion Byproduct (ASH)</b> - gray, wet, loose, fly ash				
			837.0		
	<b>Silt (MH)</b> - tan, moist, medium dense, low plasticity, residual soil				
			830.5		

Bottom of borehole at 7.5 feet.

2012 GEOTECH ENGINEERING LOGS - ESEE2012DATABASE.GDT - 3/14/13 16:02 - T:\ESEE MAJOR PROJECTS\MCDONOUGH - ATKINSON\2012\ES2207 ASH POND\CLOSURES AP1-3-4\ASH POND 4 DATA\SHOND3AND4\CLOSUREBORINGS.GPJ





# LOG OF TEST BORING

**BORING AP3-H05**  
PAGE 1 OF 1  
ES 2207

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond 3 and 4 Closure Borings  
LOCATION Plant McDonough

DATE STARTED 1/30/2013 COMPLETED 1/30/2013 SURF. ELEV. 837.8 COORDINATES: N:1,393,648.52 E:2,201,744.16

CONTRACTOR ESEE EQUIPMENT Hand METHOD 3" manual bucket auger

DRILLED BY B. Gallagher LOGGED BY B. Gallagher CHECKED BY \_\_\_\_\_ ANGLE \_\_\_\_\_ BEARING \_\_\_\_\_

BORING DEPTH 11 ft. GROUND WATER DEPTH: DURING \_\_\_\_\_ COMP. \_\_\_\_\_ DELAYED \_\_\_\_\_

NOTES \_\_\_\_\_

2012 GEOTECH ENGINEERING LOGS - ESEE2012DATABASE.GDT - 3/14/13 16:02 - T:\ESEE MAJOR PROJECTS\PROJECTS\MCDONOUGH - ATKINSON\2012\ES2207 ASH POND\CLOSURES AP1-3-4\ASH POND 4 DATA\ASH POND3 AND 4\CLOSUREBORINGS.GPJ

DEPTH (ft) GRAPHIC LOG	STRATA DESCRIPTION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
				PERCENT RECOVERY (RQD)	
5	<p style="text-align: right;">ELEV. 837.3</p> <p><b>Coal Combustion Byproduct (ASH)</b> - gray, wet, loose, fly ash</p> <p><b>Silt (MH)</b> - tan, moist, medium dense, low plasticity, residual soil</p>				
10	826.8				

Bottom of borehole at 11.0 feet.









# LOG OF TEST BORING

**BORING AP3-H11**  
PAGE 1 OF 1  
ES 2207

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond 3 and 4 Closure Borings  
LOCATION Plant McDonough

DATE STARTED 3/12/2013 COMPLETED 3/12/2013 SURF. ELEV. 840.0 COORDINATES: N:1,393,882.32 E:2,202,116.04

CONTRACTOR ESEE EQUIPMENT Hand METHOD 3" manual bucket auger

DRILLED BY B. Gallagher LOGGED BY B. Gallagher CHECKED BY \_\_\_\_\_ ANGLE \_\_\_\_\_ BEARING \_\_\_\_\_

BORING DEPTH 13.5 ft. GROUND WATER DEPTH: DURING 3.5 ft. COMP. 11 ft. DELAYED \_\_\_\_\_

NOTES \_\_\_\_\_

2012 GEOTECH ENGINEERING LOGS - ESEE2012DATABASE.GDT - 3/14/13 16:02 - T:\ESEE MAJOR PROJECTS\MCDONOUGH - ATKINSON\2012\ES2207 ASH POND\CLOSURES AP1-3-4\ASH POND 4 DATA\SHOND3AND4\CLOSUREBORINGS.GPJ

DEPTH (ft) GRAPHIC LOG	STRATA DESCRIPTION  ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
				PERCENT RECOVERY (RQD)	
0	<b>Coal Combustion Byproduct (ASH)</b> - gray, moist, loose, fly ash with numerous layers of bottom ash				
3.5	▽ - fly ash with very few layers of bottom ash below 3 ft				perched water in fly ash from 3.5 to 4.0 ft.
5					
10	▼ - with layers of bottom ash and some organic materials (roots, pine straw, etc) below 11 ft				difficult drilling below 11 ft due to squeeze. terminated due to dense natural soil and squeeze in overlying ash.
827.2					
826.5	<b>Silty Sand (SM)</b> - tan, moist, dense, sandy residual soil, little mica				

Bottom of borehole at 13.5 feet.





# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 10/2/2012 COMPLETED 10/2/2012 GROUND ELEVATION 848.3 ft COORDINATES N 1393958 E 2202119.5

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit; HQ Rock Core EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY R. Tinsley CHECKED BY \_\_\_\_\_ BORING DEPTH 54.4 ft.

GROUND WATER DEPTH: DURING 42 ft. COMP. \_\_\_\_\_ DELAYED 27.8 ft. after 24 hrs.

NOTES Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:43 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		<p><b>Silt (ML)</b> - Gravel surface with some vegetation.</p> <p>- brown, medium stiff, SILT with mica and quartz fragments.</p> <p>- CL-ML: dark red, stiff, SILT/CLAY; micaceous</p>		SS -1	4.5	4-6-9 (15)		2.5YR.
10		- reddish brown, dry, medium stiff, SILT with mica and relict bedding.		SS -2	9.5	4-4-4 (8)		saprolite (gneiss).
15		- medium stiff, SAA with mica, quartz and feldspar; distinct banding		SS -3	14.5	2-3-3 (6)		saprolite.
20		- light yellowish brown, medium stiff, fine to coarse grain, SILT with mica, quartz, and feldspar		SS -4	19.5	1-3-2 (5)		saprolite; distinct color change from red to tan with micas.
25				SS	24.5	2-3-5		

(Continued Next Page)





# BORING LOG

**BORING B-02**

Page 2 of 3

**SOUTHERN COMPANY SERVICES, INC.**  
**EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING**

**PROJECT** Plant McDonough Hydrogeological Investigation

**LOCATION** Cobb County, GA

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:43 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
29.5		<b>Silt (ML)(con't)</b> - damp, medium stiff, SAA		-5		(8)		upper saprolite.
30		- gray and white, dry, very hard, SILT; gneiss saprolite		SS -6	29.5	6-15-25 (40)		lower saprolite.
35		- olive brown, very hard, SAA, more evidence of water (iron) staining; some black specks (manganese?)		SS -7	34.5	9-27-40 (67)		2.5Y.
40		- pale brown, dry, very hard, pulverized SILT with gneiss fragments		SS -8	39.5	50 (0)		10YR.
45		<b>Gneiss</b> - dark gray, hard, slightly weathered, augen gneiss with iron staining along partings. - extremely weathered and broken gneiss	804.2	RC -1	44.1			H2O on augers when pulled.
50		- gray, hard, slightly weathered, staining along vertical fractures  - dark gray, weathered augen gneiss and mica schist with chlorite. Quartz layers at 50 ft, 52.8 ft and 54.1 ft.; Deformed and folded about 3 inches.  - Schist: hard, slightly weathered, with chlorite		RC -2	49.4			

(Continued Next Page)



# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
55		Bottom of borehole at 54.4 feet.	793.9					

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:43 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS - SURVEY UPDATED.GPJ



WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	DGWA-2/B-2
LOGGER: Rhonda Tinsley	DRILLING METHODS: HS Auger/HQ Rock Core	
DATE CONSTRUCTED: 10/2/2012	N: 1393958 E:2202119.5	

	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.6	850.88
2" Threaded Riser Cap		
4 ft x 4 ft concrete pad		
GROUND SURFACE	0.0	848.3
<b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
<b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 10 bags cement 4 lbs bentonite		
<b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	31.0	817.3
<b>ANNULAR SEAL</b> TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1.75 buckets PLACEMENT: Poured		
TOP OF FILTER PACK	35.1	813.2
<b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 2.5 Bags PLACEMENT: Poured		
BOTTOM OF RISER / TOP OF SCREEN	38.7	809.7
<b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	48.7	799.7
Flush-threaded end cap		
BOTTOM OF CASING	49.0	799.3
HOLE DIA: 7 inch (auger) 3.8 inch (HQ core)		



# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 10/2/2012 COMPLETED 10/3/2012 GROUND ELEVATION 835 ft COORDINATES N 1394045.1 E 2202411.5

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit; HQ Rock Core EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY R. Tinsley CHECKED BY \_\_\_\_\_ BORING DEPTH 42 ft.

GROUND WATER DEPTH: DURING 23 ft. COMP. \_\_\_\_\_ DELAYED 22.5 ft. after 24 hrs.

NOTES Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:43 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		<b>Silt (ML)</b> - Grass - brownish yellow, dry, SILT		SS -1	4.5	3-2-3 (5)		upper saprolite.
10		- brownish yellow, dry, medium stiff, SILT saprolite with relic bedding.		SS -2	9.5	2-3-3 (6)		10YR; powdery; Upper Saprolite.
15		- SAA		SS -3	14.5	2-3-4 (7)		upper saprolite.
20		- mottled deep red and gray, damp, stiff, SILT; with coarse grains of angular quartz; gneiss saprolite.		SS -4	19.5	1-6-5 (11)		upper saprolite.
25		<b>Silt (ML)</b>	810.5	SS	24.5	6-6-8		

(Continued Next Page)





WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	B-3
LOGGER: Rhonda Tinsley	DRILLING METHODS: HS Auger/HQ Rock Core	
DATE CONSTRUCTED: 10/3/2012	N: 1394045.1 E:2202411.5	

	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.78	837.78
2" Threaded Riser Cap		
4 ft x 4 ft concrete pad		
GROUND SURFACE	0.0	835.0
<b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
<b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 6 bags cement 9 lbs bentonite		
<b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	20.0	815.0
<b>ANNULAR SEAL</b> TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 2.25 buckets PLACEMENT: Poured		
TOP OF FILTER PACK	24.2	810.8
<b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 2.5 Bags PLACEMENT: Poured		
BOTTOM OF RISER / TOP OF SCREEN	26.7	808.4
<b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	36.7	798.4
Flush-threaded end cap		
BOTTOM OF CASING	37.0	798.0
HOLE DIA: 7 inch (auger) 3.8 inch (HQ core)		





# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 10/3/2012 COMPLETED 10/3/2012 GROUND ELEVATION 812.1 ft COORDINATES N 1394171.5 E 2202662.4

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY R. Tinsley CHECKED BY \_\_\_\_\_ BORING DEPTH 46 ft.

GROUND WATER DEPTH: DURING 23 ft. COMP. \_\_\_\_\_ DELAYED 12.2 ft. after 24 hrs.

NOTES Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:43 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
0		<b>Silt (ML)</b> - Thin topsoil with vegetation. - brown, SILT						
5		- yellowish brown, stiff, SILT saprolite, relic bedding prominent.		SS -1	4.5	3-3-6 (9)		10YR; upper saprolite.
10		- olive gray, medium stiff, SILT saprolite with fine to coarse-grained fragments.		SS -2	9.5	2-3-3 (6)		5YR; lower saprolite.
15		- damp, medium stiff, SAA		SS -3	14.5	2-2-4 (6)		
20		- wet, hard, SAA		SS -4	19.5	6-12-23 (35)		
25				SS	24.5	6-11-12		WT @ 23'.

(Continued Next Page)



# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		<b>Silt (ML)(con't)</b> - very stiff, SAA		-5		(23)		
30		- hard, SAA		SS -6	29.5	10-18-23 (41)		
35		- very stiff, SAA		SS -7	34.5	6-11-13 (24)		
40		- stiff, SAA		SS -8	39.5	5-6-5 (11)		
45		- hard, SAA		SS -9	44.5	25-45 (45)		
			766.1					
		Bottom of borehole at 46.0 feet.						
50								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:43 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS - SURVEY UPDATED.GPJ



WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	DGWC-4/B-4
LOGGER: Rhonda Tinsley	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 10/3/2012	N: 1394171.5 E:2202662.4	

	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.8	814.85
2" Threaded Riser Cap		
GROUND SURFACE	0.0	812.1
<b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
<b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 6 bags cement 9 lbs bentonite		
<b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	27.0	785.1
<b>ANNULAR SEAL</b> TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 2.25 buckets PLACEMENT: Poured		
TOP OF FILTER PACK	31.0	781.1
<b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 6.5 Bags PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	34.7	777.5
<b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	44.7	767.5
Flush-threaded end cap		
BOTTOM OF CASING	45.0	767.1
HOLE DIA: 7 inch		

4 ft x 4 ft concrete pad

Flush-threaded end cap

HOLE DIA: 7 inch



# BORING LOG

**BORING B-05**  
Page 1 of 2

**SOUTHERN COMPANY SERVICES, INC.**  
**EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING**

**PROJECT** Plant McDonough Hydrogeological Investigation  
**LOCATION** Cobb County, GA

**DATE STARTED** 10/3/2012 **COMPLETED** 10/4/2012 **GROUND ELEVATION** 788.7 ft **COORDINATES** N 1394306.3 E 2202965.1

**CONTRACTOR** SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit; HQ Rock Core **EQUIPMENT** CME 550

**DRILLED BY** S. Denty **LOGGED BY** R. Tinsley **CHECKED BY** \_\_\_\_\_ **BORING DEPTH** 30 ft.

**GROUND WATER DEPTH: DURING** 16 ft. **COMP.** \_\_\_\_\_ **DELAYED** 0 ft. after 100 hrs.

**NOTES** Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:43 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS - SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		<b>Silt (ML)</b> - reddish brown, SILT						
5		<b>Silty Sand (SM)</b> - olive gray, damp, very loose, silty SAND to sandy SILT	784.2	SS -1	4.5	WH-WH-WH (0)		
10		<b>Silt (ML)</b> - yellowish to light brown, damp, very soft, SILT with mica (gneiss)	779.2	SS -2	9.5	WH-WH-WH (0)		upper saprolite.
15		- greenish gray, wet, medium stiff, sandy SILT saprolite with relic structure (gneiss).		SS -3	14.5	2-2-4 (6)		lower saprolite.
20		- medium stiff, SAA		SS -4	19.5	1-2-3 (5)		lower saprolite.
25		- very hard, SAA; slightly less weathered.		SS	24.5	50		

(Continued Next Page)





# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
30		<b>Gneiss</b> - black (biotite) and white, hard, slightly weathered, AUGEN GNEISS with water staining along foliations (approx. 45 degrees).	763.3	-5 RC -1	24.9	(0)		lower saprolite.
Bottom of borehole at 30.0 feet.								
35								
40								
45								
50								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:43 - \\VALTRCFP01\IAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	
LOGGER: Rhonda Tinsley	DRILLING METHODS: HS Auger/HQ Rock Core	DGWC-5/B-5
DATE CONSTRUCTED: 10/4/2012	N: 1394306.3 E:2202965.1	

	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-3.0	791.75
2" Threaded Riser Cap		
4 ft x 4 ft concrete pad		
GROUND SURFACE	0.0	788.7
<b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
<b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 5 bags cement 7 lbs bentonite		
<b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	12.0	776.7
<b>ANNULAR SEAL</b> TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 2 buckets PLACEMENT: Tremie		
TOP OF FILTER PACK	16.0	772.7
<b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 1.5 Bags PLACEMENT: Tremie		
BOTTOM OF RISER / TOP OF SCREEN	19.7	769.1
<b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	29.7	759.1
Flush-threaded end cap		
BOTTOM OF CASING	30.0	758.7
HOLE DIA: 7 inch (auger) 3.8 inch (HQ core)		





# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 10/9/2012 COMPLETED 10/9/2012 GROUND ELEVATION 786.5 ft COORDINATES N 1394419.5 E 2203266.5

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY G. Dyer CHECKED BY \_\_\_\_\_ BORING DEPTH 35.8 ft.

GROUND WATER DEPTH: DURING \_\_\_\_\_ COMP. \_\_\_\_\_ DELAYED 7 ft. after 3 hrs.

NOTES Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		<b>Clayey Sand (SC)</b> - red-brown, damp, very loose, silty, clayey SAND; approximately 50% fine-grained sand, 20% clay, 20% silt, 10% organics. Organic rich horizon.	783.0					
5		<b>Silt (ML)</b> - red-tan, damp, clayey SILT with fine-grained sand  - gray to brownish yellow, stiff, clayey SILT to silty CLAY; 60% silt, 30% clay; 10% sand/gravel; contains small (1 to 2 mm) quartz feldspar gravel		SS -1	4.5	4-4-8 (12)		A horizon of residual soil.
10		- tan-brown w/orange and gray, very moist, very soft, clayey SILT, micaceous; 70% silt, 25% clay, 5% fine-grained sand		SS -2	9.5	1-1-1 (2)		B horizon of residual soil.
15		- tan-brown, very moist, very soft, clayey SILT to silty CLAY; 55% clay, 40% silt, approximately 5% fine-grained sand		SS -3	14.5	1-1-1 (2)		B horizon of residual soil.
20		- olive gray to tan-brown, dry, stiff, clayey SILT, weathered with some relic structure; 60% silt, 35% clay, 5% fine-grained sand		SS -4	19.5	3-5-6 (11)		Top of upper saprolite zone.
25				SS	24.5	12-32-46		

(Continued Next Page)





WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough		DRILLING CO.: SCS Field Services		WELL NAME	
Hydrogeologic Investigation		DRILLER: S. Denty		B-6	
LOCATION: Ash Pond		RIG TYPE: CME550			
LOGGER: Greg Dyer		DRILLING METHODS: HS Auger			
DATE CONSTRUCTED: 10/9/2012		N: 1394419.5 E: 2203266.5			
		DEPTH FEET	ELEVATION FT, MSL		
	TOP OF RISER	-3.0	789.47		
	2" Threaded Riser Cap				
4 ft x 4 ft concrete pad	GROUND SURFACE	0.0	786.5		
	<b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum				
	BOTTOM OF GROUT				
	<b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 5 bags cement 7.5 lbs bentonite				
	<b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded				
	TOP OF SEAL	16.8	769.7		
	<b>ANNULAR SEAL</b> TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 2 buckets PLACEMENT: Tremie				
	TOP OF FILTER PACK	21.7	764.8		
	<b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 6 Bags PLACEMENT: Tremie				
	BOTTOM OF RISER / TOP OF SCREEN	25.0	761.5		
	<b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch				
	BOTTOM OF SCREEN	35.0	751.5		
Flush-threaded end cap	BOTTOM OF CASING	35.4	751.1		
	HOLE DIA: 7 inch				



# BORING LOG

**BORING B-07**  
Page 1 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 10/9/2012 COMPLETED 10/9/2012 GROUND ELEVATION 806.1 ft COORDINATES N 1394374.6 E 2203596.1

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY G. Dyer CHECKED BY \_\_\_\_\_ BORING DEPTH 26 ft.

GROUND WATER DEPTH: DURING 18.5 ft. COMP. \_\_\_\_\_ DELAYED 3.8 ft. after 18 hrs.

NOTES Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		<b>Silt (ML)</b> - brown to red-brown, damp, very soft, clayey SILT with trace sand; organic rich  - red to red-tan, damp, soft, clayey SILT						O Horizon.
5		<b>Fat Clay (CH)</b> - tan, brown and orange, damp, medium stiff, silty CLAY; micaceous; relic foliations; 60% clay, 40% silt	801.6	SS -1	4.5	3-3-3 (6)		A-B Horizon / residual soils.  becomes very moist at 8.5'.
10		<b>Silt (ML)</b> - red-tan, very moist, soft, clayey SILT with trace fine sand; slightly micaceous; contains manganese	796.6	SS -2	9.5	1-1-2 (3)		residual soil.
15		- brown-red, very moist, soft, clayey SILT to silty CLAY with trace gravel; micaceous; prevalent manganese staining		SS -3	14.5	1-1-3 (4)		residual soil.
20		- olive gray (greenish), wet, medium stiff, clayey SILT; micaceous; contains relic schist fragments		SS -4	19.5	1-1-5 (6)		saturated from 18.5 to 19.5'.  residual soil.
25		- olive gray to tan-brown, wet, stiff, clayey, gravelly SILT; contains manganese and moderately		SS	24.5	7-7-8		

(Continued Next Page)





# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		weathered gneissic fragments; relic structures preserved insome instances <b>Silt (ML)(con't)</b> Bottom of borehole at 26.0 feet.	780.1	-5		(15)		upper saprolite.
30								
35								
40								
45								
50								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough		DRILLING CO.: SCS Field Services		WELL
Hydrogeologic Investigation		DRILLER: S. Denty		NAME
LOCATION: Ash Pond		RIG TYPE: CME550		B-7
LOGGER: Greg Dyer		DRILLING METHODS: HS Auger		
DATE CONSTRUCTED: 10/9/2012		N: 1394374.6 E: 2203596.1		
		DEPTH FEET	ELEVATION FT, MSL	
	TOP OF RISER	-3.1	809.16	
	2" Threaded Riser Cap			
4 ft x 4 ft concrete pad	GROUND SURFACE	0.0	806.1	
	<b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum			
	BOTTOM OF GROUT			
	<b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 3 bags cement 1.75 lbs bentonite			
	<b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded			
	TOP OF SEAL	7.6	798.5	
	<b>ANNULAR SEAL</b> TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1.75 buckets PLACEMENT: Poured			
	TOP OF FILTER PACK	12.7	793.4	
	<b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 7 Bags PLACEMENT: Poured			
	BOTTOM OF RISER / TOP OF SCREEN	14.8	791.3	
	<b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch			
	BOTTOM OF SCREEN	24.8	781.3	
Flush-threaded end cap	BOTTOM OF CASING	25.2	780.9	
	HOLE DIA: 7 inch			





# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 10/10/2012 COMPLETED 10/10/2012 GROUND ELEVATION 824.1 ft COORDINATES N 1394322.2 E 2203882.1

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY G. Dyer CHECKED BY \_\_\_\_\_ BORING DEPTH 49.1 ft.

GROUND WATER DEPTH: DURING \_\_\_\_\_ COMP. \_\_\_\_\_ DELAYED 17.04 ft. after 18 hrs.

NOTES Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \\VALTRCFP01\IAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		Silt (ML)  - tan-brown, dry, very soft, clayey SILT; micaceous; contains little quartz sand, no relic structures; 85% silt, 10% clay, 5% sand		SS -1	4.5	WH-WH-WH (0)		residual soil.
10		- tan to reddish brown, dry, medium stiff, clayey SILT; contains mica flakes and trace quartz sand; higher iron content and soil bonding; no relic structures		SS -2	9.5	3-3-5 (8)		residual soil.
15		- red-brown, damp, soft, clayey SILT; micaceous; contains trace of schist-derived gravel; higher clay percent, more plastic		SS -3	14.5	WH-1-2 (3)		residual soil.
20		- olive brown with black streaks and white layer, damp, very stiff, sandy SILT with clay; very micaceous; highly weathered original structure; contains sand and gravel derived from gneiss and a white bleached quartz lense		SS -4	19.5	20-16-10 (26)		transition to upper saprolite and higher moisture content.
25				SS	24.5	5-7-6		

(Continued Next Page)



# BORING LOG

**BORING B-08**  
Page 2 of 2

**SOUTHERN COMPANY SERVICES, INC.**  
**EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING**

**PROJECT** Plant McDonough Hydrogeological Investigation

**LOCATION** Cobb County, GA

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
30		<b>Silt (ML)(con't)</b> - stiff, SAA; more coarse-grained sediment; coarse material is angular; less competent than above; some highly weathered relict structure		-5		(13)		starting to get H2O return to surface.
35		- very hard, SAA; more competent; rock fragments less weathered		SS -6	29.5	9-10-50 (60)		transition to lower saprolite.
40		- brown-black, damp, hard, gravelly SILT; contains highly to partially weathered relict gneiss fragments; micaceous; contains manganese streaks		SS -7	34.5	5-15-18 (33)		less weathered rock; again becoming partially weathered.
45		- brown black, damp, very hard, sandy SILT with gravel; contains black manganese, red iron and weathered quartz zones; less gneissic gravel than above; micaceous	779.6	SS -8	39.5	11-12-50 (62)		fewer rock fragments.
50		<b>Silty Gravel (GM)</b> - brown, tan and black, damp, very dense, silty GRAVEL; predominately weathered to partially weathered gneiss fragments	775.0	SS -9	44.5	17-50 (50)		transitioning to partially weathered rock.
Bottom of borehole at 49.1 feet.								



WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	DGWC-8/B-8
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 10/10/2012	N: 1394322.2 E:2203882.1	

	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.3	826.38
2" Threaded Riser Cap		
GROUND SURFACE	0.0	824.1
<b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
<b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 6.25 bags cement 9 lbs bentonite		
<b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	34.8	789.3
<b>ANNULAR SEAL</b> TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Tremie w/water		
TOP OF FILTER PACK	36.8	787.3
<b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 7 Bags PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	38.7	785.4
<b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	48.7	775.4
Flush-threaded end cap		
BOTTOM OF CASING	49.1	775.0

4 ft x 4 ft concrete pad

HOLE DIA: 7 inch



# BORING LOG

**BORING B-09**  
Page 1 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 10/10/2012 COMPLETED 10/10/2012 GROUND ELEVATION 821.8 ft COORDINATES N 1394055.9 E 2204170


CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY G. Dyer CHECKED BY \_\_\_\_\_ BORING DEPTH 30.1 ft.

GROUND WATER DEPTH: DURING \_\_\_\_\_ COMP. \_\_\_\_\_ DELAYED 7.2 ft. after 15 hrs.

NOTES Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \\ALTRCFP01\ILAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		Silt (ML)  - red-brown, dry, stiff, fine SILT; relict schistose structures; soil is bonded and moderately competent but rubs to fine silt or clay		SS -1	4.5	4-6-9 (15)		no residual soil; low area previously excavated.  upper saprolite.
10		  - brown-tan, dry, very stiff, gravelly SILT; relict schistose or gneissic structure; rock fragments are more competent; rubs to fine silt with clay; contains manganese nodules and iron staining		SS -2	9.5	4-9-9 (18)		transition to lower saprolite.
15		- very stiff, SAA		SS -3	14.5	6-10-12 (22)		lower saprolite.
20		- very hard, SAA		SS -4	19.5	16-34-32 (66)		lower saprolite.
25		<b>Silty Gravel (GM)</b>	797.3	SS	24.5	51-15-25		

(Continued Next Page)





# BORING LOG

**SOUTHERN COMPANY SERVICES, INC.**  
**EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING**

**PROJECT** Plant McDonough Hydrogeological Investigation

**LOCATION** Cobb County, GA

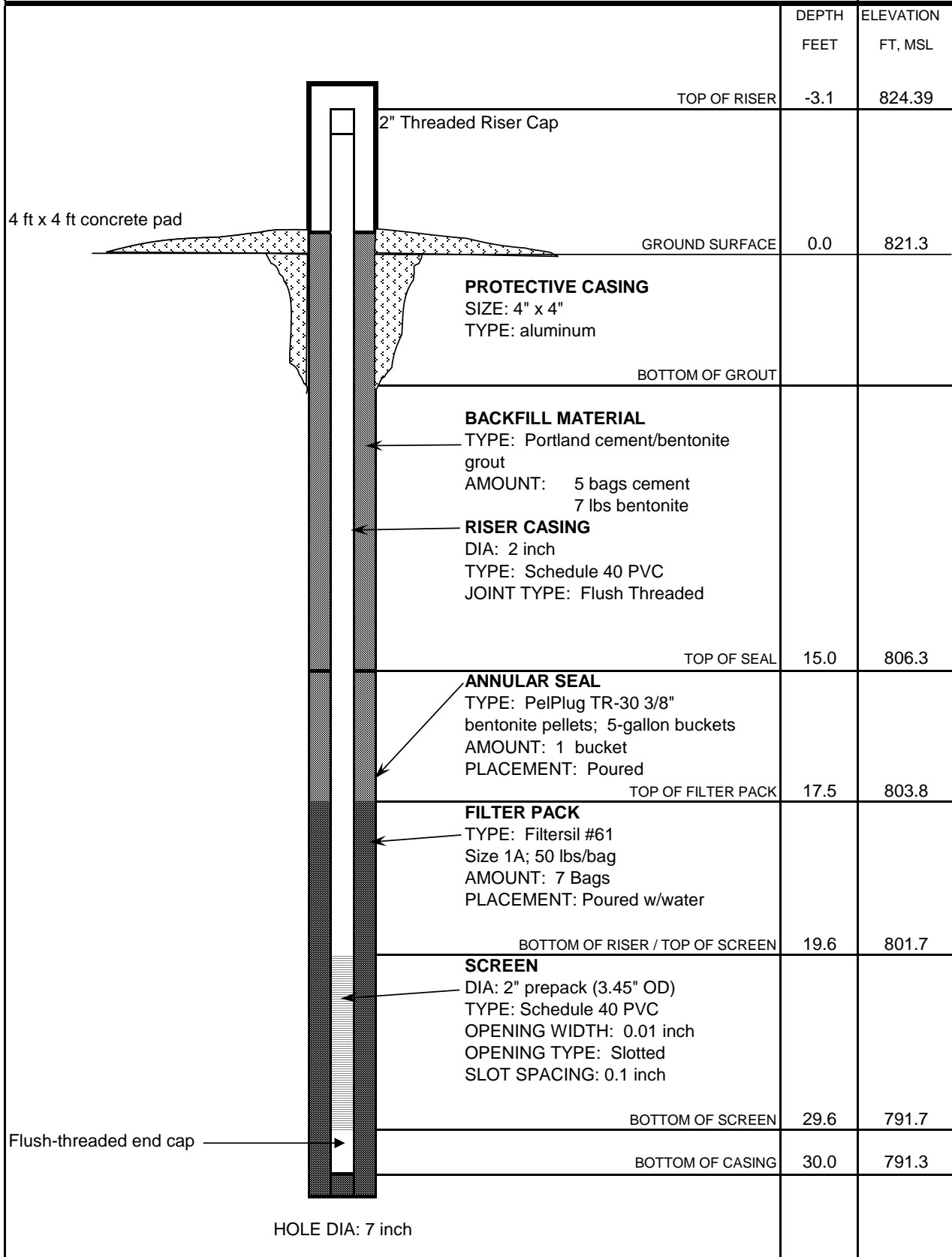
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
30		<b>Silty Gravel (GM)</b> (con't) - brown-black, damp, hard, silty GRAVEL; contains few rock fragments; crumbles to gravelly silt to silty gravel; manganese staining	791.7	-5		(40)		H2O return when pulling augers.
30.1		- very hard, partially weathered rock; schist fragments; crumbles to gravel with minor silt; micaceous Bottom of borehole at 30.1 feet.		SS -6	29.5	50 (0)		

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\$\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	B-9
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 10/10/2012	N: 1394056.26 E:2204166.95	

		DEPTH	ELEVATION
		FEET	FT, MSL
TOP OF RISER		-3.1	824.39
2" Threaded Riser Cap			
GROUND SURFACE		0.0	821.3
4 ft x 4 ft concrete pad 			
BOTTOM OF GROUT			
<b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum			
<b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 5 bags cement 7 lbs bentonite			
<b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded			
TOP OF SEAL		15.0	806.3
<b>ANNULAR SEAL</b> TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured			
TOP OF FILTER PACK		17.5	803.8
<b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 7 Bags PLACEMENT: Poured w/water			
BOTTOM OF RISER / TOP OF SCREEN		19.6	801.7
<b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch			
BOTTOM OF SCREEN		29.6	791.7
Flush-threaded end cap			
BOTTOM OF CASING		30.0	791.3
HOLE DIA: 7 inch			





# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 10/11/2012 COMPLETED 10/11/2012 GROUND ELEVATION 820.9 ft COORDINATES N 1393818.3 E 2204201.1

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY G. Dyer CHECKED BY \_\_\_\_\_ BORING DEPTH 46 ft.

GROUND WATER DEPTH: DURING \_\_\_\_\_ COMP. \_\_\_\_\_ DELAYED \_\_\_\_\_

NOTES Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		Silt (ML)  - red to red-brown, soft, fine SILT with clay; sparse mica flakes; few angular to sub-angular quartz grains; soil is moderately well bonded		SS -1	4.5	2-2-2 (4)		residual soil.
10		- tan-brown with black streaks, dry, medium stiff, fine SILT with fine to medium-grained sand and gravel; contains few quartz gravels and highly weathered mica; rubs to silt and fine to medium-grained sand; manganese staining		SS -2	9.5	2-4-4 (8)		residual soil.
15		- stiff, SAA; less sand and gravel; better cemented/bonded		SS -3	14.5	3-4-5 (9)		
20		- medium stiff, SAA; softer		SS -4	19.5	1-2-4 (6)		
25				SS	24.5	2-3-4		

(Continued Next Page)





WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	DGWC-10/B-10
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 10/11/2012	N: 1393818.3 E:2204201.1	

	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.6	823.55
2" Threaded Riser Cap		
4 ft x 4 ft concrete pad		
GROUND SURFACE	0.0	820.9
<b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
<b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 6 bags cement 9 lbs bentonite		
<b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	29.8	791.1
<b>ANNULAR SEAL</b> TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	32.1	788.8
<b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 6.75 Bags PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	35.0	785.9
<b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	45.0	775.9
Flush-threaded end cap		
BOTTOM OF CASING	45.4	775.5
HOLE DIA: 7 inch		



# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 10/15/2012 COMPLETED 10/15/2012 GROUND ELEVATION 798.1 ft COORDINATES N 1393547.1 E 2204166.2

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY C. Sellers CHECKED BY \_\_\_\_\_ BORING DEPTH 51 ft.

GROUND WATER DEPTH: DURING 25 ft. COMP. \_\_\_\_\_ DELAYED \_\_\_\_\_

NOTES Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \\VALTRCFP01\1APARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		Silt (ML)  - brownish red, medium stiff, fine SILT with clay; micaceous; slightly bonded		SS -1	4.5	2-3-4 (7)		
10		- brownish red, very stiff, fine SILT with clay; very micaceous; 10% clay		SS -2	9.5	12-12-15 (27)		
15		- damp, stiff, SAA; 20% clay; contains small schist gravel		SS -3	14.5	5-6-6 (12)		
20		- tan, damp, stiff, SAA		SS -4	19.5	4-5-7 (12)		
25				SS	24.5	5-8-11		

(Continued Next Page)





# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		<b>Silt (ML)(con't)</b> - light tan, wet, very stiff, SAA; contains fine sand and small schist fragments		-5		(19)		
30		- stiff, SAA		SS -6	29.5	5-6-8 (14)		
35		- very stiff, SAA		SS -7	34.5	6-8-14 (22)		
40		- hard, SAA		SS -8	39.5	12-20-25 (45)		
45		- gray, very hard, SAA; contains schist gravel throughout		SS -9	44.5	26-50 (50)		
50		- dark gray, very hard, SAA		SS -10	49.5	50 (0)		
			747.1					
Bottom of borehole at 51.0 feet.								

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	DGWC-11/B-11
LOGGER: C. Sellers/K. Byrd	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 10/15/2012	N: 1393547.1 E:2204166.2	

	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.5	800.57
2" Threaded Riser Cap		
4 ft x 4 ft concrete pad		
GROUND SURFACE	0.0	798.1
<b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
<b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 7 bags cement 10.5 lbs bentonite		
<b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	33.9	764.2
<b>ANNULAR SEAL</b> TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	36.2	761.9
<b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 7 Bags PLACEMENT: Tremie		
BOTTOM OF RISER / TOP OF SCREEN	38.8	759.3
<b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	48.8	749.3
Flush-threaded end cap		
BOTTOM OF CASING	49.1	749.0
HOLE DIA: 7 inch		





# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 10/15/2012 COMPLETED 10/15/2012 GROUND ELEVATION 771.2 ft COORDINATES N 1393149.4 E 2204128.3

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY K. Byrd CHECKED BY \_\_\_\_\_ BORING DEPTH 26 ft.

GROUND WATER DEPTH: DURING 9 ft. COMP. \_\_\_\_\_ DELAYED \_\_\_\_\_

NOTES Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \VALTRCFP01\1APARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		<b>Silt (ML)</b> - brown/tan, damp, soft, SILT with some clay; micaceous		SS -1	4.5	1-2-2 (4)		
10		<b>Lean Clay (CL)</b> - red/orange/light brown, wet, very soft, CLAY; contains sparse mica and fine sand grains	761.7	UD -1	7.0			
15		<b>Silt (ML)</b> - yellowish orange, wet, medium stiff, sandy SILT; very fine-grained	756.7	SS -2	9.5	WH-WH-WH (0)		
20		- light to olive gray, wet, very stiff, SILT; micaceous; contains heavily weathered schist fragments		SS -3	14.5	WH-WH-7 (7)		
25			746.2	SS -4	19.5	6-11-8 (19)		
				SS	24.5	2-2-3		

(Continued Next Page)



# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

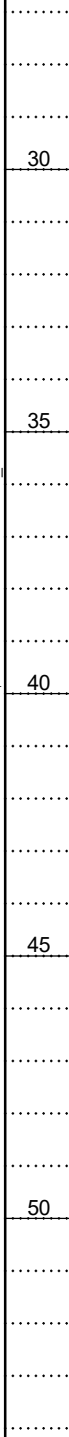
PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- yellowish orange, damp, medium stiff, clayey SILT; micaceous		-5		(5)		

Bottom of borehole at 26.0 feet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ





WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	DGWC-12/B-12
LOGGER: Kinsey Byrd	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 10/15/2012	N: 1393149.4 E: 2204128.3	

	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.7	773.86
2" Threaded Riser Cap		
4 ft x 4 ft concrete pad		
GROUND SURFACE	0.0	771.2
<b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
<b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 4 bags cement 6 lbs bentonite		
<b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	10.2	761.0
<b>ANNULAR SEAL</b> TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	12.6	758.6
<b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 2.5 Bags; 50 lbs/bag PLACEMENT: Tremie		
BOTTOM OF RISER / TOP OF SCREEN	14.7	756.5
<b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	24.7	746.5
Flush-threaded end cap		
BOTTOM OF CASING	25.1	746.1
HOLE DIA: 7 inch		



# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 11/27/2012 COMPLETED 11/27/2012 GROUND ELEVATION 791.3 ft COORDINATES N 1392881.1 E 2204084.6

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY G. Dyer CHECKED BY \_\_\_\_\_ BORING DEPTH 46 ft.

GROUND WATER DEPTH: DURING \_\_\_\_\_ COMP. \_\_\_\_\_ DELAYED 26.73 ft. after 36 hrs.

NOTES Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
0 - 9.0		- Vacuum excavation from 0 ft to 9.0 ft						
9.5		<b>Silt (ML)</b> - tan-brown, dry, very hard, SILT; saprolite (weathered schist); intact relict schistosity	781.8	SS -1	9.5	21-50 (50)		
14.5		- mottled tan, brown and red with black manganese staining, dry, very hard, clayey SILT; saprolite		SS -2	14.5	18-30-50 (80)		
19.5		- damp, hard, SAA		SS -3	19.5	6-14-26 (40)		
24.5				SS	24.5	12-22-31		

(Continued Next Page)





WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	DGWC-13/B-13
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 11/29/2012	N: 1392881.1 E:2204084.6	

	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.8	794.1
2" Threaded Riser Cap		
4 ft x 4 ft concrete pad		
GROUND SURFACE	0.0	791.3
<b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
<b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 14 bags cement 14 lbs bentonite		
<b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	29.0	762.3
<b>ANNULAR SEAL</b> TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	31.2	760.1
<b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 7 Bags PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	33.4	757.9
<b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	43.4	747.9
Flush-threaded end cap		
BOTTOM OF CASING	43.8	747.5
HOLE DIA: 7 inch		





# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 12/18/2012 COMPLETED 12/18/2012 GROUND ELEVATION 789.8 ft COORDINATES N 1392574.2 E 2204013.3

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit; HQ Rock Core EQUIPMENT CME 550

DRILLED BY T. Milam LOGGED BY G. Dyer CHECKED BY \_\_\_\_\_ BORING DEPTH 34.3 ft.

GROUND WATER DEPTH: DURING \_\_\_\_\_ COMP. \_\_\_\_\_ DELAYED \_\_\_\_\_

NOTES Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \VALTRCFP01\ILAPARKER\DESKTOP\GPCMMW LOGS - SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
0 - 9.0		- Vacuum excavation from 0 ft to 9.0 ft						
9.5		<b>Silt (ML)</b> - tan with green and red-orange mottling, damp, soft, SILT; trace of schistose bedding; trace schist fragments; slightly micaceous and quartzose	780.8	SS -1	9.5	1-2-2 (4)		residual soil.  upper saprolite.
14.5		- brown and tan-red, dry, hard, SILT; consolidated and slightly hard; relict schistose bedding; trace schist fragments		SS -2	14.5	9-15-21 (36)		lower saprolite.
19.5		<b>Silty Gravel (GM)</b> - brown, tan and silver, dry, very hard, SAPROCK; predominately schist fragments; moderately weathered	770.3	SS -3	19.5	16-50 (50)		saprock/pwr.
23' - 24'		- SAA; softer zone from 23' to 24'						
24.5		<b>Schist</b>	765.5	SS	24.5	50		

(Continued Next Page)



# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
30		- green, silver, black and white, BUTTON MICA SCHIST; heavily fractured; iron-staining; quartz banding; sheared foliations <b>Schist(con't)</b> - gray, silver and black, SCHIST; fractured; iron staining; feldspar augens; shear foliation less common	758.9	4		(0)		prevalent iron-staining and manganese oxides.  black dike or mylonite cross-cuts schist @ 45 degrees at 27.5'.
		- green, silver, black and white, BUTTON MICA SCHIST; heavily fractured; prevalent iron-staining; feldspar augens; sheared - gray, MYLONITE; micaceous; slightly to moderately fractured; pyrite observed	755.5					
35		Bottom of borehole at 34.3 feet.						
40								
45								
50								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ



WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: T. Milam	
LOCATION: Ash Pond	RIG TYPE: CME550	DGWC-14/B-14
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger/HQ Rock Core	
DATE CONSTRUCTED: 12/18/2012	N: 1392574.2 E:2204013.3	

	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.6	792.4
2" Threaded Riser Cap		
4 ft x 4 ft concrete pad		
GROUND SURFACE	0.0	789.8
<b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
<b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 24 bags cement 30 lbs bentonite		
<b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	12.5	777.3
<b>ANNULAR SEAL</b> TYPE: PelPlug TR-30 1/4" bentonite pellets; 5-gallon buckets AMOUNT: 0.75 bucket PLACEMENT: Poured/tremie pipe		
TOP OF FILTER PACK	15.5	774.3
<b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 2 Bags PLACEMENT: poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	23.9	765.9
<b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	33.9	755.9
Flush-threaded end cap		
BOTTOM OF CASING	34.3	755.5
HOLE DIA: 7 inch (auger) 3.8 inch (HQ core)		



# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 11/29/2012 COMPLETED 11/29/2012 GROUND ELEVATION 821.5 ft COORDINATES N 1392544.1 E 2203679

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY G. Dyer CHECKED BY \_\_\_\_\_ BORING DEPTH 67.2 ft.

GROUND WATER DEPTH: DURING \_\_\_\_\_ COMP. \_\_\_\_\_ DELAYED \_\_\_\_\_

NOTES Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \VALTRCFP01\ILAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
0 - 9.0		- Vacuum excavation from 0 ft to 9.0 ft						
9.5		<b>Silt (ML)</b> - tan-red, dry, soft, SILT; about 3% clay; few schistose rock fragments; slightly micaceous	812.5	SS -1	9.5	2-1-2 (3)		residual soil.
14.5		- light tan, dry, medium stiff, SILT; homogeneous silt (no clay or sand); slightly micaceous; trae gneiss fragments near base of sample		SS -2	14.5	2-3-4 (7)		residual soil.
19.5		- gray to brown, dry, very hard, crumbles to sandy SILT; saprolite; fragmented soil largely consistent of moderately to highly weathered rock		SS -3	19.5	19-35-38 (73)		
24.5				SS	24.5	14-24-27		

(Continued Next Page)





# BORING LOG

**SOUTHERN COMPANY SERVICES, INC.**  
**EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING**

**PROJECT** Plant McDonough Hydrogeological Investigation

**LOCATION** Cobb County, GA

GEO TECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
30		<b>Silt (ML)(con't)</b> - green to dark tan, dry, very hard, crumbles to SILT with fine sand; relict schitose structure; lacks competent schist fragments; micaceous; trace quartz sand (about 5%)		-4		(51)		lower saprolite.
35		- tan to gray with black manganese, dry, hard, crumbles to sandy SILT; relict schistosity; more prevalent quartz (about 10%); slightly micaceous		SS-5	29.5	14-25-22 (47)		lower saprolite.
40		- olive green, tan and silver, dry, hard, crumbles to SILT with schist derived gravel; large mica flakes; trace fine quartz sand		SS-6	34.5	12-20-16 (36)		lower saprolite.
45		- olive green, tan and silver, moist, very hard, crumbles to SILT with clay; very micaceous; relict schitose structure; moderately weathered schist fragments	777.0	SS-7	39.5	14-36-50 (86)		lower saprolite.
50		<b>Silty Gravel (GM)</b> - olive green, tan and black, moist, very hard, crumbles to silty GRAVEL; less weathered schist fragments		SS-8	44.5	50 (0)		transition from saprolite to saprock.
		<b>Silt (ML)</b> - olive to dark green and silver, damp, hard, crumbles to SILT with gravel and clay; relict schist structure and fragments	772.0	SS-9	49.5	14-21-26 (47)		lower saprolite.

(Continued Next Page)





WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	DGWC-15/B-15
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 11/29/2012	N: 1392544.1 E:2203679.0	

		DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER		-3.0	824.5
2" Threaded Riser Cap			
GROUND SURFACE		0.0	821.5
<p>4 ft x 4 ft concrete pad</p> <p><b>PROTECTIVE CASING</b>                      SIZE: 4" x 4"                      TYPE: aluminum</p>			
BOTTOM OF GROUT			
<p><b>BACKFILL MATERIAL</b>                      TYPE: Portland cement/bentonite grout                      AMOUNT: 13 bags cement                      17.5 lbs bentonite</p> <p><b>RISER CASING</b>                      DIA: 2 inch                      TYPE: Schedule 40 PVC                      JOINT TYPE: Flush Threaded</p>			
TOP OF SEAL		52.4	769.1
<p><b>ANNULAR SEAL</b>                      TYPE: PelPlug TR-30 3/8"                      bentonite pellets; 5-gallon buckets                      AMOUNT: 1 bucket                      PLACEMENT: Poured</p>			
TOP OF FILTER PACK		54.5	767.0
<p><b>FILTER PACK</b>                      TYPE: Filtersil #61                      Size 1A; 50 lbs/bag                      AMOUNT: 7 Bags                      PLACEMENT: Poured w/water</p>			
BOTTOM OF RISER / TOP OF SCREEN		56.7	764.8
<p><b>SCREEN</b>                      DIA: 2" prepack (3.45" OD)                      TYPE: Schedule 40 PVC                      OPENING WIDTH: 0.01 inch                      OPENING TYPE: Slotted                      SLOT SPACING: 0.1 inch</p>			
BOTTOM OF SCREEN		66.7	754.8
BOTTOM OF CASING		67.1	754.4
<p>Flush-threaded end cap</p> <p>HOLE DIA: 7 inch</p>			



# BORING LOG

**SOUTHERN COMPANY SERVICES, INC.**  
**EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING**

**PROJECT** Plant McDonough Hydrogeological Investigation  
**LOCATION** Cobb County, GA

**DATE STARTED** 12/19/2012 **COMPLETED** 12/19/2012 **GROUND ELEVATION** 823.6 ft **COORDINATES** N 1392595.1 E 2203315.4

**CONTRACTOR** SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit **EQUIPMENT** CME 550

**DRILLED BY** T. Milam **LOGGED BY** G. Dyer **CHECKED BY** \_\_\_\_\_ **BORING DEPTH** 46 ft.

**GROUND WATER DEPTH: DURING** \_\_\_\_\_ **COMP.** \_\_\_\_\_ **DELAYED** \_\_\_\_\_

**NOTES** Well installed. Refer to well data sheet.

GEO TECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \\VALTRCFP01\ILAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
0 - 9		- Vacuum excavation from 0 ft to 9 ft						
5								
9.5		<b>Silt (ML)</b> - tan and brown, dry, stiff, SILT; slightly micaceous; trace manganese oxides	814.6	SS -1	9.5	3-4-5 (9)		residual soil.
15		- tan, brown and orange, dry, medium stiff, sandy SILT; sand is fine to very fine-grained; slightly micaceous; trace schistosity		SS -2	14.5	3-3-5 (8)		residual soil.
20		- light tan to brown, dry, medium stiff, SILT with clay (about 10%); clay is slightly plastic; slightly micaceous; trace schitose gravel; trace manganese oxide		SS -3	19.5	3-3-3 (6)		residual soil.
25				SS	24.5	2-3-3		

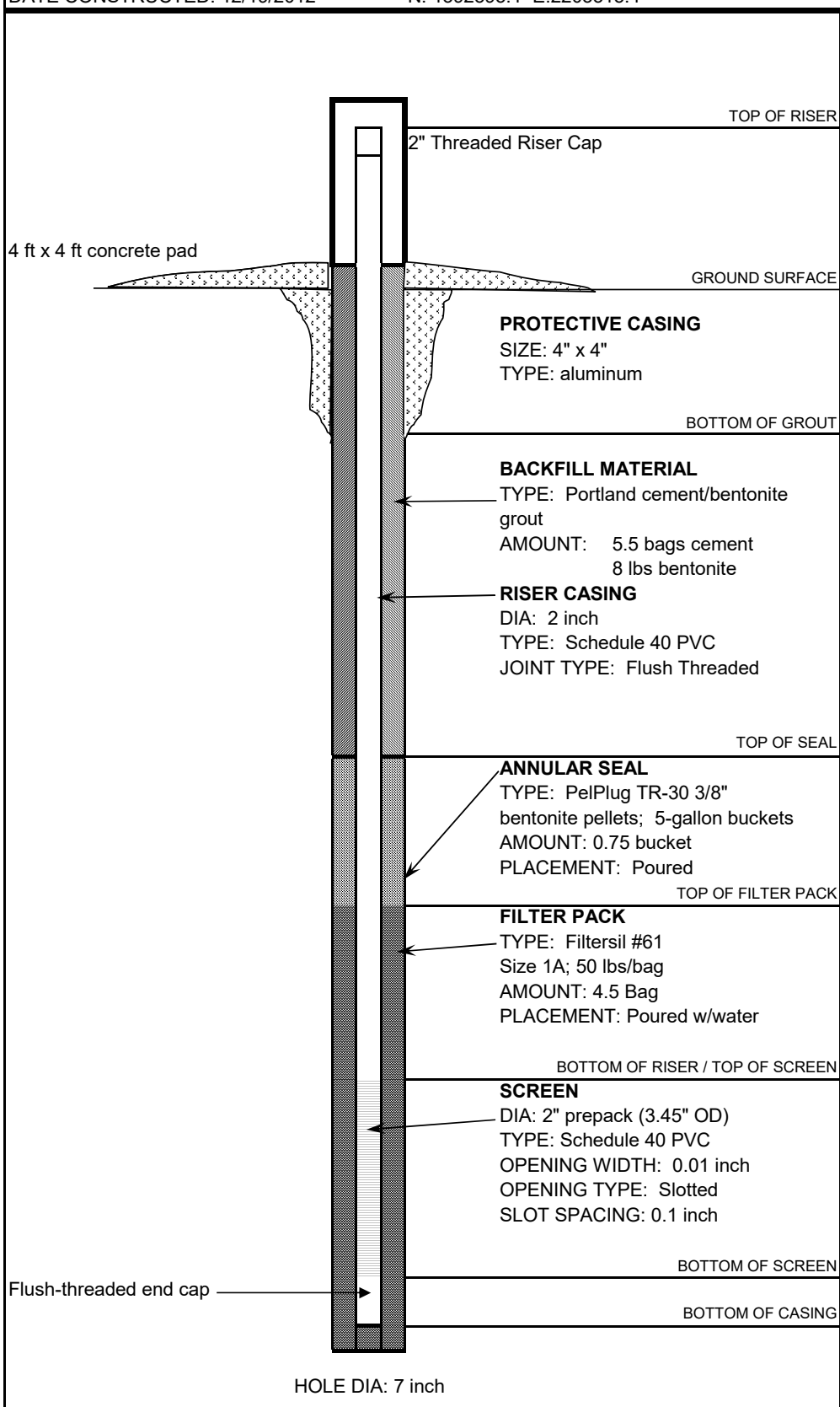
(Continued Next Page)





WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough		DRILLING CO.: SCS Field Services		WELL NAME	
Hydrogeologic Investigation		DRILLER: T. Milam		B-16	
LOCATION: Ash Pond		RIG TYPE: CME550			
LOGGER: Greg Dyer		DRILLING METHODS: HS Auger			
DATE CONSTRUCTED: 12/19/2012		N: 1392595.1 E: 2203315.4			
			DEPTH FEET	ELEVATION FT, MSL	
TOP OF RISER			-2.9	826.47	
2" Threaded Riser Cap					
GROUND SURFACE			0.0	823.6	
 <p>4 ft x 4 ft concrete pad</p> <p><b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum</p> <p><b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 5.5 bags cement 8 lbs bentonite</p> <p><b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded</p> <p><b>ANNULAR SEAL</b> TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 0.75 bucket PLACEMENT: Poured</p> <p><b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 4.5 Bag PLACEMENT: Poured w/water</p> <p><b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch</p> <p>Flush-threaded end cap</p> <p>HOLE DIA: 7 inch</p>					
BOTTOM OF GROUT					
TOP OF SEAL			26.5	797.1	
TOP OF FILTER PACK			29.2	794.4	
BOTTOM OF RISER / TOP OF SCREEN			33.4	790.2	
BOTTOM OF SCREEN			43.4	780.2	
BOTTOM OF CASING			43.7	779.9	





# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 1/9/2012 COMPLETED 1/9/2012 GROUND ELEVATION 834.2 ft COORDINATES N 1392645.6 E 2203051

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY G. Dyer CHECKED BY \_\_\_\_\_ BORING DEPTH 46 ft.

GROUND WATER DEPTH: DURING \_\_\_\_\_ COMP. \_\_\_\_\_ DELAYED \_\_\_\_\_

NOTES Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
0 - 15.0		- Vacuum excavation from 0 ft to 15.0 ft						
15.0		<b>Silt (ML)</b> - brown to brown tan, damp, medium stiff, SILT with fine sand and clay; micaceous; contains black manganese oxides; trace quartz sand	819.2	SS -1	15.0	2-2-3 (5)		residual soil.
19.5		- brown, damp, stiff, SILT with clay; highly weathered relict structure; micaceous; trace manganese oxides		SS -2	19.5	4-6-9 (15)		upper saprolite.
24.5				SS	24.5	3-5-6		

(Continued Next Page)



# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		<b>Silt (ML)(con't)</b> - tan and green, damp, stiff, highly weathered relic structure; micaceous		-3		(11)		upper saprolite.
30		- green to mottled green, black, yellow and tan, wet, stiff, SILT with fine sand; trace unweathered quartz gravel within weathered relic structure; heavy manganese oxide staining; micaceous		SS-4	29.5	2-3-6 (9)		upper saprolite.
35		- wet, stiff, SAA; more cemented; trace pyrite in/around weathered zones		SS-5	34.5	4-6-9 (15)		
40		- dark green and tan, very moist, very hard, SILT with gravel; micaceous; quartz sand; relict structures intact; trace manganese oxides; highly to slightly weathered schist fragments		SS-6	39.5	19-50 (50)		lower saprolite.
45		- green-gray, very moist, hard, SILT with clay; micaceous; trace quartz sand; relict structures but highly weathered; black manganese oxides		SS-7	44.5	16-19-20 (39)		lower saprolite.
		Bottom of borehole at 46.0 feet.		788.2				
50								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\VALTRCFP01\ILAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ



WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	DGWC-17/B-17
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 1/9/2013	N: 1392645.6 E:2203051.0	

	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.8	837.05
2" Threaded Riser Cap		
4 ft x 4 ft concrete pad		
GROUND SURFACE	0.0	834.2
<b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
<b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 20 bags cement 30.5 lbs bentonite		
<b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	30.0	804.2
<b>ANNULAR SEAL</b> TYPE: PelPlug TR-30 1/4" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	32.0	802.2
<b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 0.5 Bag filter pac 6.25 bag hole PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	34.2	800.0
<b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	44.2	790.0
Flush-threaded end cap		
BOTTOM OF CASING	44.5	789.7
HOLE DIA: 7 inch		



# BORING LOG

**BORING B-18**  
Page 1 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 1/9/2012 COMPLETED 1/9/2012 GROUND ELEVATION 823.9 ft COORDINATES N 1392521 E 2202875.5

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY G. Dyer CHECKED BY \_\_\_\_\_ BORING DEPTH 31 ft.

GROUND WATER DEPTH: DURING \_\_\_\_\_ COMP. \_\_\_\_\_ DELAYED 11 ft. after 24 hrs.

NOTES Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \VALTRCFP01\1APARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
0 to 18.0		- Vacuum excavation from 0 ft to 18.0 ft						
18.0 to 20.0		<b>Silt (ML)</b> - tan-orange, wet, medium stiff, SILT with clay; trace quartz gravel; mica flakes; trace relict structures but highly weathered	805.9	SS -1	19.5	2-3-5 (8)		residual soil-upper saprolite transition.
20.0 to 25.0				SS	24.5	3-5-6		

(Continued Next Page)





# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		<b>Silt (ML)(con't)</b> - mottled tan, green, gray and black, very moist, stiff, SILT; highly weathered relict structures; prevalent manganese oxides; trace gravel and clay		-2		(11)		residual soil-upper saprolite transition.
30		- more tan-gray, soft, SAA	792.9	SS -3	29.5	1-2-2 (4)		

Bottom of borehole at 31.0 feet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\VALTRCFP01\IAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

35								
40								
45								
50								

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough		DRILLING CO.: SCS Field Services		WELL
Hydrogeologic Investigation		DRILLER: S. Denty		NAME
LOCATION: Ash Pond		RIG TYPE: CME550		B-18
LOGGER: Greg Dyer		DRILLING METHODS: HS Auger		
DATE CONSTRUCTED: 1/9-10/2013		N: 1392521 E:2202875.5		
		DEPTH FEET	ELEVATION FT, MSL	
	TOP OF RISER	-2.7	826.56	
	2" Threaded Riser Cap			
4 ft x 4 ft concrete pad	GROUND SURFACE	0.0	823.9	
	<b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum			
	BOTTOM OF GROUT			
	<b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 28 bags cement 42 lbs bentonite			
	<b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded			
	TOP OF SEAL	18.0	805.9	
	<b>ANNULAR SEAL</b> TYPE: PelPlug TR-30 1/4" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured			
	TOP OF FILTER PACK	19.2	804.7	
	<b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 0.5 Bag filter pac 5.5 bags hole PLACEMENT: Poured w/water			
	BOTTOM OF RISER / TOP OF SCREEN	22.4	801.5	
	<b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch			
	BOTTOM OF SCREEN	32.4	791.5	
Flush-threaded end cap	BOTTOM OF CASING	32.6	791.3	
HOLE DIA: 7 inch				





# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 3/12/2013 COMPLETED 3/12/2013 GROUND ELEVATION 822.9 ft COORDINATES N 1392342.6 E 2202601

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY B. Gallagher CHECKED BY \_\_\_\_\_ BORING DEPTH 41 ft.

GROUND WATER DEPTH: DURING \_\_\_\_\_ COMP. 28 ft. DELAYED \_\_\_\_\_

NOTES Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \VALTRCFP01\1LAPARKER\DESKTOP\GFCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
0 - 5		Fill (ML) - SILT						Vaccum excavation from 0 ft to 10 ft. Soil identified based on observation during vacuum excavation.
5			816.9					
5 - 10		Silt (ML)						
10		- olive, tan, moist, medium stiff, SILT with fine sand and clay; micaceous; with iron oxide staining		SS -1	10.0	5-4-4 (8)		residual soil.
10 - 15								
15		- wet, medium stiff		SS -2	14.5	2-3-3 (6)		
15 - 20								
20		- moist, very stiff, more iron oxide staining below 19 ft		SS -3	19.5	2-4-6 (10)		
20 - 25								
25				SS	24.5	3-3-4		

(Continued Next Page)





WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond 3	RIG TYPE: CME550	DGWC-19/B-19
LOGGER: B. Gallagher	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 3/12/2013	N: 1392342.6 E:2202601.0	

	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.6	825.46
2" Threaded Riser Cap		
4 ft x 4 ft concrete pad		
GROUND SURFACE	0.0	822.9
<b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
<b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 16 bags cement 23 lbs bentonite		
<b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	24.7	798.2
<b>ANNULAR SEAL</b> TYPE: PelPlug TR-30 1/4" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	27.2	795.7
<b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 7 Bags PLACEMENT: Tremie		
BOTTOM OF RISER / TOP OF SCREEN	29.4	793.5
<b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	39.4	783.5
Flush-threaded end cap		
BOTTOM OF CASING	39.8	783.1
HOLE DIA: 7 inch		



# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 3/4/2012 COMPLETED 3/4/2012 GROUND ELEVATION 819.8 ft COORDINATES N 1392164.5 E 2202315.6

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY R. Tinsley CHECKED BY \_\_\_\_\_ BORING DEPTH 41 ft.

GROUND WATER DEPTH: DURING 2 ft. COMP. \_\_\_\_\_ DELAYED \_\_\_\_\_

NOTES Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \\VALTRCFP01\ILAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
0		- Vacuum excavation from 0 ft to 10 ft						
5								
10		<b>Silt (ML)</b> - yellowish red, medium stiff, micaceous SILT	809.8	SS -1	10.0	2-2-5 (7)		
15		- light olive brown, stiff, micaceous SILT (saprolite) with relict bedding		SS -2	14.5	4-4-5 (9)		
20		- mottled light olive brown and reddish brown, very stiff, micaceous SILT; interbedded schist and gneiss; saprolite		SS -3	19.5	4-7-9 (16)		
25				SS	24.5	4-6-8		

(Continued Next Page)





# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		<b>Silt (ML)(con't)</b> - olive green, stiff, SAA		-4		(14)		
30		- stiff, SAA		SS -5	29.5	6-9-10 (19)		
35		- stiff, SAA with heavy staining		SS -6	34.5	3-4-5 (9)		
40		- SAA	778.8	SS -7	39.5	5-7-7 (14)		
Bottom of borehole at 41.0 feet.								
45								
50								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\VALTRCFP01\IAPARKER\DESKTOP\GPCMW LOGS\_SURVEY UPDATED.GPJ

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	DGWC-20/B-20
LOGGER: Rhonda Tinsley	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 3/5/2013	N: 1392164.5 E:2202315.6	

		DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER		-2.3	822.14
2" Threaded Riser Cap			
GROUND SURFACE		0.0	819.8
<b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum			
BOTTOM OF GROUT			
<b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 9 bags cement 12 lbs bentonite			
<b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded			
TOP OF SEAL		24.7	795.1
<b>ANNULAR SEAL</b> TYPE: PeiPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured			
TOP OF FILTER PACK		26.7	793.1
<b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 6.5 Bags PLACEMENT: Tremie			
BOTTOM OF RISER / TOP OF SCREEN		29.1	790.7
<b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch			
BOTTOM OF SCREEN		39.1	780.7
BOTTOM OF CASING		39.7	780.1
Flush-threaded end cap			
HOLE DIA: 7 inch			

4 ft x 4 ft concrete pad

Flush-threaded end cap

HOLE DIA: 7 inch





# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 10/31/2012 COMPLETED 10/31/2012 GROUND ELEVATION 813.5 ft COORDINATES N 1392067.5 E 2202063.5

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit; HQ Rock Core EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY D. Brooks CHECKED BY \_\_\_\_\_ BORING DEPTH 69.1 ft.

GROUND WATER DEPTH: DURING \_\_\_\_\_ COMP. \_\_\_\_\_ DELAYED \_\_\_\_\_

NOTES Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \\ALTRCFP01\1LAPARKER\DESKTOP\GFCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
0 - 9.5		- Vacuum excavation form 0 ft to 9.5 ft						
10		<b>Clayey Silty Sand (SC-SM)</b> - orange and tan, moist, loose, silty, clayey SAND; micaceous; fine to very fine-grained	804.0	SS -1	9.5	3-3-4 (7)		
15		<b>Silty Sand (SM)</b> - tan, orange and black, damp, loose, silty SAND; micaceous; very fine-grained	799.0	SS -2	14.5	4-3-6 (9)		
20		- tan, orange and black, damp, medium dense, silty SAND; micaceous; fine-grained		SS -3	19.5	6-10-20 (30)		upper saprolite.
25				SS	24.5	10-16-18		

(Continued Next Page)



# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \\VALTRCFP01\ILAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		<b>Silty Sand (SM)(cont)</b> - hard, SAA		-4		(34)		
30		- tan and orange, damp, very stiff, silty SAND with gravel; relic structure present; fine to medium-grained		SS -5	29.5	7-10-12 (22)		saprolite.
35		- olive, orange and black, hard, SAA		SS -6	34.5	18-22-20 (42)		lower saprolite.
40		- olive and black, very hard, SAA		SS -7	39.5	18-25-45 (70)		
45		- olive and tan, damp, hard, silty SAND; relic structure; fine-grained		SS -8	44.5	9-16-21 (37)		saprolite.
50		- hard, SAA		SS -9	49.5	16-21-19 (40)		

(Continued Next Page)





WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough		DRILLING CO.: SCS Field Services		WELL NAME	
Hydrogeologic Investigation		DRILLER: S. Denty			
LOCATION: Ash Pond		RIG TYPE: CME550			
LOGGER: Dustin Brooks		DRILLING METHODS: HS Auger/HQ Rock Core		DGWC-21/B-21	
DATE CONSTRUCTED: 10/31/2012		N: 1392067.5 E:2202063.5			
			DEPTH FEET	ELEVATION FT, MSL	
TOP OF RISER			-2.8	816.28	
2" Threaded Riser Cap					
GROUND SURFACE			0.0	813.5	
<b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum					
BOTTOM OF GROUT					
<b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 15 bags cement 20 lbs bentonite					
<b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded					
TOP OF SEAL			51.2	762.3	
<b>ANNULAR SEAL</b> TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 0.5 bucket PLACEMENT: Tremie					
TOP OF FILTER PACK			56.4	757.1	
<b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 0.5 Bag filter pac 0.5 bag hole PLACEMENT: Poured w/water					
BOTTOM OF RISER / TOP OF SCREEN			58.6	754.9	
<b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch					
BOTTOM OF SCREEN			68.6	744.9	
Flush-threaded end cap					
BOTTOM OF CASING			69.0	744.5	
HOLE DIA: 7 inch (auger) 3.8 inch (HQ core)					





# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 10/25/2012 COMPLETED 10/25/2012 GROUND ELEVATION 813.7 ft COORDINATES N 1392126.3 E 2201791.9

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit; HQ Rock Core EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY C. Sellers CHECKED BY \_\_\_\_\_ BORING DEPTH 59.5 ft.

GROUND WATER DEPTH: DURING 20 ft. COMP. \_\_\_\_\_ DELAYED \_\_\_\_\_

NOTES Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
0 - 9.5		- Vacuum excavation from 0 ft to 9.5 ft						
9.5		<b>Silt (ML)</b> - brown, very stiff, SILT; micaceous	804.2	SS -1	9.5	6-9-9 (18)		upper saprolite.
14.5		- tan, very moist, medium stiff, SILT; contains very fine sand and mica		SS -2	14.5	3-3-5 (8)		
19.5		- wet, very stiff, SAA		SS -3	19.5	10-11-15 (26)		
24.5				SS	24.5	3-4-4		

(Continued Next Page)



# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		<b>Silt (ML)(con't)</b> - brown, medium stiff, SILT; contains fine sand and mica		-4		(8)		
30		- dark brown to dark gray, wet, hard, weathered schist		SS -5	29.5	10-16-19 (35)		lower sparolite.
35		- very hard, SAA		SS -6	34.5	50 (0)		
40		- brown to orange, wet, very hard		SS -7	39.5	10-15-50 (65)		
45		- black, weathered schist	769.2	SS -8	44.5	50 (0)		
		<b>Schist</b> - very weathered SCHIST with mud in fractures		RC -1	44.8			
50			764.2	RC -2	49.5			
		<b>Gneiss</b> - very fractured BIOTITE GNEISS with schist-like features; red staining						

(Continued Next Page)





# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
55		<b>Gneiss (con't)</b> - GNEISS (mylonite); fractures throughout; stained	754.2	RC	54.5			
				3				
60		Bottom of borehole at 59.5 feet.						
65								
70								
75								
80								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS - SURVEY UPDATED.GPJ

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	DGWC-22/B-22
LOGGER: Cale Sellers	DRILLING METHODS: HS Auger/HQ Rock Core	
DATE CONSTRUCTED: 10/25/2012	N: 1392126.3 E:2201791.9	

		DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER		-2.9	816.59
2" Threaded Riser Cap			
GROUND SURFACE		0.0	813.7
<b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum			
BOTTOM OF GROUT			
<b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 9 bags cement 12.5 lbs bentonite			
<b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded			
TOP OF SEAL		44.6	769.1
<b>ANNULAR SEAL</b> TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 0.25 bucket PLACEMENT: Poured			
TOP OF FILTER PACK		47.7	766.0
<b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 1 Bag PLACEMENT: Poured w/water			
BOTTOM OF RISER / TOP OF SCREEN		49.7	764.0
<b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch			
BOTTOM OF SCREEN		59.7	754.0
BOTTOM OF CASING		60.0	753.7
Flush-threaded end cap			
HOLE DIA: 7 inch (auger) 3.8 inch (HQ core)			





# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 10/24/2012 COMPLETED 10/25/2012 GROUND ELEVATION 815.7 ft COORDINATES N 1392239.7 E 2201582

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit; HQ Rock Core EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY C. Sellers CHECKED BY \_\_\_\_\_ BORING DEPTH 59.4 ft.

GROUND WATER DEPTH: DURING \_\_\_\_\_ COMP. \_\_\_\_\_ DELAYED \_\_\_\_\_

NOTES Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
0 - 9.5		- Vacuum excavation from 0 ft to 9.5 ft						
9.5		<b>Silt (ML)</b> - dark brown, wet, medium stiff, clayey SILT with gravel (schist)	806.2	SS -1	9.5	3-3-3 (6)		
14.5		- dark gray, very soft, clayey SILT; contains wood		SS -2	14.5	WH-1-1 (2)		
19.5		- light purple-gray, stiff, SILT; very fine-grained		SS -3	19.5	1-3-7 (10)		
24.5		<b>Silty Sand (SM)</b>	791.2	SS	24.5	10-14-16		

(Continued Next Page)



# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS - SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		<b>Silty Sand (SM)</b> (con't) - light tan, damp, medium dense, silty SAND; fine to very fine-grained; micaceous		-4		(30)		
30		- dark gray to brown, loose, angular gravel at top of sample; saprolite at bottom		SS -5	29.5	7-5-2 (7)		
35		- dark gray to brown, very dense, saprolite		SS -6	34.5	13-17-50 (67)		
40		- light tan to white, very dense, saprolite (silty); micaceous		SS -7	39.5	50 (0)		
45		- no sample obtained		SS -8	44.5			
			768.6	RC -1	47.1			
50		<b>Gneiss</b>  - weathered GNEISS; vertical fractures and red staining throughout		RC -2	49.4			

(Continued Next Page)





# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
55		<b>Gneiss (con't)</b> - light gray, GNEISS; some fractures	756.3	RC-3	54.4			
60								
65								
70								
75								
80								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS - SURVEY UPDATED.GPJ

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	DGWC-23/B-23
LOGGER: Cale Sellers	DRILLING METHODS: HS Auger/HQ Rock Core	
DATE CONSTRUCTED: 10/25/2012	N: 1392239.7 E:2201582.0	

	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.7	818.37
2" Threaded Riser Cap		
4 ft x 4 ft concrete pad		
GROUND SURFACE	0.0	815.7
<b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
<b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 8 bags cement 11 lbs bentonite		
<b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	42.9	772.8
<b>ANNULAR SEAL</b> TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 0.25 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	46.8	768.9
<b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 1 Bag PLACEMENT: Tremie		
BOTTOM OF RISER / TOP OF SCREEN	49.8	765.9
<b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	59.8	755.9
Flush-threaded end cap		
BOTTOM OF CASING	60.1	755.6
HOLE DIA: 7 inch (auger) 3.8 inch (HQ core)		





# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 10/24/2012 COMPLETED 10/24/2012 GROUND ELEVATION 819.3 ft COORDINATES N 1392479.9 E 2201450

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit; HQ Rock Core EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY C. Sellers CHECKED BY \_\_\_\_\_ BORING DEPTH 79.1 ft.

GROUND WATER DEPTH: DURING \_\_\_\_\_ COMP. \_\_\_\_\_ DELAYED \_\_\_\_\_

NOTES Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
0 - 9.5		- Vacuum excavation from 0 ft to 9.5 ft						
9.5		<b>Silt (ML)</b> - light gray, very soft, SILT with very fine to fine-grained sand	809.8	SS -1	9.5	WH-1-1 (2)		
14.5		- stiff, SAA; very micaceous		SS -2	14.5	3-4-6 (10)		
19.5		- light tan to brown, medium stiff, SILT; very fine to fine-grained; micaceous; 2" quartz		SS -3	19.5	5-4-4 (8)		
24.5				SS	24.5	19-37-50		

(Continued Next Page)



# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		<b>Silt (ML)(con't)</b> - wet, very hard, SILT; saprolite (weathered gneiss); banding		-4		(87)		
30				SS -5	29.5	50 (0)		
35		- SAA		SS -6	34.5	50 (0)		
40				SS -7	39.5	50 (0)		
45				SS -8	44.5	50 (0)		
50		- SAA; contains gneiss fragments		SS -9	49.5	50 (0)		

(Continued Next Page)





# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS - SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
55		<b>Silt (ML)(con't)</b> - SAA		SS -10	54.5	50 (0)		
60		<b>Gneiss</b> - light gray to orange, highly weathered, GNEISS; highly fractured, vertical and horizontal	760.2	RC -1	59.1			
65		- light gray with red staining, SAA		RC -2	64.1			
70		- SAA		RC -3	69.1			
75				RC -4	74.1			
80		Bottom of borehole at 79.1 feet.	740.2					

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	B-24
LOGGER: Cale Sellers	DRILLING METHODS: HS Auger/HQ Rock Core	
DATE CONSTRUCTED: 10/24/2012	N: 1392479.9 E:2201450.0	

	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.8	822.11
2" Threaded Riser Cap		
4 ft x 4 ft concrete pad		
GROUND SURFACE	0.0	819.3
<b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
<b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 21 bags cement 30 lbs bentonite		
<b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	60.8	758.5
<b>ANNULAR SEAL</b> TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 0.25 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	65.9	753.4
<b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 2.5 Bags PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	68.3	751.0
<b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	78.3	741.0
Flush-threaded end cap		
BOTTOM OF CASING	79.1	740.2
HOLE DIA: 7 inch (auger) 3.8 inch (HQ core)		





# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 10/23/2012 COMPLETED 10/24/2012 GROUND ELEVATION 833.5 ft COORDINATES N 1392813.3 E 2201502.7

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit; HQ Rock Core EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY B. Gallagher CHECKED BY \_\_\_\_\_ BORING DEPTH 54.8 ft.

GROUND WATER DEPTH: DURING \_\_\_\_\_ COMP. \_\_\_\_\_ DELAYED \_\_\_\_\_

NOTES Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \\ALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
0 - 9.5		- Vacuum excavation from 0 ft to 9.5 ft						
9.5		Silt (ML)	824.0	SS -1	9.5	1-2-2 (4)		no recovery.
14.8		- tan, dry, very hard, saprolite; micaceous, sandy with 1 inch lense of white feldspar at 14.8 ft.		SS -2	14.5	22-50 (50)		
19.5		- black and white, very hard, SAA; weathered gneiss saprolite		SS -3	19.5	18-36-50 (86)		
24.5				SS	24.5	25		

(Continued Next Page)



# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - VALTRCFP01\1APARKER\DESKTOP\GPCMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		<b>Silt (ML)(con't)</b> - black and white, dry, weathered gneiss		-4		(0)		
		<b>Gneiss</b> - black and white, medium hard to hard, slightly weathered - two 1/2" augens and weathered joints at 28.5 ft	806.5	RC -1	27.0			
30		- soft, weathered and broken from 29.1 to 30.2 ft - joint filled with secondary minerals from 30.2 to 30.7 ft - slightly weathered joints at 31.0, 31.3, and 31.6 ft		RC -2	29.8			
35		- 1/4" augen with four slightly weathered joints across foliation from 32.3 to 33.0 ft  - 3 inch weathered soft zone @ 34.5 ft		RC -3	34.8			
40		- 2" quartzite at 42 ft; very little staining; vertical fractures from 40ft to 42ft		RC -4	39.8			
45		- SAA		RC -5	44.8			
50		- weathered; staining in and around fractures		RC -6	49.8			

(Continued Next Page)





# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
55	/ \		778.7					
		Bottom of borehole at 54.8 feet.						
60								
65								
70								
75								
80								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\VALTRCFP01\IAPARKER\DESKTOP\GPCMMW LOGS - SURVEY UPDATED.GPJ

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	B-25
LOGGER: B. Gallagher	DRILLING METHODS: HS Auger/HQ Rock Core	
DATE CONSTRUCTED: 10/24/2012	N: 1392813.3 E:2201502.7	

	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-3.0	836.54
2" Threaded Riser Cap		
4 ft x 4 ft concrete pad		
GROUND SURFACE	0.0	833.5
<b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
<b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 10 bags cement 14 lbs bentonite		
<b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	40.1	793.4
<b>ANNULAR SEAL</b> TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 0.25 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	42.4	791.1
<b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 1 Bag; 50 lbs/bag PLACEMENT: Tremie		
BOTTOM OF RISER / TOP OF SCREEN	44.4	789.1
<b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	54.4	779.1
Flush-threaded end cap		
BOTTOM OF CASING	54.8	778.7
HOLE DIA: 7 inch (auger) 3.8 inch (HQ core)		





# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 10/16/2012 COMPLETED 10/23/2012 GROUND ELEVATION 850.6 ft COORDINATES N 1393105.6 E 2201550.4

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit; HQ Rock Core EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY Sellers/Byrd/Gallager CHECKED BY \_\_\_\_\_ BORING DEPTH 49.3 ft.

GROUND WATER DEPTH: DURING \_\_\_\_\_ COMP. \_\_\_\_\_ DELAYED \_\_\_\_\_

NOTES Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
0 - 9.5		- Vacuum excavation from 0 ft to 9.5 ft						
9.5		<b>Silt (ML)</b> - tan with white, pink and dark brown layering, stiff, sandy SILT; heavily weathered; micaceous; fine-grained	841.1	SS -1	9.5	4-4-6 (10)		
14.5		- stiff, SAA; heavily weathered gneiss		SS -2	14.5	3-5-9 (14)		
19.5		- dry, very hard, SAA; more compact with better foliation than previous samples; less sand		SS -3	19.5	17-24-27 (51)		
24.5				SS	24.5	50		

(Continued Next Page)



# BORING LOG

**SOUTHERN COMPANY SERVICES, INC.**  
**EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING**

**PROJECT** Plant McDonough Hydrogeological Investigation

**LOCATION** Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		<b>Silt (ML)(con't)</b> - dry, very hard, SAA; powdered rock	824.6	RC -4	26.0	(0)		
		<b>Gneiss</b> - black and white, fine grain, medium hard to hard, slightly to moderately weathered, banded, GNEISS - from 27.0' to 27.3' - soft, weathered, leached of biotite, stained below; 1.4" thick augen - 1/2" thick augen with remnant, healed fractures across foliation at 28'; slight staining on joint across foliation from 28.6' to 28.7' - stain on joints, one joint on foliation and one joint across foliation at 29.3' to 29.7'		RC -1 RC -2	26.0 28.9			
30		- 3 stained and leached, weathered joints from 31.4' to 32.2'; augen - 3 stained joints across foliation from 32.7' to 33.0', including a soil coated joint at 33' - slightly stained joints on foliation at 33.1', 33.6', and 34.1' to 34.7'		RC -3	33.9			
35		- stained, leached, weathered zone with many 1/4" quartz phenocrysts from 35.8' to 36.6'		RC -4	39.0			
40		- soft weathered zone with staining from 39.0' to 39.7'		RC -5	44.1			
45		- heavily stained, soft joints across foliation at 41.3' - 1/2" augen at 42.0' - weathered broken zone from 43.6' to 44.1' - below 44.1' heavily stained with many quartz phenocrysts - stained joint across foliation at 45.5'						
			801.3					
50		Bottom of borehole at 49.3 feet.						

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS - SURVEY UPDATED.GPJ



WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	B-26
LOGGER: Ben Gallagher	DRILLING METHODS: HS Auger/HQ Rock Core	
DATE CONSTRUCTED: 10/23/2012	N: 1393105.6 E:2201550.4	

		DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER		-3.0	853.6
2" Threaded Riser Cap			
GROUND SURFACE		0.0	850.6
4 ft x 4 ft concrete pad 			
<b>PROTECTIVE CASING</b>			
SIZE: 4" x 4"			
TYPE: aluminum			
BOTTOM OF GROUT			
<b>BACKFILL MATERIAL</b>			
TYPE: Portland cement/bentonite grout			
AMOUNT: 7 bags cement 10 lbs bentonite			
<b>RISER CASING</b>			
DIA: 2 inch			
TYPE: Schedule 40 PVC			
JOINT TYPE: Flush Threaded			
TOP OF SEAL		30.5	820.1
<b>ANNULAR SEAL</b>			
TYPE: PelPlug TR-30 3/8"			
bentonite pellets; 5-gallon buckets			
AMOUNT: 0.25 bucket			
PLACEMENT: Tremie			
TOP OF FILTER PACK		34.8	815.8
<b>FILTER PACK</b>			
TYPE: Filtersil #61			
Size 1A; 50 lbs/bag			
AMOUNT: 0.5 Bag filter pac			
0.5 bag hole			
PLACEMENT: Tremie			
BOTTOM OF RISER / TOP OF SCREEN		38.9	811.7
<b>SCREEN</b>			
DIA: 2" prepack (3.45" OD)			
TYPE: Schedule 40 PVC			
OPENING WIDTH: 0.01 inch			
OPENING TYPE: Slotted			
SLOT SPACING: 0.1 inch			
BOTTOM OF SCREEN		48.9	801.7
BOTTOM OF CASING		49.3	801.3
Flush-threaded end cap			
HOLE DIA: 7 inch (auger) 3.8 inch (HQ core)			



# BORING LOG

**BORING B-27**  
Page 1 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 10/16/2012 COMPLETED 10/16/2012 GROUND ELEVATION ft COORDINATES N E

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY C. Sellers/K. Byrd CHECKED BY \_\_\_\_\_ BORING DEPTH 34.4 ft.

GROUND WATER DEPTH: DURING \_\_\_\_\_ COMP. \_\_\_\_\_ DELAYED \_\_\_\_\_

NOTES Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
0 - 9.5		- Vacuum excavation from 0 ft to 9.5 ft					
9.5		<b>Gneiss</b> - dark gray, biotite GNEISS; heavily weathered	SS -1	9.5	50 (0)		
14.5		- tan brown, weathered GNEISS; reddish brown quartz vein at 14.5'; sparse mica	SS -2	14.5	9-22-44 (66)		
19.5		- SAA; micaceous	SS -3	19.5	6-9-14 (23)		oxidation features.
24.4			RC -1	24.4			

(Continued Next Page)





# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
30		<p><b>Gneiss (con't)</b> - GNEISS; micaceous flakes; fractures and iron (red) staining</p> <p>- SAA; feldspar throughout</p>	RC-2	29.4			<p>only fragments recovered; started coring.</p> <p>90% feldspar layers, 3.5" thick @ 25 ft and 29 ft.</p>
35		Bottom of borehole at 34.4 feet.					
40							
45							
50							

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS - SURVEY UPDATED.GPJ

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME  B-27
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	
LOGGER: C. Sellers/K. Byrd	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 10/16/2012	N: 1393423.51 E:2201744.77	

	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-3.3	850.29
2" Threaded Riser Cap		
4 ft x 4 ft concrete pad		
GROUND SURFACE	0.0	846.9
<b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
<b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 5.5 bags cement 8 lbs bentonite		
<b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	17.0	829.9
<b>ANNULAR SEAL</b> TYPE: PeIPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 0.5 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	21.0	825.9
<b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 0.5 Bag filter pac 0.5 bag hole PLACEMENT: Tremie		
BOTTOM OF RISER / TOP OF SCREEN	24.0	822.9
<b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	34.0	812.9
Flush-threaded end cap		
BOTTOM OF CASING	34.4	812.5
HOLE DIA: 7 inch		





# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 10/30/2012 COMPLETED 10/30/2012 GROUND ELEVATION 813.3 ft COORDINATES N 1391967.4 E 2201679.2

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit; HQ Rock Core EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY D. Brooks CHECKED BY \_\_\_\_\_ BORING DEPTH 94.3 ft.

GROUND WATER DEPTH: DURING \_\_\_\_\_ COMP. \_\_\_\_\_ DELAYED \_\_\_\_\_

NOTES Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
0 - 9.5		- Vacuum excavation from 0 ft to 9.5 ft						
9.5		<b>Gneiss</b> - no recovery; encountered boulder	803.8	SS -1	9.5			
10 - 14.5		<b>Silty Sand (SM)</b> - green and black, saprolite; relict structure present	802.3	SS -2	14.5			
19.5		- brown and tan, damp, silty SAND; micaceous; fine-grained		SS -3	19.5			
24.5				SS	24.5	4-5-7		

(Continued Next Page)



# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
30		<b>Silty Sand (SM)</b> (con't) - SC-SM: tan, orange, and black, damp, medium dense, silty, clayey SAND; fine to very fine-grained		-4		(12)		
35		- medium dense, SAA; micaceous; clay content increases	778.8	SS-5	29.5	7-7-7 (14)		
40		<b>Silt (ML)</b> - green and black, damp, hard, sandy SILT; relict structure present		SS-6	34.5	5-16-23 (39)		
45		- tan, orange, and black, stiff, sandy SILT; micaceous; some relict structure		SS-7	39.5	5-5-6 (11)		
50		- hard, SAA		SS-8	44.5	7-16-20 (36)		
		- very hard, SAA		SS-9	49.5	20-20 (20)		

(Continued Next Page)





# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\VALTRCFP01\1APARKER\DESKTOP\GPCMMW LOGS - SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
55		<b>Silt (ML)(con't)</b> - very hard, minimal recovery; partially weathered rock		SS -10	54.5	50 (0)		
60		<b>Gneiss</b> - black and gray, mylonite GNEISS (schistic zone); weathering noted along small joints and along foliations (saprock), otherwise fresh; no staining seen	754.1	RC -1	59.2			
65		- black and gray, hard, mylonite GNEISS; fresh		RC -2	64.3			
70		- SAA		RC -3	69.3			
75		- SAA		RC -4	74.3			
80		- SAA with small iron-stained joint at 83'		RC -5	79.3			

(Continued Next Page)



# BORING LOG

**BORING B-28**  
Page 4 of 4

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\VALTRCFP01\1APARKER\DESKTOP\GPCMMW LOGS - SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
85		Gneiss (cont')		RC -6	84.3			
90		- black and gray, hard, GNEISS; fresh		RC -7	89.3			
95		Bottom of borehole at 94.3 feet.						
100								
105								
110								

719.0

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough		DRILLING CO.: SCS Field Services		WELL
Hydrogeologic Investigation		DRILLER: S. Denty		NAME
LOCATION: Ash Pond		RIG TYPE: CME550		B-28
LOGGER: Dustin Brooks		DRILLING METHODS: HS Auger/HQ Rock Core		
DATE CONSTRUCTED: 10/31/2012		N: 1391967.4 E: 2201679.2		
			DEPTH	ELEVATION
			FEET	FT, MSL
TOP OF RISER			-2.8	816.08
2" Threaded Riser Cap				
GROUND SURFACE			0.0	813.3
<p>4 ft x 4 ft concrete pad</p> <p><b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum</p> <p><b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 14 bags cement 19 lbs bentonite</p> <p><b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded</p> <p><b>ANNULAR SEAL</b> TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 0.5 bucket PLACEMENT: Tremie</p> <p><b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 0.5 Bag filter pac 0.5 bag hole PLACEMENT: Tremie</p> <p><b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch</p> <p>Flush-threaded end cap</p> <p>HOLE DIA: 7 inch (auger) 3.8 inch (HQ core)</p>				
BOTTOM OF GROUT				
TOP OF SEAL			53.0	760.3
TOP OF FILTER PACK			55.6	757.7
BOTTOM OF RISER / TOP OF SCREEN			59.0	754.3
BOTTOM OF SCREEN			69.0	744.3
BOTTOM OF CASING			69.4	743.9





# BORING LOG

**SOUTHERN COMPANY SERVICES, INC.**  
**EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING**

**PROJECT** Plant McDonough Hydrogeological Investigation  
**LOCATION** Cobb County, GA

**DATE STARTED** 1/10/2012 **COMPLETED** 1/11/2012 **GROUND ELEVATION** 813.5 ft **COORDINATES** N 1391890 E 2201422

**CONTRACTOR** SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit **EQUIPMENT** CME 550

**DRILLED BY** S. Denty **LOGGED BY** G. Dyer **CHECKED BY** \_\_\_\_\_ **BORING DEPTH** 55.7 ft.

**GROUND WATER DEPTH: DURING** \_\_\_\_\_ **COMP.** \_\_\_\_\_ **DELAYED** \_\_\_\_\_

**NOTES** Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \\VALTRCFP01\1APARKER\DESKTOP\GPCMMW LOGS\_SURVEY\_UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
0 to 10		- Vacuum excavation from 0 ft to 10 ft						
10			803.5					
10 to 12		<b>Silt (ML)</b> - tan-red, damp, medium stiff, clayey SILT, no structures or staining		SS -1	12.0	2-2-4 (6)		residual soil.
12 to 15		- tan, brown, and orange-red, damp, stiff, SILT with clay; vertical manganese oxide bands; highly weathered relict structure; slightly micaceous		SS -2	14.5	2-5-6 (11)		residual soil - upper saprolite.
15 to 19.5		- tan, brown, and orange-red, damp, stiff, SILT with clay; vertical manganese oxide bands; highly weathered relict structure; slightly micaceous		SS -3	19.5	9-28-29 (57)		lower saprolite.
19.5 to 24.5		- red, green and gray, very hard, sandy SILT; highly weathered schist fragments; relict structure intact; moderately to well cemented; trace partially weathered rock fragments		SS	24.5	2-11-14		

(Continued Next Page)



# BORING LOG

**SOUTHERN COMPANY SERVICES, INC.**  
**EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING**

**PROJECT** Plant McDonough Hydrogeological Investigation

**LOCATION** Cobb County, GA

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS - SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		<b>Silt (ML)(con't)</b> - green-gray and tan, dry, very stiff, sandy SILT; moderately to well cemented; structure intact; lacks rock fragments; micaceous; trace quartz sand		-4		(25)		lower saprolite.
30		- green-gray, moist, very hard, GRAVEL and SILT; moderately weathered schist fragments		SS -5	29.5	28-50 (50)		lower saprolite/transitioning to saprock.
35		- very damp, very hard, SAA		SS -6	34.5	24-50 (50)		spoon moist to wet.
40		- dry, very hard, SAA		SS -7	39.5	50 (0)		saprock transition.
45								
50		- green-gray, wet, very hard, fine SILT with gravel; noticeably softer than previous runs; isolated schist fragments near base; little to no structure		SS -8	49.5	11-29-50 (79)		noticeable sound of water flowing.

(Continued Next Page)



# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
55		- very hard, SAPROCK; schist fragments <b>Silt (ML)(con't)</b>	757.8	SS-9	54.5	50 (0)		
Bottom of borehole at 55.7 feet.								
60								
65								
70								
75								
80								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS - SURVEY UPDATED.GPJ



WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	B-29
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 1/11/2013	N: 1391890.0 E: 2201422.0	

		DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER		-2.9	816.43
2" Threaded Riser Cap			
GROUND SURFACE		0.0	813.5
<b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum			
BOTTOM OF GROUT			
<b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 10 bags cement 13.5 lbs bentonite			
<b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded			
TOP OF SEAL		40.0	773.5
<b>ANNULAR SEAL</b> TYPE: PelPlug TR-30 1/4" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured			
TOP OF FILTER PACK		42.0	771.5
<b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 5.5 Bags PLACEMENT: Poured w/water			
BOTTOM OF RISER / TOP OF SCREEN		44.1	769.4
<b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch			
BOTTOM OF SCREEN		54.1	759.4
BOTTOM OF CASING		54.4	759.1
Flush-threaded end cap			
HOLE DIA: 7 inch			

4 ft x 4 ft concrete pad

Flush-threaded end cap

HOLE DIA: 7 inch



# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 1/22/2013 COMPLETED 1/22/2013 GROUND ELEVATION 794.9 ft COORDINATES N 1392034.3 E 2200928.5

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit; HQ Rock Core EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY B. Gallagher CHECKED BY \_\_\_\_\_ BORING DEPTH 45.1 ft.

GROUND WATER DEPTH: DURING \_\_\_\_\_ COMP. \_\_\_\_\_ DELAYED \_\_\_\_\_

NOTES Drilled near North Abutment of Ash Pond 1 dike Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY\_UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
0		Silt (ML)						Vacuum excavation from 0 ft to 10 ft.
5								
10		- white and tan, moist, foliated; saprolite		SS -1	10.0	8-7-6 (13)		
15				SS -2	14.5	7-8-17 (25)		
20		- tan, damp, stained below 20.5 ft		SS -3	19.5	7-17-12 (29)		
25				SS	24.5	3-6-12		

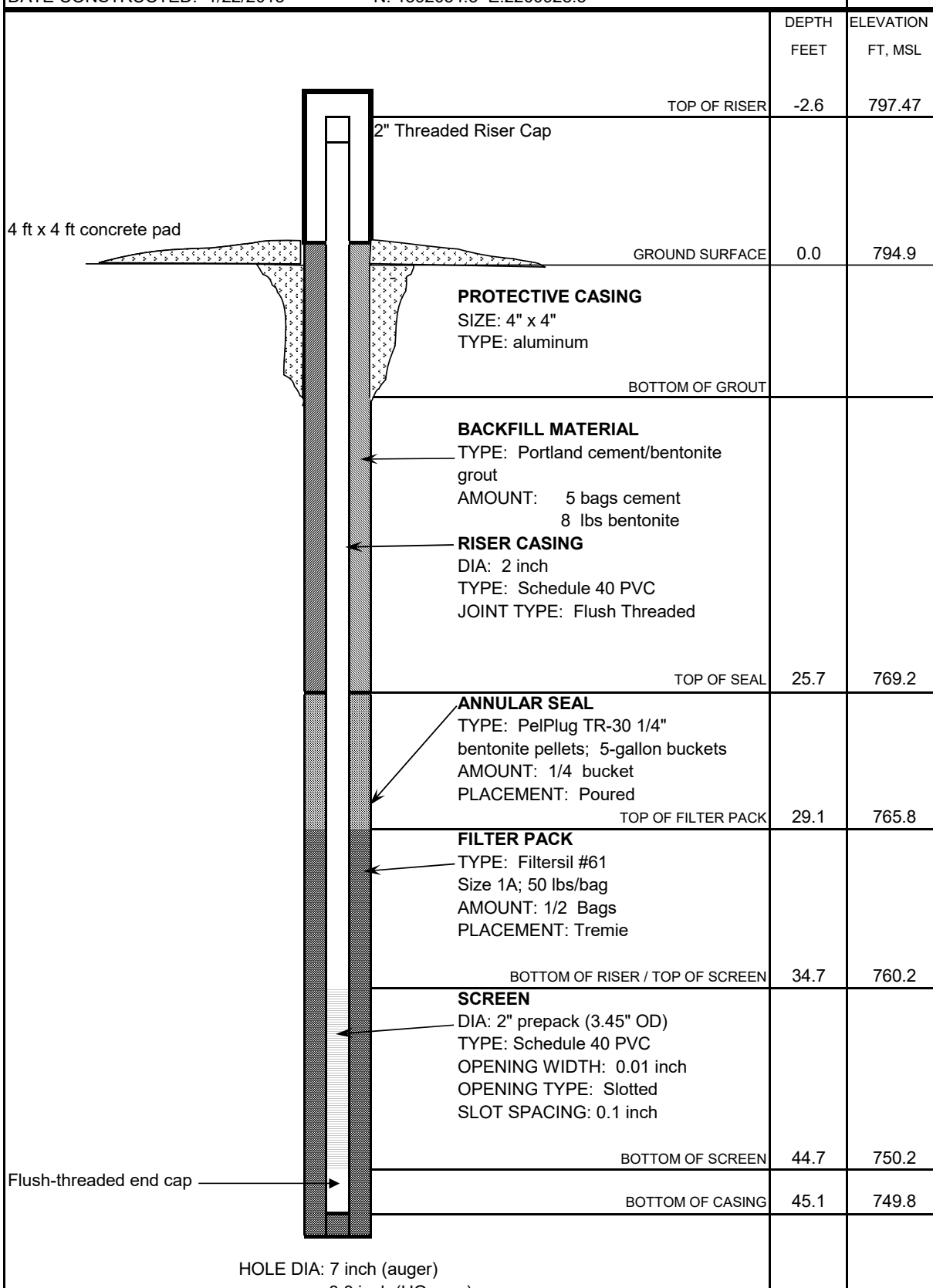
(Continued Next Page)





WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough		DRILLING CO.: SCS Field Services		WELL NAME	
Hydrogeologic Investigation		DRILLER: S. Denty		B-31	
LOCATION: Ash Pond 1		RIG TYPE: CME550			
LOGGER: B. Gallagher		DRILLING METHODS: HS Auger/HQ Rock Core			
DATE CONSTRUCTED: 1/22/2013		N: 1392034.3 E:2200928.5			
			DEPTH FEET	ELEVATION FT, MSL	
TOP OF RISER			-2.6	797.47	
2" Threaded Riser Cap					
GROUND SURFACE			0.0	794.9	
4 ft x 4 ft concrete pad 					
BOTTOM OF GROUT					
<b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum					
<b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 5 bags cement 8 lbs bentonite					
<b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded					
TOP OF SEAL			25.7	769.2	
<b>ANNULAR SEAL</b> TYPE: PelPlug TR-30 1/4" bentonite pellets; 5-gallon buckets AMOUNT: 1/4 bucket PLACEMENT: Poured					
TOP OF FILTER PACK			29.1	765.8	
<b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 1/2 Bags PLACEMENT: Tremie					
BOTTOM OF RISER / TOP OF SCREEN			34.7	760.2	
<b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch					
BOTTOM OF SCREEN			44.7	750.2	
Flush-threaded end cap					
BOTTOM OF CASING			45.1	749.8	
HOLE DIA: 7 inch (auger) 3.8 inch (HQ core)					



# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 11/28/2012 COMPLETED 11/28/2012 GROUND ELEVATION 763.7 ft COORDINATES N 1390482.2 E 2200919.8

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY G. Dyer CHECKED BY \_\_\_\_\_ BORING DEPTH 41 ft.

GROUND WATER DEPTH: DURING \_\_\_\_\_ COMP. \_\_\_\_\_ DELAYED \_\_\_\_\_

NOTES Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
0 to 9.0		- Vacuum excavation fro 0 ft to 9.0 ft						
9.5		<b>Silt (ML)</b> - tan to mottled tan, brown and red, damp, soft, SILT with clay (about 5% clay); micaceous; trace schistose texture (highly weathered)	754.7	SS -1	9.5	1-1-3 (4)		residual soil.
14.5		- yellow tan, medium stiff, SAA		SS -2	14.5	2-2-3 (5)		residual soil.
19.5		- tan, yellow and green banding, soft, SAA; softer; less clay		SS -3	19.5	1-1-2 (3)		residual soil.
24.5				SS	24.5	2-2-4		

(Continued Next Page)



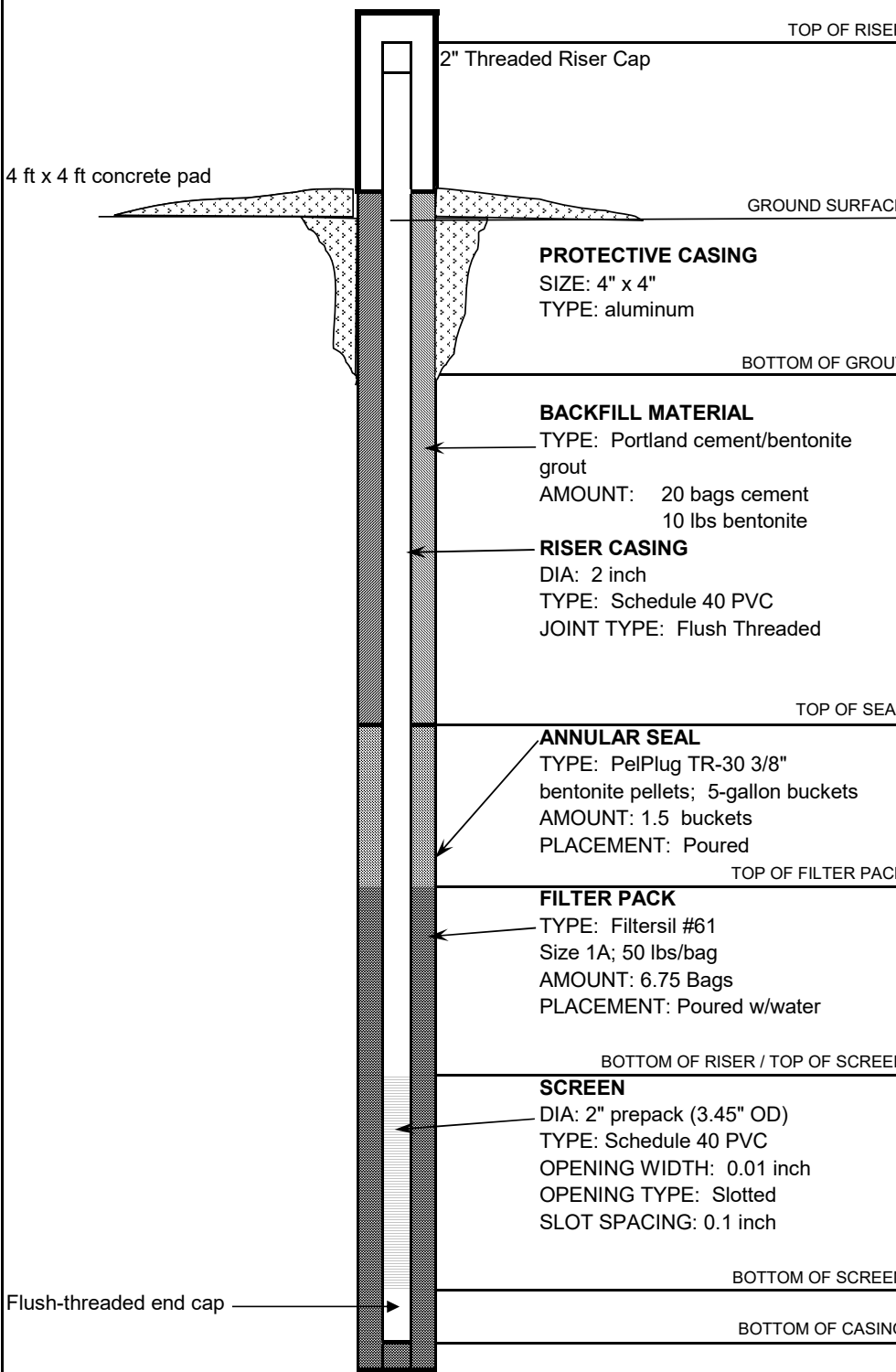


WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	DGWC-37/B-37
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 11/28/2012	N: 1390482.2 E:2200919.8	

	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.5	766.21
2" Threaded Riser Cap		
GROUND SURFACE	0.0	763.7
<b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
<b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 20 bags cement 10 lbs bentonite		
<b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	24.6	739.1
<b>ANNULAR SEAL</b> TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1.5 buckets PLACEMENT: Poured		
TOP OF FILTER PACK	27.0	736.7
<b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 6.75 Bags PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	29.3	734.4
<b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	39.3	724.4
Flush-threaded end cap		
BOTTOM OF CASING	39.7	724.0
HOLE DIA: 7 inch		





# BORING LOG

**BORING B-38**  
Page 1 of 1

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 11/28/2012 COMPLETED 11/28/2012 GROUND ELEVATION 754.7 ft COORDINATES N 1390362.7 E 2201148.6

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY G. Dyer CHECKED BY \_\_\_\_\_ BORING DEPTH 24.7 ft.

GROUND WATER DEPTH: DURING 13 ft. COMP. \_\_\_\_\_ DELAYED \_\_\_\_\_

NOTES Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \\VALTRCFP01\1APARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
0 to 9.0		- Vacuum excavation from 0 ft to 9.0 ft						
9.5		<b>Silt (ML)</b> - olive-gray to tan, moist, medium stiff, SILT; micaceous; trace schist gravel; <5% clay	745.7	SS -1	9.5	2-3-4 (7)		residual soil.
14.5		- more tan, wet, very soft, SAA		SS -2	14.5	WH-WH-1 (1)		
19.5		- tan-brown-gray, very moist, stiff, SILT; micaceous; more prevalent schistose gravel		SS -3	19.5	2-4-5 (9)		residual soil.
24.7		- SAA with very fine-grained sand	730.0					

Bottom of borehole at 24.7 feet.

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	DGWC-38/B-38
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 11/29/2012	N: 1390362.7 E:2201148.6	

	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.7	757.43
2" Threaded Riser Cap		
4 ft x 4 ft concrete pad		
GROUND SURFACE	0.0	754.7
<b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
<b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 4 bags cement 6 lbs bentonite		
<b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	10.4	744.3
<b>ANNULAR SEAL</b> TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1.25 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	13.4	741.3
<b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 5.25 Bags PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	14.7	740.0
<b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	24.7	730.0
Flush-threaded end cap		
BOTTOM OF CASING	25.0	729.7
HOLE DIA: 7 inch		





# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 10/6/2012 COMPLETED 10/6/2012 GROUND ELEVATION 757 ft COORDINATES N 1390303.6 E 2201540.1

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY G. Dyer CHECKED BY \_\_\_\_\_ BORING DEPTH 26 ft.

GROUND WATER DEPTH: DURING 20 ft. COMP. \_\_\_\_\_ DELAYED \_\_\_\_\_

NOTES Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \VALTRCFP01\1APARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
0 - 9.5		- Vacuum excavation from 0 ft to 9.5 ft						water table in hydrovac hole at about 2 ft bgs.
9.5		<b>Elastic Silt (MH)</b> - tan, wet, medium stiff, medium plasticity, clayey SILT with fine sand	747.5	UD -1	9.5			
14.5		<b>Silt (ML)</b> - tan-brown, wet, medium stiff, sandy SILT; contains schist gravel at base	741.8	SS -1	14.5	1-2-6 (8)		residual soil.
19.5		- mottled tan, orange and brown, wet, medium stiff, clayey SILT; micaceous		SS -2	19.5	2-2-5 (7)		residual soil/upper saprolite transition.
24.5		<b>Lean Clay (CL)</b>	732.5	SS	24.5	3-2-4		

(Continued Next Page)



# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
	//	- mottled tan, brown and black, damp, medium stiff, low plasticity, silty CLAY; relict structures observed; highly weathered <b>Lean Clay (CL)(con't)</b>	731.0	-3		(6)		upper saprolite.
30								
35								
40								
45								
50								
		Bottom of borehole at 26.0 feet.						

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\VALTRCFP01\IAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	DGWC-39/B-39
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 11/6/2012	N: 1390303.6 E:2201540.1	

	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.9	759.89
2" Threaded Riser Cap		
4 ft x 4 ft concrete pad		
GROUND SURFACE	0.0	757.0
<b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
<b>BACKFILL MATERIAL</b> TYPE: Bentonite Plug grout AMOUNT: 4 buckets 200 lbs bentonite		
<b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	4.9	752.1
<b>ANNULAR SEAL</b> TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 3.5 buckets PLACEMENT: Poured		
TOP OF FILTER PACK	8.0	749.0
<b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 11 Bags PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	10.8	746.2
<b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	20.8	736.2
Flush-threaded end cap		
BOTTOM OF CASING	21.2	735.8
HOLE DIA: 7 inch		





# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 11/5/2012 COMPLETED 11/5/2012 GROUND ELEVATION 776.2 ft COORDINATES N 1390625.7 E 2201825.9

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY G. Dyer CHECKED BY \_\_\_\_\_ BORING DEPTH 36 ft.

GROUND WATER DEPTH: DURING \_\_\_\_\_ COMP. \_\_\_\_\_ DELAYED \_\_\_\_\_

NOTES Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
0 - 9.5		- Vacuum excavation from 0 ft to 9.5 ft						
9.5		<b>Silt (ML)</b> - brown-tan, stiff, clayey, sandy SILT; damp to moist; contains micaceous fragments; manganese staining and nodules	766.7	SS -1	9.5	2-4-5 (9)		residual soil.
14.5		- tan to tan-brown, damp, stiff, sandy SILT; contains highly weathered schist; manganese staining		SS -2	14.5	4-5-6 (11)		upper saprolite.
19.5		- mottled tan, brown, and black, very moist, clayey SILT with sand; highly weathered schist fragments; 10% micaceous sand		SS -3	19.5	4-3-4 (7)		upper saprolite; increased water content.
24.5				SS	24.5	7-11-12		

(Continued Next Page)



WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	DGWC-40/B-40
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 11/5/2012	N: 1390625.7 E:2201825.9	

		DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER		-2.9	779.06
2" Threaded Riser Cap			
GROUND SURFACE		0.0	776.2
<b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum			
BOTTOM OF GROUT			
<b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 6 bags cement 6 lbs bentonite			
<b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded			
TOP OF SEAL		19.0	757.2
<b>ANNULAR SEAL</b> TYPE: PeiPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured			
TOP OF FILTER PACK		21.4	754.8
<b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 0.5 Bag filter pac 6.5 bag hole PLACEMENT: Poured w/water			
BOTTOM OF RISER / TOP OF SCREEN		24.5	751.7
<b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch			
BOTTOM OF SCREEN		34.5	741.7
BOTTOM OF CASING		34.9	741.3
Flush-threaded end cap			
HOLE DIA: 7 inch			

4 ft x 4 ft concrete pad

Flush-threaded end cap





# BORING LOG

**BORING B-41**  
Page 1 of 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 11/13/2012 COMPLETED 11/14/2012 GROUND ELEVATION 792.4 ft COORDINATES N 1390920.8 E 2201751.9

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY C. Sellers CHECKED BY \_\_\_\_\_ BORING DEPTH 61 ft.

GROUND WATER DEPTH: DURING 35 ft. COMP. \_\_\_\_\_ DELAYED \_\_\_\_\_

NOTES Well installed. Refer to well data sheet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
0 - 9.5		- Vacuum excavation from 0 ft to 9.5 ft						
9.5		<b>Lean Clay (CL)</b> - light tan/orange, very soft, silty CLAY (fill for parking lot)	782.9	SS -1	9.5	WH-WH-1 (1)		
14.5		<b>Silt (ML)</b> - no recovery - medium stiff	777.9	SS -2	14.5	3-2-4 (6)		
19.5		- brownish orange, dry, stiff, clayey SILT with mica		SS -3	19.5	4-4-5 (9)		
24.5				SS	24.5			

(Continued Next Page)



# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		<b>Silt (ML)(con't)</b> - light tan, SILT; micaceous		4				
30		- stiff, SAA; with very fine-grained sand		SS-5	29.5	2-4-9 (13)		
35	▽	- wet, medium stiff, SAA		SS-6	34.5	2-2-3 (5)		
40		- brown, wet, stiff, SILT with fine to very fine sand		SS-7	39.5	2-3-6 (9)		
45		- stiff, SAA		SS-8	44.5	2-5-7 (12)		
50		- light tan, damp, hard, sandy SILT (saprolite); fine to very fine-grained sand		SS-9	49.5	11-18-23 (41)		

(Continued Next Page)



# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
55		<b>Silt (ML)(con't)</b> - light tan, damp, hard, SILT; contains fine to very fine-grained sand and angular quartz gravel		SS -10	54.5	10-17-26 (43)		
60		- light tan, damp, saprolite; contains fine to medium-grained sand	731.4	SS -11	59.5	11-24-50 (74)		
Bottom of borehole at 61.0 feet.								
65								
70								
75								
80								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS - SURVEY UPDATED.GPJ



WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	B-41
LOGGER: Cale Sellers	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 11/14/2012	N: 1390920.8 E:2201751.9	

		DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER		-2.8	795.2
2" Threaded Riser Cap			
GROUND SURFACE		0.0	792.4
<p><b>PROTECTIVE CASING</b>                      SIZE: 4" x 4"                      TYPE: aluminum</p>			
BOTTOM OF GROUT			
<p><b>BACKFILL MATERIAL</b>                      TYPE: Portland cement/bentonite grout                      AMOUNT: 7 bags cement                      10 lbs bentonite</p>			
<p><b>RISER CASING</b>                      DIA: 2 inch                      TYPE: Schedule 40 PVC                      JOINT TYPE: Flush Threaded</p>			
TOP OF SEAL		45.2	747.2
<p><b>ANNULAR SEAL</b>                      TYPE: PelPlug TR-30 3/8"                      bentonite pellets; 5-gallon buckets                      AMOUNT: 1.25 buckets                      PLACEMENT: Tremie</p>			
TOP OF FILTER PACK		47.3	745.1
<p><b>FILTER PACK</b>                      TYPE: Filtersil #61                      Size 1A; 50 lbs/bag                      AMOUNT: 7 Bags                      PLACEMENT: Tremie</p>			
BOTTOM OF RISER / TOP OF SCREEN		49.4	743.0
<p><b>SCREEN</b>                      DIA: 2" prepack (3.45" OD)                      TYPE: Schedule 40 PVC                      OPENING WIDTH: 0.01 inch                      OPENING TYPE: Slotted                      SLOT SPACING: 0.1 inch</p>			
BOTTOM OF SCREEN		59.4	733.0
BOTTOM OF CASING		60.0	732.4
<p>Flush-threaded end cap</p>			
HOLE DIA: 7 inch			

4 ft x 4 ft concrete pad

Flush-threaded end cap

HOLE DIA: 7 inch



# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation  
LOCATION Cobb County, GA

DATE STARTED 11/12/2012 COMPLETED 11/12/2012 GROUND ELEVATION 802 ft COORDINATES N 1391327.8 E 2201870.2

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit EQUIPMENT CME 550

DRILLED BY S. Denty LOGGED BY C. Sellers CHECKED BY \_\_\_\_\_ BORING DEPTH 51 ft.

GROUND WATER DEPTH: DURING 30 ft. COMP. \_\_\_\_\_ DELAYED \_\_\_\_\_

NOTES Well installed. Refer to well data sheet.

GEO TECH ENGINEERING LOGS - ESEE DATABASE: GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
0 - 9.5		- Vacuum excavation from 0 ft to 9.5 ft						
9.5		<b>Lean Clay (CL)</b> - orange/tan, medium stiff, silty CLAY; micaceous; fine to very-fine grained	792.5	SS -1	9.5	1-2-4 (6)		
14.5		<b>Silt (ML)</b> - tan/orange/some white, stiff, SILT with very fine sand; very micaceous; saprolite	787.5	SS -2	14.5	3-4-6 (10)		
19.5		- SAA		SS -3	19.5	4-4-5 (9)		
24.5				SS	24.5	1-3-4		

(Continued Next Page)



# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\VALTRCFP01\1LAPARKER\DESKTOP\GPCMW LOGS\_SURVEY UPDATED.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		<b>Silt (ML)(con't)</b> - light tan, medium stiff, clayey SILT; very fine-grained; some mica (less than above)		4		(7)		
30	▽	- tan with black banding, wet, soft, SILT with very fine-grained sand		SS-5	29.5	1-2-2 (4)		
35		- wet, hard, SILT with fine sand and some gravel; angular; saprolite		SS-6	34.5	7-22-26 (48)		
40		- tan, wet, very stiff, SILT with fine sand and angular gravel		SS-7	39.5	8-9-12 (21)		
45		- wet, very stiff, SAA		SS-8	44.5	5-9-14 (23)		
50		<b>Silty Sand (SM)</b> - tan, damp, silty SAND	752.5	SS-9	49.5			
		Bottom of borehole at 51.0 feet.	751.0					



WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough		DRILLING CO.: SCS Field Services		WELL NAME
Hydrogeologic Investigation		DRILLER: S. Denty		
LOCATION: Ash Pond		RIG TYPE: CME550		DGWC-42/B-42
LOGGER: Cale Sellers		DRILLING METHODS: HS Auger		
DATE CONSTRUCTED: 11/12/2012		N: 1391327.8 E:2201870.2		
			DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER			-2.7	804.68
2" Threaded Riser Cap				
GROUND SURFACE			0.0	802.0
<b>PROTECTIVE CASING</b> SIZE: 4" x 4" TYPE: aluminum				
BOTTOM OF GROUT				
<b>BACKFILL MATERIAL</b> TYPE: Portland cement/bentonite grout AMOUNT: 8 bags cement 11 lbs bentonite				
<b>RISER CASING</b> DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded				
TOP OF SEAL			35.2	766.8
<b>ANNULAR SEAL</b> TYPE: PelPlug TR-30 1/4" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured				
TOP OF FILTER PACK			37.2	764.8
<b>FILTER PACK</b> TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 5 Bags PLACEMENT: Poured w/water				
BOTTOM OF RISER / TOP OF SCREEN			39.9	762.1
<b>SCREEN</b> DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch				
BOTTOM OF SCREEN			49.9	752.1
Flush-threaded end cap				
BOTTOM OF CASING			50.4	751.6
HOLE DIA: 7 inch				



# RECORD OF BOREHOLE DGWC-48/B-48

SHEET 1 of 1

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 30.00 ft  
 LOCATION: Smyrna, GA

DRILL RIG: 100C Track Mounted Rig  
 DATE STARTED: 6/21/16  
 DATE COMPLETED: 6/22/16

NORTHING: 1,391,314.60  
 EASTING: 2,202,290.20  
 GS ELEVATION: 785.2  
 TOC ELEVATION: 788.33 ft

DEPTH W.L.: 11.35  
 ELEVATION W.L.: 773.85  
 DATE W.L.: 6/23/2016  
 TIME W.L.: 9:55

BOREHOLE RECORD\_MCDONOUGH MASTER LIST\_BACKUP\_SURVEY UPDATED (5).GPJ\_PIEDMONT.GDT 8/24/20

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0	785	0.00 - 3.00 SILT; orange brown, micaceous, dry, very stiff (fill)	ML		782.2 3.00				<p style="font-size: small;">Portland Type I / Aluminum Casing</p> <p style="font-size: small;">Portland Type I / Bentonite Gel mix</p> <p style="font-size: small;">3/8" Bentonite Pellets</p> <p style="font-size: small;">Filtersil std #61</p> <p style="font-size: small;">0.010" slot screen</p> <p style="font-size: small;">Sump</p>	<p><b>WELL CASING</b> Interval: 0'-30' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush threaded with O-ring</p> <p><b>WELL SCREEN</b> Interval: 19.6'-29.6' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC</p> <p><b>FILTER PACK</b> Interval: 17.6'-30' Type: Filtersil std61</p> <p><b>FILTER PACK SEAL</b> Interval: 12.1'-17.6' Type: 3/8" Bentonite Pellets</p> <p><b>ANNULUS SEAL</b> Interval: 0'-12.1' Type: Portland Type I/Type II/Gel Mix</p> <p><b>WELL COMPLETION</b> Pad: 4'x4'x4" Protective Casing: Aluminum</p> <p><b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic</p>
5	780	3.00 - 11.00 SILT; oragnish brown to tan, laminations, trace to some medium to coarse sand, trace fine to coarse gravel, gray, subangular, moist (saprolite)	ML							
10	775	11.00 - 24.00 SILT; gray to blackish brown, some fine to coarse sand, laminations, stiff to very stiff, dry	ML		774.2 11.00					
15	770		ML							
20	765		ML							
25	760	24.00 - 30.00 biotite GNEISS; gray and white, orange staining, partially weathered bedrock, some clay, gray, micaceous	BR		761.2 24.00					
30	755	Boring completed at 30.00 ft			755.2					
35	750									
40	745									
45										

LOG SCALE: 1 in = 5.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Bill Lindsey

GA INSPECTOR: K. Jurinko, PG  
 CHECKED BY: Rachel P. Kirkman, PG  
 DATE: 12/22/17





# RECORD OF BOREHOLE B-50

SHEET 1 of 1

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 36.00 ft  
 LOCATION: Smyrna, GA

DRILL RIG: 100C Track Mounted Rig  
 DATE STARTED: 6/24/16  
 DATE COMPLETED: 6/24/16

NORTHING: 1,391,657.10  
 EASTING: 2,201,841.00  
 GS ELEVATION: 809.2  
 TOC ELEVATION: 809.67 ft

DEPTH W.L.: 20.8  
 ELEVATION W.L.: 788.4  
 DATE W.L.: 6/24/2016  
 TIME W.L.: 10:50

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 12.00 SILT; grayish brown, dry, soft (fill)	ML					Portland Type I/Protective Casing		<b>WELL CASING</b> Interval: 0'-35.2' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush threaded with O-ring  <b>WELL SCREEN</b> Interval: 24.8'-34.8' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC  <b>FILTER PACK</b> Interval: 21.8'-36' Type: Filtersil std61  <b>FILTER PACK SEAL</b> Interval: 15.9'-21.8' Type: 3/8" Bentonite Pellets  <b>ANNULUS SEAL</b> Interval: 3'-15.9' Type: Portland Type I/Type II/Bentonite Gel Mix  <b>WELL COMPLETION</b> Pad: 4'x4'x4" Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic
805										
800								Portland Type I/Type II/Bentonite Gel mix		
10		12.00 - 29.50 SILT; organish gray, some fine to coarse sand, micaceous, moist to wet, soft to firm (saprolite)	ML		797.2			3/8" Bentonite Pellets		
15										
17.5					799.2			Filtersil std #61		
20										
22.5										
25										
27.5										
30		29.50 - 36.00 SILTY SAND; brownish gray, fine sand, wet, very soft	SM		779.7			0.010" slot screen		
35										
37.5										
40										
42.5										
45								Sump		
		Boring completed at 36.00 ft				773.2				

BOREHOLE RECORD MCDONOUGH MASTER LIST\_BACKUP\_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

LOG SCALE: 1 in = 5.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Bill Lindsey

GA INSPECTOR: K. Jurinko, PG  
 CHECKED BY: Rachel P. Kirkman, PG  
 DATE: 12/22/17



# RECORD OF BOREHOLE DGWA-53/B-53

SHEET 1 of 1

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 28.90 ft  
 LOCATION: in the middle of the pond of the construction area of AP3

DRILL RIG: CME 55  
 DATE STARTED: 9/24/16  
 DATE COMPLETED: 9/24/16

NORTHING: 1,393,472.80  
 EASTING: 2,201,668.80  
 GS ELEVATION: 841.3  
 TOC ELEVATION: 844.26 ft

DEPTH W.L.: 10.08  
 ELEVATION W.L.: 831.22  
 DATE W.L.: 10/6/2016  
 TIME W.L.: 1233

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES					MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE			REC
0	840	0.00 - 3.50 SM, silt SAND, fine to medium grained, non-plastic, tan, non-cohesive, dry to moist, compact	SM		837.8 3.50	1	DO	2-4-6	10	1.50	CETCO puregold grout (70:30) / aluminum casing  CETCO puregold grout (70:30)  PEL-PLUG 3/8" Bentonite pellets  FilterSil -  0.010" slotted screen	<b>WELL CASING</b> Interval: 0'-17.6' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw  <b>WELL SCREEN</b> Interval: 17.6'-27.6' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010 End Cap: Schedule 40 PVC  <b>FILTER PACK</b> Interval: 12'-28.9' Type: FilterSil  <b>FILTER PACK SEAL</b> Interval: 8'-12' Type: PEL-PLUG 3/8" Bentonite pellets  <b>ANNULUS SEAL</b> Interval: 0'-8' Type: CETCO puregold grout (70:30)  <b>WELL COMPLETION</b> Pad: Protective Casing: 4"x4"x5' aluminum  <b>DRILLING METHODS</b> Soil Drill: Hollow-stem auger Rock Drill: HQ Core Barrell
5	835	3.50 - 12.20 SM, silt SAND, fine to medium grained, non-plastic, tan, non-cohesive, dry to moist, compact to dense (saprolite). Auger Refusal at 12.2	SM			2	DO	4-6-6	12	1.50		
10	830	12.20 - 29.50 Bedrock; GNEISS; competent, thinly foliated.	BR		829.1 12.20	3	DO	5-13-35	48	1.50		
15	825				811.8 29.50							
20	820	Boring completed at 28.90 ft										
25	815											
30	810											
35	805											
40	800											
45												

BOREHOLE RECORD MCDONOUGH MASTER LIST\_BACKUP\_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

LOG SCALE: 1 in = 5.5 ft  
 DRILLING COMPANY: Southern Company Services  
 DRILLER: S. Milam

GA INSPECTOR: Nortey Yeboah  
 CHECKED BY: Timothy Richards, PG  
 DATE: 12/22/17









# RECORD OF BOREHOLE B-55

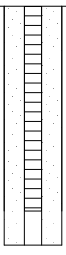
SHEET 2 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 52.00 ft  
 LOCATION: West of the cement plant

DRILL RIG: CME 55  
 DATE STARTED: 9/21/16  
 DATE COMPLETED: 9/22/16

NORTHING: 1,394,142.60  
 EASTING: 2,204,147.90  
 GS ELEVATION: 822.9  
 TOC ELEVATION: 825.12 ft

DEPTH W.L.: 12.05'  
 ELEVATION W.L.: 810.85  
 DATE W.L.: 10/6/2016  
 TIME W.L.: 850

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES				MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE			REC
45		23.50 - 52.00 ML, SILT, some sand, non plastic; light brown to tan to silverish gray, schist saprolite; cohesive, moist to wet (increases with depth), w<PL, soft to firm. <i>(Continued)</i>	ML									<p><b>WELL CASING</b> Interval: 0' - 41' Material: Schedule 40 PVC Diameter: 2 Joint Type: Flush/Screw</p> <p><b>WELL SCREEN</b> Interval: 41' - 51' Material: Schedule 40 PVC Diameter: 2 Slot Size: 0.010 End Cap: Schedule 40 PVC</p> <p><b>FILTER PACK</b> Interval: 39'-52' Type: FilterSil</p> <p><b>FILTER PACK SEAL</b> Interval: 32'-39' Type: PEL-PLUG 3/8" Bentonite pellets</p> <p><b>ANNULUS SEAL</b> Interval: 0'-32' Type: Portland Type I/Type II/Gel Mix</p> <p><b>WELL COMPLETION</b> Pad: 2' x 2' concrete Protective Casing: 4"x4"x5' aluminum</p> <p><b>DRILLING METHODS</b> Soil Drill: Hollow-stem auger Rock Drill: N/A</p>
775												
50		Boring completed at 52.00 ft										
770												
55												
765												
60												
760												
65												
755												
70												
750												
75												
745												
80												
740												
85												
735												
90												

BOREHOLE RECORD\_MCDONOUGH MASTER LIST\_BACKUP\_SURVEY UPDATED (5).GPJ\_PIEDMONT.GDT\_8/24/20

LOG SCALE: 1 in = 5.5 ft  
 DRILLING COMPANY: Terracon  
 DRILLER: Shep Becker

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 12/22/17



# RECORD OF BOREHOLE B-56

SHEET 1 of 1

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 45.00 ft  
 LOCATION: SW of the cement plant

DRILL RIG: CME 55  
 DATE STARTED: 10/3/16  
 DATE COMPLETED: 10/3/16

NORTHING: 1,393,957.90  
 EASTING: 2,204,187.80  
 GS ELEVATION: 821.0  
 TOC ELEVATION: 823.59 ft

DEPTH W.L.: 16.39  
 ELEVATION W.L.: 804.61  
 DATE W.L.: 10/6/2016  
 TIME W.L.: 900

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES				MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS		
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop			N-VALUE	REC
0	820	0.00 - 13.50 ML, SILT, trace fine sand, non to low plasticity; brownish red, micaceous, fill; cohesive, dry to moist, w<PL, firm.	ML			1	DO	2-5-5	10	1.08 1.50	CETCO puregold grout (70:30) / aluminum casing	<b>WELL CASING</b> Interval: 0'-34.6' Material: Schedule 40 PVC Diameter: 2 Joint Type: Flush/Screw  <b>WELL SCREEN</b> Interval: 34.6'-44.6' Material: Schedule 40 PVC Diameter: 2 Slot Size: 0.010 End Cap: Schedule 40 PVC  <b>FILTER PACK</b> Interval: 31.8' - 45' Type: FilterSil  <b>FILTER PACK SEAL</b> Interval: 26.7'-31.8' Type: PEL-PLUG 3/8" Bentonite pellets  <b>ANNULUS SEAL</b> Interval: 0'-26.7' Type: CETCO puregold grout (70:30)  <b>WELL COMPLETION</b> Pad: 2' x 2' concrete Protective Casing: 4"x4"x5' aluminum  <b>DRILLING METHODS</b> Soil Drill: Hollow-stem auger Rock Drill: N/A
5	815											
10	810											
15	805	13.50 - 23.50 ML, SILT, trace fine to coarse sand, non to low plasticity; red to brown to black to silver, micaceous, schist/schistose gneiss saprolite; cohesive, moist to wet, soft to stiff.	ML		807.5 13.50	3	DO	3-5-11	16	1.50 1.50	CETCO puregold grout (70:30)	
20	800											
25	795	23.50 - 45.00 ML, SILT, trace fine to coarse sand, non to low plasticity; brown to silvery brown, deeply weathered, micaceous, schist saprolite; cohesive, wet, w<PL, soft to firm. (locally contains pegmatite veins)	ML		797.5 23.50	5	DO	7-8-14	22	1.33 1.50	PEL-PLUG 3/8" Bentonite pellets	
30	790											
35	785											
40	780											
45		Boring completed at 45.00 ft			776	9	DO	7-12-33	42	1.25 1.50	0.010" slotted screen	

BOREHOLE RECORD MCDONOUGH MASTER LIST\_BACKUP\_SURVEY UPDATED (5).GPJ PIEDMONT\_GDT 8/24/20

LOG SCALE: 1 in = 5.5 ft  
 DRILLING COMPANY: Southern Company Services  
 DRILLER: S. Milam

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 12/22/17





# RECORD OF BOREHOLE B-57

SHEET 1 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 50.50 ft  
 LOCATION: North of the 4-wide construction trailer

DRILL RIG: CME 55  
 DATE STARTED: 9/24/16  
 DATE COMPLETED: 9/24/16

NORTHING: 1,391,396.30  
 EASTING: 2,202,736.90  
 GS ELEVATION: 786.0  
 TOC ELEVATION: 789.04 ft

DEPTH W.L.: 21.49  
 ELEVATION W.L.: 764.51  
 DATE W.L.: 10/6/2016  
 TIME W.L.: 920

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES					MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS		
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE			REC	
0	785	0.00 - 10.00 Boring was hydrovac'd to 10' bgs (material appears to be SM-ML)	SM-ML		776						Portland Type I/Type II/Gel Mix / aluminum casing	<b>WELL CASING</b> Interval: 0'-40' Material: Schedule 40 PVC Diameter: 2 Joint Type: Flush/Screw  <b>WELL SCREEN</b> Interval: 40'-50' Material: Schedule 40 PVC Diameter: 2 Slot Size: 0.010 End Cap: Schedule 40 PVC  <b>FILTER PACK</b> Interval: 34.6'-50.5' Type: FilterSil  <b>FILTER PACK SEAL</b> Interval: 29'-34.6' Type: PEL-PLUG 3/8" Bentonite pellets  <b>ANNULUS SEAL</b> Interval: 0'-29' Type: Portland Type I/Type II/Gel Mix  <b>WELL COMPLETION</b> Pad: 2' x 2' concrete Protective Casing: 4"x4"x5' aluminum  <b>DRILLING METHODS</b> Soil Drill: Hollow-stem auger Rock Drill: HQ Core Barrell	
5	780												
10	775	10.00 - 30.00 ML- Sandy Clayey SILT, fine to coarse sand, some fine gravel; reddish-brown to brown, dense, dry; micaceous, PWR	ML		776						Portland Type I/Type II/Gel Mix		
15	770						1	DO	4-10-14	24			1.00 1.50
20	765						2	DO	11-24-50/5	74/11			1.00 1.50
25	760												
30	755	30.00 - 34.50 CL- Silty CLAY, SOME fine to medium SAND, trace gravel: brown; loose, W<PL; micaceous, PWR. Auger Refusal at 34.5	CL		756						PEL-PLUG 3/8" Bentonite pellets		
35	750						3	DO	4-8-14	22			1.33 1.50
34.50	751.5				4	DO	4-4-8	12	1.33 1.50				
35	750	34.50 - 50.50 Bedrock; SCHIST; strong to very strong, light to dark gray with white and black laminations, sub-parallel; slightly weathered top with red oxidation on fractured surfaces to fresh and unfractured at the bottom.	BR		751.5						FilterSil -		
40	745						5	DO	50/3	50/3			0.00 0.25
45	740										0.010 Slotted Screen		

BOREHOLE RECORD: MCDONOUGH MASTER LIST\_BACKUP\_SURVEY\_UPDATED (5).GPJ\_PIEDMONT.GDT 8/24/20

Log continued on next page

LOG SCALE: 1 in = 5.5 ft  
 DRILLING COMPANY: Terracon  
 DRILLER: Shep Becker

GA INSPECTOR: Aubrey Ellis  
 CHECKED BY: Timothy Richards, PG  
 DATE: 12/22/17



# RECORD OF BOREHOLE B-57

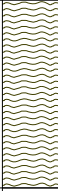

SHEET 2 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 50.50 ft  
 LOCATION: North of the 4-wide construction trailer

DRILL RIG: CME 55  
 DATE STARTED: 9/24/16  
 DATE COMPLETED: 9/24/16

NORTHING: 1,391,396.30  
 EASTING: 2,202,736.90  
 GS ELEVATION: 786.0  
 TOC ELEVATION: 789.04 ft

DEPTH W.L.: 21.49  
 ELEVATION W.L.: 764.51  
 DATE W.L.: 10/6/2016  
 TIME W.L.: 920

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES				MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS		
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop			N-VALUE	REC
45	740	34.50 - 50.50 Bedrock; SCHIST; strong to very strong, light to dark gray with white and black laminations, sub-parallel; slightly weathered top with red oxidation on fractured surfaces to fresh and unfractured at the bottom. <i>(Continued)</i>	BR		735.5							<p><b>WELL CASING</b> Interval: 0'-40' Material: Schedule 40 PVC Diameter: 2 Joint Type: Flush/Screw</p> <p><b>WELL SCREEN</b> Interval: 40'-50' Material: Schedule 40 PVC Diameter: 2 Slot Size: 0.010 End Cap: Schedule 40 PVC</p> <p><b>FILTER PACK</b> Interval: 34.6'-50.5' Type: FilterSil</p> <p><b>FILTER PACK SEAL</b> Interval: 29'-34.6' Type: PEL-PLUG 3/8" Bentonite pellets</p> <p><b>ANNULUS SEAL</b> Interval: 0'-29' Type: Portland Type I/Type II/Gel Mix</p> <p><b>WELL COMPLETION</b> Pad: 2' x 2' concrete Protective Casing: 4"x4"x5' aluminum</p> <p><b>DRILLING METHODS</b> Soil Drill: Hollow-stem auger Rock Drill: HQ Core Barrell</p>
50	735	Boring completed at 50.50 ft										
55	730											
60	725											
65	720											
70	715											
75	710											
80	705											
85	700											
90												

BOREHOLE RECORD\_MCDONOUGH MASTER LIST\_BACKUP\_SURVEY UPDATED (5).GPJ\_PIEDMONT.GDT 8/24/20

LOG SCALE: 1 in = 5.5 ft  
 DRILLING COMPANY: Terracon  
 DRILLER: Shep Becker

GA INSPECTOR: Aubrey Ellis  
 CHECKED BY: Timothy Richards, PG  
 DATE: 12/22/17



# RECORD OF BOREHOLE B-58

SHEET 1 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 45.00 ft  
 LOCATION: SW corner of the new overflow parking lot of the NEW admin building

DRILL RIG: CME 55  
 DATE STARTED: 9/22/16  
 DATE COMPLETED: 9/23/16

NORTHING: 1,391,125.70  
 EASTING: 2,202,426.50  
 GS ELEVATION: 785.2  
 TOC ELEVATION: 788.17 ft

DEPTH W.L.: 22.30  
 ELEVATION W.L.: 762.9  
 DATE W.L.: 10/6/2016  
 TIME W.L.: 940

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES				MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop			N-VALUE
0	785	0.00 - 13.50 Top 10' were Hydrovac for utilities.									<p><b>WELL CASING</b> Interval: 0'-34.5' Material: Schedule 40 PVC Diameter: 2 Joint Type: Flush/Screw</p> <p><b>WELL SCREEN</b> Interval: 34.5'-44.5' Material: Schedule 40 PVC Diameter: 2 Slot Size: 0.010 End Cap: Schedule 40 PVC</p> <p><b>FILTER PACK</b> Interval: 31.7'-45.1' Type: FilterSil</p> <p><b>FILTER PACK SEAL</b> Interval: 24.1'-31.7' Type: PEL-PLUG 3/8" Bentonite pellets</p> <p><b>ANNULUS SEAL</b> Interval: 0'-24.1' Type: CETCO puregold grout (70:30)</p> <p><b>WELL COMPLETION</b> Pad: 2' x 2' concrete Protective Casing: 4"x4"x5' aluminum</p> <p><b>DRILLING METHODS</b> Soil Drill: Hollow-stem auger Rock Drill: N/A</p>
13.50	770	13.50 - 18.50 SC-SM, silty SAND/ clayly SAND, fine to coarse, low plasticity; red to red orange, fill; cohesive, moist, w<PL, soft to firm.	SC-SM		771.7 13.50	1	DO	5-6-7	13	1.50 1.50	
18.50	765	18.50 - 23.50 ML, SILT, trace sand, low to moderate plasticity; red orange, micaceous, fill; cohesive, moist, w<PL, soft to firm.	ML		766.7 18.50	2	DO	2-1-2	3	1.50 1.50	
23.50	760	23.50 - 28.50 ML, SILT, some fine sand, low plasticity; tan to white; cohesive, wet, w<PL (over saturated), soft.	ML		761.7 23.50	3	DO	2-3-3	6	1.50 1.50	
28.50	755	28.50 - 33.50 ML, SILT, non plastic; brown to silver, slight to deeply weathered, schistose gneiss saprolite; cohesive, wet, w<PL, firm to stiff.	ML		756.7 28.50	4	DO	4-7-9	16	1.50 1.50	
33.50	750	33.50 - 45.00 ML, SILT, trace to some sand, low to moderate plasticity; brown to dark brown, micaceous, schistose gneiss/schist saprolite; cohesive, moist to wet, w<PL, soft to stiff.	ML		751.7 33.50	5	DO	1-4-7	11	1.50 1.50	
45.00	745	45.00 - 45.00 Borehole completed at 45.00 ft	ML		740.2 45.00	6	DO	3-6-11	17	1.50 1.50	
						7	DO	3-7-12	19	1.50 1.50	

BOREHOLE RECORD MCDONOUGH MASTER LIST\_BACKUP\_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

LOG SCALE: 1 in = 5.5 ft  
 DRILLING COMPANY: Southern Company Services  
 DRILLER: S. Milam

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 12/22/17





# RECORD OF BOREHOLE B-58

SHEET 2 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 45.00 ft  
 LOCATION: SW corner of the new overflow parking lot of the NEW admin building

DRILL RIG: CME 55  
 DATE STARTED: 9/22/16  
 DATE COMPLETED: 9/23/16

NORTHING: 1,391,125.70  
 EASTING: 2,202,426.50  
 GS ELEVATION: 785.2  
 TOC ELEVATION: 788.17 ft

DEPTH W.L.: 22.30  
 ELEVATION W.L.: 762.9  
 DATE W.L.: 10/6/2016  
 TIME W.L.: 940

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES				MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE			REC
45	740											<p><b>WELL CASING</b>                      Interval: 0'- 34.5'                      Material: Schedule 40 PVC                      Diameter: 2                      Joint Type: Flush/Screw</p> <p><b>WELL SCREEN</b>                      Interval: 34.5'-44.5'                      Material: Schedule 40 PVC                      Diameter: 2                      Slot Size: 0.010                      End Cap: Schedule 40 PVC</p> <p><b>FILTER PACK</b>                      Interval: 31.7'-45.'                      Type: FilterSil</p> <p><b>FILTER PACK SEAL</b>                      Interval: 24.1'-31.7'                      Type: PEL-PLUG 3/8"                      Bentonite pellets</p> <p><b>ANNULUS SEAL</b>                      Interval: 0'-24.1'                      Type: CETCO puregold                      grout (70:30)</p> <p><b>WELL COMPLETION</b>                      Pad: 2' x 2' concrete                      Protective Casing: 4"x4"x5'                      aluminum</p> <p><b>DRILLING METHODS</b>                      Soil Drill: Hollow-stem auger                      Rock Drill: N/A</p>
50	735											
55	730											
60	725											
65	720											
70	715											
75	710											
80	705											
85	700											
90												

BOREHOLE RECORD\_MCDONOUGH MASTER LIST\_BACKUP\_SURVEY UPDATED (5).GPJ\_PIEDMONT.GDT\_8/24/20

LOG SCALE: 1 in = 5.5 ft  
 DRILLING COMPANY: Southern Company Services  
 DRILLER: S. Milam

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 12/22/17



# RECORD OF BOREHOLE B-59



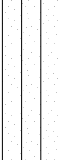


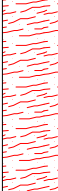
SHEET 1 of 1

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 30.25 ft  
 LOCATION: westside of the stream north of AP4

DRILL RIG: CME 55  
 DATE STARTED: 9/23/16  
 DATE COMPLETED: 9/23/16

NORTHING: 1,394,349.10  
 EASTING: 2,203,001.10  
 GS ELEVATION: 785.5  
 TOC ELEVATION: 788.00 ft

DEPTH W.L.: 5.56  
 ELEVATION W.L.: 779.94  
 DATE W.L.: 10/6/2016  
 TIME W.L.: 828

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES					MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE			REC
0	785	0.00 - 3.50 SC, clayly SAND, fine to coarse, non plastic; red, micaceous, fill; cohesive, dry, w<PL, stiff.	SC		782	1	DO	3-5-7	12	1.16 1.50	CETCO puregold grout (70:30) / aluminum casing  CETCO puregold grout (70:30)  PEL-PLUG 3/8" Bentonite pellets  FilterSil -  0.010 Slotted Screen	<b>WELL CASING</b> Interval: 0'-20.2' Material: Schedule 40 PVC Diameter: 2 Joint Type: Flush/Screw  <b>WELL SCREEN</b> Interval: 20.2'-30.2' Material: Schedule 40 PVC Diameter: 2 Slot Size: 0.010 End Cap: Schedule 40 PVC  <b>FILTER PACK</b> Interval: 17'-30.2' Type: FilterSil  <b>FILTER PACK SEAL</b> Interval: 12'-17' Type: PEL-PLUG 3/8" Bentonite pellets  <b>ANNULUS SEAL</b> Interval: 0'-12' Type: CETCO puregold grout (70:30)  <b>WELL COMPLETION</b> Pad: 2' x 2' concrete Protective Casing: 4"x4"x5' aluminum  <b>DRILLING METHODS</b> Soil Drill: Hollow-stem auger Rock Drill: HQ Core Barrell
5	780	3.50 - 9.00 CH, CLAY, moderate to high plasticity; aark brown to red brown, fill; cohesive, moist, w>PL, soft.	CH		776.5	2	DO	2-1-1	2	0.75 1.50		
10	775	9.00 - 14.00 SM, SAND and SILT, fine, trace organics, non to low plasticity; gray; cohesive, wet, w<PL, very soft.	SM		771.5	3	DO	WOH-1-1	2	1.50 1.50		
15	770	14.00 - 19.00 SP-SW, moderate- graded SAND, fine to coarse, non plastic; tan to white; non-cohesive, wet, w<PL, loose.	SP-SW		766.5	4	DO	4-5-7	12	1.50 1.50		
20	765	19.00 - 24.50 SM, silty SAND, low plasticity; gray to black, deeply weathered, gneissic saprolite; cohesive, moist to wet, w<PL, firm to very stiff, PWR. Auger Refusal at 24.3	SM		761	5	DO	5-4-5	9	1.00 1.50		
25	760	24.50 - 30.25 Bedrock; AUGEN GNEISS; slightly weathered, foliated, gray to dark gray, fine to medium grained, medium strong.	BR		755.25	6	DO	50/4	50/4	0.66 0.33		
30	755	Boring completed at 30.25 ft										

BOREHOLE RECORD\_MCDONOUGH MASTER LIST\_BACKUP\_SURVEY UPDATED (5).GPJ\_PIEDMONT\_GDT 8/24/20

LOG SCALE: 1 in = 5.5 ft  
 DRILLING COMPANY: Southern Company Services  
 DRILLER: S. Milam

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 12/22/17



# RECORD OF BOREHOLE B-60

SHEET 1 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 49.80 ft  
 LOCATION: Almost due south of B-58 ~ 300 to 400 feet

DRILL RIG: CME 55  
 DATE STARTED: 9/29/16  
 DATE COMPLETED: 9/29/16

NORTHING: 1,391,100.70  
 EASTING: 2,202,881.60  
 GS ELEVATION: 779.2  
 TOC ELEVATION: 782.13 ft

DEPTH W.L.: 33.35  
 ELEVATION W.L.: 745.85  
 DATE W.L.: 10/6/2016  
 TIME W.L.: 955

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES					MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE			REC
0		0.00 - 13.50 Top 10' were Hydrovac for utilities.									CETCO puregold grout (70:30) / aluminum casing  CETCO puregold grout (70:30)  PEL-PLUG 3/8" Bentonite pellets  FilterSil	<b>WELL CASING</b> Interval: 0'-39.3' Material: Schedule 40 PVC Diameter: 2 Joint Type: Flush/Screw  <b>WELL SCREEN</b> Interval: 39.3' - 49.3' Material: Schedule 40 PVC Diameter: 2 Slot Size: 0.010 End Cap: Schedule 40 PVC  <b>FILTER PACK</b> Interval: 36.9'-50' Type: FilterSil  <b>FILTER PACK SEAL</b> Interval: 30.2'-36.9' Type: PEL-PLUG 3/8" Bentonite pellets  <b>ANNULUS SEAL</b> Interval: 0'-30.2' Type: CETCO puregold grout (70:30)  <b>WELL COMPLETION</b> Pad: 2' x 2' concrete Protective Casing: 4"x4"x5' aluminum  <b>DRILLING METHODS</b> Soil Drill: Hollow-stem auger Rock Drill: N/A
775												
770												
765	765.7	13.50 - 23.50 SC-SM, clayey SAND - silty SAND; brown to red brown; non-cohesive, moist, loose.	SC-SM		13.50	1	DO	4-3-4	7	0.66 1.50		
760						2	DO	3-2-3	5	1.33 1.50		
755	755.7	23.50 - 28.50 CL, silty CLAY, low plasticity; contains mica; moist, W<PL.	CL		23.50	3	DO	1-3-5	8	1.50 1.50		
750	750.7	28.50 - 33.50 SC-SM, clayey SAND - silty SAND, fine grained, low to non-plastic; brown to gray; non-cohesive, moist, compact.	SC-SM		28.50	4	DO	2-8-10	18	1.50 1.50		
745	745.7	33.50 - 48.50 SM, silty SAND; brown to red brown, saprolite; non-cohesive, moist to wet (increases with depth), dense, PWR.	SM		33.50	5	DO	50/4	50/4	0.33 0.33		
740						6	DO	50/4	50/4	0.33 0.33		
735						7	DO	50/4	50/4	0.25 0.33		
45		Log continued on next page										

BOREHOLE RECORD\_MCDONOUGH MASTER LIST\_BACKUP\_SURVEY UPDATED (5).GPJ\_PIEDMONT\_GDT 8/24/20

LOG SCALE: 1 in = 5.5 ft  
 DRILLING COMPANY: Southern Company Services  
 DRILLER: S. Milam

GA INSPECTOR: Nortey Yeboah  
 CHECKED BY: Timothy Richards, PG  
 DATE: 12/22/17





# RECORD OF BOREHOLE B-60

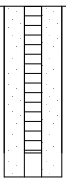
SHEET 2 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 49.80 ft  
 LOCATION: Almost due south of B-58 ~ 300 to 400 feet

DRILL RIG: CME 55  
 DATE STARTED: 9/29/16  
 DATE COMPLETED: 9/29/16

NORTHING: 1,391,100.70  
 EASTING: 2,202,881.60  
 GS ELEVATION: 779.2  
 TOC ELEVATION: 782.13 ft

DEPTH W.L.: 33.35  
 ELEVATION W.L.: 745.85  
 DATE W.L.: 10/6/2016  
 TIME W.L.: 955

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES				MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop			N-VALUE
45		33.50 - 48.50 SM, silty SAND; brown to red brown, saprolite; non-cohesive, moist to wet (increases with depth), dense, PWR. (Continued)	SM		730.7						<p><b>WELL CASING</b>                      Interval: 0'-39.3'                      Material: Schedule 40 PVC                      Diameter: 2                      Joint Type: Flush/Screw</p> <p><b>WELL SCREEN</b>                      Interval: 39.3' - 49.3'                      Material: Schedule 40 PVC                      Diameter: 2                      Slot Size: 0.010                      End Cap: Schedule 40 PVC</p> <p><b>FILTER PACK</b>                      Interval: 36.9'-50'                      Type: FilterSil</p> <p><b>FILTER PACK SEAL</b>                      Interval: 30.2'-36.9'                      Type: PEL-PLUG 3/8"                      Bentonite pellets</p> <p><b>ANNULUS SEAL</b>                      Interval: 0'-30.2'                      Type: CETCO puregold grout (70:30)</p> <p><b>WELL COMPLETION</b>                      Pad: 2' x 2' concrete                      Protective Casing: 4"x4"x5' aluminum</p> <p><b>DRILLING METHODS</b>                      Soil Drill: Hollow-stem auger                      Rock Drill: N/A</p>
730		48.50 - 49.80 SM, silty SAND; gray to brown, saprolite, contains mica; non-cohesive, moist to wet (increases with depth), dense, PWR Boring completed at 49.80 ft	SM		48.50 729.4	8	DO	50/3	50/3		
50											
55											
725											
60											
720											
65											
715											
70											
710											
75											
705											
80											
700											
85											
695											
90											
690											

BOREHOLE RECORD\_MCDONOUGH MASTER LIST\_BACKUP\_SURVEY UPDATED (5).GPJ\_PIEDMONT.GDT 8/24/20

LOG SCALE: 1 in = 5.5 ft  
 DRILLING COMPANY: Southern Company Services  
 DRILLER: S. Milam

GA INSPECTOR: Nortey Yeboah  
 CHECKED BY: Timothy Richards, PG  
 DATE: 12/22/17



# RECORD OF BOREHOLE B-61

SHEET 1 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 52.40 ft  
 LOCATION: SSW of B-57. on the NE corner of the switch yard

DRILL RIG: CME 55  
 DATE STARTED: 9/28/16  
 DATE COMPLETED: 9/29/16

NORTHING: 1,390,957.80  
 EASTING: 2,202,505.80  
 GS ELEVATION: 779.0  
 TOC ELEVATION: 782.09 ft

DEPTH W.L.: 22.25  
 ELEVATION W.L.: 756.75  
 DATE W.L.: 10/6/2016  
 TIME W.L.: 950

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES					MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE			REC
0		0.00 - 13.50 Top 10' were Hydrovac for utilities.									CETCO puregold grout (70:30) / aluminum casing  CETCO puregold grout (70:30)  PEL-PLUG 3/8" Bentonite pellets  FilterSil	<b>WELL CASING</b> Interval: 0'-41.5' Material: Schedule 40 PVC Diameter: 2 Joint Type: Flush/Screw  <b>WELL SCREEN</b> Interval: 41.5'-51.5' Material: Schedule 40 PVC Diameter: 2 Slot Size: 0.010 End Cap: Schedule 40 PVC  <b>FILTER PACK</b> Interval: 39.5'-51.9' Type: FilterSil  <b>FILTER PACK SEAL</b> Interval: 35'-39.5' Type: PEL-PLUG 3/8" Bentonite pellets  <b>ANNULUS SEAL</b> Interval: 0'-35' Type: CETCO puregold grout (70:30)  <b>WELL COMPLETION</b> Pad: 2' x 2' concrete Protective Casing: 4"x4"x5' aluminum  <b>DRILLING METHODS</b> Soil Drill: Hollow-stem auger Rock Drill: N/A
775												
770												
10												
765		13.50 - 18.50 CL-CH, CLAY, trace sand and silt, fine to coarse, moderate plasticity; dark red brown, fill; cohesive, moist, w<PL, soft.	CL-CH		765.5 13.50	1	DO	3-4-6	10	$\frac{1.50}{1.50}$		
15												
760		18.50 - 23.50 SM, silty SAND, fine, non to low plasticity, trace organics (tree root); dark gray to black; cohesive, dry to moist, w<PL, firm	SM		760.5 18.50	2	DO	5-8-13	21	$\frac{1.50}{1.50}$		
20												
755		23.50 - 38.50 ML, SILT, trace fine to coarse sand, non to low plasticity; red-brown to gray to black; cohesive, dry to moist, w<PL, firm.	ML		755.5 23.50	3	DO	6-8-13	21	$\frac{1.16}{1.50}$		
25												
750												
30												
745												
35												
740		38.50 - 52.40 SM, silty SAND, fine to coarse, non to low plasticity; dark brown to gray to black, deeply weathered, schistose gneiss / schist saprolite; non-cohesive to cohesive, moist, w<PL, compact to dense / firm to stiff, PWR.	SM		740.5 38.50	6	DO	7-10-23	33	$\frac{1.33}{1.50}$		
40												
735												
45												

Log continued on next page

BOREHOLE RECORD\_MCDONOUGH MASTER LIST\_BACKUP\_SURVEY UPDATED (5).GPJ\_PIEDMONT.GDT 8/24/20

LOG SCALE: 1 in = 5.5 ft  
 DRILLING COMPANY: Southern Company Services  
 DRILLER: S. Milam

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 12/22/17



# RECORD OF BOREHOLE B-61

SHEET 2 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 52.40 ft  
 LOCATION: SSW of B-57. on the NE corner of the switch yard

DRILL RIG: CME 55  
 DATE STARTED: 9/28/16  
 DATE COMPLETED: 9/29/16

NORTHING: 1,390,957.80  
 EASTING: 2,202,505.80  
 GS ELEVATION: 779.0  
 TOC ELEVATION: 782.09 ft

DEPTH W.L.: 22.25  
 ELEVATION W.L.: 756.75  
 DATE W.L.: 10/6/2016  
 TIME W.L.: 950

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES					MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE	REC		
45		38.50 - 52.40 SM, silty SAND, fine to coarse, non to low plasticity; dark brown to gray to black, deeply weathered, schistose gneiss / schist saprolite; non-cohesive to cohesive, moist, w<PL, compact to dense / firm to stiff, PWR. (Continued)	SM								0.010 Slotted _ Screen	<p><b>WELL CASING</b>                      Interval: 0'-41.5'                      Material: Schedule 40 PVC                      Diameter: 2                      Joint Type: Flush/Screw</p> <p><b>WELL SCREEN</b>                      Interval: 41.5'-51.5'                      Material: Schedule 40 PVC                      Diameter: 2                      Slot Size: 0.010                      End Cap: Schedule 40 PVC</p> <p><b>FILTER PACK</b>                      Interval: 39.5'-51.9'                      Type: FilterSil</p> <p><b>FILTER PACK SEAL</b>                      Interval: 35'-39.5'                      Type: PEL-PLUG 3/8"                      Bentonite pellets</p> <p><b>ANNULUS SEAL</b>                      Interval: 0'-35'                      Type: CETCO puregold                      grout (70:30)</p> <p><b>WELL COMPLETION</b>                      Pad: 2' x 2' concrete                      Protective Casing: 4"x4"x5'                      aluminum</p> <p><b>DRILLING METHODS</b>                      Soil Drill: Hollow-stem auger                      Rock Drill: N/A</p>
730						8	DO	14-9-14	23	1.50 1.50		
50		Boring completed at 52.40 ft										
725					726.6							
55												
720												
60												
715												
65												
710												
70												
705												
75												
700												
80												
695												
85												
690												
90												

BOREHOLE RECORD\_MCDONOUGH MASTER LIST\_BACKUP\_SURVEY UPDATED (5).GPJ\_PIEDMONT.GDT\_8/24/20

LOG SCALE: 1 in = 5.5 ft  
 DRILLING COMPANY: Southern Company Services  
 DRILLER: S. Milam

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 12/22/17







## DRILLING LOG GEOLOGICAL SERVICES

Hole No. **B-64**

Sheet 1 of 2

SITE <b>Plant McDonough</b>		HOLE DEPTH <b>31'</b>	SURFELEV <b>786.10</b>
LOCATION <b>North of AP-4, near property line at Atkinson Rd</b>	COORDINATES <b>33.832856</b>	<b>-84.474746</b>	
ANGLE _____ BEARING _____	CONTRACTOR <b>SCS</b>	DRILL NO. _____	
DRILLING METHOD <b>HSA</b>	NO. SAMPLES _____	NO. U.D. SAMPLES <b>0</b>	
CASING SIZE <b>2"</b> LENGTH <b>10'</b>	CORE SIZE _____	TOTAL % REC. _____	
WATER TABLE DEPTH <b>4.9' BLS</b>	ELEV. <b>781.20' NAVD88</b>	TIME AFTER COMP. <b>24 hr</b>	DATE TAKEN <b>11/3/2016</b>
TYPE GROUT <b>Bentonite</b>	QUANTITY _____	MIX _____	DRILLING START DATE <b>11/2/2016</b>
DRILLER <b>Milam</b>	RECORDER <b>Abraham</b>	APPROVED _____	DRILLING COMP. DATE <b>11/2/2016</b>

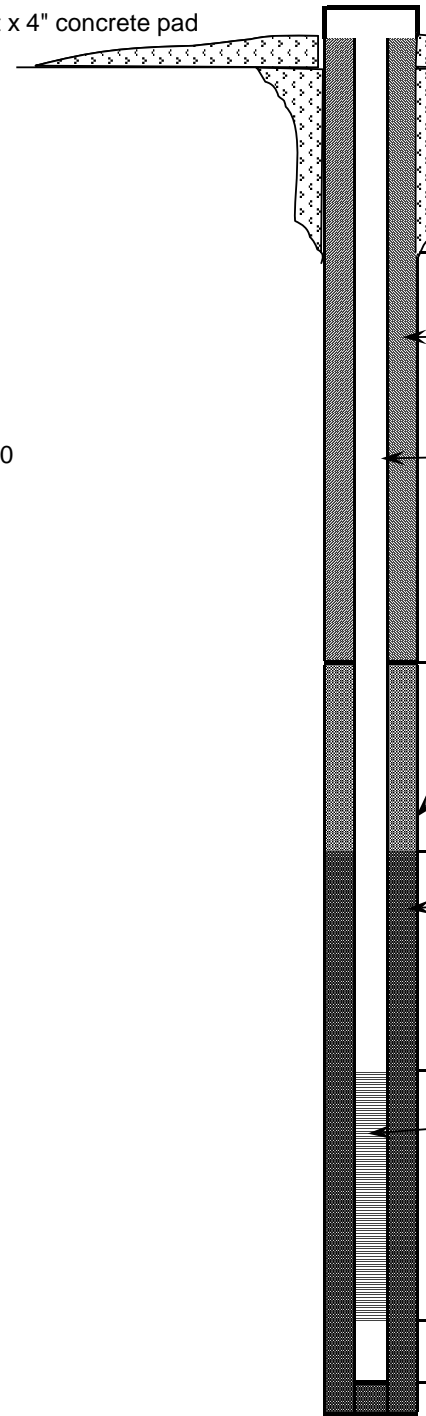
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD
				From	To	Blows			
0	786.10								
1	785.10								
2	784.10								
3	783.10								
4	782.10								
5	781.10	<b>HYDRO-EXCAVATION</b>							
6	780.10	Hydrovac from land surface to 20-feet below land. No samples							
7	779.10								
8	778.10								
9	777.10								
10	776.10								
11	775.10								
12	774.10								
13	773.10								
14	772.10								
15	771.10								
16	770.10								
17	769.10								
18	768.10								
19	767.10								
20	766.10								
21	765.10								
22	764.10	<b>SANDY SILT SAPROLITE</b>							
23	763.10	Light gray sandy silt saprolite; minor quartz & feldspar grains, micaceous; oxidation along relict foliations; Fe stains; 2.5Y/6/1; SM.	S-1	23.5 - 25	1-1-2		85		
24	762.10								



WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS, Inc.	WELL NAME  <b>B-64</b>
North of AP-4, at Atkinson Rd	DRILLER: Milam	
LOCATION: 33.832856 / -84.474746	RIG TYPE: CME550	
LOGGER: Abraham	DRILLING METHODS: HSA	
DATE CONSTRUCTED: 11/2/2016		

	DEPTH FEET	ELEVATION FT, MSL
4 ft x 4 ft x 4" concrete pad 	GROUND SURFACE	0.0 786.10
<b>PROTECTIVE CASING</b> Flushmounted	BOTTOM OF GROUT	3.0 783.10
<b>BACKFILL MATERIAL</b> TYPE: Bentonite Grout mix AMOUNT: 1 x 50lbs		
<b>RISER CASING</b> DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
	TOP OF SEAL	8.10 778.00
<b>ANNULAR SEAL</b> TYPE: 1/4" coated bentonite pellets 5-gal buckets AMOUNT: 0.5 bucket PLACEMENT: Tremie		
	TOP OF FILTER PACK	16.50 769.60
<b>FILTER PACK</b> TYPE: DSI Sand - 1A (20/40) Drillers Services, Inc. AMOUNT: 6 Bags PLACEMENT: Tremie; wash with water		
	BOTTOM OF RISER / TOP OF SCREEN	20.00 766.10
<b>SCREEN</b> DIA: 2" TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.25 inch SLOT LENGTH: 1.5 inch		
	BOTTOM OF SCREEN	30.00 756.10
	BOTTOM OF WELL	30.40 755.70
HOLE DIA: 9 inch		

▼ 781.20





**DRILLING LOG**  
**GEOLOGICAL SERVICES**

Hole No. **B-65**

Sheet 1 of 2

SITE <b>Plant McDonough</b>		HOLE DEPTH <b>50'</b>	SURFELEV <b>822.30</b>
LOCATION <b>North of AP-4, near property line, NW end of parking lot</b>	COORDINATES <b>33.832862</b>	<b>-84.471389</b>	
ANGLE _____ BEARING _____	CONTRACTOR <b>SCS</b>	DRILL NO. _____	
DRILLING METHOD <b>HSA</b>	NO. SAMPLES _____	NO. U.D. SAMPLES <b>0</b>	
CASING SIZE <b>2"</b> LENGTH <b>10'</b>	CORE SIZE _____	TOTAL % REC. _____	
WATER TABLE DEPTH <b>10.5' BLS</b>	ELEV. <b>811.80 NAVD88</b>	TIME AFTER COMP. <b>24 HR</b>	DATE TAKEN <b>11/16/2016</b>
TYPE GROUT _____	QUANTITY _____	MIX _____	DRILLING START DATE <b>11/15/2016</b>
DRILLER <b>Milam</b>	RECORDER <b>Abraham</b>	APPROVED _____	DRILLING COMP. DATE <b>11/15/2016</b>

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD
				From To	Blows	N			
0	822.30								
1	821.30								
2	820.30								
3	819.30								
4	818.30								
5	817.30	<b>HYDRO-EXCAVATION</b> Hydrovac from land surface to 10-feet below land. No samples							
6	816.30								
7	815.30								
8	814.30								
9	813.30								
10	812.30								
11	811.30								
12	810.30								
13	809.30								
14	808.30	<b>SILTY SAND SAPROLITE</b> Light brown silty sand with minor clay; weathered schist fragments; minor oxidation bands; minor quartz fragments	S-1	13.5-15	13-50/3		90		
15	807.30	10YR/3/2; SM; At 15-ft, large rock fragments brownish black color; damp.							
16	806.30								
17	805.30								
18	804.30								
19	803.30	<b>SILTY SAND SAPROLITE</b> Blackish brown silty sand saprolite; large micas with a greenish tinge; highly oxidized with FeO parallel to foliations; 10YR/3/2; SM; damp to moist.	S-2	18.5-20	24-30-31	61	90		
20	802.30								
21	801.30								
22	800.30	<b>CLAYEY SILT</b> Dark gray to reddish brown silty sand saprolite; micas abundant; softer than interval above; few gravel-size rock fragments; FeO bands with minor MnO streaks; 2.5Y/3/2; SM; moist to saturated.	S-3	23.5 - 25	2-16-50/2		90		
23	799.30								
24	798.30								

**DRILLING LOG**  
**GEOLOGICAL SERVICES**

Hole No. **B-65**

Sheet 2 of 2

SITE Plant McDonough TOTAL DEPTH 50' SURF.ELEV. 822.30

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD
				From To	Blows	N			
25	797.30	<b>SILTY SAND SAPROLITE</b>	S-4	28.5-30	50/2		90		
26	796.30								
27	795.30								
28	794.30	Dark gray to reddish brown silty sand with minor clay; few structures; 2.5Y/3/2; SM; saturated.	S-4	28.5-30	50/2		90		
29	793.30								
30	792.30	<b>SILTY SAND SAPROLITE</b>	S-5	33.5 - 35	50/2		90		
31	791.30								
32	790.30								
33	789.30	Dark gray to reddish brown silty sand with minor gravel; damp to saturated; 2.5Y/3/2	S-5	33.5 - 35	50/2		90		
34	788.30								
35	787.30	<b>SILTY SAND SAPROLITE</b>	S-6	38.5 - 40	6-9-32		90		
36	786.30								
37	785.30								
38	784.30	Dark gray to reddish brown silty sand with minor clay; saprolite; saturated; 2.5YR/3/2	S-6	38.5 - 40	6-9-32		90		
39	783.30								
40	782.30	Top of Rock - 42-ft	S-7	40 - 42	50/2		90		
41	781.30								
42	780.30	MUSCOVITE-BIOTITE SCHIST; minor chlorite; 2 horizontal fractures, non-water bearing, 44' 1 sub-vertical fracture, water-bearing, 46' - 50'		42 - 49.9			95		
43	779.30								
44	778.30								
45	777.30	<b>BACKFILLED &amp; SET REGOLITH WELL</b>							
46	776.30								
47	775.30								
48	774.30								
49	773.30								
50	772.30								
51	771.30								
52	770.30								
53	769.30								
54	768.30								
55	767.30								
56	766.30	<b>END OF BORING - 49.9-FT</b>							

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS, Inc.	<b>WELL NAME  B-65</b>
NE of AP-4 at Argos, near N corner parking lot	DRILLER: Milam	
LOCATION: 33.832862 / -84.471389	RIG TYPE: CME550	
LOGGER: Abraham	DRILLING METHODS: HSA	
DATE CONSTRUCTED: 11/15/2016		

	DEPTH FEET	ELEVATION FT, MSL
6 ft x 6 ft x 4" concrete pad		
GROUND SURFACE	0.00	822.30
<b>PROTECTIVE CASING</b> Flushmounted		
BOTTOM OF GROUT	3.00	819.30
<b>BACKFILL MATERIAL</b> TYPE: Bentonite Grout mix AMOUNT: 3 x 50lbs (1.5 bag bentonite; 1.5 bag grout)		
<b>RISER CASING</b> DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	26.80	795.50
<b>ANNULAR SEAL</b> TYPE: 1/4" coated bentonite pellets 5-gal buckets AMOUNT: 0.5 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	31.80	790.50
<b>FILTER PACK</b> TYPE: DSI Sand - 1A (20/40) Drillers Services, Inc. AMOUNT: 5 Bags PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	34.40	787.90
<b>SCREEN</b> DIA: 2" TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.25 inch SLOT LENGTH: 1.5 inch		
BOTTOM OF SCREEN	44.40	777.90
BOTTOM OF WELL	45.40	776.90
HOLE DIA: 9 inch		
TYPE: 1/4" coated bentonite pellets between 45.4' and 49.9'		
	49.90	772.40

▼ 811.77





**DRILLING LOG**  
**GEOLOGICAL SERVICES**

Hole No. **B-66**  
Sheet 1 of 2

SITE <b>Plant McDonough</b>		HOLE DEPTH <b>55.5'</b>	SURFELEV <b>813.30</b>
LOCATION <b>North of AP-4, near property line concrete pile</b>	COORDINATES <b>33.831427</b>	<b>-84.470638</b>	
ANGLE _____ BEARING _____	CONTRACTOR <b>SCS</b>	DRILL NO. _____	
DRILLING METHOD <b>HSA</b>	NO. SAMPLES _____	NO. U.D. SAMPLES <b>0</b>	
CASING SIZE <b>2"</b>	LENGTH <b>10'</b>	CORE SIZE _____	TOTAL % REC. _____
WATER TABLE DEPTH <b>14.8' BLS</b>	ELEV. <b>798.50' NAVD88</b>	TIME AFTER COMP. _____	DATE TAKEN _____
TYPE GROUT _____	QUANTITY _____	MIX _____	DRILLING START DATE <b>11/16/2016</b>
DRILLER <b>Milam</b>	RECORDER <b>Abraham</b>	APPROVED _____	DRILLING COMP. DATE <b>11/16/2016</b>

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD
				From To	Blows	N			
0	813.30								
1	812.30								
2	811.30								
3	810.30								
4	809.30								
5	808.30	<b>HYDRO-EXCAVATION</b> Hydrovac from land surface to 10-feet below land. No samples							
6	807.30								
7	806.30								
8	805.30								
9	804.30								
10	803.30								
11	802.30								
12	801.30								
13	800.30								
14	799.30	<b>CLAYEY SILT</b> Light Brown to reddish brown clayey silt; 10R/5/6; damp; FeO along fracture traces & relict foliations; organics absent.	S-1	13.5-15	2-1-1	2		85	
15	798.30								
16	797.30								
17	796.30								
18	795.30								
19	794.30	<b>CLAYEY SILT</b> Light Brown to reddish brown clayey silt; 10R/5/6; damp; FeO along fracture traces & relict foliations;	S-2	18.5-20	2-1-5	6		90	
20	793.30								
21	792.30								
22	791.30	<b>CLAYEY SILT</b> Brownish gray with reddish streaks clayey silt grading to brownsh gray saprolite; 10YR/6/3; moist; FeO bands with minor MnO streaks along fracutre traces; distinct MnO layer at 25-ft parallel to foliation; fractures increase at 25-ft.	S-3	3-4-9	3-4-9	14		90	
23	790.30								
24	789.30								

SITE **Plant McDonough** TOTAL DEPTH **55.5'** SURF.ELEV. **813.30**

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD
				From To	Blows	N			
25	788.30	<b>SILTY SAND</b>	S-4	4-5-10	15	80			
26	787.30								
27	786.30								
28	785.30	Medium to dark gray silty sand with minor clay; 2.5Y/5/2; few brownish-black weathered minerals; micaceous texture; MnO bands along fracture & foliations; saprolite between 28 and 30 feet.	S-4	4-5-10	15	80			
29	784.30								
30	783.30								
31	782.30								
32	781.30	<b>SILTY SAND SAPROLITE</b>	S-5	7-9-16	25	90			
33	780.30								
34	779.30								
35	778.30	Light to dark gray SILTY SAND; 5Y/5/3; moist to wet saprolite; gravel-size rock frags; weathered feldspars & quartz; increasing biotite & MnO at 35-feet.	S-5	7-9-16	25	90			
36	777.30								
37	776.30								
38	775.30								
39	774.30	Grayish brown - brownish-black SILTY SAND with minor clay; 5Y/3/2; fewer rock fragments than above; moist to wet.	S-6	6-8-10	18	90			
40	773.30								
41	772.30								
42	771.30								
43	770.30	<b>SILTY SAPROLITE</b>	S-7	5-6-9	16	90			
44	769.30								
45	768.30								
46	767.30	Yellowish brown silt with minor clay saprolite; 2.5Y/6/3; lighter than above; abundant MnO streaks; wet but not saturated.	S-7	5-6-9	16	90			
47	766.30								
48	765.30								
49	764.30								
50	763.30	<b>SILTY SAND SAPROLITE</b>	S-8	6-7-17	24	90			
51	762.30								
52	761.30								
53	760.30	Yellowish brown silty sand saprolite; minor clay; 2.5Y/6/3; minor rock fragments; saturated	S-8	6-7-17	24	90			
54	759.30								
55	758.30								
56	757.30								
56	757.30	<b>END OF BORING; REGOLITH WELL</b>							

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS, Inc.	WELL NAME
NE of AP-4 at Argos, nr concrete pile, ~250' NE of DGWC-10	DRILLER: Wideman	
LOCATION: 33.831427 / -84.470638	RIG TYPE: CME 550	
LOGGER: Abraham	DRILLING METHODS: HSA	<b>B-66</b>
DATE CONSTRUCTED: 3/7/2016		

	DEPTH FEET	ELEVATION FT, MSL	
	TOP OF RISER	-1.89	815.19
	GROUND SURFACE	0.00	813.30
	BOTTOM OF PROTECTIVE CASING		
	TOP OF SEAL	37.60	775.70
	TOP OF FILTER PACK	41.70	771.60
	BOTTOM OF RISER / TOP OF SCREEN	45.00	768.3
	BOTTOM OF SCREEN	55.00	758.30
	BOTTOM OF WELL	55.30	758.00
HOLE DIA: 9"			



# RECORD OF BOREHOLE DGWC-67/B-67

SHEET 1 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 56.00 ft  
 LOCATION: West Toe of AP-1

DRILL RIG: Geoprobe  
 DATE STARTED: 3/8/17  
 DATE COMPLETED: 3/14/17

NORTHING: 1,390,953.80  
 EASTING: 2,200,830.70  
 GS ELEVATION: 767.0  
 TOC ELEVATION: 766.70 ft

DEPTH W.L.: 9.1  
 ELEVATION W.L.: 757.9  
 DATE W.L.: 3/14/17  
 TIME W.L.: 0850

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES					MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE	REC		
0	765	0.00 - 10.00 Silt and Clay with some sand and pebbles, brown, highly weathered mica schist, low plastic, cohesive, dry.	ML			S1	GRAB			0.50	<p>Flush Mounted Casing</p> <p>CETCO puregold grout (70:30)</p> <p>PEL-PLUG 3/8" Bentonite pellets</p>	<p><b>WELL CASING</b> Interval: 0'-46.3' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw</p> <p><b>WELL SCREEN</b> Interval: 46.3'-56.3' Material: Schedule 40 PVC Diameter: 2" Slot Size: .010" End Cap: Schedule 40 PVC</p> <p><b>FILTER PACK</b> Interval: 44.0'-56.7' Type: FilterSil</p> <p><b>FILTER PACK SEAL</b> Interval: 44.0'-41.8' Type: PEL-PLUG 3/8" Bentonite pellets</p> <p><b>ANNULUS SEAL</b> Interval: 0'-41.8' Type: CETCO puregold grout (70:30)</p> <p><b>WELL COMPLETION</b> Pad: 4'x4' Concrete Protective Casing: 8" Round Flush Mount</p> <p><b>DRILLING METHODS</b> Soil Drill: Hollow-stem auger Rock Drill: N/A</p>
5	760							S2	GRAB			
10	755	10.00 - 15.00 Sandy Silt, sands fine, brown, highly weathered, micaceous, low plastic, cohesive, dry.	ML			S3	SPT	6-7-12	19	1.50 1.50		
15	750	15.00 - 20.00 Sandy Silt, sands fine, brown, highly weathered, micaceous, low plastic, cohesive, moist.				ML			S4	SPT		
20	745	20.00 - 25.00 Sandy silt, sand f-m, brown to tan, highly weathered, micaceous, low-medium plasticity, cohesive, moist, sample spoon wet.	ML						S5	SPT		
25	740	25.00 - 30.00 Saprolite, Sandy silt, sands fine to coarse, brown to tan, highly weathered, micaceous, low plastic, cohesive, moist, sample spoon wet.				ML			S6	SPT		
30	735	30.00 - 35.00 Saprolite, Sandy silt, sands fine to coarse, trace pebbles, reddish brown to tan, highly weathered, micaceous, low plastic, cohesive, moist, sample spoon wet.	ML						S7	SPT		
35	730	35.00 - 40.00 Saprolite, Sandy silt, sands fine to coarse, trace pebbles, reddish brown to tan, highly weathered, micaceous, low plastic, cohesive, moist, sample spoon wet.				ML			S8	SPT		
40	725	40.00 - 45.00 Saprolite, Sandy silt, sands fine to medium, reddish brown to tan, highly weathered, micaceous, low plastic, cohesive, moist, sample spoon wet.	ML						S9	SPT		
45		Log continued on next page										

BOREHOLE RECORD MCDONOUGH MASTER LIST\_BACKUP\_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

LOG SCALE: 1 in = 5.5 ft  
 DRILLING COMPANY: Southern Company Services  
 DRILLER: S. Milam

GA INSPECTOR: Ben Hodges  
 CHECKED BY: Timothy Richards, PG  
 DATE: 1/16/18





# RECORD OF BOREHOLE DGWC-68A/B-68A

SHEET 1 of 1

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 30.00 ft  
 LOCATION: ~15' East of B-68

DRILL RIG: Geoprobe 7822DT  
 DATE STARTED: 4/19/17  
 DATE COMPLETED: 4/20/17

NORTHING: 1,391,301.20  
 EASTING: 2,200,734.90  
 GS ELEVATION: 765.4  
 TOC ELEVATION: 765.33 ft

DEPTH W.L.: 18.8  
 ELEVATION W.L.: 746.6  
 DATE W.L.: 4/20/2017  
 TIME W.L.: 08:48

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES					MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE			REC
0	765	0.00 - 8.50 SM, Silty SAND, fine to coarse, moderate plasticity; red-orange to orange-brown, fill; non-cohesive, moist, w~PL, loose.	SM								8" Diameter Round Flush Mount	<b>WELL CASING</b> Interval: 0' - 29.8' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw  <b>WELL SCREEN</b> Interval: 19.4' - 29.4' Material: Schedule 40 PVC pre-pack Diameter: 2" Slot Size: 0.010" End Cap: 29.4' - 29.8'  <b>FILTER PACK</b> Interval: 17.0' - 29.8' Type: FilterSil gravel pack  <b>FILTER PACK SEAL</b> Interval: 15.0' - 17.0' Type: Pel-Plug 3/8" Bentonite Pellets  <b>ANNULUS SEAL</b> Interval: 0' - 15.0' Type: Pure Gold Grout Mixture  <b>WELL COMPLETION</b> Pad: 4' x 4' concrete Protective Casing: 8" Diameter Round Flush Mount  <b>DRILLING METHODS</b> Soil Drill: 4.25-inch ID HSA Rock Drill: N/A
5	760											
10	755	8.50 - 13.50 CL, CLAY, with trace sand, moderate plasticity; red-orange brown, fill; cohesive, moist, w<PL, soft to firm.	CL		756.9 8.50	S1	DO	13-18-9	27	$\frac{1.50}{1.50}$	Pure Gold Grout Mixture	
15	750	13.50 - 28.50 ML, SILT, low plasticity; brown to silver, relict structure; cohesive, moist to wet, w<PL, very soft.			751.9 13.50	S2	DO	WOH-WOH-3	3	$\frac{1.50}{1.50}$		
20	745		ML			S3	DO	4-6-16	22	$\frac{1.33}{1.50}$	Pel-Plug 3/8" Bentonite Pellets	
25	740					S4	DO	WOH-16-24	40	$\frac{1.50}{1.50}$		
30	735	28.50 - 30.00 SM, Silty SAND, fine to coarse, non-plastic to low plasticity; gray to white to silver, weathered saprolite, gneiss; cohesive, wet, w<PL, firm.  Boring completed at 30.00 ft			736.9 28.50	S5	DO	13-50/5	50/5	$\frac{0.75}{0.92}$		
35	730				735.4						Pre-pack 0.010" Slotted Schedule 40 PVC	
40	725										FilterSil gravel pack	

BOREHOLE RECORD: MCDONOUGH MASTER LIST\_BACKUP\_SURVEY UPDATED (5).GPJ\_PIEDMONT.GDT 8/24/20

LOG SCALE: 1 in = 5.5 ft  
 DRILLING COMPANY: Southern Company Services  
 DRILLER: S. Milam

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 1/16/18





# RECORD OF BOREHOLE DGWC-69/B-69

SHEET 1 of 1

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 44.30 ft  
 LOCATION: West Toe of AP-1

DRILL RIG: Geoprobe  
 DATE STARTED: 3/15/17  
 DATE COMPLETED: 3/16/17

NORTHING: 1,391,585.00  
 EASTING: 2,200,657.10  
 GS ELEVATION: 764.0  
 TOC ELEVATION: 763.75 ft

DEPTH W.L.: 6.0  
 ELEVATION W.L.: 758  
 DATE W.L.: 3/17/17  
 TIME W.L.: 0840

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES					MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE			REC
0	760	0.00 - 10.00 Hydrovac									Flush Mount Casing	<b>WELL CASING</b> Interval: 0'-14.3' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screen  <b>WELL SCREEN</b> Interval: 14.3'-24.3' Material: Schedule 40 PVC Diameter: 2" Slot Size: .010" End Cap: Schedule 40 PVC  <b>FILTER PACK</b> Interval: 12.0'-24.7' Type: FilterSil  <b>FILTER PACK SEAL</b> Interval: 10.0'-12.0' Type: PEL-PLUG 3/8" Bentonite pellets  <b>ANNULUS SEAL</b> Interval: 0'-10.0' Type: CETCO puregold grout (70:30)  <b>WELL COMPLETION</b> Pad: 4'x4' Concrete Protective Casing: 8" Round Flush  <b>DRILLING METHODS</b> Soil Drill: Hollow-stem auger Rock Drill: HQ Core Barrell
10	754	10.00 - 24.90 Silty Sand, fine to coarse, banded grey and brown, heighly weathered, noncohesive, moist, very dense, sample spoon wet	SM	[Graphic Log]	754						CETCO puregold grout (70:30)	
15	750				S1	SPT	26-36-48	84	1.58 1.50			
20	745				S2	SPT	3-23-17	40	1.00 1.50			
25	740	24.90 - 44.30 Slightly weathered to fresh, moderate to strongly foliated, light to dark gray, fine to coarse grained, medium strong to strong, Sheared Gneiss (Long Island Creek).	BR	[Graphic Log]	739.1						.010" Slotted Schedule 40 PVC	
25	739.1				S3	SPT	50/6	50/6	0.50 0.50			
45	720	Boring completed at 44.30 ft			719.7						FilterSil	
											PEL-PLUG 3/8" Bentonite pellets	

BOREHOLE RECORD: MCDONOUGH MASTER LIST\_BACKUP\_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

LOG SCALE: 1 in = 5.5 ft  
 DRILLING COMPANY: Southern Company Services  
 DRILLER: Sean Denty

GA INSPECTOR: Ben Hodges  
 CHECKED BY: Timothy Richards, PG  
 DATE: 1/16/18



# RECORD OF BOREHOLE DGWA-70A/B-70A

SHEET 1 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 60.00 ft  
 LOCATION: ~400' west of the SW corner of AP-1

DRILL RIG: CME 550  
 DATE STARTED: 5/10/17  
 DATE COMPLETED: 5/10/17

NORTHING: 1,390,481.40  
 EASTING: 2,200,591.60  
 GS ELEVATION: 805.8  
 TOC ELEVATION: 808.52 ft

DEPTH W.L.: 42.9  
 ELEVATION W.L.: 762.9  
 DATE W.L.: 5/10/2017  
 TIME W.L.: 10:45

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES					MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE			REC
0	805	0.00 - 5.00 CL-CH, low to high plasticity CLAY with trace fine sand; red orange; cohesive, moist	CL-CH		800.8						Pure Gold Grout Mixture	<p><b>WELL CASING</b> Interval: 0' - 59.3' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw</p> <p><b>WELL SCREEN</b> Interval: 48.9' - 58.9' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 58.9' - 59.3'</p> <p><b>FILTER PACK</b> Interval: 46.9' - 59.3' Type: FilterSil Gravel Pack</p> <p><b>FILTER PACK SEAL</b> Interval: 43.4' - 46.9' Type: Pel-Plug 3/8" Bentonite Pellets</p> <p><b>ANNULUS SEAL</b> Interval: 0' - 43.4' Type: Pure Gold Grout Mixture</p> <p><b>WELL COMPLETION</b> Pad: 4' x 4' concrete Protective Casing: 4" x 4" x 5' Aluminum</p> <p><b>DRILLING METHODS</b> Soil Drill: 8.25 Hollow-Stem Auger Rock Drill: N/A</p>
5	800	5.00 - 13.50 ML, SILT, trace fine sand, low plasticity; yellowish brown, contains mica; cohesive, moist, w<PL, soft.	ML		5.00							
10	795											
15	790	13.50 - 28.50 ML, SILT, trace fine to coarse sand, non to low plasticity; yellowish brown to orange brown, iron staining weathered, relic structure (gneissic); cohesive, moist, w<PL, soft.	ML		792.3	S1	DO	6-7-7	14	0.83 1.50		
20	785					S2	DO	5-9-13	22	1.50 1.50		
25	780					S3	DO	5-9-10	19	1.50 1.50		
30	775	28.50 - 38.50 ML, SILT, trace sand, low plasticity; medium to dark gray, highly micaceous; cohesive, moist to wet (increase with depth), w<PL, soft.	ML		777.3	S4	DO	5-8-11	19	1.50 1.50		
35	770					S5	DO	5-11-15	26	1.50 1.50		
40	765	38.50 - 53.50 ML, SILT, trace sand, low plasticity; medium to dark gray, saprolite, highly micaceous; cohesive, moist to wet (increase with depth), w<PL, soft.	ML		767.3	S6	DO	4-8-10	18	1.50 1.50		
45		Log continued on next page				S7	DO	20-50/4	50/4	0.75 1.50		

BOREHOLE RECORD MCDONOUGH MASTER LIST\_BACKUP\_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

LOG SCALE: 1 in = 5.5 ft  
 DRILLING COMPANY: Southern Company Services  
 DRILLER: S. Milam

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 1/16/18







# RECORD OF BOREHOLE DGWA-71/B-71

SHEET 1 of 1

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 43.80 ft  
 LOCATION: NW corner of site, inside cell tower gate.

DRILL RIG: CME 550  
 DATE STARTED: 2/28/17  
 DATE COMPLETED: 2/28/17

NORTHING: 1,393,963.30  
 EASTING: 2,201,714.80  
 GS ELEVATION: 861.2  
 TOC ELEVATION: 863.84 ft

DEPTH W.L.: 27.1  
 ELEVATION W.L.: 834.1  
 DATE W.L.: 2/28/17  
 TIME W.L.: 1245

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES				MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop			N-VALUE
0	860	0.00 - 10.50 Hydrovac									<p><b>WELL CASING</b> Interval: 0'-33.4' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screen</p> <p><b>WELL SCREEN</b> Interval: 33.4'-43.4' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC</p> <p><b>FILTER PACK</b> Interval: 32.6'-43.8' Type: FilterSil</p> <p><b>FILTER PACK SEAL</b> Interval: 30.6'-32.6' Type: PEL-PLUG 3/8" Bentonite pellets</p> <p><b>ANNULUS SEAL</b> Interval: 1'-30.6' Type: CETCO puregold grout (70:30)</p> <p><b>WELL COMPLETION</b> Pad: 4'x4' Concrete Protective Casing: 4" x 4" x 5' Aluminum</p> <p><b>DRILLING METHODS</b> Soil Drill: Hollow-stem auger Rock Drill: N/A</p>
5	855										
10	850	10.50 - 20.00 Sand with some silt, sands fine, white/black/grey weathered granite/granite gneiss, non plastic, moist, compact.	SP-SM		850.7 10.50	S1	SPT	4-8-10	18	1.50 1.50	
15	845										
20	840	20.00 - 30.00 Silty Sand, sands fine, white/black/grey weathered granite/granite gneiss, non plastic, moist, dense.	SM		841.2 20.00	S2	SPT	2-5-7	12	1.50 1.50	
25	835										
30	830	30.00 - 35.00 Sand with trace to some silt, sands fine to medium, white/black/grey, non plastic, moist, very dense.	SP-SM		831.2 30.00	S3	SPT	4-7-11	18	1.50 1.50	
35	825	35.00 - 43.80 Sand with trace silt and gravel (rock fragments), sands fine to medium, white/black/grey, non plastic, wet, very dense, and some iron staining in samples.	PWR		826.2 35.00	S4	SPT	8-21-50/4	71/10	1.33 1.33	
40	820										
45	817.4	Boring completed at 43.80 ft				S5	SPT	43-50/2	50/2	0.67 0.67	
						S6	SPT	50/3	50/3	0.25 0.25	
						S7	SPT	50/3	50/3	0.25 0.25	

BOREHOLE RECORD MCDONOUGH MASTER LIST\_BACKUP\_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

LOG SCALE: 1 in = 5.5 ft  
 DRILLING COMPANY: Southern Company Services  
 DRILLER: S. Milam

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 1/16/18





# RECORD OF BOREHOLE B-83

SHEET 1 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 50.00 ft  
 LOCATION: South by river, NW of B-76

DRILL RIG: CME550X  
 DATE STARTED: 9/30/19  
 DATE COMPLETED: 9/30/09

NORTHING: 1,390,735.50  
 EASTING: 2,202,695.60  
 GS ELEVATION: 777.1  
 TOC ELEVATION: 776.98 ft

DEPTH W.L.: 28.75  
 ELEVATION W.L.: 748.35  
 DATE W.L.: 1/13/2020  
 TIME W.L.: 14:52

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES					MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE			REC
0	775	0.00 - 15.00 Hydrovac to 15' for utilities									AquaGuard Bentonite - Grout           PEL-PLUG 3/8" Bentonite Pellets           #2 FilterSil -           0.010" Slotted	<b>WELL CASING</b> Interval: 0'-38.6' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw  <b>WELL SCREEN</b> Interval: 38.6'-48.6' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC  <b>FILTER PACK</b> Interval: 36.6'-50' Type: Filter Media  <b>FILTER PACK SEAL</b> Interval: 30.7'-36.6' Type: PEL-PLUG 3/8"  <b>ANNULUS SEAL</b> Interval: 0'-30.7' Type: AquaGuard Bentonite Grout  <b>WELL COMPLETION</b> Pad: 2' x 2' concrete Protective Casing: 8" Round Ground Flush  <b>DRILLING METHODS</b> Soil Drill: 4.25-inch ID Hollow-Stem Auger Rock Drill: N/A
15	765	15.00 - 19.00 ML, Gravely SILT with some sand, brown-black, cohesive, W<PL, dry, soft	ML									
19	758.1	19.00 - 20.00 ML, SILT, micaceous, brown, W<PL, moist, very soft	ML		S1	SS	6-4-4	8	1.25 1.50			
20	757.1	20.00 - 33.50 ML, SILT, brown, moist, W-PL, firm to stiff	ML									
25	750		ML		S2	SS	2-1-3	4	1.50 1.50			
30	745		ML		S3	SS	1-1-2	3	1.50 1.50			
35	743.6	33.50 - 38.50 CL, silty CLAY, micaceous, dark brown-tan, cohesive, moist, W>PL, very soft to soft	CL		S4	SS	1-1-2	3	1.50 1.50			
40	738.6	38.50 - 43.50 CL, silty CLAY, brown with black and red, W>PL, very soft to soft	CL		S5	SS	3-3-4	7	1.50 1.50			
45	733.6	43.50 - 49.00 CL, silty CLAY, brown with orange, moist to wet, W<PL, very soft to firm	CL-ML		S6	SS	WOH-4-8	12	1.50 1.50			

BOREHOLE RECORD MCDONOUGH MASTER LIST\_BACKUP\_SURVEY UPDATED (5).GPJ PIEDMONT\_GDT 8/24/20

LOG SCALE: 1 in = 5.5 ft  
 DRILLING COMPANY: Southern Company Services  
 DRILLER: S. Milam

GA INSPECTOR: K. Minkara  
 CHECKED BY: Timothy Richards, PG  
 DATE: 2/11/20





# RECORD OF BOREHOLE B-83

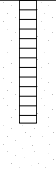
SHEET 2 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 50.00 ft  
 LOCATION: South by river, NW of B-76

DRILL RIG: CME550X  
 DATE STARTED: 9/30/19  
 DATE COMPLETED: 9/30/09

NORTHING: 1,390,735.50  
 EASTING: 2,202,695.60  
 GS ELEVATION: 777.1  
 TOC ELEVATION: 776.98 ft

DEPTH W.L.: 28.75  
 ELEVATION W.L.: 748.35  
 DATE W.L.: 1/13/2020  
 TIME W.L.: 14:52

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES					MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE	REC		
45	730	43.50 - 49.00 CL, silty CLAY, brown with orange, moist to wet, W<PL, very soft to firm ( <i>Continued</i> )	CL-ML	[Hatched Pattern]	728.1						Schedule 40 PVC 	<b>WELL CASING</b> Interval: 0'-38.6' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw  <b>WELL SCREEN</b> Interval: 38.6'-48.6' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC  <b>FILTER PACK</b> Interval: 36.6'-50' Type: Filter Media  <b>FILTER PACK SEAL</b> Interval: 30.7'-36.6' Type: PEL-PLUG 3/8"  <b>ANNULUS SEAL</b> Interval: 0'-30.7' Type: AquaGuard Bentonite Grout  <b>WELL COMPLETION</b> Pad: 2' x 2' concrete Protective Casing: 8" Round Ground Flush  <b>DRILLING METHODS</b> Soil Drill: 4.25-inch ID Hollow-Stem Auger Rock Drill: N/A
50		49.00 - 50.00 SM, silty SAND, PWR, black-brown mica schist  Boring completed at 50.00 ft	SM	[Dotted Pattern]	49.00 727.1	S7	SS	8-15-18	33	1.50 1.50		
55	720											
60	715											
65	710											
70	705											
75	700											
80	695											
85	690											
90												

BOREHOLE RECORD\_MCDONOUGH MASTER LIST\_BACKUP\_SURVEY UPDATED (5).GPJ\_PIEDMONT.GDT 8/24/20

LOG SCALE: 1 in = 5.5 ft  
 DRILLING COMPANY: Southern Company Services  
 DRILLER: S. Milam

GA INSPECTOR: K. Minkara  
 CHECKED BY: Timothy Richards, PG  
 DATE: 2/11/20





# RECORD OF BOREHOLE B-84

SHEET 2 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 50.00 ft  
 LOCATION: NE of security gate, along road

DRILL RIG: CME550X  
 DATE STARTED: 10/1/19  
 DATE COMPLETED: 10/1/19

NORTHING: 1,390,411.90  
 EASTING: 2,202,241.90  
 GS ELEVATION: 776.6  
 TOC ELEVATION: 776.34 ft

DEPTH W.L.: 30.12  
 ELEVATION W.L.: 746.48  
 DATE W.L.: 1/14/2020  
 TIME W.L.: 12:32

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES					MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE	REC		
45	730	brown-black, micaceous, PWR, moist 45.00 - 50.00 ML, sandy SILT with gravel, brown-black, PWR, W<PL, wet to moist, PWR, very dense	ML		45.00						Schedule 40 PVC 	<p><b>WELL CASING</b>                      Interval: 0'-39.1'                      Material: Schedule 40 PVC                      Diameter: 2"                      Joint Type: Flush/Screw</p> <p><b>WELL SCREEN</b>                      Interval: 39.1'-49.1'                      Material: Schedule 40 PVC                      Diameter: 2"                      Slot Size: 0.010"                      End Cap: Schedule 40 PVC</p> <p><b>FILTER PACK</b>                      Interval: 36.0'-49.5'                      Type: Filter Media</p> <p><b>FILTER PACK SEAL</b>                      Interval: 30.6'-36.0'                      Type: PEL-PLUG 3/8"</p> <p><b>ANNULUS SEAL</b>                      Interval: 0'-30.6'                      Type: AquaGuard Bentonite Grout</p> <p><b>WELL COMPLETION</b>                      Pad: 2' x 2' concrete                      Protective Casing: 8" Round                      Ground Flush</p> <p><b>DRILLING METHODS</b>                      Soil Drill: 4.25-inch ID Hollow Stem Auger                      Rock Drill: N/A</p>
50		Boring completed at 50.00 ft			726.6	S7	SS	25-33-24	57	1.50 1.50		
55	725											
60	720											
65	715											
70	710											
75	705											
80	700											
85	695											
90	690											

BOREHOLE RECORD\_MCDONOUGH MASTER LIST\_BACKUP\_SURVEY UPDATED (5).GPJ\_PIEDMONT.GDT\_8/24/20

LOG SCALE: 1 in = 5.5 ft  
 DRILLING COMPANY: Southern Company Services  
 DRILLER: S. Milam

GA INSPECTOR: K. Minkara  
 CHECKED BY: Timothy Richards, PG  
 DATE: 2/11/20





# RECORD OF BOREHOLE B-85

SHEET 1 of 1

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 34.50 ft  
 LOCATION: North of site, adjacent to B-54

DRILL RIG: CME 550  
 DATE STARTED: 11/17/19  
 DATE COMPLETED: 11/18/19

NORTHING: 1,394,433.40  
 EASTING: 2,203,134.50  
 GS ELEVATION: 782.7  
 TOC ELEVATION: 782.54 ft

DEPTH W.L.: 2.27  
 ELEVATION W.L.: 780.43  
 DATE W.L.: 1/13/2020  
 TIME W.L.: 14:16

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES				MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop			N-VALUE
0	780	0.00 - 10.00 Hydrovac to 10.0' to for utilities									<p><b>WELL CASING</b> Interval: 0'-34.2' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screen</p> <p><b>WELL SCREEN</b> Interval: 24.2'-34.2' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC</p> <p><b>FILTER PACK</b> Interval: 21.6'-34.5' Type: Filter Media</p> <p><b>FILTER PACK SEAL</b> Interval: 16.6'-21.6' Type: PEL-PLUG 3/8"</p> <p><b>ANNULUS SEAL</b> Interval: 0'-16.6' Type: AquaGuard Bentonite Grout</p> <p><b>WELL COMPLETION</b> Pad: 2' x 2' concrete Protective Casing: 8" Round Ground Flush</p> <p><b>DRILLING METHODS</b> Soil Drill: 4.25-inch ID Hollow Stem Auger Rock Drill: HQ Core Barrell</p>
10	770	10.00 - 15.00 SM, silty SAND with trace clay, white to grey, fine to coarse sand, well foliated, saprolite, low to no plasticity, W<PL, moist, cohesive	SM	[Graphic Log: SM]	772.7 10.00	1	SPT	4-8-9	17	1.00 1.50	
15	765	15.00 - 20.00 SM, silty SAND with some clay and trace gravel, orange to brown and white to grey, fine to coarse sand, saprolite, no plasticity, W<PL, moist, cohesive, firm	SM	[Graphic Log: SM]	767.7 15.00	2	SPT	2-6-8	14	0.50 1.50	
20	760	20.00 - 25.00 SW, SAND with some silt, white to grey and brown, fine to coarse sand, saprolite, non-cohesive, moist, compact	SP-SM	[Graphic Log: SP-SM]	762.7 20.00	3	SPT	6-15-12	27	1.00 1.50	
25	755	25.00 - 29.50 PWR, AUGEN GNEISS, gravelly sand, grey to white, some orange staining, fine to coarse, moist, very dense	PWR	[Graphic Log: PWR]	757.7 25.00	4	SPT	27-50/1	>50	0.50 0.50	
30	750	29.50 - 34.50 BEDROCK, AUGEN GNEISS, fresh to slightly weathered, white to light pink, feldspar porphyroclasts up to 1 cm in diameter, well foliated, strong to medium strong	GNEISS	[Graphic Log: GNEISS]	753.2 29.50	5	CORE			4.80 5.00	
35	748.2	Boring completed at 34.50 ft									

BOREHOLE RECORD\_MCDONOUGH MASTER LIST\_BACKUP\_SURVEY UPDATED (5).GPJ\_PIEDMONT.GDT 8/24/20

LOG SCALE: 1 in = 5.5 ft  
 DRILLING COMPANY: Southern Company Services  
 DRILLER: S. Milam

GA INSPECTOR: W.Ballow  
 CHECKED BY: Timothy Richards, PG  
 DATE: 2/11/20



# RECORD OF BOREHOLE B-91

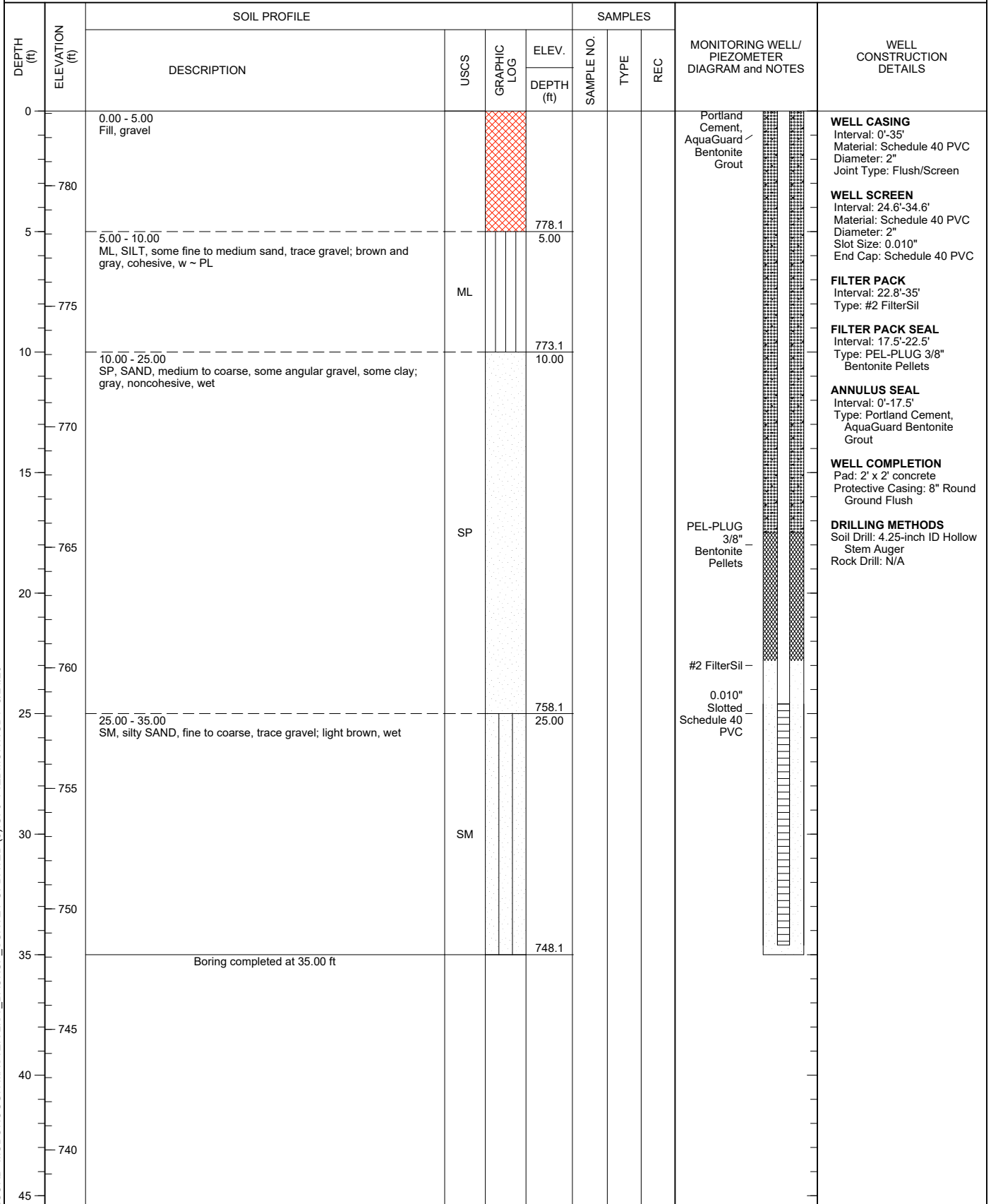
SHEET 1 of 1

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 35.00 ft  
 LOCATION: North of site along Plant Atkinson Road

DRILL RIG: CME 550  
 DATE STARTED: 12/11/19  
 DATE COMPLETED: 12/11/19

NORTHING: 1,394,447.10  
 EASTING: 2,203,123.90  
 GS ELEVATION: 783.1  
 TOC ELEVATION: 782.98 ft

DEPTH W.L.: 2.90  
 ELEVATION W.L.: 780.2  
 DATE W.L.: 1/14/2020  
 TIME W.L.: 12:34



BOREHOLE RECORD MCDONOUGH MASTER LIST\_BACKUP\_SURVEY UPDATED (5).GPJ PIEDMONT\_GDT 8/24/20

LOG SCALE: 1 in = 5.5 ft  
 DRILLING COMPANY: Southern Company Services  
 DRILLER: S. Milam

GA INSPECTOR: W.Ballow  
 CHECKED BY: Timothy Richards, PG  
 DATE: 2/11/20



# RECORD OF BOREHOLE B-91

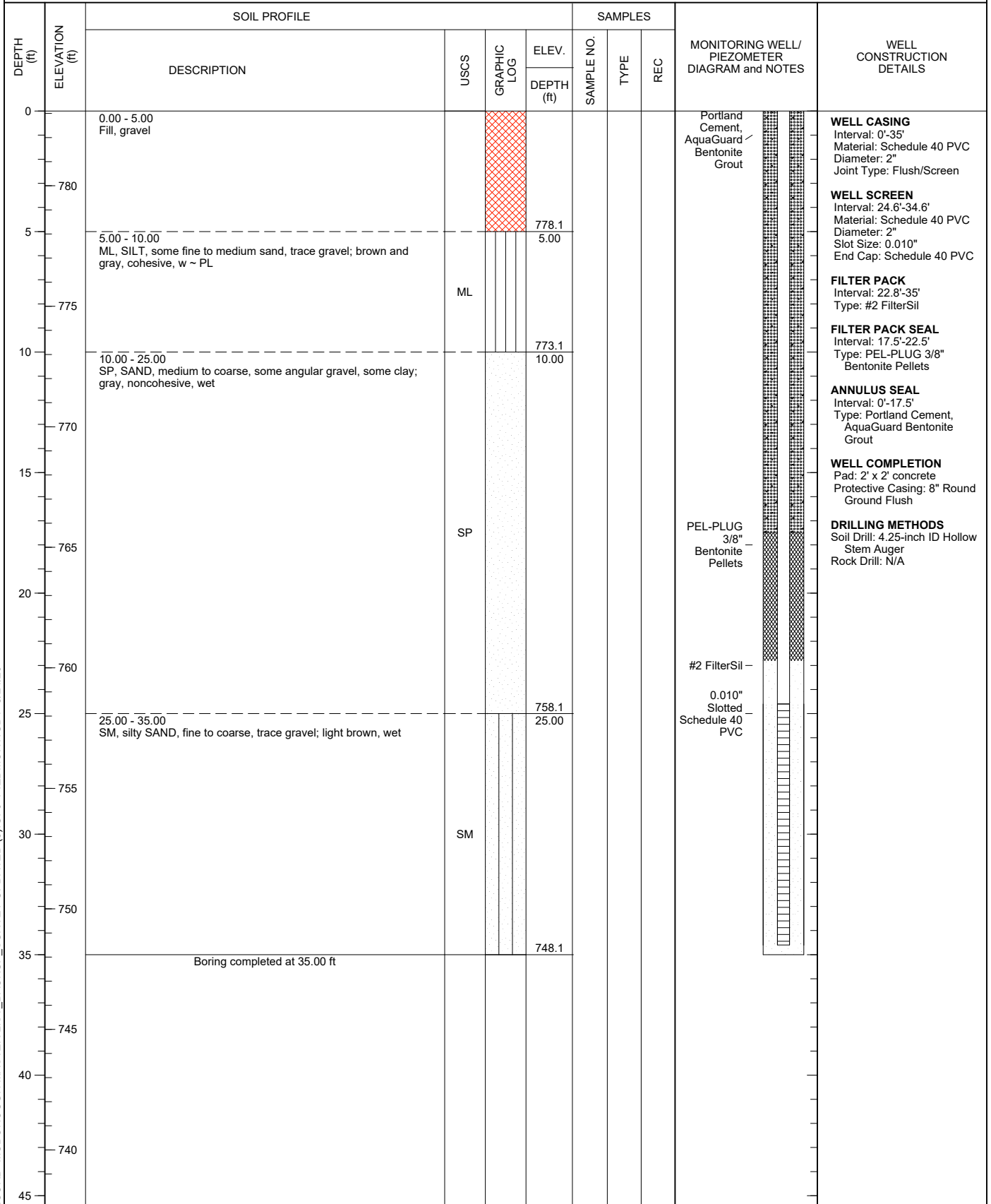
SHEET 1 of 1

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 35.00 ft  
 LOCATION: North of site along Plant Atkinson Road

DRILL RIG: CME 550  
 DATE STARTED: 12/11/19  
 DATE COMPLETED: 12/11/19

NORTHING: 1,394,447.10  
 EASTING: 2,203,123.90  
 GS ELEVATION: 783.1  
 TOC ELEVATION: 782.98 ft

DEPTH W.L.: 2.90  
 ELEVATION W.L.: 780.2  
 DATE W.L.: 1/14/2020  
 TIME W.L.: 12:34



BOREHOLE RECORD MCDONOUGH MASTER LIST\_BACKUP\_SURVEY UPDATED (5).GPJ PIEDMONT\_GDT 8/24/20

LOG SCALE: 1 in = 5.5 ft  
 DRILLING COMPANY: Southern Company Services  
 DRILLER: S. Milam

GA INSPECTOR: W.Ballow  
 CHECKED BY: Timothy Richards, PG  
 DATE: 2/11/20





# RECORD OF BOREHOLE B-92

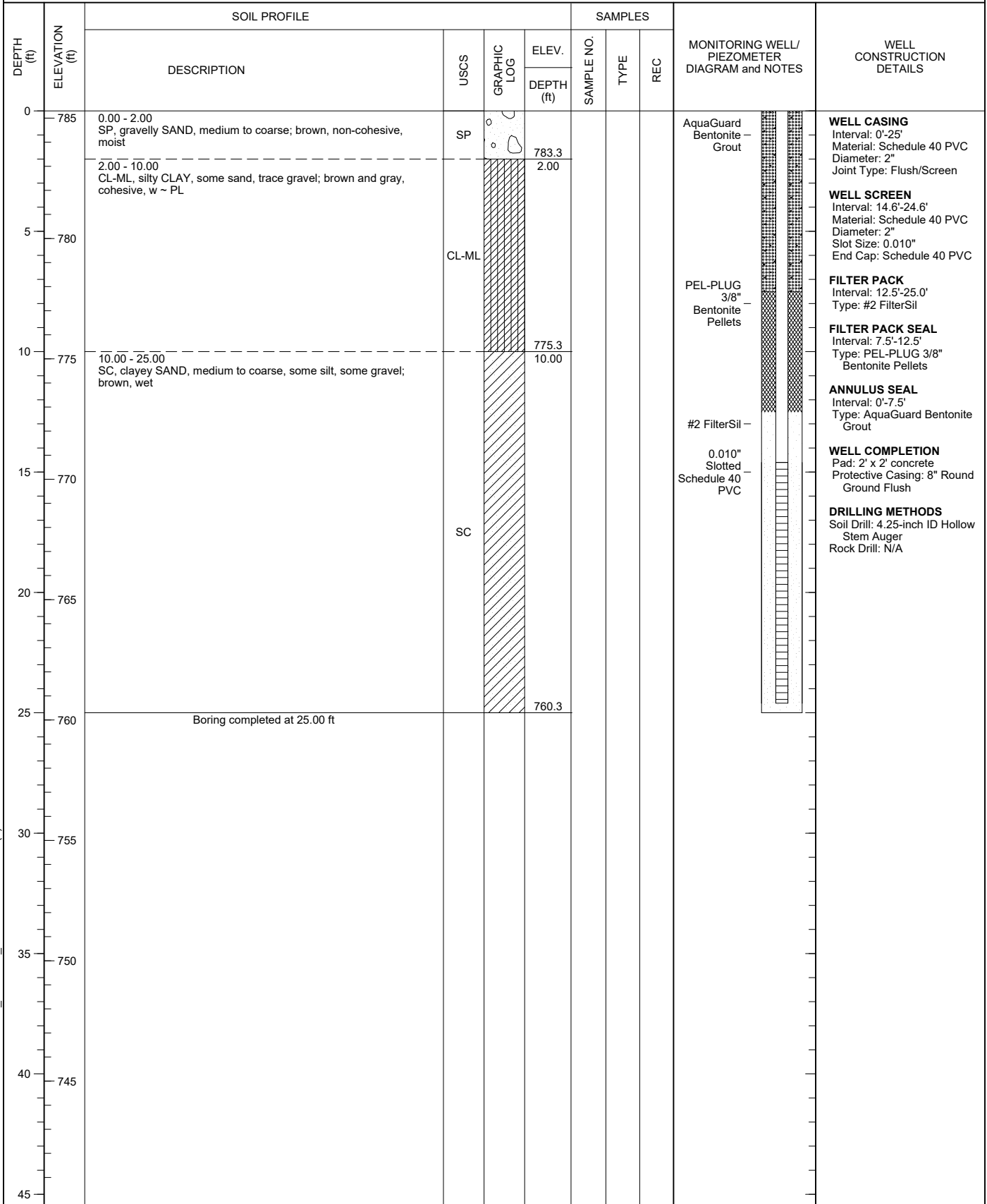
SHEET 1 of 1

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 25.00 ft  
 LOCATION: North of site along Plant Atkinson Road

DRILL RIG: CME 550  
 DATE STARTED: 12/11/19  
 DATE COMPLETED: 12/11/19

NORTHING: 1,394,392.70  
 EASTING: 2,203,026.70  
 GS ELEVATION: 785.3  
 TOC ELEVATION: 785.08 ft

DEPTH W.L.: 3.88  
 ELEVATION W.L.: 781.42  
 DATE W.L.: 1/14/2020  
 TIME W.L.: 12:36



BOREHOLE RECORD\_MCDONOUGH MASTER LIST\_BACKUP\_SURVEY UPDATED (5).GPJ\_PIEDMONT.GDT 8/24/20

LOG SCALE: 1 in = 5.5 ft  
 DRILLING COMPANY: Southern Company Services  
 DRILLER: S. Milam

GA INSPECTOR: W.Ballow  
 CHECKED BY: Timothy Richards, PG  
 DATE: 2/11/20



# RECORD OF BOREHOLE B-95

SHEET 1 of 1

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 33.30 ft  
 LOCATION: East of B-96

DRILL RIG: CME 550  
 DATE STARTED: 2/11/20  
 DATE COMPLETED: 2/11/20

NORTHING: 1,394,518.60  
 EASTING: 2,203,167.70  
 GS ELEVATION: 784.3  
 TOC ELEVATION: 784.00 ft

DEPTH W.L.: 1.7 ft bTOC  
 ELEVATION W.L.: 782.3  
 DATE W.L.: 2/26/2020  
 TIME W.L.: 13:49

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES					MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE			REC
0		0.00 - 10.00 Hydro Vac'd for utilities clearance										<b>WELL CASING</b> Interval: 0 ft-bgs - 33.3 ft-bgs Material: PVC Diameter: 2" Joint Type: Flush  <b>WELL SCREEN</b> Interval: 23 ft-bgs - 33 ft-bgs Material: Schedule 40 PVC Diameter: 3" Slot Size: 0.010" End Cap: 4"  <b>FILTER PACK</b> Interval: 20.8 ft-bgs - 33.3 ft-bgs Type: FilterSil Sand  <b>FILTER PACK SEAL</b> Interval: 17.5 ft-bgs - 20.5 ft-bgs Type: PEL-PLUG 3/8" Bentonite Pellets  <b>ANNULUS SEAL</b> Interval: 0 ft-bgs - 17.5 ft-bgs Type: Portland Cement, AquaGuard Bentonite Grout  <b>WELL COMPLETION</b> Pad: 2'x2' Concrete Pad Protective Casing: 8" Round Flush Mount  <b>DRILLING METHODS</b> Soil Drill: 4.25-inch ID Hollow Stem Augers Rock Drill: N/A
780												
775												
770		13.50 - 33.30 SANDY SILT, low plasticity, fine grained sand; brown; non-cohesive, wet, loose			774.3 10.00							
770					770.8 13.50	S-01	DO	3-3-4	7	N/A 1.50	Bentonite Grout	
765		18.50: SANDY SILT, low plasticity, fine grained sand; tan, orange, bronze, laminated, saprolite (gneiss parent rock), micaceous; non-cohesive, moist, very dense				S-02	DO	14-27-27	54	N/A 1.50	Bentonite Pellets	
760		23.50: Trace fine gravel	ML			S-03	DO	8-50	50/5	N/A 0.92	Sand Filter Pack	
755		28.50: Compact				S-04	DO	3-2-8	10	N/A 1.50	3" PVC 0.010 Slot U-Pack Screen	
750		Boring completed at 33.30 ft			751							

BOREHOLE RECORD\_MCDONOUGH MASTER LIST\_BACKUP\_SURVEY UPDATED (5).GPJ\_PIEDMONT.GDT 9/2/20

LOG SCALE: 1 in = 5.5 ft  
 DRILLING COMPANY: Southern Company Services  
 DRILLER: S. Milam

GA INSPECTOR: Heather Brissey  
 CHECKED BY: Timothy Richards, PG  
 DATE: 4/28/20



# RECORD OF BOREHOLE B-101D

SHEET 1 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 75.00 ft  
 LOCATION: Next to DGWC-9

DRILL RIG: Geoprobe 8140LC  
 DATE STARTED: 11/11/20  
 DATE COMPLETED: 11/12/20

NORTHING: 1394063.6  
 EASTING: 2204168.2  
 GS ELEVATION: 821.2 ft  
 TOC ELEVATION: 824.29 ft

DEPTH W.L.: 34.0  
 ELEVATION W.L.: 790.3  
 DATE W.L.: 11/12/20  
 TIME W.L.: 0954

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 10.00 Air knife; FILL	FILL	[Cross-hatched pattern]					Stick-up -	<p><b>B-101D</b> Borehole Diameter: 4"  <b>WELL CASING</b> Interval: 0-75' Material: Schedule 40 PVC Diameter: 2" Joint Type: Screw fit with rubber seam  <b>WELL SCREEN</b> Interval: 64.9'-74.9' Material: Schedule 40 PVC Diameter: 2" Slot Size: .010" End Cap: Schedule 40 PVC  <b>FILTER PACK</b> Interval: 62.5'-75.0' Type: FilterSil Quantity: 4-50 lbs bags  <b>FILTER PACK SEAL</b> Interval: 59.0'-62.5' Type: 3/8" Uncoated Pel-Plug Quantity: 1-5 gallon bucket  <b>ANNULUS SEAL</b> Interval: 0'-59.0' Type: AquaGuard Bentonite Grout Quantity: Approximately 80 gallons</p> <p><b>NOTES</b></p>
5										
10		10.00 - 15.00 (SM), SILTY SAND; tannish brown to reddish brown, low plasticity, w<pl, dry, loose to soft	SM	[Dotted pattern]	10.00					
15		15.00 - 16.00 (TWR), TRANSITIONALLY WEATHERED ROCK; dark gray, deeply weathered, fine to medium, poorly jointed	TWR	[Blue triangles]	15.00	1	ROTO SONIC	8.00 10.00		
16		16.00 - 20.00 (CL), CLAY; some sand, reddish brown, fine to coarse, low plasticity, w<PL, soft, moist to wet	CL	[Diagonal lines]	16.00					
20		20.00 - 23.00 (ML), SILT; trace to some gravels, reddish brown, low plasticity, w<PL, very soft, wet	ML	[Vertical lines]	20.00	2	ROTO SONIC	4.00 5.00		
23		23.00 - 25.00 (SM), SILTY SAND; trace gravels, tannish brown to gray, non-plastic, w<PL, loose, dry, TWR	TWR	[Blue triangles]	23.00					
25		25.00 - 35.00 NO RECOVERY; material washed out of core barrel after switching to rock coring methods based on the TWR at the 23-25' interval.	NR		25.00	3	ROTO SONIC	0.00 10.00		
30										
35		35.00 - 40.00 NO RECOVERY; The core barrel was able to be advanced to depth, but casing was not able to advance to depth. Material was lost while extracting core barrel.	NR		35.00	4	ROTO SONIC	0.00 5.00	AquaGuard Bentonite Grout	
40		40.00 - 50.00 NO RECOVERY; The core barrel was able to be advanced to depth, but casing was not able to advance to depth. Material was lost while extracting core barrel.	NR		40.00	5	ROTO SONIC	0.00 10.00		
45										
50		Log continued on next page								

BOREHOLE RECORD MCDONOUGH MASTER LIST (2).GPJ - PIEDMONT.GDT 2/3/21

LOG SCALE: 1 in = 6.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 2/3/21





# RECORD OF BOREHOLE B-101D

SHEET 2 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 75.00 ft  
 LOCATION: Next to DGWC-9

DRILL RIG: Geoprobe 8140LC  
 DATE STARTED: 11/11/20  
 DATE COMPLETED: 11/12/20

NORTHING: 1394063.6  
 EASTING: 2204168.2  
 GS ELEVATION: 821.2 ft  
 TOC ELEVATION: 824.29 ft

DEPTH W.L.: 34.0  
 ELEVATION W.L.: 790.3  
 DATE W.L.: 11/12/20  
 TIME W.L.: 0954

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
50		50.00 - 51.00 (ML), SANDY SILT; grayish brown, low to medium plasticity, w~PL, soft to firm, moist	ML		50.00	6	ROTO SONIC	9.50 10.00		<p><b>B-101D</b>                      Borehole Diameter: 4"  <b>WELL CASING</b>                      Interval: 0-75'                      Material: Schedule 40 PVC                      Diameter: 2"                      Joint Type: Screw fit with rubber seam  <b>WELL SCREEN</b>                      Interval: 64.9'-74.9'                      Material: Schedule 40 PVC                      Diameter: 2"                      Slot Size: .010"                      End Cap: Schedule 40 PVC  <b>FILTER PACK</b>                      Interval: 62.5'-75.0'                      Type: FilterSil                      Quantity: 4-50 lbs bags  <b>FILTER PACK SEAL</b>                      Interval: 59.0'-62.5'                      Type: 3/8" Uncoated Pel-Plug                      Quantity: 1-5 gallon bucket  <b>ANNULUS SEAL</b>                      Interval: 0'-59.0'                      Type: AquaGuard Bentonite Grout                      Quantity: Approximately 80 gallons</p> <p><b>NOTES</b></p>
		51.00 - 52.00 (ML), SILT; trace gravels, schist fragments, grayish tan, non-plastic, non-cohesive, w<PL, loose, dry	ML		51.00					
		52.00 - 52.30 (TWR), TRANSITIONALLY WEATHERED ROCK; deeply weathered, R2, well foliated, fine to medium grain, iron staining.	TWR		52.30					
55		52.30 - 60.00 (ML), SANDY SILT; with gravel, grayish brown, low to medium plasticity, w~PL, soft to firm, moist	ML			7	ROTO SONIC	2.50 10.00		
60		60.00 - 70.00 (SCHIST), BEDROCK; well foliated, highly crenulated, poorly jointed, iron staining	BR		60.00					
65						8	ROTO SONIC	3.55 5.00		
70		70.00 - 72.00 (ML), SANDY SILT; grayish brown, low to medium plasticity, w~PL, soft to firm, moist	ML		70.00					
		72.00 - 75.00 (SCHIST), BEDROCK; well foliated, highly crenulated, poorly jointed, iron staining	BR		72.00					
75		Boring completed at 75.00 ft								
80										
85										
90										
95										
100										

BOREHOLE RECORD MCDONOUGH MASTER LIST (2).GPJ - PIEDMONT.GDT 2/3/21

LOG SCALE: 1 in = 6.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 2/3/21



# RECORD OF BOREHOLE B-102D

SHEET 1 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 85.00 ft  
 LOCATION: Next to DGWC-10

DRILL RIG: Geoprobe 8140LC  
 DATE STARTED: 11/9/20  
 DATE COMPLETED: 11/10/20

NORTHING: 1393828.4  
 EASTING: 2204200.4  
 GS ELEVATION: 820.6 ft  
 TOC ELEVATION: 823.42 ft

DEPTH W.L.: 34.0  
 ELEVATION W.L.: 789.4  
 DATE W.L.: 11/10/2020  
 TIME W.L.: 1444

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 10.00 Air knife; FILL	FILL						Stick-up -	<p><b>B-102D</b>                      Borehole Diameter: 4"  <b>WELL CASING</b>                      Interval: 0'-85'                      Material: Schedule 40 PVC                      Diameter: 2"                      Joint Type: Screw fit with rubber seam  <b>WELL SCREEN</b>                      Interval: 74.4'-84.4'                      Material: Schedule 40 PVC                      Diameter: 2"                      Slot Size: .010"                      End Cap: Schedule 40 PVC  <b>FILTER PACK</b>                      Interval: 72.0'-75.4'                      Type: FilterSil                      Quantity: 4-50 lbs bags  <b>FILTER PACK SEAL</b>                      Interval: 67'-72'                      Type: 3/8" Uncoated Pel-Plug                      Quantity: 1-5 gallon bucket  <b>ANNULUS SEAL</b>                      Interval: 0'-67'                      Type: AquaGuard Bentonite Grout                      Quantity: Approximately 120 gallons</p> <p><b>NOTES</b></p>
5										
10		10.00 - 15.50 (CL), CLAY; red brown, trace to some sand, fine grain, w~PL, low plasticity, soft, moist	CL		10.00	1	ROTO SONIC	6.50 10.00		
15		15.50 - 17.50 (ML), SILT; red brown, trace gravels, non-plastic to low plasticity, w<PL, soft, moist	ML		15.50					
20		17.50 - 20.00 (ML), SILT; tanish-orange brown to silver, nonplastic to low plasticity, soft to loose	ML		17.50					
25		20.00 - 26.00 (SM), SILTY SAND; bronze, some coarse sand, nonplastic, dry to moist	SM		20.00	2	ROTO SONIC	10.00 10.00		
30		26.00 - 30.00 (SM), SILTY SAND; gray, some coarse sand, nonplastic, non-cohesive, compact, dry to moist	SM		26.00					
35		30.00 - 40.00 (SM), SILTY SAND; gray and orange-brown, non-plastic to low plasticity, firm to compact, dry to moist, soft to firm, contains muscovite	SM		30.00	3	ROTO SONIC	9.00 10.00	AquaGuard Bentonite - Grout	
40		40.00 - 44.00 (SM), SILTY SAND; gray and orange-brown, non-plastic to low plasticity, firm to compact, dry to moist, soft to firm	SM		40.00					
45		44.00 - 46.00 (ML), SILT; gray, non-plastic to lows plasticity, soft, moist,	ML		44.00	4	ROTO SONIC	7.00 10.00		
50		46.00 - 50.00 (SM), SILTY SAND; reddish brown, non-plastic to low plasticity, very soft, wet	SM		46.00					
		Log continued on next page								

BOREHOLE RECORD MCDONOUGH MASTER LIST (2) (3) (1) (2), GPJ PIEDMONT.GDT 7/19/21

LOG SCALE: 1 in = 6.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 2/3/21



# RECORD OF BOREHOLE B-102D

SHEET 2 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 85.00 ft  
 LOCATION: Next to DGWC-10

DRILL RIG: Geoprobe 8140LC  
 DATE STARTED: 11/9/20  
 DATE COMPLETED: 11/10/20

NORTHING: 1393828.4  
 EASTING: 2204200.4  
 GS ELEVATION: 820.6 ft  
 TOC ELEVATION: 823.42 ft

DEPTH W.L.: 34.0  
 ELEVATION W.L.: 789.4  
 DATE W.L.: 11/10/2020  
 TIME W.L.: 1444

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
50	50.00 - 51.00	(SM), SILTY SAND; reddish brown, non-plastic to low plasticity, very soft, wet	SM	[Pattern]	50.00	5	ROTO SONIC	5.00 5.00		<p><b>B-102D</b>                      Borehole Diameter: 4"  <b>WELL CASING</b>                      Interval: 0'-85'                      Material: Schedule 40 PVC                      Diameter: 2"                      Joint Type: Screw fit with rubber seam  <b>WELL SCREEN</b>                      Interval: 74.4'-84.4'                      Material: Schedule 40 PVC                      Diameter: 2"                      Slot Size: .010"                      End Cap: Schedule 40 PVC  <b>FILTER PACK</b>                      Interval: 72.0'-75.4'                      Type: FilterSil                      Quantity: 4-50 lbs bags  <b>FILTER PACK SEAL</b>                      Interval: 67'-72'                      Type: 3/8" Uncoated Pel-Plug                      Quantity: 1-5 gallon bucket  <b>ANNULUS SEAL</b>                      Interval: 0'-67'                      Type: AquaGuard Bentonite Grout                      Quantity: Approximately 120 gallons</p> <p><b>NOTES</b></p>
	51.00 - 55.00	(SM), SILTY SAND; gray, w<PL, fine to compact, dry to moist, contains muscovite	SM	[Pattern]	51.00					
55	55.00 - 60.00	(SM), SILTY SAND; gray to yellow orange, w<PL, fine to stiff, dry to moist, saprolitic	SM	[Pattern]	55.00	6	ROTO SONIC	5.00 5.00		
60	60.00 - 65.00	(ML), SILT; gray to light brown, w<PL, dense, dry	ML	[Pattern]	60.00	7	ROTO SONIC	4.00 5.00		
65	65.00 - 70.00	(TWR), TRANSITIONALLY WEATHERED ROCK; silty sand, gray, low plasticity, w<PL, stiff to hard, dry, saprolitic	TWR	[Pattern]	65.00	8	ROTO SONIC	5.00 5.00		
70	70.00 - 75.00	(SCHIST), BEDROCK, dark gray to black, fine to medium grain, moderately foliated, poorly jointed, high crenulated, weak to strong rock, slightly to moderately weathered, feldspar, muscovite, schist.	BR	[Pattern]	70.00	9	ROTO SONIC	5.00 5.00		
75	75.00 - 85.00	(SCHIST), BEDROCK; dark gray to black, moderately foliated, poorly jointed, high crenulated, weak to strong rock, slightly to moderately weathered, feldspar, muscovite, schist	BR	[Pattern]	75.00	10	ROTO SONIC	7.00 10.00		
85	Boring completed at 85.00 ft									

BOREHOLE RECORD MCDONOUGH MASTER LIST (2) (3) (1) (2), GPJ PIEDMONT.GDT 7/19/21

LOG SCALE: 1 in = 6.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 2/3/21







# RECORD OF BOREHOLE B-103D

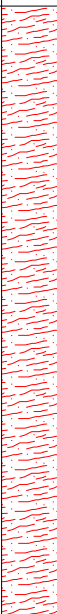
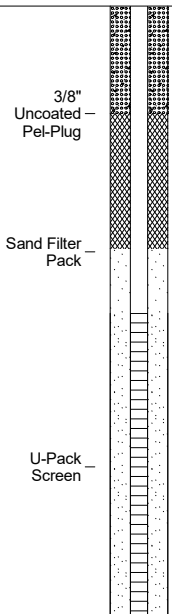
SHEET 2 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 70.00 ft  
 LOCATION: East of DGWC-47

DRILL RIG: Geoprobe 8140LC  
 DATE STARTED: 10/14/20  
 DATE COMPLETED: 10/15/20

NORTHING: 1391543.5  
 EASTING: 2202614.4  
 GS ELEVATION: 793.8 ft  
 TOC ELEVATION: 795.96 ft

DEPTH W.L.: 12.0  
 ELEVATION W.L.: 783.9  
 DATE W.L.: 10/15/2020  
 TIME W.L.: 0740

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
50		40.00 - 70.00 (GNEISS), BEDROCK; light gray-green to dark gray; well foliated, poorly jointed, muscovite, biotite, feldspar, quartz <i>(Continued)</i>	BR							<p><b>B-103D</b>                      Borehole Diameter: 4"  <b>WELL CASING</b>                      Interval: 0'-70'                      Material: Schedule 40 PVC                      Diameter: 2"                      Joint Type: Screw fit with rubber seam  <b>WELL SCREEN</b>                      Interval: 60'-70'                      Material: Schedule 40 PVC                      Diameter: 2"                      Slot Size: .010"                      End Cap: Schedule 40 PVC  <b>FILTER PACK</b>                      Interval: 57.9'-70.0'                      Type: FilterSil                      Quantity: 3.5-50 lbs bags  <b>FILTER PACK SEAL</b>                      Interval: 53.5'-57.9'                      Type: 3/8" Uncoated Pel-Plug                      Quantity: 1-5 gallon bucket  <b>ANNULUS SEAL</b>                      Interval: 0'-53.5'                      Type: AquaGuard Bentonite Grout                      Quantity: Approximately 40 gallons</p> <p><b>NOTES</b></p>
55					7	ROTO SONIC	7.50 10.00			
60					8	ROTO SONIC	9.65 10.00	Sand Filter Pack		
65								U-Pack Screen		
70		Boring completed at 70.00 ft								
75										
80										
85										
90										
95										
100										

BOREHOLE RECORD MCDONOUGH MASTER LIST (2).GPJ - PIEDMONT.GDT 2/3/21

LOG SCALE: 1 in = 6.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 2/3/21



# RECORD OF BOREHOLE B-104D

SHEET 1 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 60.00 ft  
 LOCATION: East of DGWC-48

DRILL RIG: Geoprobe 8140LC  
 DATE STARTED: 10/20/20  
 DATE COMPLETED: 10/20/20

NORTHING: 1391318.3  
 EASTING: 2202298.5  
 GS ELEVATION: 785.3 ft  
 TOC ELEVATION: 787.90 ft

DEPTH W.L.: 12.0  
 ELEVATION W.L.: 775.9  
 DATE W.L.: 10/20/2020  
 TIME W.L.: 1818

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 10.00 Air knife; FILL	FILL						Stick-up -	<p><b>B-104D</b> Borehole Diameter: 4"  <b>WELL CASING</b> Interval: 0'-60' Material: Schedule 40 PVC Diameter: 2" Joint Type: Screw fit with rubber seam  <b>WELL SCREEN</b> Interval: 50'-60' Material: Schedule 40 PVC Diameter: 2" Slot Size: .010" End Cap: Schedule 40 PVC  <b>FILTER PACK</b> Interval: 47.15'-60.0' Type: FilterSil Quantity: 4-50 lbs bags  <b>FILTER PACK SEAL</b> Interval: 44'-47.15' Type: 3/8" Uncoated Pel-Plug Quantity: 1-5 gallon bucket  <b>ANNULUS SEAL</b> Interval: 0'-44' Type: AquaGuard Bentonite Grout Quantity: Approximately 40 gallons</p> <p><b>NOTES</b></p>
5										
10		10.00 - 12.00 (CL), CLAY; red brown; moist, soft, low plasticity, w<PL, FILL	CL		10.00					
15		12.00 - 22.00 (ML), SILT; dark brown to gray; non-plastic to low plasticity, dry to moist, w<PL, soft to firm	ML		12.00	1	ROTO SONIC	8.00 8.00		
20						2	ROTO SONIC	4.00 4.00		
25		22.00 - 30.00 (ML), SILT; dark brown; w~PL, moist to wet, soft to firm, contains gravels of biotite gneiss (trace)	ML		22.00	3	ROTO SONIC	8.00 8.00	AquaGuard Bentonite - Grout	
30		30.00 - 35.00 (TWR), TRANSITIONALLY WEATHERED ROCK; rust brown to gray; deeply weathered biotite gneiss, poorly foliated, poorly jointed, iron staining	TWR		30.00					
35		35.00 - 55.50 (GNEISS), BEDROCK; biotite, quartz, feldspar, light to dark gray, strong to medium strong, fresh to slightly weathered, locally contains iron staining and garnets	BR		35.00	4	ROTO SONIC	6.55 10.00		
40						5	ROTO SONIC	2.10 5.00	3/8" Uncoated Pel-Plug	
45						6	ROTO SONIC	4.35 7.50		
50		Log continued on next page							Sand Filter -	

BOREHOLE RECORD - MCDONOUGH MASTER LIST (2).GPJ - PIEDMONT.GDT 2/3/21

LOG SCALE: 1 in = 6.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 2/3/21





# RECORD OF BOREHOLE B-104D

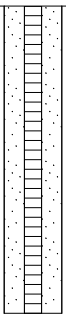
SHEET 2 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 60.00 ft  
 LOCATION: East of DGWC-48

DRILL RIG: Geoprobe 8140LC  
 DATE STARTED: 10/20/20  
 DATE COMPLETED: 10/20/20

NORTHING: 1391318.3  
 EASTING: 2202298.5  
 GS ELEVATION: 785.3 ft  
 TOC ELEVATION: 787.90 ft

DEPTH W.L.: 12.0  
 ELEVATION W.L.: 775.9  
 DATE W.L.: 10/20/2020  
 TIME W.L.: 1818

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE			REC
50		35.00 - 55.50 (GNEISS), BEDROCK; biotite, quartz, feldspar, light to dark gray, strong to medium strong, fresh to slightly weathered, locally contains iron staining and garnets <i>(Continued)</i>	BR	[Red wavy lines]		6		4.35 7.50	<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">Pack</div>  </div>	<p><b>B-104D</b>                      Borehole Diameter: 4"  <b>WELL CASING</b>                      Interval: 0'-60'                      Material: Schedule 40 PVC                      Diameter: 2"                      Joint Type: Screw fit with rubber seam  <b>WELL SCREEN</b>                      Interval: 50'-60'                      Material: Schedule 40 PVC                      Diameter: 2"                      Slot Size: .010"                      End Cap: Schedule 40 PVC  <b>FILTER PACK</b>                      Interval: 47.15'-60.0'                      Type: FilterSil                      Quantity: 4-50 lbs bags  <b>FILTER PACK SEAL</b>                      Interval: 44'-47.15'                      Type: 3/8" Uncoated Pel-Plug                      Quantity: 1-5 gallon bucket  <b>ANNULUS SEAL</b>                      Interval: 0'-44'                      Type: AquaGuard Bentonite Grout                      Quantity: Approximately 40 gallons</p> <p><b>NOTES</b></p>
55		55.50 - 60.00 (SCHIST), BEDROCK; quartz, muscovite, gray to silver, medium grain, medium strong, fresh to moderately weathered	BR	[Black diagonal lines]	55.50	7	ROTO SONIC	6.15 7.50		
60		Boring completed at 60.00 ft								
65										
70										
75										
80										
85										
90										
95										
100										

BOREHOLE RECORD - MCDONOUGH MASTER LIST (2).GPJ - PIEDMONT.GDT 2/3/21

LOG SCALE: 1 in = 6.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 2/3/21



# RECORD OF BOREHOLE B-105D

SHEET 1 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 70.00 ft  
 LOCATION: East of DGWC-40

DRILL RIG: Geoprobe 8140LC  
 DATE STARTED: 10/18/20  
 DATE COMPLETED: 10/19/20

NORTHING: 1390634.5  
 EASTING: 2201831.9  
 GS ELEVATION: 776.0 ft  
 TOC ELEVATION: 779.01 ft

DEPTH W.L.: 22.50  
 ELEVATION W.L.: 756.5  
 DATE W.L.: 10/19/2020  
 TIME W.L.: 0950

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 10.00 Air knife; FILL	FILL						Stick-up -	<p><b>B-105D</b>                      Borehole Diameter: 4"  <b>WELL CASING</b>                      Interval: 0'-70'                      Material: Schedule 40 PVC                      Diameter: 2"                      Joint Type: Screw fit with rubber seam  <b>WELL SCREEN</b>                      Interval: 60'-70'                      Material: Schedule 40 PVC                      Diameter: 2"                      Slot Size: .010"                      End Cap: Schedule 40 PVC  <b>FILTER PACK</b>                      Interval: 57.5'-60.0'                      Type: FilterSil                      Quantity: 4-50 lbs bags  <b>FILTER PACK SEAL</b>                      Interval: 53.75'-57.5'                      Type: 3/8" Uncoated Pel-Plug                      Quantity: 1-5 gallon bucket  <b>ANNULUS SEAL</b>                      Interval: 0'-53.75'                      Type: AquaGuard Bentonite Grout                      Quantity: Approximately 80 gallons</p> <p><b>NOTES</b></p>
10		10.00 - 15.00 (ML), SILT; red to orange brown, some clay, low plasticity, dry to moist, w<PL, soft to firm, FILL	CL-ML		10.00					
15		15.00 - 27.00 (ML), SILT; olive brown to silvery brown, low plasticity, moist, firm, w<PL, contains muscovite			15.00	1	ROTO SONIC	9.25 10.00		
20			ML			2	ROTO SONIC	6.00 7.50		
27		27.00 - 27.50 (CL), CLAY; white, medium plasticity, firm, moist, w<PL, possible WT	CL		27.50					
27.5		27.50 - 32.50 (ML), SILT; gray/brown, fine grain, low to medium plasticity, moist, w~PL, soft to firm	ML							
32.5		32.50 - 33.80 (SM), SILTY SAND; non-plastic to low plasticity, dry to moist, fine to coarse, w<PL, loose, sand is mica (biotite/muscovite)	SM		32.50	3	ROTO SONIC	8.50 10.00		
33.8		33.80 - 37.50 (ML), SILT; gray/brown, fine grain, low to moderate plasticity, moist, w~PL, soft to firm	ML		33.80				AquaGuard Bentonite - Grout	
37.5		37.50 - 40.00 (ML), SILT; whitish gray, trace fine sand, low plasticity, moist to dry, w~PL, firm/compact, high feldspar	ML		37.50	4	ROTO SONIC	2.50 2.50		
40		40.00 - 45.00 (SM), SILTY SAND; brown to black, non-plastic to low plasticity, moist, w<PL, fine to coarse, compact to loose. Sand particles size is mica, not quartz.	SM		40.00	5	ROTO SONIC	5.00 5.00		
45		45.00 - 50.00 (SM), SILTY SAND; rock flour, trace gravels, tan brown, non-plastic, dry, fine to coarse, w<PL, loose, sand is micaceous, transitions to TWR from 48.8'-50.0'	SM		45.00	6	ROTO SONIC	5.00 5.00		
50		Log continued on next page								

BOREHOLE RECORD MCDONOUGH MASTER LIST (2).GPJ PIEDMONT.GDT 2/3/21

LOG SCALE: 1 in = 6.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 2/3/21



# RECORD OF BOREHOLE B-105D

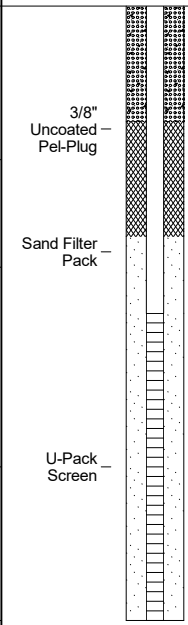
SHEET 2 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 70.00 ft  
 LOCATION: East of DGWC-40

DRILL RIG: Geoprobe 8140LC  
 DATE STARTED: 10/18/20  
 DATE COMPLETED: 10/19/20

NORTHING: 1390634.5  
 EASTING: 2201831.9  
 GS ELEVATION: 776.0 ft  
 TOC ELEVATION: 779.01 ft

DEPTH W.L.: 22.50  
 ELEVATION W.L.: 756.5  
 DATE W.L.: 10/19/2020  
 TIME W.L.: 0950

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE			REC
50		50.00 - 55.00 (SM), SILTY SAND; brown to black, low to medium plasticity, moist to dry, w<PL, loose/soft, materials is from gneiss (relief structure), TWR	SM	[Graphic Log: Dotted pattern]	50.00	7	ROTO SONIC	5.00 5.00	 <p style="font-size: small;">3/8" Uncoated Pel-Plug</p> <p style="font-size: small;">Sand Filter Pack</p> <p style="font-size: small;">U-Pack Screen</p>	<p><b>B-105D</b>                      Borehole Diameter: 4"  <b>WELL CASING</b>                      Interval: 0'-70'                      Material: Schedule 40 PVC                      Diameter: 2"                      Joint Type: Screw fit with rubber seam</p> <p><b>WELL SCREEN</b>                      Interval: 60'-70'                      Material: Schedule 40 PVC                      Diameter: 2"                      Slot Size: .010"                      End Cap: Schedule 40 PVC</p> <p><b>FILTER PACK</b>                      Interval: 57.5'-60.0'                      Type: FilterSil                      Quantity: 4-50 lbs bags</p> <p><b>FILTER PACK SEAL</b>                      Interval: 53.75'-57.5'                      Type: 3/8" Uncoated Pel-Plug                      Quantity: 1-5 gallon bucket</p> <p><b>ANNULUS SEAL</b>                      Interval: 0'-53.75'                      Type: AquaGuard Bentonite Grout                      Quantity: Approximately 80 gallons</p> <p><b>NOTES</b></p>
55		55.00 - 70.00 (GNEISS), BEDROCK; light to dark gray, fine to medium grain, well foliated, poorly jointed, fresh to slightly weathered, strong to medium strong	BR	[Graphic Log: Red wavy lines]	55.00	8	ROTO SONIC	2.75 3.50		
60						9	ROTO SONIC	4.80 6.50		
65						10	ROTO SONIC	4.25 5.00		
70		Boring completed at 70.00 ft								
75										
80										
85										
90										
95										
100										

BOREHOLE RECORD MCDONOUGH MASTER LIST (2).GPJ - PIEDMONT.GDT 2/3/21

LOG SCALE: 1 in = 6.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 2/3/21





# RECORD OF BOREHOLE B-106D

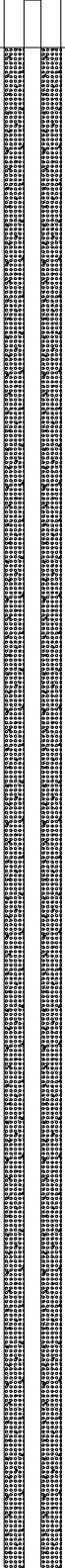
SHEET 1 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 80.00 ft  
 LOCATION: North of DGWC-8

DRILL RIG: Geoprobe 8140LC  
 DATE STARTED: 11/12/20  
 DATE COMPLETED: 11/13/20

NORTHING: 1394327.1  
 EASTING: 2203869.2  
 GS ELEVATION: 823.5 ft  
 TOC ELEVATION: 826.21 ft

DEPTH W.L.: 37.0  
 ELEVATION W.L.: 789.2  
 DATE W.L.: 11/13/2020  
 TIME W.L.: 1652

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 10.00 Air knife; FILL	FILL						Stick-up - 	<b>B-106D</b> Borehole Diameter: 4" <b>WELL CASING</b> Interval: 0'-80' Material: Schedule 40 PVC Diameter: 2" Joint Type: Screw fit with rubber seam <b>WELL SCREEN</b> Interval: 69.4'-79.4' Material: Schedule 40 PVC Diameter: 2" Slot Size: .010" End Cap: Schedule 40 PVC <b>FILTER PACK</b> Interval: 66.61'-80' Type: FilterSil Quantity: 4-50 lbs bags <b>FILTER PACK SEAL</b> Interval: 62.85'-66.61' Type: 3/8" Uncoated Pel-Plug Quantity: 1-5 gallon bucket <b>ANNULUS SEAL</b> Interval: 0'-62.85' Type: AquaGuard Bentonite Grout Quantity: <b>NOTES</b>
10		10.00 - 16.75 (ML), SILT; some fine to medium sand, some gravel, moist, firm, w<PL, low to medium plasticity	ML		10.00	1	ROTO SONIC	8.20 10.00		
16.75		16.75 - 18.10 (ML), SILT; some coarse sand, moist, stiff, w<PL	ML		16.75					
18.10		18.10 - 20.00 (CL), CLAY; red to red-brown, some coarse sand, dry to moist, w<PL, soft, some muscovite, Fill	CL		18.10					
20		20.00 - 28.00 (ML), SILT; brown, some fines, very fine to coarse sand, wet, soft to very soft, w<PL, medium plasticity,	ML		20.00	2	ROTO SONIC	10.00 10.00		
28		28.00 - 30.00 (SP), SAND; uniformly graded, some silt, non-cohesive, loose, moist, non-plastic	SP		28.00					
30		30.00 - 32.00 (SM), SILTY SAND; brown, trace gravel, dry to moist, cohesive, firm to stiff, w<PL, low plasticity, some crenulations, saprolitic	SM		30.00	3	ROTO SONIC	5.00 5.00		
32		32.00 - 35.00 (SM), SILTY SAND; dry to moist, cohesive, firm to stiff, w~PL, low to medium plasticity	SM		32.00					
35		35.00 - 40.00 (ML), SANDY SILT; brown, fine to coarse sand, micas, firm to stiff, w>PL, dry to wet	ML		35.00	4	ROTO SONIC	5.00 5.00		
40		40.00 - 45.00 (SM), SILTY SAND; brown, fine to coarse sand, some gravel, schist, quartz vein fragments, micas, firm to stiff, w<PL, moist, medium plasticity	SM		40.00	5	ROTO SONIC	5.00 5.00		
45		45.00 - 47.00 (SM), SILTY SAND; brown, fine to coarse sand, some gravel, schist, quartz vein fragments, micas, stiff to very stiff, w>PL, moist, medium plasticity, saprolitic	SM		45.00	6	ROTO SONIC	2.00		
47		47.00 - 60.00 NO RECOVERY; material too loose and continues to fall out of core barrel	NR		47.00	7	ROTO SONIC	0.00 13.00		

BOREHOLE RECORD MCDONOUGH MASTER LIST (2).GPJ - PIEDMONT.GDT 2/3/21

Log continued on next page

LOG SCALE: 1 in = 6.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 2/3/21



# RECORD OF BOREHOLE B-106D

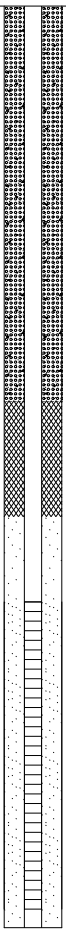
SHEET 2 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 80.00 ft  
 LOCATION: North of DGWC-8

DRILL RIG: Geoprobe 8140LC  
 DATE STARTED: 11/12/20  
 DATE COMPLETED: 11/13/20

NORTHING: 1394327.1  
 EASTING: 2203869.2  
 GS ELEVATION: 823.5 ft  
 TOC ELEVATION: 826.21 ft

DEPTH W.L.: 37.0  
 ELEVATION W.L.: 789.2  
 DATE W.L.: 11/13/2020  
 TIME W.L.: 1652

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
50		47.00 - 60.00 NO RECOVERY; material too loose and continues to fall out of core barrel (Continued)	NR			7	ROTO SONIC	0.00 13.00	 <p style="font-size: small; text-align: center;">3/8" Uncoated - Pel-Plug</p> <p style="font-size: small; text-align: center;">Sand Filter Pack</p> <p style="font-size: small; text-align: center;">U-Pack Screen</p>	<p><b>B-106D</b>                      Borehole Diameter: 4"  <b>WELL CASING</b>                      Interval: 0'-80'                      Material: Schedule 40 PVC                      Diameter: 2"                      Joint Type: Screw fit with rubber seam  <b>WELL SCREEN</b>                      Interval: 69.4'-79.4'                      Material: Schedule 40 PVC                      Diameter: 2"                      Slot Size: .010"                      End Cap: Schedule 40 PVC  <b>FILTER PACK</b>                      Interval: 66.61'-80'                      Type: FilterSil                      Quantity: 4-50 lbs bags  <b>FILTER PACK SEAL</b>                      Interval: 62.85'-66.61'                      Type: 3/8" Uncoated Pel-Plug                      Quantity: 1-5 gallon bucket  <b>ANNULUS SEAL</b>                      Interval: 0'-62.85'                      Type: AquaGuard Bentonite Grout                      Quantity:</p> <p><b>NOTES</b></p>
55										
60		60.00 - 65.00 (SCHIST), BEDROCK; silvery blue, well foliated, poorly jointed, moderate to deeply weathered, weak to medium strong rock, iron staining	BR	60.00		8	ROTO SONIC	1.60 5.00		
65		65.00 - 75.00 (BIOTITE GNEISS), BEDROCK; light gray to dark gray, zones of muscovite schistosity, very fine grain, moderate to poor foliation, poorly jointed, fresh to moderately weathered, medium strong, iron staining, feldspar, quartz, muscovite	BR	65.00		9	ROTO SONIC	5.20 10.00		
70										
75		75.00 - 80.00 (BIOTITE GNEISS), BEDROCK; light gray to dark gray, zones of muscovite schistosity, very fine grain, moderate to poor foliation, poorly jointed, fresh to moderately weathered, medium strong, iron staining, feldspar, quartz	BR	75.00		10	ROTO SONIC	3.40 5.00		
80		Boring completed at 80.00 ft								
85										
90										
95										
100										

BOREHOLE RECORD MCDONOUGH MASTER LIST (2).GPJ - PIEDMONT.GDT 2/3/21

LOG SCALE: 1 in = 6.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 2/3/21



# RECORD OF BOREHOLE B-107D

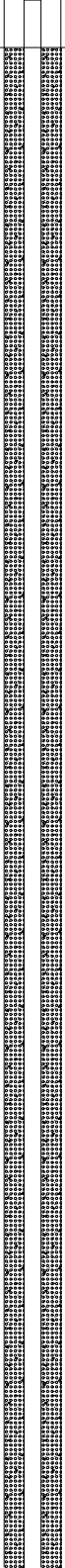
SHEET 1 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 85.75 ft  
 LOCATION: Southwest of DGWC-19

DRILL RIG: Geoprobe 8140LC  
 DATE STARTED: 10/28/20  
 DATE COMPLETED: 10/28/20

NORTHING: 1392334.5  
 EASTING: 2202596.4  
 GS ELEVATION: 820.6 ft  
 TOC ELEVATION: 823.38 ft

DEPTH W.L.: 21.8  
 ELEVATION W.L.: 801.6  
 DATE W.L.: 10/28/2020  
 TIME W.L.: 1440

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 10.00 Air knife; FILL	FILL						Stick-up - 	<b>B-107D</b> Borehole Diameter: 4" <b>WELL CASING</b> Interval: 0'-85.1' Material: Schedule 40 PVC Diameter: 2" Joint Type: Screw fit with rubber seam <b>WELL SCREEN</b> Interval: 75.1'-85.1' Material: Schedule 40 PVC Diameter: 2" Slot Size: .010" End Cap: Schedule 40 PVC <b>FILTER PACK</b> Interval: 72.25'-85.5' Type: FilterSil Quantity: 4.5-50 lbs bags <b>FILTER PACK SEAL</b> Interval: 68.8'-72.25' Type: 3/8" Uncoated Pel-Plug Quantity: 1-5 gallon <b>ANNULUS SEAL</b> Interval: 0'-68.8' Type: AquaGuard Bentonite Grout Quantity: Approximately 80 gallons  <b>NOTES</b>
10		10.00 - 20.00 (CL-ML), SILTY and CLAY; red brown to brown, trace sand, low to medium plasticity, soft to firm, moist, contains muscovite	CL-ML		10.00	1	ROTO SONIC	7.00 10.00		
20		20.00 - 38.00 (SM), SILTY SAND; brown to tannish brown, trace sand, w<PL, low plasticity, loose to compact, large grains of muscovite	SM		20.00	2	ROTO SONIC	4.30 10.00		
35			SM			3	ROTO SONIC	10.00 10.00		
40		38.00 - 40.00 (SM), SILTY SAND; black and silverish gray, fine to medium, non-plastic, w<PL, loose sand, moist,	SM		38.00					
45		40.00 - 50.00 (SM-ML), SILTY SAND to SILT; brown to silverish brown, moist to wet, w<PL, soft to stiff	SM		40.00	4	ROTO SONIC	9.00 10.00		
50		Log continued on next page								

BOREHOLE RECORD - MCDONOUGH MASTER LIST (2).GPJ - PIEDMONT.GDT 2/3/21

LOG SCALE: 1 in = 6.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 2/3/21





# RECORD OF BOREHOLE B-107D

SHEET 2 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 85.75 ft  
 LOCATION: Southwest of DGWC-19

DRILL RIG: Geoprobe 8140LC  
 DATE STARTED: 10/28/20  
 DATE COMPLETED: 10/28/20

NORTHING: 1392334.5  
 EASTING: 2202596.4  
 GS ELEVATION: 820.6 ft  
 TOC ELEVATION: 823.38 ft

DEPTH W.L.: 21.8  
 ELEVATION W.L.: 801.6  
 DATE W.L.: 10/28/2020  
 TIME W.L.: 1440

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
50		50.00 - 60.00 (SM-ML), SILTY SAND to SILT; brown to silverish brown, moist to wet, w<PL, soft to stiff	SM		50.00	5	ROTO SONIC	6.00 10.00		<p><b>B-107D</b>                      Borehole Diameter: 4"  <b>WELL CASING</b>                      Interval: 0'-85.1'                      Material: Schedule 40 PVC                      Diameter: 2"                      Joint Type: Screw fit with rubber seam  <b>WELL SCREEN</b>                      Interval: 75.1'-85.1'                      Material: Schedule 40 PVC                      Diameter: 2"                      Slot Size: .010"                      End Cap: Schedule 40 PVC  <b>FILTER PACK</b>                      Interval: 72.25'-85.5'                      Type: FilterSil                      Quantity: 4.5-50 lbs bags  <b>FILTER PACK SEAL</b>                      Interval: 68.8'-72.25'                      Type: 3/8" Uncoated Pel-Plug                      Quantity: 1-5 gallon  <b>ANNULUS SEAL</b>                      Interval: 0'-68.8'                      Type: AquaGuard Bentonite Grout                      Quantity: Approximately 80 gallons</p> <p><b>NOTES</b></p>
55										
60		60.00 - 67.00 NO RECOVERY; material was washed away by coring methods. Material from 63' to 67' is inferred as TWR.	NR		60.00	6	ROTO SONIC	0.00 7.00		
65										
70		67.00 - 75.00 (GNEISS), BEDROCK; dark gray to black, well foliated, poorly jointed, slightly to deeply weathered, weak to medium strong, feldspar, quartz, muscovite,	BR		67.00	7	ROTO SONIC	6.70 8.00	3/8" Uncoated Pel-Plug	
75								Sand Filter Pack		
80		75.00 - 85.75 (GNEISS), BEDROCK; dark gray to black, well foliated, poorly jointed, slightly to deeply weathered, weak to medium strong, feldspar, quartz, muscovite,	BR		75.00	8	ROTO SONIC	6.80 10.75	U-Pack Screen	
85		Boring completed at 85.75 ft			85.75					
90										
95										
100										

BOREHOLE RECORD - MCDONOUGH MASTER LIST (2).GPJ - PIEDMONT.GDT 2/3/21

LOG SCALE: 1 in = 6.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 2/3/21



# RECORD OF BOREHOLE B-108D


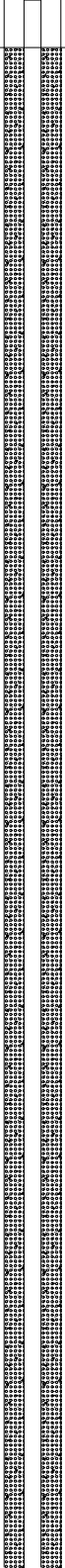





SHEET 1 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 80.00 ft  
 LOCATION: Next to DGWC-20

DRILL RIG: Geoprobe 8140LC  
 DATE STARTED: 10/26/20  
 DATE COMPLETED: 10/27/20

NORTHING: 1392156.1  
 EASTING: 2202312.5  
 GS ELEVATION: 818.4 ft  
 TOC ELEVATION: 821.13 ft

DEPTH W.L.: 17.7  
 ELEVATION W.L.: 803.43  
 DATE W.L.: 10/27/2020  
 TIME W.L.: 0915

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 10.00 Air knife; FILL	FILL						Stick-up - 	<b>B-108D</b> Borehole Diameter: 4" <b>WELL CASING</b> Interval: 0'-80.0' Material: Schedule 40 PVC Diameter: 2" Joint Type: Screw fit with rubber seam <b>WELL SCREEN</b> Interval: 69'-79' Material: Schedule 40 PVC Diameter: 2" Slot Size: .010" End Cap: Schedule 40 PVC <b>FILTER PACK</b> Interval: 65.85'-79' Type: FilterSil Quantity: 4-50 lbs bags <b>FILTER PACK SEAL</b> Interval: 62.5'-65.85' Type: 3/8" Uncoated Pel-Plug Quantity: 1- 5 gallon bucket <b>ANNULUS SEAL</b> Interval: 0'-62.5' Type: AquaGuard Bentonite Grout Quantity: Approximately 80 gallons  <b>NOTES</b>
10		10.00 - 12.00 (CL), CLAY;w<PL, low plasticity, moist to wet, Fill	CL		10.00					
15		12.00 - 20.00 (ML), SILT; tannish brown with black spots, trace fine sand, w<PL, non-plastic to low plasticity, compact to firm, moist	ML		12.00	1	ROTO SONIC	10.00 10.00		
20		20.00 - 30.00 (ML), SILT; tannish brown with black/silver spots, trace to some fine sand, w<PL, low plasticity, dry to moist, firm, saprolite, deeply weather biotite gneiss	ML		20.00	2	ROTO SONIC	9.50 10.00		
30		30.00 - 40.00 (ML-SM), SILT and SILTY SAND; silverish brown, trace clay, w<PL, nonplastic to low plasticity, moist, firm to stiff, contains muscovite, saprolite	SM		30.00	3	ROTO SONIC	8.00 10.00		
35								AquaGuard Bentonite Grout		
40		40.00 - 50.00 (ML-SM), SILT and SILTY SAND; silverish brown, trace clay, w<PL, nonplastic to low plasticity, moist, soft to firm, contains muscovite, saprolite	SM		40.00	4	ROTO SONIC	6.75 10.00		
50		Log continued on next page								

BOREHOLE RECORD\_MCDONOUGH MASTER LIST (2).GPJ\_PIEDMONT.GDT\_2/3/21

LOG SCALE: 1 in = 6.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 2/3/21



# RECORD OF BOREHOLE B-108D

SHEET 2 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 80.00 ft  
 LOCATION: Next to DGWC-20

DRILL RIG: Geoprobe 8140LC  
 DATE STARTED: 10/26/20  
 DATE COMPLETED: 10/27/20

NORTHING: 1392156.1  
 EASTING: 2202312.5  
 GS ELEVATION: 818.4 ft  
 TOC ELEVATION: 821.13 ft

DEPTH W.L.: 17.7  
 ELEVATION W.L.: 803.43  
 DATE W.L.: 10/27/2020  
 TIME W.L.: 0915

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE			REC
50		50.00 - 51.00 (SP), SAND; black to dark gray, w<PL, non-plastic, firm, loose, wet	SP	50.00	5	ROTO SONIC	7.50		<p><b>B-108D</b>                      Borehole Diameter: 4"  <b>WELL CASING</b>                      Interval: 0'-80.0'                      Material: Schedule 40 PVC                      Diameter: 2"                      Joint Type: Screw fit with rubber seam  <b>WELL SCREEN</b>                      Interval: 69'-79'                      Material: Schedule 40 PVC                      Diameter: 2"                      Slot Size: .010"                      End Cap: Schedule 40 PVC  <b>FILTER PACK</b>                      Interval: 65.85'-79'                      Type: FilterSil                      Quantity: 4-50 lbs bags  <b>FILTER PACK SEAL</b>                      Interval: 62.5'-65.85'                      Type: 3/8" Uncoated Pel-Plug                      Quantity: 1- 5 gallon bucket  <b>ANNULUS SEAL</b>                      Interval: 0'-62.5'                      Type: AquaGuard Bentonite Grout                      Quantity: Approximately 80 gallons</p> <p><b>NOTES</b></p>	
55		51.00 - 57.50 (ML), SILT; gray to brown, w<PL, low plasticity, firm to stiff, moist, saprolite	ML	51.00			7.50			
60		57.50 - 65.00 (GNEISS), BEDROCK; dark brown to gray, well foliated, poorly jointed, deeply weathered, weak rock, iron staining	BR	57.50	6	ROTO SONIC	1.25 7.50			3/8" Uncoated Pel-Plug
65		65.00 - 75.00 (GNEISS), BEDROCK; dark brown to gray, well foliated, poorly jointed, fresh to slightly weathered, medium strong rock, iron staining	BR	65.00	7	ROTO SONIC	6.55 10.00			Sand Filter Pack
70		75.00 - 80.00 (GNEISS), BEDROCK; dark brown to gray, well foliated, poorly jointed, fresh to slightly weathered, medium strong rock, iron staining	BR	75.00	8	ROTO SONIC	4.80 5.00			U-Pack Screen
75										
80		Boring completed at 80.00 ft								
85										
90										
95										
100										

BOREHOLE RECORD MCDONOUGH MASTER LIST (2).GPJ - PIEDMONT.GDT 2/3/21

LOG SCALE: 1 in = 6.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 2/3/21





# RECORD OF BOREHOLE B-109D


SHEET 1 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 100.00 ft  
 LOCATION: Next to DGWC-2

DRILL RIG: Geoprobe 8140LS  
 DATE STARTED: 10/30/20  
 DATE COMPLETED: 10/31/20

NORTHING: 1393957.5  
 EASTING: 2202127  
 GS ELEVATION: 847.8 ft  
 TOC ELEVATION: 850.73 ft

DEPTH W.L.: 23.50  
 ELEVATION W.L.: 827.2  
 DATE W.L.: 10/31/2020  
 TIME W.L.: 1157

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0	0.00	0.00 - 10.00 Air knife; FILL	FILL	[Cross-hatch pattern]					Stick-up - 	<b>B-109D</b> Borehole Diameter: 4" <b>WELL CASING</b> Interval: 0'-100' Material: Schedule 40 PVC Diameter: 2" Joint Type: Screw fit with rubber seam <b>WELL SCREEN</b> Interval: 89.4'-99.4' Material: Schedule 40 PVC Diameter: 2" Slot Size: .010" End Cap: Schedule 40 PVC <b>FILTER PACK</b> Interval: 86.5'-99.4' Type: FilterSil Quantity: 4-50 lbs bags <b>FILTER PACK SEAL</b> Interval: 83.9'-86.5' Type: 3/8" Uncoated Pel-Plug Quantity: 1-5 gallon bucket <b>ANNULUS SEAL</b> Interval: 0'-83.9' Type: AquaGuard Bentonite Grout Quantity: Approximately 80 gallons  <b>NOTES</b>
10	10.00	10.00 - 13.50 (ML). SILT; brown, soft,	ML	[Vertical lines pattern]	10.00					
15	13.50	13.50 - 20.00 (CL). CLAY; red to red brown, trace sand, medium plasticity, w<PL, firm, moist to dry,	CL	[Diagonal lines pattern]	13.50	1	ROTO SONIC	10.00 10.00		
20	20.00	20.00 - 30.00 (SM). SILTY SAND; gray to reddish gray, fine to medium, loose to soft, dry to moist, w<PL, low plasticity, quartz, biotite, feldspar	SM	[Dotted pattern]	20.00	2	ROTO SONIC	3.70 10.00		
30	30.00	30.00 - 36.00 (SM). SILTY SAND; gray to reddish gray, some clay, fine to medium, loose to soft, dry to moist, w<PL, low plasticity, quartz, biotite, feldspar	SM	[Dotted pattern]	30.00	3	ROTO SONIC	6.00 6.00		
36	36.00	36.00 - 40.00 (CL). CLAY; black to dark gray, low plasticity, w<PL, very soft to hard, dry to moist, saprolite, biotite gneiss, saprolite,	CL	[Diagonal lines pattern]	36.00	4	ROTO SONIC	4.00 4.00		
40	40.00	40.00 - 45.00 (TWR). TRANSITIONALLY WEATHERED ROCK; black to dark gray, silt with some fine sand, trace gravels, low plasticity, w<PL, soft, moist to wet, biotite gneiss fragments	TWR	[Triangle pattern]	40.00	5	ROTO SONIC	2.20 5.00		
45	45.00	45.00 - 46.00 (GRANITE). BEDROCK; biotite, feldspar, quartz, white to light gray, fine grain, quartz veins, weakly foliated, poorly jointed, fresh to slightly weathered, medium strong	BR	[Pink pattern]	45.00	6	ROTO SONIC	4.20 10.00		
50	46.00	46.00 - 55.00 (GNEISS). BEDROCK; feldspar, quartz, biotite, black to dark gray, well foliated, poorly jointed fresh to slightly weathered, medium strong to weak, iron staining	BR	[Red pattern]	46.00					

BOREHOLE RECORD MCDONOUGH MASTER LIST (2) (3) (1) (2).GPJ PIEDMONT.GDT 7/19/21

LOG SCALE: 1 in = 6.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 2/3/21



Log continued on next page

# RECORD OF BOREHOLE B-109D

SHEET 2 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 100.00 ft  
 LOCATION: Next to DGWC-2

DRILL RIG: Geoprobe 8140LS  
 DATE STARTED: 10/30/20  
 DATE COMPLETED: 10/31/20

NORTHING: 1393957.5  
 EASTING: 2202127  
 GS ELEVATION: 847.8 ft  
 TOC ELEVATION: 850.73 ft

DEPTH W.L.: 23.50  
 ELEVATION W.L.: 827.2  
 DATE W.L.: 10/31/2020  
 TIME W.L.: 1157

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
50		46.00 - 55.00 (GNEISS), BEDROCK; feldspar, quartz, biotite, black to dark gray, well foliated, poorly jointed fresh to slightly weathered, medium strong to weak, iron staining ( <i>Continued</i> )	BR	[Red wavy lines]		6	ROTO SONIC	4.20 10.00		<p><b>B-109D</b>                      Borehole Diameter: 4"  <b>WELL CASING</b>                      Interval: 0'-100'                      Material: Schedule 40 PVC                      Diameter: 2"                      Joint Type: Screw fit with rubber seam  <b>WELL SCREEN</b>                      Interval: 89.4'-99.4'                      Material: Schedule 40 PVC                      Diameter: 2"                      Slot Size: .010"                      End Cap: Schedule 40 PVC  <b>FILTER PACK</b>                      Interval: 86.5'-99.4'                      Type: FilterSil                      Quantity: 4-50 lbs bags  <b>FILTER PACK SEAL</b>                      Interval: 83.9'-86.5'                      Type: 3/8" Uncoated Pel-Plug                      Quantity: 1-5 gallon bucket  <b>ANNULUS SEAL</b>                      Interval: 0'-83.9'                      Type: AquaGuard Bentonite Grout                      Quantity: Approximately 80 gallons</p> <p><b>NOTES</b></p>
55		55.00 - 65.00 (GNEISS), BEDROCK; feldspar, quartz, biotite, black to dark gray, well foliated, poorly jointed, fresh to slightly weathered, medium strong to weak, iron staining. Pegmatitic zone 57.75' - 58.75' bgs (biotite, quartz, feldspar).	BR	[Red wavy lines]	55.00	7	ROTO SONIC	8.25 10.00		
60			BR	[Red wavy lines]		8	ROTO SONIC	10.00 10.00		
65		65.00 - 80.00 (GNEISS), BEDROCK; quartz, feldspar, biotite, black to dark gray, well foliated, poorly jointed fresh to slightly weathered, medium strong to weak, iron staining.	BR	[Red wavy lines]	65.00	9	ROTO SONIC	5.00 5.00		
70			BR	[Red wavy lines]		10	ROTO SONIC	4.25 5.00		
75		80.00 - 85.00 (GNEISS), BEDROCK; feldspar, quartz, biotite, black to dark gray, well foliated, poorly jointed, fresh, fine to medium grain, medium strong, iron staining, locally contains chlorite	BR	[Red wavy lines]	80.00	11	ROTO SONIC	5.00 5.00		
80		85.00 - 100.00 (GNEISS), BEDROCK; feldspar, quartz, biotite, green when dry and dark gray to black when wet, well foliated, poorly jointed fresh, fine to medium grain, medium strong, iron staining, locally contains chlorite and epidote	BR	[Red wavy lines]	85.00	12	ROTO SONIC	8.40 10.00		
85			BR	[Red wavy lines]				3/8" Uncoated Pel-Plug		
90			BR	[Red wavy lines]				Sand Filter Pack		
95			BR	[Red wavy lines]				U-Pack Screen		
100		Boring completed at 100.00 ft								

BOREHOLE RECORD MCDONOUGH MASTER LIST (2) (3) (1) (2), GPJ PIEDMONT.GDT 7/19/21

LOG SCALE: 1 in = 6.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 2/3/21



# RECORD OF BOREHOLE B-110D

SHEET 1 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 65.00 ft  
 LOCATION: Next to DGWC-68A

DRILL RIG: Geoprobe 8140LC  
 DATE STARTED: 11/14/20  
 DATE COMPLETED: 11/17/20

NORTHING: 1391294.4  
 EASTING: 2200736  
 GS ELEVATION: 764.7 ft  
 TOC ELEVATION: 764.61 ft

DEPTH W.L.: 9.35  
 ELEVATION W.L.: 755.3  
 DATE W.L.: 11/17/2020  
 TIME W.L.: 1110

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 5.00 Hand Auger 0'-10'; core loss from 0'-5',	NR						Flush mount -	<p><b>B-110D</b>                      Borehole Diameter: 4"  <b>WELL CASING</b>                      Interval: 0'-65'                      Material: Schedule 40 PVC                      Diameter: 2"                      Joint Type: Screw fit with rubber seam  <b>WELL SCREEN</b>                      Interval: 53'-63'                      Material: Schedule 40 PVC                      Diameter: 2"                      Slot Size: .010"                      End Cap: Schedule 40 PVC  <b>FILTER PACK</b>                      Interval: 50.5'-63'                      Type: FilterSil                      Quantity: 3.5-50 lbs bags  <b>FILTER PACK SEAL</b>                      Interval: 46'-50.5'                      Type: 3/8" Uncoated Pel-Plug                      Quantity: 1-5 gallon bucket  <b>ANNULUS SEAL</b>                      Interval: 0'-46'                      Type: AquaGuard Bentonite Grout                      Quantity: Approximately 85 gallons</p> <p><b>NOTES</b></p>
5		5.00 - 8.50 (CL), CLAY; reddish brown to yellowish orange, trace to some fine to medium sand, moist, low plasticity, w<PL, soft to firm, Fill	CL		5.00	1	ROTO SONIC	7.00 12.00		
10		8.50 - 12.00 (ML), SILT; brown to dark brown, trace fine sand, moist, non-plastic, w<PL, soft	ML		8.50					
15		12.00 - 20.00 (ML), SILT; brown to dark brown, some fine sand, moist, non-plastic, w<PL, soft	ML		12.00	2	ROTO SONIC	3.00 8.00		
20		20.00 - 25.00 (ML), SILT; brown to dark brown, some fine sand, moist, non-plastic, w<PL, firm to stiff	ML		20.00	3	ROTO SONIC	3.00 5.00	AquaGuard Bentonite - Grout	
25		25.00 - 35.00 NO RECOVERY; material too loose and soft to stay in core barrel	NR		25.00	4	ROTO SONIC	0.00 10.00		
35		35.00 - 45.00 (GNEISS), BEDROCK; biotite, feldspar, quartz, light gray to white, well foliated, poorly jointed, fine-to medium-grained, fresh to slightly weathered, strong rock, locally contains vein quartz and garnets	BR		35.00	5	ROTO SONIC	6.40 10.00		
45		45.00 - 55.00 (GNEISS), BEDROCK; biotite, feldspar, quartz, light gray to white, well foliated, poorly jointed, veing quartz, fine to medium-grained, fresh to slightly weathered, strong rock, zones of fine-grained biotite	BR		45.00	6	ROTO SONIC	8.70 10.00	3/8" Uncoated - Pel-Plug	
50		Log continued on next page								

BOREHOLE RECORD MCDONOUGH MASTER LIST (2).GPJ - PIEDMONT.GDT 2/3/21

LOG SCALE: 1 in = 6.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 2/3/21





# RECORD OF BOREHOLE B-110D

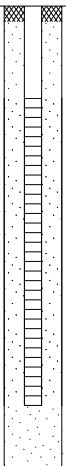
SHEET 2 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 65.00 ft  
 LOCATION: Next to DGWC-68A

DRILL RIG: Geoprobe 8140LC  
 DATE STARTED: 11/14/20  
 DATE COMPLETED: 11/17/20

NORTHING: 1391294.4  
 EASTING: 2200736  
 GS ELEVATION: 764.7 ft  
 TOC ELEVATION: 764.61 ft

DEPTH W.L.: 9.35  
 ELEVATION W.L.: 755.3  
 DATE W.L.: 11/17/2020  
 TIME W.L.: 1110

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
50		45.00 - 55.00 (GNEISS), BEDROCK; biotite, feldspar, quartz, light gray to white, well foliated, poorly jointed, veing quartz, fine to medium-grained, fresh to slightly weathered, strong rock, zones of fine-grained biotite <i>(Continued)</i>	BR			6	ROTO SONIC	8.70 10.00		<p><b>B-110D</b> Borehole Diameter: 4"  <b>WELL CASING</b> Interval: 0'-65' Material: Schedule 40 PVC Diameter: 2" Joint Type: Screw fit with rubber seam  <b>WELL SCREEN</b> Interval: 53'-63' Material: Schedule 40 PVC Diameter: 2" Slot Size: .010" End Cap: Schedule 40 PVC  <b>FILTER PACK</b> Interval: 50.5'-63' Type: FilterSil Quantity: 3.5-50 lbs bags  <b>FILTER PACK SEAL</b> Interval: 46'-50.5' Type: 3/8" Uncoated Pel-Plug Quantity: 1-5 gallon bucket  <b>ANNULUS SEAL</b> Interval: 0'-46' Type: AquaGuard Bentonite Grout Quantity: Approximately 85 gallons</p> <p><b>NOTES</b></p>
55		55.00 - 60.00 (GNEISS), BEDROCK; biotite, feldspar, quartz, light gray to white, well foliated, poorly jointed, veing quartz, fine to medium grain, fresh to slightly weathered, strong rock, local zones of fine-grained biotite	BR		55.00	7	ROTO SONIC	5.00 5.00		
60		60.00 - 65.00 (GNEISS), BEDROCK; biotite, feldspar, quartz, light gray to white, well foliated, poorly jointed, veing quartz, fine-to medium-grained, fresh to slightly weathered, strong rock, local zones of fine grained biotite	BR		60.00	8	ROTO SONIC	4.00 5.00		
65		Boring completed at 65.00 ft								
70										
75										
80										
85										
90										
95										
100										

BOREHOLE RECORD MCDONOUGH MASTER LIST (2).GPJ - PIEDMONT.GDT 2/3/21

LOG SCALE: 1 in = 6.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 2/3/21



# RECORD OF BOREHOLE B-111D

SHEET 1 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 85.00 ft  
 LOCATION: West of DGWC-5

DRILL RIG: Geoprobe 8140LC  
 DATE STARTED: 11/1/20  
 DATE COMPLETED: 11/3/20

NORTHING: 1394303.4  
 EASTING: 2202956.4  
 GS ELEVATION: 789.1 ft  
 TOC ELEVATION: 791.87 ft

DEPTH W.L.: 8.9  
 ELEVATION W.L.: 755.30  
 DATE W.L.: 11/3/2020  
 TIME W.L.: 0815

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 10.00 Air Knife; Fill	FILL						Stick-up -	<p><b>B-111D</b>                      Borehole Diameter: 6"  <b>WELL CASING</b>                      Interval: 0'-85'                      Material: Schedule 40 PVC                      Diameter: 2"                      Joint Type: Screw fit with rubber seam  <b>WELL SCREEN</b>                      Interval: 74.15'-84.15'                      Material: Schedule 40 PVC                      Diameter: 2"                      Slot Size: .010"                      End Cap: Schedule 40 PVC  <b>FILTER PACK</b>                      Interval: 72.1'-84.15'                      Type: FilterSil                      Quantity: 3-50 lbs bags  <b>FILTER PACK SEAL</b>                      Interval: 68.7'-72.1'                      Type: 3/8" Uncoated Pel-Plug                      Quantity: 1-5 gallon bucket  <b>ANNULUS SEAL</b>                      Interval: 0'-68.7'                      Type: AquaGuard Bentonite Grout                      Quantity: Approximately 80 gallons</p> <p><b>NOTES</b></p>
5										
10		10.00 - 15.00 (ML), SILT; tan to brown, trace fine to coarse sand, moist to wet, soft, low plasticity, w<PI, saprolite	ML		10.00					
15		15.00 - 20.00 (ML), SILT; gray and green to brown, low plasticity, w<PL, moist, soft to firm	ML		15.00	1	ROTO SONIC	10.00 10.00		
20		20.00 - 26.00 (ML), SILT; gray and green to brown, low plasticity, w<PL, moist, soft to firm, more saprolitic	ML		20.00					
25						2	ROTO SONIC	8.00 8.00		
30		26.00 - 27.00 (TWR), TRANSITIONALLY WEATHERED ROCK; silt, gray and green to brown, low plasticity, w<PL, moist, soft to firm, saprolitic, locally contains gravels of augen biotite gneiss	TWR		26.00					
30		27.00 - 34.00 (GNEISS), BEDROCK; quartz, feldspar, biotite, white to dark gray, moderately weathered, medium strong, iron staining, locally contains augened feldspars	BR		27.00	3	ROTO SONIC	1.00 2.00	AquaGuard Bentonite - Grout	
35		34.00 - 51.50 (GNEISS), BEDROCK; biotite, quartz, feldspar, white to light gray, well foliated, poorly jointed, fresh to slightly weathered, medium strong, iron staining, locally contains K-spar augens	BR		34.00	4	ROTO SONIC	2.20 4.00		
40						5	ROTO SONIC	1.70 6.00		
45						6	ROTO SONIC	10.00 10.00		
50		Log continued on next page								

BOREHOLE RECORD: MCDONOUGH MASTER LIST (2) (3) (1).GPJ | PIEDMONT.GDT 2/10/21

LOG SCALE: 1 in = 6.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 2/3/21



# RECORD OF BOREHOLE B-111D

SHEET 2 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 1668496.18  
 DRILLED DEPTH: 85.00 ft  
 LOCATION: West of DGWC-5

DRILL RIG: Geoprobe 8140LC  
 DATE STARTED: 11/1/20  
 DATE COMPLETED: 11/3/20

NORTHING: 1394303.4  
 EASTING: 2202956.4  
 GS ELEVATION: 789.1 ft  
 TOC ELEVATION: 791.87 ft

DEPTH W.L.: 8.9  
 ELEVATION W.L.: 755.30  
 DATE W.L.: 11/3/2020  
 TIME W.L.: 0815

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE		
50			BR		51.50				<p><b>B-111D</b>                      Borehole Diameter: 6"  <b>WELL CASING</b>                      Interval: 0'-85'                      Material: Schedule 40 PVC                      Diameter: 2"                      Joint Type: Screw fit with rubber seam  <b>WELL SCREEN</b>                      Interval: 74.15'-84.15'                      Material: Schedule 40 PVC                      Diameter: 2"                      Slot Size: .010"                      End Cap: Schedule 40 PVC  <b>FILTER PACK</b>                      Interval: 72.1'-84.15'                      Type: FilterSil                      Quantity: 3-5 lbs bags  <b>FILTER PACK SEAL</b>                      Interval: 68.7'-72.1'                      Type: 3/8" Uncoated Pel-Plug                      Quantity: 1-5 gallon bucket  <b>ANNULUS SEAL</b>                      Interval: 0'-68.7'                      Type: AquaGuard Bentonite Grout                      Quantity: Approximately 80 gallons</p> <p><b>NOTES</b></p>
55		51.50 - 58.00 (GNEISS), BEDROCK; feldspar, quartz, biotite, white to light gray, well foliated, poorly jointed, fresh to slightly weathered, medium strong, locally contains epidote	BR			7	ROTO SONIC 7.00 10.00		
60		58.00 - 85.00 (GNEISS), BEDROCK; biotite, feldspar, quartz, white to light gray, well foliated, poorly jointed, fresh to slightly weathered, medium to strong,	BR		58.00				
65						8	ROTO SONIC 5.00 5.00		
70						9	ROTO SONIC 5.00 5.00		
75						10	ROTO SONIC 5.00 5.00		
80						11	ROTO SONIC 10.00 10.00		
85		Boring completed at 85.00 ft							
90									
95									
100									

BOREHOLE RECORD MCDONOUGH MASTER LIST (2) (3) (1).GPJ PIEDMONT.GDT 2/10/21

LOG SCALE: 1 in = 6.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Timothy Richards, PG  
 DATE: 2/3/21





# RECORD OF BOREHOLE B-112D

SHEET 1 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 166849621  
 DRILLED DEPTH: 55.00 ft  
 LOCATION: Offset of DGWC-69

DRILL RIG: TSi 150CC  
 DATE STARTED: 3/21/21  
 DATE COMPLETED: 3/22/21

NORTHING: 1,391,564.2  
 EASTING: 2,200,664.1  
 GS ELEVATION: 766.1  
 TOC ELEVATION: 765.58 ft

DEPTH W.L.: 6.87  
 ELEVATION W.L.: 758.71  
 DATE W.L.: 4/12/2021  
 TIME W.L.: 12:18

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			PIEZOMETER DIAGRAM and NOTES	PIEZOMETER CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	PHOTO	REC		
0	765	0.00 - 7.00 CL, Silty CLAY, low plasticity; red brown; soft, dry to moist, W<PL	CL		759.1				8" Flush Mount	<b>WELL CASING</b> Interval: 0-44.7' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw  <b>WELL SCREEN</b> Interval: 44.7-54.7' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 54.7-55'  <b>FILTER PACK</b> Interval: 42.5-55' Type: #1 Filter Sand Quantity: 4-50 lbs bags  <b>FILTER PACK SEAL</b> Interval: 38.5-42.5' Type: 3/8" Uncoated Pel-Plug Quantity: 1 - 5 gallon bucket  <b>ANNULUS SEAL</b> Interval: 0-38.5' Type: AquaGuard Bentonite Grout Quantity: Approximately 80 gallons  <b>WELL COMPLETION</b> Pad: 4'x4'x4" Concrete Protective Casing: 8" Flush Mount  <b>DRILLING METHODS</b> Soil Drill: Rotosonic (6 inch casing by 4 inch core barrel) Rock Drill: Rotosonic Sample Type: Rotosonic
5	760	7.00 - 11.50 SP, SAND with trace silt and gravels, non-plasticity fine to coarse; blue-gray; soft to firm, moist, W<PL	SP		7.00			Hand Auger		
10	755	11.50 - 12.50 ML, Clayey SILT, low plasticity; brown to gray-brown; soft, moist, W<PL	ML		11.50			1	9.00 10.00	
15	750	12.50 - 16.00 SM, SILTY SAND, non to low plasticity; tan to brown to beige; loose to compact, dry, W<PL	SM		12.50					
20	745	16.00 - 20.00 TWR, Transitionally Weathered Rock; No recovery; Wash out; Driller noted the material was hard enough to drill with water (coring), but soft enough to wash away.	TWR		16.00				AquaGuard Grout	
25	740	20.00 - 30.00 Slightly to moderately weathered, well foliated, well jointed, light gray to gray, fine-medium grained, medium strong, quartz-feldspar-biotite GNEISS; locally contains vein quartz and augened potassium feldspar (K-spar)	BR		746.1			2	3.80 10.00	
30	735	30.00 - 40.00 Fresh to slightly weathered, well foliated, poorly jointed, light gray to gray, fine-medium grained, weak to medium strong, quartz-feldspar-biotite GNEISS; locally contains epidote	BR		736.1			3	7.80 10.00	
40	730	Log continued on next page			726.1				Bentonite Seal	

BOREHOLE RECORD: 166849621.GPJ\_PIEDMONT.GDT: 5/24/21

LOG SCALE: 1 in = 5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Tommy Ardito

INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Rachel Kirkman, PG  
 DATE: 5/24/21



# RECORD OF BOREHOLE B-112D

SHEET 2 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 166849621  
 DRILLED DEPTH: 55.00 ft  
 LOCATION: Offset of DGWC-69

DRILL RIG: TSi 150CC  
 DATE STARTED: 3/21/21  
 DATE COMPLETED: 3/22/21

NORTHING: 1,391,564.2  
 EASTING: 2,200,664.1  
 GS ELEVATION: 766.1  
 TOC ELEVATION: 765.58 ft

DEPTH W.L.: 6.87  
 ELEVATION W.L.: 758.71  
 DATE W.L.: 4/12/2021  
 TIME W.L.: 12:18

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			PIEZOMETER DIAGRAM and NOTES	PIEZOMETER CONSTRUCTION DETAILS		
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	PHOTO	REC				
40	725	40.00 - 50.00 Fresh to moderately weathered, well foliated, poorly jointed, light gray to gray, fine-medium grained, weak to medium strong, quartz-feldspar-biotite GNEISS; locally contains vein quartz and water staining	BR	[Red wavy lines]	40.00	4	[Photo of sample]	5.00 10.00	#1 Sand filter pack	0.010" Slotted Schedule 40 PVC	Sump	<p><b>WELL CASING</b> Interval: 0-44.7' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw</p> <p><b>WELL SCREEN</b> Interval: 44.7-54.7' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 54.7-55'</p> <p><b>FILTER PACK</b> Interval: 42.5-55' Type: #1 Filter Sand Quantity: 4-50 lbs bags</p> <p><b>FILTER PACK SEAL</b> Interval: 38.5-42.5' Type: 3/8" Uncoated Pel-Plug Quantity: 1 - 5 gallon bucket</p> <p><b>ANNULUS SEAL</b> Interval: 0-38.5' Type: AquaGuard Bentonite Grout Quantity: Approximately 80 gallons</p> <p><b>WELL COMPLETION</b> Pad: 4'x4'x4" Concrete Protective Casing: 8" Flush Mount</p> <p><b>DRILLING METHODS</b> Soil Drill: Rotosonic (6 inch casing by 4 inch core barrel) Rock Drill: Rotosonic Sample Type: Rotosonic</p>
45	720				716.1							
50	715	50.00 - 55.00 Slightly to moderately weathered, well foliated, poorly jointed, light gray to gray, fine-medium grained, medium strong to strong, potassium feldspar, plagioclase, quartz-biotite GNEISS; locally contains epidote, pegmatitic vein quartz, and augened k-spar	BR	[Red wavy lines]	50.00	5	[Photo of sample]	5.00 5.00				
55	710	Boring completed at 55.00 ft			711.1							
60	705											
65	700											
70	695											
75	690											
80												

BOREHOLE RECORD: 166849621.GPJ\_PIEDMONT.GDT: 5/24/21

LOG SCALE: 1 in = 5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Tommy Ardito

INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Rachel Kirkman, PG  
 DATE: 5/24/21



# RECORD OF BOREHOLE B-113D






SHEET 1 of 3

PROJECT: Plant McDonough  
 PROJECT NUMBER: 166849621  
 DRILLED DEPTH: 85.00 ft  
 LOCATION: Offset of B-72

DRILL RIG: TSi 150CC  
 DATE STARTED: 3/22/21  
 DATE COMPLETED: 3/30/21

NORTHING: 1,391,264.6  
 EASTING: 2,200,719.2  
 GS ELEVATION: 758.8  
 TOC ELEVATION: 758.22 ft

DEPTH W.L.: 1.46  
 ELEVATION W.L.: 756.76  
 DATE W.L.: 4/12/2021  
 TIME W.L.: 12:00

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			PIEZOMETER DIAGRAM and NOTES	PIEZOMETER CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	PHOTO	REC		
0		0.00 - 3.00 CL, Silty CLAY, low plasticity; red-brown; soft, dry to moist, W<PL	CL		755.8 3.00				8" Flush Mount	<p><b>WELL CASING</b> Interval: 0-74.4' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw</p> <p><b>WELL SCREEN</b> Interval: 74.4-84.4' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 84.4-84.7'</p> <p><b>FILTER PACK</b> Interval: 72.4-84.7' Type: #1 Filter Sand Quantity: 3.5 - 50 lbs bags</p> <p><b>FILTER PACK SEAL</b> Interval: 68.0-72.4' Type: 3/8" Uncoated Pel-Plug Quantity: 1 - 5 gallon bucket</p> <p><b>ANNULUS SEAL</b> Interval: 0-68.0' Type: AquaGuard Bentonite Grout Quantity: Approximately 80 gallons</p> <p><b>WELL COMPLETION</b> Pad: 4'x4' Concrete Protective Casing: 8" Flush Mount</p> <p><b>DRILLING METHODS</b> Soil Drill: Rotosonic (6 inch casing by 4 inch core barrel) Rock Drill: Rotosonic Sample Type: Rotosonic</p>
755		3.00 - 10.00 ML, Clayey SILT, non to low plasticity; dark brown to brown; soft, moist to wet (with depth), W<PL	ML			Hand Auger		0.00 10.00		
750					748.8 10.00					
10		10.00 - 15.50 ML, Clayey SILT with some sand, low plasticity; dark brown to brown; soft to firm, dry to moist, W<PL	ML					1	7.60 10.00	
745					743.3 15.50					
15		15.50 - 20.00 TWR, Transitional Weathered Rock; breaks down to a ML, Clayey SILT with some sand, low plasticity; dark brown to brown; soft to firm, dry to moist, W<PL	TWR							
740					738.8 20.00					
20		20.00 - 30.00 Highly weathered, poorly foliated, poorly jointed, gray to black, fine-medium grained, very weak to weak, quartz-feldspar-biotite-muscovite SCHIST; locally contains vein quartz and water staining	BR					2	3.80 10.00	
735					728.8 30.00					
25		30.00 - 35.15 Highly weathered, poorly foliated, poorly jointed, gray to black, fine-medium grained, very weak to weak, quartz-feldspar-biotite-muscovite SCHIST; locally contains vein quartz, water staining, and garnets	BR							
730					723.65 35.15					
30		35.15 - 50.00 Fresh to slightly weathered, poorly foliated, white to pink and green, very fine to medium grained, medium strong to very strong, muscovite-plagioclase-k-spar-quartz GNEISS; locally contains vein quartz, epidote, and garnets	BR					3	7.00 10.00	
725								AquaGuard Grout		
35										
720										
40		Log continued on next page								

BOREHOLE RECORD: 166849621.GPJ\_PIEDMONT.GDT: 5/24/21

LOG SCALE: 1 in = 5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Tommy Ardito

INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Rachel Kirkman, PG  
 DATE: 5/24/21





# RECORD OF BOREHOLE B-113D

SHEET 2 of 3

PROJECT: Plant McDonough  
 PROJECT NUMBER: 166849621  
 DRILLED DEPTH: 85.00 ft  
 LOCATION: Offset of B-72

DRILL RIG: TSi 150CC  
 DATE STARTED: 3/22/21  
 DATE COMPLETED: 3/30/21

NORTHING: 1,391,264.6  
 EASTING: 2,200,719.2  
 GS ELEVATION: 758.8  
 TOC ELEVATION: 758.22 ft

DEPTH W.L.: 1.46  
 ELEVATION W.L.: 756.76  
 DATE W.L.: 4/12/2021  
 TIME W.L.: 12:00

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			PIEZOMETER DIAGRAM and NOTES	PIEZOMETER CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	PHOTO	REC		
40		35.15 - 50.00 Fresh to slightly weathered, poorly foliated, white to pink and green, very fine to medium grained, medium strong to very strong, muscovite-plagioclase-k-spar-quartz GNEISS; locally contains vein quartz, epidote, and garnets <i>(Continued)</i>	BR						Bentonite Seal	#1 Filter Sand
45	715				4	6.50 10.00				
50		50.00 - 60.00 Fresh, weakly foliated, poorly jointed, light gray to greenish white, fine to medium grained, medium strong to strong, epidote-muscovite-biotite-feldspar-quartz GNEISS; locally contains garnets and pyrite.	BR		708.8 50.00				Bentonite Seal	#1 Filter Sand
55	710				5	10.00 10.00				
60		60.00 - 76.00 Fresh, weakly foliated, poorly jointed, green to white to gray, fine to medium grained, medium strong to strong, GNEISS; locally contains vein quartz and garnets	BR		698.8 60.00				Bentonite Seal	#1 Filter Sand
65	695				6	7.50 10.00				
75		76.00 - 85.00 Fresh to slightly weathered, weak to moderately foliated, poorly jointed, greenish white to gray, fine to medium grained, strong, GNEISS; locally contains folds, vein quartz, and garnets; rock becomes schistose in localized areas.	BR		682.8 76.00				Bentonite Seal	#1 Filter Sand
80	680		7	8.70 10.00						

**WELL CASING**  
 Interval: 0-74.4'  
 Material: Schedule 40 PVC  
 Diameter: 2"  
 Joint Type: Flush/Screw

**WELL SCREEN**  
 Interval: 74.4-84.4'  
 Material: Schedule 40 PVC  
 Diameter: 2"  
 Slot Size: 0.010"  
 End Cap: 84.4-84.7'

**FILTER PACK**  
 Interval: 72.4-84.7'  
 Type: #1 Filter Sand  
 Quantity: 3.5 - 50 lbs bags

**FILTER PACK SEAL**  
 Interval: 68.0-72.4'  
 Type: 3/8" Uncoated Pel-Plug  
 Quantity: 1 - 5 gallon bucket

**ANNULUS SEAL**  
 Interval: 0-68.0'  
 Type: AquaGuard Bentonite Grout  
 Quantity: Approximately 80 gallons

**WELL COMPLETION**  
 Pad: 4'x4' Concrete  
 Protective Casing: 8" Flush Mount

**DRILLING METHODS**  
 Soil Drill: Rotasonic (6 inch casing by 4 inch core barrel)  
 Rock Drill: Rotasonic  
 Sample Type: Rotasonic

BOREHOLE RECORD: 166849621.GPJ\_PIEDMONT.GDT: 5/24/21

Log continued on next page

LOG SCALE: 1 in = 5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Tommy Ardito

INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Rachel Kirkman, PG  
 DATE: 5/24/21



# RECORD OF BOREHOLE B-113D

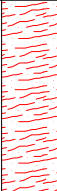

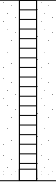
SHEET 3 of 3

PROJECT: Plant McDonough  
 PROJECT NUMBER: 166849621  
 DRILLED DEPTH: 85.00 ft  
 LOCATION: Offset of B-72

DRILL RIG: TSi 150CC  
 DATE STARTED: 3/22/21  
 DATE COMPLETED: 3/30/21

NORTHING: 1,391,264.6  
 EASTING: 2,200,719.2  
 GS ELEVATION: 758.8  
 TOC ELEVATION: 758.22 ft

DEPTH W.L.: 1.46  
 ELEVATION W.L.: 756.76  
 DATE W.L.: 4/12/2021  
 TIME W.L.: 12:00

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			PIEZOMETER DIAGRAM and NOTES	PIEZOMETER CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	PHOTO	REC		
80		76.00 - 85.00 Fresh to slightly weathered, weak to moderately foliated, poorly jointed, greenish white to gray, fine to medium grained, strong, GNEISS; locally contains folds, vein quartz, and garnets; rock becomes schistose in localized areas. <i>(Continued)</i>	BR			8		4.50 5.00	0.010" Slotted Schedule 40 PVC  Sump - 	<b>WELL CASING</b> Interval: 0-74.4' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw  <b>WELL SCREEN</b> Interval: 74.4-84.4' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 84.4-84.7'  <b>FILTER PACK</b> Interval: 72.4-84.7' Type: #1 Filter Sand Quantity: 3.5 - 50 lbs bags  <b>FILTER PACK SEAL</b> Interval: 68.0-72.4' Type: 3/8" Uncoated Pel-Plug Quantity: 1 - 5 gallon bucket  <b>ANNULUS SEAL</b> Interval: 0-68.0' Type: AquaGuard Bentonite Grout Quantity: Approximately 80 gallons  <b>WELL COMPLETION</b> Pad: 4'x4' Concrete Protective Casing: 8" Flush Mount  <b>DRILLING METHODS</b> Soil Drill: Rotosonic (6 inch casing by 4 inch core barrel) Rock Drill: Rotosonic Sample Type: Rotosonic
675		Boring completed at 85.00 ft								
85		Boring completed at 85.00 ft								
670		Boring completed at 85.00 ft								
90		Boring completed at 85.00 ft								
665		Boring completed at 85.00 ft								
95		Boring completed at 85.00 ft								
660		Boring completed at 85.00 ft								
100		Boring completed at 85.00 ft								
655		Boring completed at 85.00 ft								
105		Boring completed at 85.00 ft								
650		Boring completed at 85.00 ft								
110		Boring completed at 85.00 ft								
645		Boring completed at 85.00 ft								
115		Boring completed at 85.00 ft								
640		Boring completed at 85.00 ft								
120		Boring completed at 85.00 ft								

BOREHOLE RECORD: 166849621.GPJ - PIEDMONT.GDT: 5/24/21

LOG SCALE: 1 in = 5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Tommy Ardito

INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Rachel Kirkman, PG  
 DATE: 5/24/21



# RECORD OF BOREHOLE B-115D






SHEET 1 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 166849621  
 DRILLED DEPTH: 80.00 ft  
 LOCATION: South of overflow parking

DRILL RIG: TSi 150CC  
 DATE STARTED: 3/19/21  
 DATE COMPLETED: 3/20/21

NORTHING: 1,391,265.3  
 EASTING: 2,202,580.7  
 GS ELEVATION: 786.4  
 TOC ELEVATION: 789.17 ft

DEPTH W.L.: 19.32  
 ELEVATION W.L.: 769.85  
 DATE W.L.: 4/7/2021  
 TIME W.L.: 14:15

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			PIEZOMETER DIAGRAM and NOTES	PIEZOMETER CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	PHOTO		
0	785	0.00 - 10.00 FILL- Backfilled with cuttings from air knife clearance							<p><b>WELL CASING</b> Interval: 0-69.2' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw</p> <p><b>WELL SCREEN</b> Interval: 69.2-79.2' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 79.2-79.5'</p> <p><b>FILTER PACK</b> Interval: 66.7-79.5' Type: #1 Filter Sand Quantity: 4 - 50 lbs bags</p> <p><b>FILTER PACK SEAL</b> Interval: 62.5-66.7' Type: 3/8" Uncoated Pel-Plug Quantity: 1 - 5 gallon bucket</p> <p><b>ANNULUS SEAL</b> Interval: 0-62.5' Type: AquaGuard Bentonite Grout Quantity: Approximately 100 gallons</p> <p><b>WELL COMPLETION</b> Pad: 4'x4'x4" Concrete Protective Casing: 4"x4" Aluminium</p> <p><b>DRILLING METHODS</b> Soil Drill: Rotasonic (6 inch casing by 4 inch core barrel) Rock Drill: Rotasonic Sample Type: Rotasonic</p>
5	780				776.4	10.00	Air Knife	0.00 10.00	
10	775	10.00 - 13.00 CL, Silty CLAY with trace organics, low to moderate plasticity; dark brown; fill; soft to firm, moist, W<PL	CL		773.4	13.00		10.00 10.00	
15	770	13.00 - 18.00 SC, Clayey SAND, low plasticity, fine to coarse; dark red brown to red brown; fill; soft/loose, dry to moist, W<PL	SC		768.4	18.00		8.50 10.00	
20	765	18.00 - 20.00 ML, Clayey SILT, low plasticity; tan; soft, moist, W<PL	ML		766.4	20.00			
25	760	20.00 - 25.00 TWR, Transitional Weathered Rock; breaks down to a ML, Sandy SILT with trace cobbles, non to low plasticity; light brown to brown; soft/loose, moist, W<PL	TWR		761.4	25.00			
30	755	25.00 - 30.00 Highly to moderately weathered, well foliated, well jointed, dark gray to black, fine to medium grained, very weak to weak, muscovite SCHIST; locally is water stained	BR		756.4	30.00			
35	750	30.00 - 50.00 Fresh to moderately weathered, well foliated, well jointed, green to gray to black, fine to medium grained, very weak to medium strong, muscovite SCHIST; locally interlayered with an epidote-quartz-muscovite schistose GNEISS	BR					7.50 10.00	
40		Log continued on next page						AquaGuard Grout	

BOREHOLE RECORD: 166849621.GPJ\_PIEDMONT.GDT: 5/24/21

LOG SCALE: 1 in = 5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Tommy Ardito

INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Rachel Kirkman, PG  
 DATE: 5/24/21







# RECORD OF BOREHOLE B-116D

SHEET 1 of 3

PROJECT: Plant McDonough  
 PROJECT NUMBER: 166849621  
 DRILLED DEPTH: 90.00 ft  
 LOCATION: Offset DGWC-70A

DRILL RIG: TSi 150CC  
 DATE STARTED: 3/7/21  
 DATE COMPLETED: 3/8/21

NORTHING: 1,390,483.7  
 EASTING: 2,200,611.0  
 GS ELEVATION: 805.3  
 TOC ELEVATION: 807.82 ft

DEPTH W.L.: 40.82  
 ELEVATION W.L.: 767.00  
 DATE W.L.: 4/6/2021  
 TIME W.L.: 15:11

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			PIEZOMETER DIAGRAM and NOTES	PIEZOMETER CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	PHOTO	REC		
0	805	0.00 - 3.00 CL, Silty CLAY, low plasticity; red brown; soft to firm, moist, W<PL	CL		802.3					<p><b>WELL CASING</b> Interval: 0-79.2' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw</p> <p><b>WELL SCREEN</b> Interval: 79.2-89.2' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 89.2-89.5'</p> <p><b>FILTER PACK</b> Interval: 75.5-89.5' Type: #1 Filter Sand Quantity: 4.5 - 50 lbs bag</p> <p><b>FILTER PACK SEAL</b> Interval: 70.6-75.5' Type: 3/8" Uncoated Pel-Plug Quantity: 1 - 5 gallon bucket</p> <p><b>ANNULUS SEAL</b> Interval: 0-70.6' Type: AquaGuard Bentonite Grout Quantity: Approximately 120 gallons</p> <p><b>WELL COMPLETION</b> Pad: 4'x4' Concrete Protective Casing: 4" x 4" Aluminium</p> <p><b>DRILLING METHODS</b> Soil Drill: Rotasonic (6 inch casing by 4 inch core barrel) Rock Drill: Rotasonic Sample Type: Rotasonic</p>
5	800	3.00 - 6.00 ML, Clayey SILT with trace to some fine to coarse sand, non plasticity; brown; soft/ loose, dry to moist, W<PL	ML		799.3	Hand Auger		0.00 10.00		
		6.00 - 10.00 SM, SILTY SAND, non to low plasticity; yellow-brown to tan; loose, dry, W<PL	SM		795.3					
10	795	10.00 - 11.00 CL, Silty CLAY with some silt, low plasticity; red brown to brown; soft, moist, W<PL	CL		10.00					
		11.00 - 20.00 ML, Clayey SILT, non plasticity; brown to gray-brown; soft/ loose, moist, W<PL; locally contains books of muscovite	ML		794.3					
15	790		ML			1		13.50 10.00		
20	785	20.00 - 21.50 CL, Silty CLAY with some fine sand, low plasticity; orange brown; soft, moist, W~PL	CL		785.3					
		21.50 - 30.00 ML, Clayey SILT with trace clay and fine sand, non plasticity; brown to gray-brown; soft/ loose, moist, W<PL; locally contains books of muscovite	ML		783.8					
25	780		ML			2		15.00 10.00		
30	775	30.00 - 40.00 ML, Clayey SILT with trace fine sand and trace to some clay, non to low plasticity; gray; soft, moist, W<PL to W~PL	ML		775.3					
			ML		30.00					
35	770		ML			3		12.00 10.00	AquaGuard Grout	
40					765.3					

Log continued on next page

BOREHOLE RECORD: 166849621.GPJ\_PIEDMONT.GDT: 5/24/21

LOG SCALE: 1 in = 5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Tommy Ardito

INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Rachel Kirkman, PG  
 DATE: 5/24/21



# RECORD OF BOREHOLE B-116D

SHEET 2 of 3

PROJECT: Plant McDonough  
 PROJECT NUMBER: 166849621  
 DRILLED DEPTH: 90.00 ft  
 LOCATION: Offset DGWC-70A

DRILL RIG: TSi 150CC  
 DATE STARTED: 3/7/21  
 DATE COMPLETED: 3/8/21

NORTHING: 1,390,483.7  
 EASTING: 2,200,611.0  
 GS ELEVATION: 805.3  
 TOC ELEVATION: 807.82 ft

DEPTH W.L.: 40.82  
 ELEVATION W.L.: 767.00  
 DATE W.L.: 4/6/2021  
 TIME W.L.: 15:11

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			PIEZOMETER DIAGRAM and NOTES	PIEZOMETER CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	PHOTO	REC			
40	765	40.00 - 50.00 ML, Clayey SILT with some fine to coarse sand, non to low plasticity; gray to gray-brown; soft (becoming firm to stiff with depth), moist to wet, W<PL	ML		40.00	4		12.00	10.00	<p style="text-align: center;">Bentonite Seal</p>	<p><b>WELL CASING</b> Interval: 0-79.2' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw</p> <p><b>WELL SCREEN</b> Interval: 79.2-89.2' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 89.2-89.5'</p> <p><b>FILTER PACK</b> Interval: 75.5-89.5' Type: #1 Filter Sand Quantity: 4.5 - 50 lbs bag</p> <p><b>FILTER PACK SEAL</b> Interval: 70.6-75.5' Type: 3/8" Uncoated Pel-Plug Quantity: 1 - 5 gallon bucket</p> <p><b>ANNULUS SEAL</b> Interval: 0-70.6' Type: AquaGuard Bentonite Grout Quantity: Approximately 120 gallons</p> <p><b>WELL COMPLETION</b> Pad: 4'x4' Concrete Protective Casing: 4" x 4" Aluminium</p> <p><b>DRILLING METHODS</b> Soil Drill: Rotasonic (6 inch casing by 4 inch core barrel) Rock Drill: Rotasonic Sample Type: Rotasonic</p>
45	760				755.3			50.00			
50	755	50.00 - 54.90 TWR, Transitional Weathered Rock; breaks down to a ML, Clayey SILT with some fine to coarse sand, non to low plasticity; gray to gray-brown; soft (becoming firm to stiff with depth), moist to wet, W<PL	TWR		54.90	5		5.10	10.00		
55	750	54.90 - 90.00 Fresh to slightly weathered, well foliated, well jointed, gray to black, fine to medium grained, weak to medium strong, garnet-chlorite-quartz-biotite-muscovite SCHIST			750.4			54.90			
60	745		BR			6		7.00	10.00		
65	740										
70	735										
75	730					7		8.00	10.00		
80		Log continued on next page									

BOREHOLE RECORD: 166849621.GPJ\_PIEDMONT.GDT: 5/24/21

LOG SCALE: 1 in = 5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Tommy Ardito

INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Rachel Kirkman, PG  
 DATE: 5/24/21







# RECORD OF BOREHOLE B-117D






SHEET 1 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 166849621  
 DRILLED DEPTH: 75.00 ft  
 LOCATION: Offset of DGWC-71

DRILL RIG: TSi 150CC  
 DATE STARTED: 3/17/21  
 DATE COMPLETED: 3/17/21

NORTHING: 1,393,963.8  
 EASTING: 2,201,727.3  
 GS ELEVATION: 861.2  
 TOC ELEVATION: 863.82 ft

DEPTH W.L.: 27.88  
 ELEVATION W.L.: 835.94  
 DATE W.L.: 4/7/2021  
 TIME W.L.: 9:35

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			PIEZOMETER DIAGRAM and NOTES	PIEZOMETER CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	PHOTO	REC		
					DEPTH (ft)					
0	860	0.00 - 10.00 FILL- Backfilled with cuttings from air knife clearance		X						<p><b>WELL CASING</b> Interval: 0-64.7' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw</p> <p><b>WELL SCREEN</b> Interval: 64.7-74.7' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 74.7-75'</p> <p><b>FILTER PACK</b> Interval: 62.5- 75' Type: #1 Filter Sand Quantity: 4 - 50 lbs bags</p> <p><b>FILTER PACK SEAL</b> Interval: 58.5-62.5' Type: 3/8" Uncoated Pel-Plug Quantity: 1 - 5 gallon bucket</p> <p><b>ANNULUS SEAL</b> Interval: 0-58.5' Type: AquaGuard Bentonite Grout Quantity: Approximately 80 gallons</p> <p><b>WELL COMPLETION</b> Pad: 4'x4' Concrete Protective Casing: 4'x4' Aluminium</p> <p><b>DRILLING METHODS</b> Soil Drill: Rotosonic (6 inch casing by 4 inch core barrel) Rock Drill: Rotosonic Sample Type: Rotosonic</p>
5	855					Air Knife		0.00 10.00		
10	850	10.00 - 16.00 SM, SILTY SAND, low plasticity; red brown; soft/loose, moist, W<PL	SM		851.2 10.00	1		7.00 9.00		
15	845	16.00 - 19.00 ML, Clayey SILT with trace sand, low plasticity; light gray to white; soft, moist, W<PL	ML		845.2 16.00					
20	840	19.00 - 29.00 SM, SILTY SAND, low plasticity, very fine; light gray to tannish white; soft, moist, W<PL	SM		842.2 19.00	2		9.50 10.00		
25	835		SM			3		10.00 10.00	AquaGuard Grout	
30	830	29.00 - 39.00 SM, SILTY SAND with trace gravels, low plasticity, fine to coarse; light gray to tannish white; soft, moist (becoming dry with depth), W<PL	SM		832.2 29.00	4		9.00 10.00		
35	825		SM							
40		Log continued on next page								

BOREHOLE RECORD: 166849621.GPJ\_PIEDMONT.GDT: 5/24/21

LOG SCALE: 1 in = 5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Tommy Ardito

INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Rachel Kirkman, PG  
 DATE: 5/24/21



# RECORD OF BOREHOLE B-117D

SHEET 2 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 166849621  
 DRILLED DEPTH: 75.00 ft  
 LOCATION: Offset of DGWC-71

DRILL RIG: TSi 150CC  
 DATE STARTED: 3/17/21  
 DATE COMPLETED: 3/17/21

NORTHING: 1,393,963.8  
 EASTING: 2,201,727.3  
 GS ELEVATION: 861.2  
 TOC ELEVATION: 863.82 ft

DEPTH W.L.: 27.88  
 ELEVATION W.L.: 835.94  
 DATE W.L.: 4/7/2021  
 TIME W.L.: 9:35

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			PIEZOMETER DIAGRAM and NOTES	PIEZOMETER CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	PHOTO	REC		
40	820	39.00 - 41.00 SM, SILTY SAND with trace gravels, low plasticity, fine to coarse; light gray to tannish white; compact/dense to firm/stiff, moist (becoming dry with depth), W<PL (Continued)	SM	[Symbol]	820.2 41.00	4	[Photo]	9.00 10.00	[Piezo Diagram]	<b>WELL CASING</b> Interval: 0-64.7' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw  <b>WELL SCREEN</b> Interval: 64.7-74.7' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 74.7-75'  <b>FILTER PACK</b> Interval: 62.5- 75' Type: #1 Filter Sand Quantity: 4 - 50 lbs bags  <b>FILTER PACK SEAL</b> Interval: 58.5-62.5' Type: 3/8" Uncoated Pel-Plug Quantity: 1 - 5 gallon bucket  <b>ANNULUS SEAL</b> Interval: 0-58.5' Type: AquaGuard Bentonite Grout Quantity: Approximately 80 gallons  <b>WELL COMPLETION</b> Pad: 4'x4' Concrete Protective Casing: 4'x4' Aluminium  <b>DRILLING METHODS</b> Soil Drill: Rotasonic (6 inch casing by 4 inch core barrel) Rock Drill: Rotasonic Sample Type: Rotasonic
45	815	41.00 - 49.00 TWR, Transitional Weathered Rock; breaks down to abreaks down to aSM, SILTY SAND with trace gravels, low plasticity, fine to coarse; light gray to tannish white; compact/dense to firm/stiff, moist (becoming dry with depth), W<PL	TWR	[Symbol]	812.2 49.00					
50	810	49.00 - 75.00 Fresh to moderately weathered, well foliated, moderately jointed, gray to dark gray, fine to medium grained, medium strong, biotite-quartz-feldspar GNEISS; locally contains pegmatite and quartz veins	BR	[Symbol]	812.2 49.00	5	[Photo]	7.50 10.00	[Piezo Diagram]	
55	805		BR	[Symbol]	812.2 49.00	6	[Photo]	8.50 10.00	[Piezo Diagram]	
60	800		BR	[Symbol]	812.2 49.00	7	[Photo]	4.50 6.00	[Piezo Diagram]	
65	795		BR	[Symbol]	812.2 49.00				[Piezo Diagram]	
70	790		BR	[Symbol]	812.2 49.00				[Piezo Diagram]	
75	785	Boring completed at 75.00 ft				786.2			[Piezo Diagram]	

BOREHOLE RECORD: 166849621.GPJ\_PIEDMONT.GDT: 5/24/21

LOG SCALE: 1 in = 5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Tommy Ardito

INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Rachel Kirkman, PG  
 DATE: 5/24/21





# RECORD OF BOREHOLE B-118

SHEET 1 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 166849621  
 DRILLED DEPTH: 75.00 ft  
 LOCATION: West of gas pipeline

DRILL RIG: TSi 150CC  
 DATE STARTED: 3/8/21  
 DATE COMPLETED: 3/9/21

NORTHING: 1,391,219.3  
 EASTING: 2,200,449.7  
 GS ELEVATION: 805.0  
 TOC ELEVATION: 807.70 ft

DEPTH W.L.: 50.65  
 ELEVATION W.L.: 757.05  
 DATE W.L.: 4/6/2021  
 TIME W.L.: 9:36

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			PIEZOMETER DIAGRAM and NOTES	PIEZOMETER CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	PHOTO	REC			
0	805	0.00 - 3.00 CL, Silty CLAY with trace to some fine sand, low plasticity; dark red; soft, dry to moist, W<PL	CL		802 3.00					<p><b>WELL CASING</b> Interval: 0-64.85' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw</p> <p><b>WELL SCREEN</b> Interval: 64.85-74.85' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 74.85-75.15'</p> <p><b>FILTER PACK</b> Interval: 61.8-75.15 Type: #1 Filter Sand Quantity: 4 - 50 lbs bags</p> <p><b>FILTER PACK SEAL</b> Interval: 56.6-61.8' Type: 3/8" Uncoated Pel-Plug Quantity: 1 - 5 gallon bucket</p> <p><b>ANNULUS SEAL</b> Interval: 0-56.6' Type: AquaGuard Bentonite Grout Quantity: Approximately 80 gallons</p> <p><b>WELL COMPLETION</b> Pad: 4'x4' Concrete Protective Casing: 4" x 4" Aluminium</p> <p><b>DRILLING METHODS</b> Soil Drill: Rotasonic (6 inch casing by 4 inch core barrel) Rock Drill: Rotasonic Sample Type: Rotasonic</p>	
5	800	3.00 - 10.00 SP, SAND, non plasticity, uniformly graded; yellow-orange; loose, dry to moist, W<PL	SP			Hand Auger		0.00 10.00			
10	795	10.00 - 18.50 CL, Silty CLAY with trace to some fine sand, low plasticity; red-orange and white; soft, moist, W<PL	CL		795 10.00		1	5.00 10.00			
15	790										
20	785	18.50 - 20.00 ML, Clayey SILT with trace sand and fine gravels, non plasticity; olive brown to brown; loose, dry, W<PL	ML		786.5 18.50						
20	785	20.00 - 25.00 SP, SAND, non plasticity, fine to coarse, poorly graded; tannish-orange; loose, moist, W<PL	SP		785 20.00						
25	780	25.00 - 30.00 SM, SILTY SAND, low plasticity, fine to medium; orange to tan; loose/soft, moist, W<PL	SM		780 25.00		2	7.50 10.00			
30	775	30.00 - 32.00 ML, Sandy SILT, non plasticity; brown to dark brown; soft, moist, W<PL	ML		775 30.00		3	2.50 2.00			
35	770	32.00 - 40.00 TWR, Transitional Weathered Rock; breaks down to a SW-SM, SAND AND SILT with some gravels, non to low plasticity, fine to coarse; white; loose, wet, W<PL	TWR		773 32.00		4	1.00 6.00			AquaGuard Grout
40	765				765		5	1.50 2.00			

Log continued on next page

BOREHOLE RECORD: 166849621.GPJ\_PIEDMONT.GDT: 5/24/21

LOG SCALE: 1 in = 5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Tommy Ardito

INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Rachel Kirkman, PG  
 DATE: 5/24/21



# RECORD OF BOREHOLE B-118

SHEET 2 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 166849621  
 DRILLED DEPTH: 75.00 ft  
 LOCATION: West of gas pipeline

DRILL RIG: TSi 150CC  
 DATE STARTED: 3/8/21  
 DATE COMPLETED: 3/9/21

NORTHING: 1,391,219.3  
 EASTING: 2,200,449.7  
 GS ELEVATION: 805.0  
 TOC ELEVATION: 807.70 ft

DEPTH W.L.: 50.65  
 ELEVATION W.L.: 757.05  
 DATE W.L.: 4/6/2021  
 TIME W.L.: 9:36

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			PIEZOMETER DIAGRAM and NOTES	PIEZOMETER CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	PHOTO		
40	765	40.00 - 50.00 Slightly to moderately weathered, well foliated, moderately jointed, tan to white to gray, fine to medium grained, medium strong, plagioclase-K-spar-biotite-quartz GNEISS	BR		40.00	6		4.80 10.00	<p><b>WELL CASING</b> Interval: 0-64.85' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw</p> <p><b>WELL SCREEN</b> Interval: 64.85-74.85' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 74.85-75.15'</p> <p><b>FILTER PACK</b> Interval: 61.8-75.15 Type: #1 Filter Sand Quantity: 4 - 50 lbs bags</p> <p><b>FILTER PACK SEAL</b> Interval: 56.6-61.8' Type: 3/8" Uncoated Pel-Plug Quantity: 1 - 5 gallon bucket</p> <p><b>ANNULUS SEAL</b> Interval: 0-56.6' Type: AquaGuard Bentonite Grout Quantity: Approximately 80 gallons</p> <p><b>WELL COMPLETION</b> Pad: 4'x4' Concrete Protective Casing: 4"x4" Aluminium</p> <p><b>DRILLING METHODS</b> Soil Drill: Rotasonic (6 inch casing by 4 inch core barrel) Rock Drill: Rotasonic Sample Type: Rotasonic</p>
45	760				50.00				
50	755	50.00 - 60.00 Moderately weathered, well foliated, well jointed, tan to white to brown, fine to medium grained, weak to medium strong, plagioclase-K-spar-biotite-quartz GNEISS	BR		755	7		2.50 10.00	
55	750				60.00				
60	745	60.00 - 75.00 Fresh to slightly weathered, well foliated, poorly jointed, greenish gray to gray, fine to medium grained, medium strong, epidote-biotite-feldspar-quartz GNEISS	BR		745	8		0.00 10.00	
65	740				730				
70	735							<p>Bentonite Seal</p> <p># 1 Filter Sand</p> <p>0.010" Slotted Schedule 40 PVC</p> <p>Sump</p>	
75	730	Boring completed at 75.00 ft							
80	725								

BOREHOLE RECORD: 166849621.GPJ\_PIEDMONT.GDT: 5/24/21

LOG SCALE: 1 in = 5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Tommy Ardito

INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Rachel Kirkman, PG  
 DATE: 5/24/21



# RECORD OF BOREHOLE B-119D

SHEET 1 of 3

PROJECT: Plant McDonough  
 PROJECT NUMBER: 166849621  
 DRILLED DEPTH: 105.00 ft  
 LOCATION: Offset of B-118

DRILL RIG: TSi 150CC  
 DATE STARTED: 3/10/21  
 DATE COMPLETED: 3/16/21

NORTHING: 1,391,236.4  
 EASTING: 2,200,446.6  
 GS ELEVATION: 804.5  
 TOC ELEVATION: 807.15 ft

DEPTH W.L.: 49.94  
 ELEVATION W.L.: 757.21  
 DATE W.L.: 4/5/2021  
 TIME W.L.: 13:37

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			PIEZOMETER DIAGRAM and NOTES	PIEZOMETER CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	PHOTO	REC		
0		0.00 - 12.50 CL, Sandy CLAY, low plasticity, fine to coarse; red to red-orange; soft/loose, dry to moist, W<PL	CL							<p><b>WELL CASING</b> Interval: 0-94.7' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw</p> <p><b>WELL SCREEN</b> Interval: 94.7-104.7' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 104.7-105'</p> <p><b>FILTER PACK</b> Interval: 91.5-105' Type: #1 Filter Sand Quantity: 4.5 - 50 lbs bags</p> <p><b>FILTER PACK SEAL</b> Interval: 86.5-91.5' Type: 3/8" Uncoated Pel-Plug Quantity: 1 - 5 gallon bucket</p> <p><b>ANNULUS SEAL</b> Interval: 0-86.5' Type: AquaGuard Bentonite Grout Quantity: Approximately 160 gallons</p> <p><b>WELL COMPLETION</b> Pad: 4'x4' Concrete Protective Casing: 4" x 4" Aluminium</p> <p><b>DRILLING METHODS</b> Soil Drill: Rotasonic (6 inch casing by 4 inch core barrel) Rock Drill: Rotasonic Sample Type: Rotasonic</p>
5	800					Hand Auger		0.00 10.00		
10	795									
15	790	12.50 - 18.00 ML, Clayey SILT with some fine sand, low plasticity; pink-brown to tan; loose, dry to moist, W<PL	ML		792 12.50	1		7.50 9.00		
20	785	18.00 - 19.00 SP, SAND with trace to some silt, low plasticity, uniformly graded; white to tan; loose, dry, W<PL	SP		786.5 18.00 785.5					
		19.00 - 20.00 SC, CLAYEY SAND, moderate plasticity, fine to medium; dark brown; soft, moist, W-PL	SC		19.00 784.5					
		20.00 - 21.50 SP, SAND with some silt, low plasticity, fine; white to tan to gray; loose, dry to moist, W<PL	SP		20.00 783					
		21.50 - 23.50 SM, SILTY SAND, low plasticity; beige brown; soft, moist to wet, W-PL	SM		21.50 781					
25	780	23.50 - 27.50 ML, Clayey SILT with some fine sand, moderate plasticity; light to dark brown; soft/loose, dry to moist, W<PL	ML		23.50 777	2		9.50 10.00		
		27.50 - 29.00 SP, SAND with trace to some silt, non plasticity, fine to coarse; white to beige; loose, dry, W<PL	SP		27.50 775.5					
30	775	29.00 - 39.00 ML, Sandy SILT with trace gravels, low plasticity, fine; tan to light brown; loose, dry to moist, W<PL	ML		29.00	3		9.50 10.00	AquaGuard Grout	
35	770									
40	765		ML		765.5 39.00	4		4.50 6.00		

Log continued on next page

BOREHOLE RECORD: 166849621.GPJ\_PIEDMONT.GDT: 5/24/21

LOG SCALE: 1 in = 5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Tommy Ardito

INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Rachel Kirkman, PG  
 DATE: 5/24/21





# RECORD OF BOREHOLE B-119D


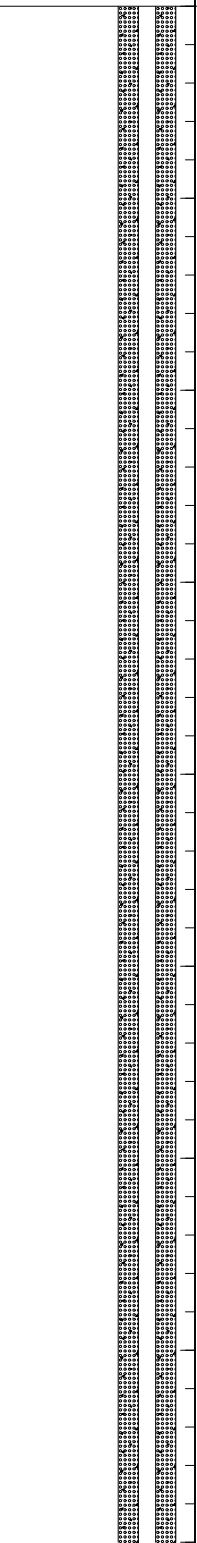




SHEET 2 of 3

PROJECT: Plant McDonough  
 PROJECT NUMBER: 166849621  
 DRILLED DEPTH: 105.00 ft  
 LOCATION: Offset of B-118

DRILL RIG: TSi 150CC  
 DATE STARTED: 3/10/21  
 DATE COMPLETED: 3/16/21

NORTHING: 1,391,236.4  
 EASTING: 2,200,446.6  
 GS ELEVATION: 804.5  
 TOC ELEVATION: 807.15 ft

DEPTH W.L.: 49.94  
 ELEVATION W.L.: 757.21  
 DATE W.L.: 4/5/2021  
 TIME W.L.: 13:37

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			PIEZOMETER DIAGRAM and NOTES	PIEZOMETER CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	PHOTO	REC		
40		39.00 - 45.00 ML, Sandy SILT with trace gravels and cobbles, low plasticity, fine; tan to light brown; loose, dry to wet, W<PL ( <i>Continued</i> )	ML		759.5 45.00	4		4.50 6.00		<p><b>WELL CASING</b> Interval: 0-94.7' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw</p> <p><b>WELL SCREEN</b> Interval: 94.7-104.7' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 104.7-105'</p> <p><b>FILTER PACK</b> Interval: 91.5-105' Type: #1 Filter Sand Quantity: 4.5 - 50 lbs bags</p> <p><b>FILTER PACK SEAL</b> Interval: 86.5-91.5' Type: 3/8" Uncoated Pel-Plug Quantity: 1 - 5 gallon bucket</p> <p><b>ANNULUS SEAL</b> Interval: 0-86.5' Type: AquaGuard Bentonite Grout Quantity: Approximately 160 gallons</p> <p><b>WELL COMPLETION</b> Pad: 4'x4' Concrete Protective Casing: 4"x4" Aluminium</p> <p><b>DRILLING METHODS</b> Soil Drill: Rotosonic (6 inch casing by 4 inch core barrel) Rock Drill: Rotosonic Sample Type: Rotosonic</p>
45	760	45.00 - 50.00 TWR, Transitional Weathered Rock; breaks down to a SM, SILTY SAND with trace gravels(weatherd gneiss) low plasticity; light gray to tan; firm/compact, moist to wet, W<PL	TWR	▲ ▲ ▲ ▲	754.5 50.00	5		6.00 5.00		
50	755	50.00 - 53.40 Slightly to moderately weathered, well foliated, moderately jointed, gray to brown, fine grained, weak to medium strong, muscovite-quartz-feldspar-biotite GNEISS	BR	~ ~ ~ ~	751.1 53.40	6		6.20 10.00		
55	750	53.40 - 60.00 TWR, Transitional Weathered Rock; breaks down to a SM, SILTY SAND, low plasticity; grayish brown to gray; loose, dry to moist, W<PL	TWR	▲ ▲ ▲ ▲	744.5 60.00					
60	745	60.00 - 67.00 Slightly to moderately weathered, well foliated, moderately jointed, gray to brown, fine grained, weak to medium strong, muscovite-quartz-feldspar-biotite GNEISS	BR	~ ~ ~ ~	737.5 67.00	7		4.00 10.00		
65	740									
70	735	67.00 - 87.00 Fresh to slightly weathered, moderately foliated, poorly jointed, dark gray to black, very fine to fine grained, medium strong, feldspar-quartz-biotite GNEISS	BR	~ ~ ~ ~		8		8.50 10.00		
75	730									
80	725									

Log continued on next page

BOREHOLE RECORD: 166849621.GPJ\_PIEDMONT.GDT: 5/24/21

LOG SCALE: 1 in = 5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Tommy Ardito

INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Rachel Kirkman, PG  
 DATE: 5/24/21



# RECORD OF BOREHOLE B-119D

SHEET 3 of 3

PROJECT: Plant McDonough  
 PROJECT NUMBER: 166849621  
 DRILLED DEPTH: 105.00 ft  
 LOCATION: Offset of B-118

DRILL RIG: TSi 150CC  
 DATE STARTED: 3/10/21  
 DATE COMPLETED: 3/16/21

NORTHING: 1,391,236.4  
 EASTING: 2,200,446.6  
 GS ELEVATION: 804.5  
 TOC ELEVATION: 807.15 ft

DEPTH W.L.: 49.94  
 ELEVATION W.L.: 757.21  
 DATE W.L.: 4/5/2021  
 TIME W.L.: 13:37

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			PIEZOMETER DIAGRAM and NOTES	PIEZOMETER CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	PHOTO		
80		67.00 - 87.00 Fresh to slightly weathered, moderately foliated, poorly jointed, dark gray to black, very fine to fine grained, medium strong, feldspar-quartz-biotite GNEISS (Continued)	BR					Bentonite Seal # 1 Filter Sand  0.010" Slotted Schedule 40 PVC  Sump	<b>WELL CASING</b> Interval: 0-94.7' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw  <b>WELL SCREEN</b> Interval: 94.7-104.7' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 104.7-105'  <b>FILTER PACK</b> Interval: 91.5-105' Type: #1 Filter Sand Quantity: 4.5 - 50 lbs bags  <b>FILTER PACK SEAL</b> Interval: 86.5-91.5' Type: 3/8" Uncoated Pel-Plug Quantity: 1 - 5 gallon bucket  <b>ANNULUS SEAL</b> Interval: 0-86.5' Type: AquaGuard Bentonite Grout Quantity: Approximately 160 gallons  <b>WELL COMPLETION</b> Pad: 4'x4'x4" Concrete Protective Casing: 4"x4" Aluminium  <b>DRILLING METHODS</b> Soil Drill: Rotasonic (6 inch casing by 4 inch core barrel) Rock Drill: Rotasonic Sample Type: Rotasonic
85	720				9	7.00 10.00			
		87.00 - 90.00 Fresh to slightly weathered, poor to moderately foliated, poorly jointed, dark gray to black, medium grained, medium strong, chlorite-epidote-quartz-feldspar-biotite GNEISS	BR			717.5 87.00			
90	715				714.5 90.00				
95	710	90.00 - 105.00 Fresh to slightly weathered, foliated, poorly jointed, light gray to dark gray, fine to medium grained, medium strong to strong, feldspar-biotite-quartz GNEISS; locally contains garnets and k-spar augens	BR			9.00 10.00			
100	705				11	4.90 5.00			
105	700	Boring completed at 105.00 ft				699.5			
110	695								
115	690								
120	685								

BOREHOLE RECORD: 166849621.GPJ\_PIEDMONT.GDT: 5/24/21

LOG SCALE: 1 in = 5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Tommy Ardito

INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Rachel Kirkman, PG  
 DATE: 5/24/21



# RECORD OF BOREHOLE B-120D

SHEET 1 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 166849621  
 DRILLED DEPTH: 70.00 ft  
 LOCATION: Offset of B-3

DRILL RIG: TSi 150CC  
 DATE STARTED: 3/5/21  
 DATE COMPLETED: 3/6/21

NORTHING: 1,394,047.2  
 EASTING: 2,202,436.4  
 GS ELEVATION: 834.0  
 TOC ELEVATION: 836.42 ft

DEPTH W.L.: 33.76  
 ELEVATION W.L.: 802.66  
 DATE W.L.: 4/9/2021  
 TIME W.L.: 12:26

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			PIEZOMETER DIAGRAM and NOTES	PIEZOMETER CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	PHOTO	REC		
0		0.00 - 10.00 FILL- Backfilled with cuttings from air knife clearance								<p><b>WELL CASING</b> Interval: 0-59' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw</p> <p><b>WELL SCREEN</b> Interval: 59-69' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 69.0-69.3'</p> <p><b>FILTER PACK</b> Interval: 56.0-69.3' Type: #1 Filter Sand Quantity: 5.5 - 50 lbs bags</p> <p><b>FILTER PACK SEAL</b> Interval: 53-56' Type: 3/8" Uncoated Pel-Plug Quantity: 1 - 5 gallon bucket</p> <p><b>ANNULUS SEAL</b> Interval: 0-53' Type: AquaGuard Bentonite Grout Quantity: Approximately 80 gallons</p> <p><b>WELL COMPLETION</b> Pad: 4'x4'x4" Concrete Protective Casing: 4"x4" Aluminium</p> <p><b>DRILLING METHODS</b> Soil Drill: Rotasonic (6 inch casing by 4 inch core barrel) Rock Drill: Rotasonic Sample Type: Rotasonic</p>
5					Air Knife		0.00 10.00			
10		10.00 - 20.00 ML, Clayey SILT with trace medium to coarse sand, non to low plasticity; tan to brown; loose, dry to moist, W<PL	ML		824 10.00	1	6.80 10.00			
15										
20		20.00 - 27.00 SM, SILTY SAND with some gravels, non plasticity; light gray to gray; loose, dry to moist, W<PL	SM		814 20.00	2	10.00 10.00			
25										
30		27.00 - 30.00 ML, Clayey SILT with trace medium to coarse sand, non to low plasticity; tan to brown; loose, dry to moist, W<PL	ML		807 27.00					
35		30.00 - 36.00 SM, SILTY SAND with trace fine to coarse gravels, non plasticity; tan to brown; compact to dense, dry to moist, W<PL	SM		804 30.00	3	8.00 10.00	AquaGuard Grout		
40		36.00 - 40.00 TWR, Transitional Weathered Rock; breaks down to a SM, SILTY SAND with trace fine to coarse gravels, non plasticity; olive to tan to brown; compact to dense, dry to moist, W<PL	TWR		798 36.00					
		Log continued on next page			794					

BOREHOLE RECORD: 166849621.GPJ\_PIEDMONT.GDT: 5/24/21

LOG SCALE: 1 in = 5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Tommy Ardito

INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Rachel Kirkman, PG  
 DATE: 5/24/21





# RECORD OF BOREHOLE B-120D

SHEET 2 of 2

PROJECT: Plant McDonough  
 PROJECT NUMBER: 166849621  
 DRILLED DEPTH: 70.00 ft  
 LOCATION: Offset of B-3

DRILL RIG: TSi 150CC  
 DATE STARTED: 3/5/21  
 DATE COMPLETED: 3/6/21

NORTHING: 1,394,047.2  
 EASTING: 2,202,436.4  
 GS ELEVATION: 834.0  
 TOC ELEVATION: 836.42 ft

DEPTH W.L.: 33.76  
 ELEVATION W.L.: 802.66  
 DATE W.L.: 4/9/2021  
 TIME W.L.: 12:26

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			PIEZOMETER DIAGRAM and NOTES	PIEZOMETER CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	PHOTO		
40		40.00 - 70.00 Fresh to slightly weathered, well foliated, poorly jointed, white to dark gray, fine to coarse grained, biotite-feldspar-quartz GNEISS; locally the feldspars are augened	BR	[Red hatched pattern]	40.00			<p style="font-size: small;">Bentonite Seal # 1 Filter Sand 0.010" Slotted Schedule 40 PVC Sump</p>	<p><b>WELL CASING</b> Interval: 0-59' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw</p> <p><b>WELL SCREEN</b> Interval: 59-69' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 69.0-69.3'</p> <p><b>FILTER PACK</b> Interval: 56.0-69.3' Type: #1 Filter Sand Quantity: 5.5 - 50 lbs bags</p> <p><b>FILTER PACK SEAL</b> Interval: 53-56' Type: 3/8" Uncoated Pel-Plug Quantity: 1 - 5 gallon bucket</p> <p><b>ANNULUS SEAL</b> Interval: 0-53' Type: AquaGuard Bentonite Grout Quantity: Approximately 80 gallons</p> <p><b>WELL COMPLETION</b> Pad: 4'x4' Concrete Protective Casing: 4"x4" Aluminium</p> <p><b>DRILLING METHODS</b> Soil Drill: Rotasonic (6 inch casing by 4 inch core barrel) Rock Drill: Rotasonic Sample Type: Rotasonic</p>
45	790				4	7.80 10.00			
50	785				5	6.20 10.00			
55	780				5	6.20 10.00			
60	775				6	8.50 10.00			
65	770				6	8.50 10.00			
70		Boring completed at 70.00 ft			764				
75	760								
80	755								

BOREHOLE RECORD: 166849621.GPJ\_PIEDMONT.GDT: 5/24/21

LOG SCALE: 1 in = 5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Tommy Ardito

INSPECTOR: Michael Boatman, PG  
 CHECKED BY: Rachel Kirkman, PG  
 DATE: 5/24/21



# RECORD OF BOREHOLE DGWC-121

SHEET 1 of 2

PROJECT: SCS Plant McDonough  
 PROJECT NUMBER: GL166849621  
 DRILLED DEPTH: 50.00 ft  
 LOCATION: Smyrna, GA

DRILL RIG: Terra Sonic 150T  
 Truck-Mounted Sonic  
 DATE STARTED: 3/22/22  
 DATE COMPLETED: 3/22/22

NORTHING: 1,390,739.7  
 EASTING: 2,200,849.4  
 GS ELEVATION: 764.52  
 TOC ELEVATION: 764.16 ft

DEPTH W.L.: 9.4'  
 ELEVATION W.L.: 755.12  
 DATE W.L.: 3/22/22  
 TIME W.L.: 19:25

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	PHOTO	REC		
0		0.00 - 8.00 Fill material								<p><b>WELL CASING</b> Interval: 0'-39.7' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded</p> <p><b>WELL SCREEN</b> Interval: 39.7'-49.7' Material: 0.010" Slotted Diameter: 2" Slot Size: 0.010" End Cap: 3"</p> <p><b>FILTER PACK</b> Interval: 37.5'-49.7' Type: Filter Sil - Filtration sand and gravel, industrial quartz Quantity: 3.5 x 50 lb bag</p> <p><b>FILTER PACK SEAL</b> Interval: 34'-37.5' Type: Pel Plug Bentonite Pellets Quantity: 1 x 50 lb bucket</p> <p><b>ANNULUS SEAL</b> Interval: 0'-34' Type: Aquaguard bentonite grout Quantity: 2 bags Aquaguard + 40 gal water</p> <p><b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum</p> <p><b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic Sample Type: Sonic</p>
5	760					1	6.50 10.00			
		8.00 - 10.00 MH, CLAYEY SILT; very micaceous, little fine to coarse sand, brown/red brown, saprolitic, dry	MH		756.52 8.00					
10	755				754.52 10.00					
		10.00 - 20.00 ML, fine sandy SILT; very micaceous, little clay, brown to dark brown, saprolitic, crenulated, dry	ML			2	9.75 10.00			
15	750									
		20.00 - 29.50 SW-ML, fine SAND and SILT; very micaceous, little clay, dark brown to brown, iron staining, saprolitic, moist			744.52 20.00					
20	745					3	9.75 10.00			
		29.50 - 30.00 TWR, Transitionally Weathered Rock; muscovite schist	TWR		735.02 30.00					
25	740									
		30.00 - 40.00 TWR; fine to coarse gravel with fine sandy silt, little clay, friable, very micaceous, brown to dark brown, orange iron staining in soils, moist	TWR			4	9.75 10.00	Pel Plug Bentonite Pellets		
30	735									
		40.00 - 48.50 TWR; same as above	TWR		724.52 40.00			Filter Sil Filtration sand and gravel 0.010" Slotted Schedule 40 PVC U-pack Screen		
35	730					5	7.50 10.00			
		48.50 - 50.00 muscovite SCHIST, fine to coarse grained, medium strong,			716.02 48.50 714.52					
40	725									
45	720									
50	715									

BOREHOLE RECORD: PLANT MCDONOUGH\_DGWC-121, B-122D, B-123D, GPJ, PIEDMONT, GDT, 5/13/22

LOG SCALE: 1 in = 6.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Corey Franklin

GA INSPECTOR: Connor Mikilitus  
 CHECKED BY: Rachel Kirkman, PG  
 DATE: 5/10/22



Log continued on next page

# RECORD OF BOREHOLE DGWC-121

SHEET 2 of 2

PROJECT: SCS Plant McDonough  
 PROJECT NUMBER: GL166849621  
 DRILLED DEPTH: 50.00 ft  
 LOCATION: Smyrna, GA

DRILL RIG: Terra Sonic 150T  
 Truck-Mounted Sonic  
 DATE STARTED: 3/22/22  
 DATE COMPLETED: 3/22/22

NORTHING: 1,390,739.7  
 EASTING: 2,200,849.4  
 GS ELEVATION: 764.52  
 TOC ELEVATION: 764.16 ft

DEPTH W.L.: 9.4'  
 ELEVATION  
 W.L.: 755.12  
 DATE W.L.: 3/22/22  
 TIME W.L.: 19:25

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	PHOTO	REC		
50		slightly to moderately weathered, slightly to moderately fractured, some iron staining  Boring completed at 50.00 ft							<b>WELL CASING</b> Interval: 0'-39.7' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 39.7'-49.7' Material: 0.010" Slotted Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 37.5'-49.7' Type: Filter Sil - Filtration sand and gravel, industrial quartz Quantity: 3.5 x 50 lb bag  <b>FILTER PACK SEAL</b> Interval: 34'-37.5' Type: Pel Plug Bentonite Pellets Quantity: 1 x 50 lb bucket  <b>ANNULUS SEAL</b> Interval: 0'-34' Type: Aquaguard bentonite grout Quantity: 2 bags Aquaguard + 40 gal water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic Sample Type: Sonic	
55	710									
60	705									
65	700									
70	695									
75	690									
80	685									
85	680									
90	675									
95	670									
100	665									

BOREHOLE RECORD PLANT MCDONOUGH\_DGWC-121, B-122D, B-123D.GPJ - PIEDMONT.GDT 5/13/22

LOG SCALE: 1 in = 6.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Corey Franklin

GA INSPECTOR: Connor Mikilitus  
 CHECKED BY: Rachel Kirkman, PG  
 DATE: 5/10/22





# RECORD OF BOREHOLE B-122D

SHEET 1 of 2

PROJECT: SCS Plant McDonough  
 PROJECT NUMBER: GL166849621  
 DRILLED DEPTH: 85.00 ft  
 LOCATION: Smyrna, GA

DRILL RIG: Terra Sonic 150T  
 Truck-Mounted Sonic  
 DATE STARTED: 3/24/22  
 DATE COMPLETED: 3/24/22

NORTHING: 1,390,992.8  
 EASTING: 2,202,975.4  
 GS ELEVATION: 777.32  
 TOC ELEVATION: 777.03 ft

DEPTH W.L.: 30.25  
 ELEVATION W.L.: 747.07  
 DATE W.L.: 3/25/22  
 TIME W.L.: 8:15

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	PHOTO	REC		
0	775	0.00 - 10.00 FILL, CL, SILTY CLAY, moist, micaceous, trace of organics; air knifed for utility clearance			767.32	1		NA 10.00		<p><b>WELL CASING</b> Interval: 0'-69.8' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded</p> <p><b>WELL SCREEN</b> Interval: 69.8'-79.8' Material: 0.010" Slotted Diameter: 2" Slot Size: 0.010" End Cap: 3"</p> <p><b>FILTER PACK</b> Interval: 67.8'-85' Type: Filter Sil - Filtration sand and gravel, industrial quartz Quantity: 5 x 50 lb bag</p> <p><b>FILTER PACK SEAL</b> Interval: 64.2'-67.8' Type: Pel Plug Bentonite Pellets Quantity: 1 x 50 lb bucket</p> <p><b>ANNULUS SEAL</b> Interval: 0'-64.2' Type: Aquaguard bentonite grout Quantity: 3 batches of 2 bags Aquaguard + 40 gal water</p> <p><b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum</p> <p><b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic Sample Type: Sonic</p>
5	770				757.32	2	8.50 10.00			
10	765	10.00 - 20.00 CL, SILTY CLAY, moist, high plasticity, little fine to coarse gravel, orange to brown, schist fragments	CH		757.32	2	8.50 10.00			
15	760				757.32	2	8.50 10.00			
20	755	20.00 - 30.00 SP-SM, SAND and SILT, dark brown, iron staining, low plasticity, weathered boulder encountered, muscovite, biotite schist boulder			747.32	3	6.50 10.00			
25	750		SP-SM		747.32	3	6.50 10.00			
30	745	30.00 - 40.00 SP-SM, SAND, moist, dark gray, fine grained, trace of organics, rounded shape			737.32	4	9.75 10.00			
35	740		SP-SM		737.32	4	9.75 10.00			
40	735	40.00 - 41.00 SP-SM, SILTY SAND, dark brown, little iron staining, fine, rounded shape			40.00 736.32	5	9.75 10.00			
45	730	41.00 - 50.00 muscovite biotite SCHIST, strong, fresh to slightly weathered, slightly fractured, fine to coarse grains, little iron staining			41.00	5	9.75 10.00			
50	727.32	Log continued on next page			727.32					

BOREHOLE RECORD PLANT MCDONOUGH\_DGWC-121, B-122D, B-123D.GPJ - PIEDMONT.GDT 5/13/22

LOG SCALE: 1 in = 6.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Corey Franklin

GA INSPECTOR: Connor Mikilitus  
 CHECKED BY: Rachel Kirkman, PG  
 DATE: 5/10/22



# RECORD OF BOREHOLE B-122D

SHEET 2 of 2

PROJECT: SCS Plant McDonough  
 PROJECT NUMBER: GL166849621  
 DRILLED DEPTH: 85.00 ft  
 LOCATION: Smyrna, GA

DRILL RIG: Terra Sonic 150T  
 Truck-Mounted Sonic  
 DATE STARTED: 3/24/22  
 DATE COMPLETED: 3/24/22

NORTHING: 1,390,992.8  
 EASTING: 2,202,975.4  
 GS ELEVATION: 777.32  
 TOC ELEVATION: 777.03 ft

DEPTH W.L.: 30.25  
 ELEVATION W.L.: 747.07  
 DATE W.L.: 3/25/22  
 TIME W.L.: 8:15

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	PHOTO	REC		
50		50.00 - 60.00 Muscovite biotite SCHIST, strong, fresh, unfractured, fine to coarse grains		[Graphic Log Pattern]	50.00				<p style="font-size: small;">Pel Plug Bentonite Pellets Filter Sil Filtration sand and gravel 0.010" Slotted Schedule 40 PVC U-pack Screen</p>	<p><b>WELL CASING</b> Interval: 0'-69.8' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded</p> <p><b>WELL SCREEN</b> Interval: 69.8'-79.8' Material: 0.010" Slotted Diameter: 2" Slot Size: 0.010" End Cap: 3"</p> <p><b>FILTER PACK</b> Interval: 67.8'-85' Type: Filter Sil - Filtration sand and gravel, industrial quartz Quantity: 5 x 50 lb bag</p> <p><b>FILTER PACK SEAL</b> Interval: 64.2'-67.8' Type: Pel Plug Bentonite Pellets Quantity: 1 x 50 lb bucket</p> <p><b>ANNULUS SEAL</b> Interval: 0'-64.2' Type: Aquaguard bentonite grout Quantity: 3 batches of 2 bags Aquaguard + 40 gal water</p> <p><b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum</p> <p><b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic Sample Type: Sonic</p>
725						6	6.50 10.00			
55										
720										
60		60.00 - 65.00 Same as above			717.32 60.00					
715										
65		65.00 - 70.00 muscovite biotite SCHIST, strong, fresh to slightly weathered, slightly fractured, fine to coarse grained, traces of iron staining			712.32 65.00	7	9.50 10.00			
710										
70		70.00 - 73.00 Same as above, some iron staining, slightly to moderately fractured			707.32 70.00					
705										
75		73.00 - 80.00 muscovite biotite SCHIST, strong fresh, unfractured, fine to coarse grained			704.32 73.00	8	9.20 10.00			
700										
80		80.00 - 85.00 muscovite biotite SCHIST, strong fresh to slightly weathered, slightly fractured, fine to coarse grained, trace to little iron staining			697.32 80.00	9	5.00 5.00			
695										
85		Boring completed at 85.00 ft			692.32					
690										
90										
685										
95										
680										
100										

BOREHOLE RECORD PLANT MCDONOUGH\_DGWC-121, B-122D, B-123D.GPJ - PIEDMONT.GDT 5/13/22

LOG SCALE: 1 in = 6.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Corey Franklin

GA INSPECTOR: Connor Mikilitus  
 CHECKED BY: Rachel Kirkman, PG  
 DATE: 5/10/22



# RECORD OF BOREHOLE B-123D

SHEET 1 of 4

PROJECT: SCS Plant McDonough  
 PROJECT NUMBER: GL166849621  
 DRILLED DEPTH: 160.00 ft  
 LOCATION: Smyrna, GA

DRILL RIG: Terra Sonic 150T  
 Truck-Mounted Sonic  
 DATE STARTED: 3/25/22  
 DATE COMPLETED: 4/4/22

NORTHING: 1,391,234.4  
 EASTING: 2,202,608.4  
 GS ELEVATION: 778.85  
 TOC ELEVATION: 781.80 ft

DEPTH W.L.: 13.2  
 ELEVATION W.L.: 765.65  
 DATE W.L.: 4/4/22  
 TIME W.L.: 14:55

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	PHOTO		
0		0.00 - 10.00 FILL, CL, SILTY CLAY, moist, micaceous, trace of organics; Air knifed for utility clearance	CL		768.85	1			<p><b>WELL CASING</b> Interval: 0'-110' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded</p> <p><b>WELL SCREEN</b> Interval: 110'-160' Material: 0.010" Slotted Diameter: 2" Slot Size: 0.010" End Cap: 3"</p> <p><b>FILTER PACK</b> Interval: 107.3'-160' Type: Filter Sil - Filtration sand and gravel, industrial quartz Quantity: 16 x 50 lb bag</p> <p><b>FILTER PACK SEAL</b> Interval: 62.5'-107.3' Type: Pel Plug Bentonite Pellets / Haliburton Bentonite Chips 3/8" Quantity: 3 x 50 lb bucket, 10 bags chips</p> <p><b>ANNULUS SEAL</b> Interval: 0'-55.5' Type: Aquaguard bentonite grout Quantity: 2.5 batches of 2 bags Aquaguard + 40 gal water</p> <p><b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum</p> <p><b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic Sample Type: Sonic</p>
5						NA	10.00		
10		10.00 - 20.00 ML-CH, SILT and CLAY, moist, red, orange, brown, some fine sand, trace of fine schist gravel, micaceous	ML-CH		758.85	2	9.75 10.00		
15									
20		20.00 - 28.00 Same as above	ML-CH		750.85	3	8.50 10.00		
25									
30		28.00 - 30.00 ML, sandy SILT, moist, gray, fine, trace of coarse gravel	ML		748.85				
35		30.00 - 31.50 Same as above	ML		30.00				
40		31.50 - 40.00 muscovite biotite SCHIST, fine grained, strong, slightly to moderately weathered, slight, fractured, some iron staining			747.35	4	9.75 10.00		
45									
50		40.00 - 50.00 muscovite biotite garnet SCHIST, fine to coarse grained, strong, fresh to slightly weathered, slightly fractured, traces iron staining			738.85	5	7.50 10.00		
55									
60					728.85				

BOREHOLE RECORD PLANT MCDONOUGH\_DGWC-121, B-122D, B-123D.GPJ, PIEDMONT.GDT, 5/13/22

Log continued on next page

LOG SCALE: 1 in = 6.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Corey Franklin

GA INSPECTOR: Connor Mikilitus  
 CHECKED BY: Rachel Kirkman, PG  
 DATE: 5/10/22





# RECORD OF BOREHOLE B-123D

SHEET 2 of 4

PROJECT: SCS Plant McDonough  
 PROJECT NUMBER: GL166849621  
 DRILLED DEPTH: 160.00 ft  
 LOCATION: Smyrna, GA

DRILL RIG: Terra Sonic 150T  
 Truck-Mounted Sonic  
 DATE STARTED: 3/25/22  
 DATE COMPLETED: 4/4/22

NORTHING: 1,391,234.4  
 EASTING: 2,202,608.4  
 GS ELEVATION: 778.85  
 TOC ELEVATION: 781.80 ft

DEPTH W.L.: 13.2  
 ELEVATION W.L.: 765.65  
 DATE W.L.: 4/4/22  
 TIME W.L.: 14:55

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS		
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	PHOTO	REC				
50		50.00 - 60.00 muscovite biotite SCHIST, fine to coarse grained, strong, fresh to slightly weathered, slightly fractured, traces of iron staining		[Graphic Log Pattern]	50.00					<p><b>WELL CASING</b> Interval: 0'-110' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded</p> <p><b>WELL SCREEN</b> Interval: 110'-160' Material: 0.010" Slotted Diameter: 2" Slot Size: 0.010" End Cap: 3"</p> <p><b>FILTER PACK</b> Interval: 107.3'-160' Type: Filter Sil - Filtration sand and gravel, industrial quartz Quantity: 16 x 50 lb bag</p> <p><b>FILTER PACK SEAL</b> Interval: 62.5'-107.3' Type: Pel Plug Bentonite Pellets / Haliburton Bentonite Chips 3/8" Quantity: 3 x 50 lb bucket, 10 bags chips</p> <p><b>ANNULUS SEAL</b> Interval: 0'-55.5' Type: Aquaguard bentonite grout Quantity: 2.5 batches of 2 bags Aquaguard + 40 gal water</p> <p><b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum</p> <p><b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic Sample Type: Sonic</p>		
725						6	9.30 10.00					
55												
720												
60		60.00 - 70.00 muscovite biotite chlorite SCHIST, fine to coarse grained, strong, fresh, unfractured to slightly fractured, trace of iron staining		[Graphic Log Pattern]	718.85 60.00			7			9.50 10.00	
715												
65												
710												
70		70.00 - 80.00 muscovite biotite SCHIST, fine to coarse grained, strong, fresh, unfractured to slightly weathered, slightly fractured, secondary mineralization of fractures, trace of iron staining		[Graphic Log Pattern]	708.85 70.00						8	9.50 10.00
705												
75												
700												
80		80.00 - 90.00 muscovite biotite SCHIST, fine to coarse grained, strong, fresh, unfractured to slightly weathered, slightly fractured, secondary mineralization of fractures, trace of iron staining		[Graphic Log Pattern]	698.85 80.00				9	7.50 10.00		
695												
85												
690												
90		90.00 - 100.00 muscovite biotite SCHIST, fine to coarse grained, strong, fresh, fresh to slightly weathered, unfractured to slightly fractured		[Graphic Log Pattern]	688.85 90.00				10	8.00 10.00		
685												
95												
680												
100		Log continued on next page			678.85							

BOREHOLE RECORD PLANT MCDONOUGH\_DGWC-121, B-122D, B-123D, GPJ - PIEDMONT, GDT 5/13/22

LOG SCALE: 1 in = 6.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Corey Franklin

GA INSPECTOR: Connor Mikilitus  
 CHECKED BY: Rachel Kirkman, PG  
 DATE: 5/10/22



# RECORD OF BOREHOLE B-123D

SHEET 3 of 4

PROJECT: SCS Plant McDonough  
 PROJECT NUMBER: GL166849621  
 DRILLED DEPTH: 160.00 ft  
 LOCATION: Smyrna, GA

DRILL RIG: Terra Sonic 150T  
 Truck-Mounted Sonic  
 DATE STARTED: 3/25/22  
 DATE COMPLETED: 4/4/22

NORTHING: 1,391,234.4  
 EASTING: 2,202,608.4  
 GS ELEVATION: 778.85  
 TOC ELEVATION: 781.80 ft

DEPTH W.L.: 13.2  
 ELEVATION W.L.: 765.65  
 DATE W.L.: 4/4/22  
 TIME W.L.: 14:55

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	PHOTO		
100		100.00 - 110.00 muscovite biotite SCHIST, fine to coarse grained, strong, fresh, fresh to slightly weathered, unfractured to slightly fractured		[Graphic Log Pattern]	100.00				<p><b>WELL CASING</b> Interval: 0'-110' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded</p> <p><b>WELL SCREEN</b> Interval: 110'-160' Material: 0.010" Slotted Diameter: 2" Slot Size: 0.010" End Cap: 3"</p> <p><b>FILTER PACK</b> Interval: 107.3'-160' Type: Filter Sil - Filtration sand and gravel, industrial quartz Quantity: 16 x 50 lb bag</p> <p><b>FILTER PACK SEAL</b> Interval: 62.5'-107.3' Type: Pel Plug Bentonite Pellets / Haliburton Bentonite Chips 3/8" Quantity: 3 x 50 lb bucket, 10 bags chips</p> <p><b>ANNULUS SEAL</b> Interval: 0'-55.5' Type: Aquaguard bentonite grout Quantity: 2.5 batches of 2 bags Aquaguard + 40 gal water</p> <p><b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum</p> <p><b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic Sample Type: Sonic</p>
675					668.85	11	9.75 10.00		
105		110.00 - 120.00 muscovite Biotite SCHIST, fine to coarse grained, strong, fresh to slightly weathered, slightly fractured, secondary mineralization of fractures with calcite @ 114' bgs, measured -0.018 gallons per minute (gpm) from borehole geophysics heat-pulse flow meter (HPFM), trace vein quartz		[Graphic Log Pattern]	110.00				
670					658.85	12	8.25 10.00		
110		120.00 - 130.00 Same as above. Water producing fracture at 129.5' identified using borehole geophysics		[Graphic Log Pattern]	120.00				
665					648.85	13	9.75 10.00		
115		130.00 - 140.00 Same as above; Trace secondary mineralization of calcite within fractures @ 131 bgs, water producing fracture at 130.5' identified using borehole geophysics, measured -0.027 gallons per minute (gpm) from HPFM		[Graphic Log Pattern]	130.00				
660					638.85	14	9.00 10.00		
120		140.00 - 150.00 muscovite biotite, garnet SCHIST, fine to coarse grained, strong, fresh to slightly weathered, slightly fractured, calcite precipitation @ 145' bgs		[Graphic Log Pattern]	140.00				
655					628.85	15	9.00 10.00		
125									
650									
130									
645									
135									
640									
140									
635									
145									
630									
150		Log continued on next page							

BOREHOLE RECORD PLANT MCDONOUGH\_DGWC-121, B-122D, B-123D.GPJ - PIEDMONT.GDT 5/13/22

LOG SCALE: 1 in = 6.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Corey Franklin

GA INSPECTOR: Connor Mikilitus  
 CHECKED BY: Rachel Kirkman, PG  
 DATE: 5/10/22



# RECORD OF BOREHOLE B-123D


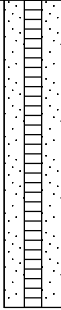
SHEET 4 of 4

PROJECT: SCS Plant McDonough  
 PROJECT NUMBER: GL166849621  
 DRILLED DEPTH: 160.00 ft  
 LOCATION: Smyrna, GA

DRILL RIG: Terra Sonic 150T  
 Truck-Mounted Sonic  
 DATE STARTED: 3/25/22  
 DATE COMPLETED: 4/4/22

NORTHING: 1,391,234.4  
 EASTING: 2,202,608.4  
 GS ELEVATION: 778.85  
 TOC ELEVATION: 781.80 ft

DEPTH W.L.: 13.2  
 ELEVATION W.L.: 765.65  
 DATE W.L.: 4/4/22  
 TIME W.L.: 14:55

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	PHOTO	REC		
150		150.00 - 160.00 Same as above; calcite @ 157.5' bgs		150.00		16	9.75 10.00			<p><b>WELL CASING</b> Interval: 0'-110' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded</p> <p><b>WELL SCREEN</b> Interval: 110'-160' Material: 0.010" Slotted Diameter: 2" Slot Size: 0.010" End Cap: 3"</p> <p><b>FILTER PACK</b> Interval: 107.3'-160' Type: Filter Sil - Filtration sand and gravel, industrial quartz Quantity: 16 x 50 lb bag</p> <p><b>FILTER PACK SEAL</b> Interval: 62.5'-107.3' Type: Pel Plug Bentonite Pellets / Haliburton Bentonite Chips 3/8" Quantity: 3 x 50 lb bucket, 10 bags chips</p> <p><b>ANNULUS SEAL</b> Interval: 0'-55.5' Type: Aquaguard bentonite grout Quantity: 2.5 batches of 2 bags Aquaguard + 40 gal water</p> <p><b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum</p> <p><b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic Sample Type: Sonic</p>
155	625									
160	620	Boring completed at 160.00 ft		618.85						
165	615									
170	610									
175	605									
180	600									
185	595									
190	590									
195	585									
200	580									

BOREHOLE RECORD PLANT MCDONOUGH\_DGWC-121, B-122D, B-123D, GPJ, PIEDMONT, GDT, 5/13/22

LOG SCALE: 1 in = 6.5 ft  
 DRILLING COMPANY: Cascade Drilling  
 DRILLER: Corey Franklin

GA INSPECTOR: Connor Mikilitus  
 CHECKED BY: Rachel Kirkman, PG  
 DATE: 5/10/22





# RECORD OF BOREHOLE B-01

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: August 6, 2020 09:30  
 DRILLING END: August 6, 2020 11:15  
 COORDINATES: N: 1,391,891 E: 2,201,581

SHEET: 1 of 2  
 GS ELEV.: 792  
 TOC ELEV.: na  
 DATUM: NAD 83

DEPTH (ft)	BORING METHOD	SOIL PROFILE				SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic			
0		0.0	Hydrovac.	792.0							
5											
10		10.0	No recovery	782.0							Shelby Tube pushed at 10'. No Recovery
12		12.0		780.0			TP ST-01	0 24			Collected B-01 bucket sample from 12 to 15 ft
15			(ML), CLAYEY SILT AND SAND, low to medium plasticity, and sand, trace gravel, grayish-brown; soft to firm, w ~ PL		ML						
17		17.0		775.0			TP ST-02	0 24			Shelby Tube pushed at 15'. No Recovery
20			RESIDUUM, (SM), SILTY SAND, fine to coarse, and low plasticity fines, some fine gravel, brown to blue-gray; non-cohesive, loose, wet, saprolitic		SM		DO S-01	WH-3-2-4 (5)	10 24	5	
23		23.0		769.0			DO S-02	3-4-4-7 (8)	24 24	8	
25			RESIDUUM, (ML), CLAYEY SILT AND SAND, low plasticity, and fine to coarse sand, trace fine gravel, red-brown; cohesive, compact to dense, w < PL, saprolitic		ML		DO S-03	4-12-16-20 (28)	24 24	28	
30											

Log continued on next page

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:58  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSL\DAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109\_AP1 MCDONOUGH\_LOGS\_COMBINED.GPJ

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Cliff Lackey  
 DRILL RIG: CME 75

LOGGED: Michael Boatman  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree



# RECORD OF BOREHOLE B-01

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: August 6, 2020 09:30  
 DRILLING END: August 6, 2020 11:15  
 COORDINATES: N: 1,391,891 E: 2,201,581

SHEET: 2 of 2  
 GS ELEV.: 792  
 TOC ELEV.: na  
 DATUM: NAD 83

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:58  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSL\DAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109\_AP1 MCDONOUGH\_LOGS\_COMBINED.GPJ

DEPTH (ft)	BORING METHOD	SOIL PROFILE			SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER			
30		30.0		762.0						
			RESIDUUM, (ML), CLAYEY SILT AND SAND, low plasticity, and fine to coarse sand, trace fine gravel, red-brown; cohesive, compact to dense, w < PL, saprolitic (continued)							
35					ML					
						DO S-04	4-10-19-19 (29)	18 24		29
						DO S-05	8-17-23-30 (40)	22 24		40
40		39.8 40.0	PARTIALLY WEATHERED ROCK, SAMPLED AS, (GP), SANDY GRAVEL, poorly graded, dark gray; very dense, moist Refusal at 40.0 ft. Bottom of borehole at 40.0 ft. Backfilled with soil cuttings	752.2 752.0	GP	DO S-06	50/2" (50/2")	2 2		100
45										
50										
55										
60										

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Cliff Lackey  
 DRILL RIG: CME 75

LOGGED: Michael Boatman  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree



# RECORD OF BOREHOLE B-02

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: August 6, 2020 07:20  
 DRILLING END: August 6, 2020 08:45  
 COORDINATES: N: 1,391,691 E: 2,201,585

SHEET: 1 of 2  
 GS ELEV.: 791  
 TOC ELEV.: na  
 DATUM: NAD 83

DEPTH (ft)	BORING METHOD	SOIL PROFILE			SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER			
0		0.0		791.0						
			Hydrovac.							
5										
10		10.0		781.0						
			(ML), SANDY CLAYEY SILT, non plastic, fine to coarse sand, trace fine gravel; non-cohesive, loose to compact, w < PL, weathered schist							
15										
				ML						
20										
25		25.0		766.0						
			RESIDUUM, (SM), SILTY SAND, fine, low to non plastic plasticity fines, dark gray to black; dense to very dense, dry to moist, relict structure							
30										
				SM						
35		33.0		758.0						
			PARTIALLY WEATHERED ROCK, SAMPLED AS, (ML), SANDY CLAYEY SILT, low to medium plasticity, fine to medium sand, red-brown to gray; cohesive, very dense, w < PL, saprolitic, contains fine grained gneiss							
40										
				ML						

Log continued on next page

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Cliff Lackey  
 DRILL RIG: CME 75

LOGGED: Michael Boatman  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree



01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:58  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSL\DAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109\_AP1 MCDONOUGH\_LOGS\_COMBINED.GPJ



# RECORD OF BOREHOLE B-02

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: August 6, 2020 07:20  
 DRILLING END: August 6, 2020 08:45  
 COORDINATES: N: 1,391,691 E: 2,201,585

SHEET: 2 of 2  
 GS ELEV.: 791  
 TOC ELEV.: na  
 DATUM: NAD 83

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:58  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSL\DAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109\_AP1 MCDONOUGH\_LOGS\_COMBINED.GPJ

DEPTH (ft)	BORING METHOD	SOIL PROFILE				SAMPLES			PENETRATION RESISTANCE BLOWS / ft		NOTES WATER LEVELS	ADDITIONAL LAB TESTING	
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic	REC ATT (in)	WATER CONTENT (%)			
										W <sub>c</sub>			W <sub>L</sub>
40		40.0		751.0					20 40 60 80				
			PARTIALLY WEATHERED ROCK, SAMPLED AS, (ML), SANDY CLAYEY SILT, low to medium plasticity, fine to medium sand, red-brown to gray; cohesive, very dense, w < PL, saprolitic, contains fine grained gneiss <i>(continued)</i>		ML	X DO S-07	18-50/5" <b>(50/5")</b>	11 11		100			
45		46.0		745.0						100			
			Refusal at 46.0 ft. Bottom of borehole at 46.0 ft. Backfilled with soil cuttings			X DO S-08	14-50 <b>(50/1")</b>	12 12					
50													
55													
60													
65													
70													
75													
80													

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Cliff Lackey  
 DRILL RIG: CME 75

LOGGED: Michael Boatman  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree



# RECORD OF BOREHOLE B-03

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: July 27, 2020 08:00  
 DRILLING END: July 27, 2020 13:00  
 COORDINATES: N: 1,391,423 E: 2,201,768

SHEET: 1 of 2  
 GS ELEV.: 801  
 TOC ELEV.: na  
 DATUM: NAD 83

DEPTH (ft)	BORING METHOD	SOIL PROFILE			SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER			
0		0.0		801.0						
0			RESIDUUM, (ML), SANDY CLAYEY SILT, non plastic, fine to coarse sand, trace fine gravel, tan to brown; micaceous, non-cohesive, loose to dense, dry to wet							
5										
5						DO S-01	9-4-3 (7)	0/18	7	
10						DO S-02	6-4-7 (11)	6/18	11	O H
15						DO S-03	11-21-27 (48)	18/18	48	
20						DO S-04	6-20-15 (35)	18/18	35	
25						DO S-05	4-5-6 (11)	18/18	11	
30						DO S-06	2-3-5 (8)	18/18	8	O H
35						DO S-07	2-5-10 (15)	18/18	15	
40						DO S-08	3-7-10 (17)	18/18	17	

Log continued on next page

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Cliff Lackey  
 DRILL RIG: CME 75

LOGGED: Qian Zhao  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree



01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:58  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSLIDAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109\_AP1 MCDONOUGH\_LOGS\_COMBINED.GPJ

# RECORD OF BOREHOLE B-03

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: July 27, 2020 08:00  
 DRILLING END: July 27, 2020 13:00  
 COORDINATES: N: 1,391,423 E: 2,201,768

SHEET: 2 of 2  
 GS ELEV.: 801  
 TOC ELEV.: na  
 DATUM: NAD 83

01 - GOLDRER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:58  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSLIDAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109\_AP1 MCDONOUGH\_LOGS\_COMBINED.GPJ

DEPTH (ft)	BORING METHOD	SOIL PROFILE			SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING	
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER				BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic
40		40.0	RESIDUUM, (ML), SANDY CLAYEY SILT, non plastic, fine to coarse sand, trace fine gravel, tan to brown; micaceous, non-cohesive, loose to dense, dry to wet (continued)	761.0	ML						
45						DO S-09	4-6-10 (16)	18 18	16		
50						DO S-10	5-11-18 (29)	18 18	29		
55			Rock fragments in the sample as gravel			DO S-11	5-12-14 (26)	18 18	26		
60						DO S-12	5-7-14 (21)	18 18	21	H	
65						DO S-13	4-10-16 (26)	18 18	26		
70						DO S-14	7-12-18 (30)	18 18	30		
75		73.0	PARTIALLY WEATHERED ROCK, SAMPLED AS, (SM), GRAVELLY SILTY SAND, fine, non plastic fines, tan to brown; micaceous, non-cohesive, compact to dense, dry to wet	728.0	SM	DO S-15	50-50/3" (50/3")	9 9		100	
80		77.0	Refusal at 77.0 ft. Bottom of borehole at 77.0 ft. Backfilled with soil cuttings	724.0							

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Cliff Lackey  
 DRILL RIG: CME 75

LOGGED: Qian Zhao  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree





# RECORD OF BOREHOLE B-04

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: July 27, 2020 14:00  
 DRILLING END: July 28, 2020 11:30  
 COORDINATES: N: 1,391,192 E: 2,201,761

SHEET: 1 of 2  
 GS ELEV.: 797  
 TOC ELEV.: na  
 DATUM: NAD 83

DEPTH (ft)	BORING METHOD	SOIL PROFILE			SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER			
0		0.0		797.0						
			RESIDUUM, (ML), SANDY CLAYEY SILT, non plastic, fine to coarse sand, trace fine gravel, brown to red-brown; micaceous, non-cohesive, very loose to dense, dry to wet		ML					
5							DO S-01	1-0-0 (0)	2/18	
10							DO S-02	4-4-6 (10)	18/18	
15							DO S-03	3-3-5 (8)	18/18	
20							DO S-04	4-7-9 (16)	18/18	
25							DO S-05	4-8-9 (17)	18/18	
30							DO S-06	5-7-9 (16)	18/18	
35							DO S-07	5-5-10 (15)	18/18	
40							DO S-08	6-11-15 (26)	18/18	

Log continued on next page

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:58  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSLIDAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109 AP1 MCDONOUGH LOGS\_COMBINED.GPJ

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Cliff Lackey  
 DRILL RIG: CME 75

LOGGED: Ayushi Tiwari  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree



# RECORD OF BOREHOLE B-04

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: July 27, 2020 14:00  
 DRILLING END: July 28, 2020 11:30  
 COORDINATES: N: 1,391,192 E: 2,201,761

SHEET: 2 of 2  
 GS ELEV.: 797  
 TOC ELEV.: na  
 DATUM: NAD 83

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:58  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSL\DAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109\_AP1 MCDONOUGH\_LOGS\_COMBINED.GPJ

DEPTH (ft)	BORING METHOD	SOIL PROFILE				SAMPLES			PENETRATION RESISTANCE BLOWS / ft		NOTES WATER LEVELS	ADDITIONAL LAB TESTING	
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic	REC ATT (in)	WATER CONTENT (%)			
										W <sub>c</sub>			W <sub>L</sub>
40		40.0		757.0									
45			RESIDUUM, (ML), SANDY CLAYEY SILT, non plastic, fine to coarse sand, trace fine gravel, brown to red-brown; micaceous, non-cohesive, very loose to dense, dry to wet (continued)			DO S-09	4-8-14 (22)	18/18		22			
50					ML	DO S-10	4-9-19 (28)	18/18		28			
55						DO S-11	6-9-20 (29)	18/18		29			
60						DO S-12	6-15-27 (42)	18/18		42			
62.0		62.0		735.0									
63.5		63.5	RESIDUUM, (SM), SILTY SAND, fine to medium, non plastic fines, brown with gray; micaceous, non-cohesive, very dense, wet		SM								
65			PARTIALLY WEATHERED ROCK, SAMPLED AS, (ML), GRAVELLY SANDY SILT, non plastic, fine to medium sand, brown; non-cohesive, wet			DO S-13	16-47-50/5" (97/11")	18/17			100		
70					ML	DO S-14	50/4" (50/4")	4/4			100		
72.0		72.0		725.0									
75			Refusal at 72.0 ft. Bottom of borehole at 72.0 ft. Backfilled with soil cuttings										
80													

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Cliff Lackey  
 DRILL RIG: CME 75

LOGGED: Ayushi Tiwari  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree



# RECORD OF BOREHOLE B-05

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: July 28, 2020 15:55  
 DRILLING END: July 28, 2020 18:15  
 COORDINATES: N: 1,390,752 E: 2,201,733

SHEET: 1 of 2  
 GS ELEV.: 782  
 TOC ELEV.: na  
 DATUM: NAD 83

DEPTH (ft)	BORING METHOD	SOIL PROFILE			SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER			
0		0.0		782.0						
5			RESIDUUM, (ML), SANDY CLAYEY SILT, low plasticity, fine to coarse sand, trace fine gravel, brown; non-cohesive, loose to compact, dry, tree roots							
10										Collected B-01 bucket sample of auger cuttings from 10 to 20 feet
15					ML					Tree roots
13						DO S-01	6-6-7-11 (13)	19/24	13	
15						DO S-02	4-6-7-11 (13)	22/24	13	OH
20						DO S-03	4-4-5-7 (9)	22/24	9	
25						DO S-04	4-9-12-15 (21)	22/24	21	
28.0				754.0		TP ST-01		24/24		
30			RESIDUUM, (SM), SILTY SAND, fine, brown; micaceous, non-cohesive, compact to dense, wet			DO S-05	9-10-15-20 (25)	24/24	25	
35					SM	DO S-06	5-14-18-18 (32)	21/24	32	
40										

Log continued on next page

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Cliff Lackey  
 DRILL RIG: CME 75

LOGGED: Ayushi Tiwari  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree



01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSLIDAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109 AP1 MCDONOUGH LOGS\_COMBINED.GPJ



# RECORD OF BOREHOLE B-05

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: July 28, 2020 15:55  
 DRILLING END: July 28, 2020 18:15  
 COORDINATES: N: 1,390,752 E: 2,201,733

SHEET: 2 of 2  
 GS ELEV.: 782  
 TOC ELEV.: na  
 DATUM: NAD 83

DEPTH (ft)	BORING METHOD	SOIL PROFILE				SAMPLES			PENETRATION RESISTANCE BLOWS / ft		NOTES WATER LEVELS	ADDITIONAL LAB TESTING	
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic	REC ATT (in)	WATER CONTENT (%)			
								W <sub>c</sub>  -----  W <sub>l</sub> 20 40 60 80					
40		40.0		742.0									
			RESIDUUM, (SM), SILTY SAND, fine, brown; micaceous, non-cohesive, compact to dense, wet ( <i>continued</i> )		SM	DO S-07	5-6-11-14 (17)	19 24	17				
45						DO S-08	4-9-15-20 (24)	24 24	24				
		48.0		734.0									
			RESIDUUM, (SM), SILTY SAND, fine to coarse, and , trace fine gravel; micaceous, non-cohesive, dense, wet		SM	DO S-09	5-12-19-25 (31)	22 24	31				
55						DO S-10	5-8-15-21 (23)	24 24	23				
60						DO S-11	9-14-20-38 (34)	24 24	34				
		62.0		720.0									
65			Refusal at 62.0 ft. Bottom of borehole at 62.0 ft. Backfilled with soil cuttings										
70													
75													
80													

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSLIDAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109 AP1 MCDONOUGH LOGS\_COMBINED.GPJ

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Cliff Lackey  
 DRILL RIG: CME 75

LOGGED: Ayushi Tiwari  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree



# RECORD OF BOREHOLE B-06

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: July 30, 2020 08:10  
 DRILLING END: July 30, 2020 11:15  
 COORDINATES: N: 1,390,489 E: 2,201,596

SHEET: 1 of 2  
 GS ELEV.: 790  
 TOC ELEV.: na  
 DATUM: NAD 83

DEPTH (ft)	BORING METHOD	SOIL PROFILE				SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING			
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic				REC ATT (in)	WATER CONTENT (%)	
													W <sub>p</sub>	W <sub>L</sub>
0		0.0		790.0										
5			FILL, (ML), SANDY CLAYEY SILT, fine to coarse sand, trace fine to coarse gravel, brown; micaceous, non-cohesive, loose to compact, dry								Hand augered utility clearance from 0 to 10 feet.			
10											Collected B-01 bucket sample of auger cuttings from 10-20 feet			
15					ML									
20														
25														
30														
32.0		32.0		758.0										
35			RESIDUUM, (CL), SILTY CLAY AND SAND, medium plasticity, and fine to coarse sand, red-brown; micaceous, cohesive, soft, w < PL		CL						▼ 32.0 ft, 07/31/2020 08:30 ▼ Shelby Tube pushed at 32' 33.0 ft, 07/30/2020 13:00			
37.0		37.0		753.0										
40					SC									

Log continued on next page

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Cliff Lackey  
 DRILL RIG: CME 75

LOGGED: Ayushi Tiwari  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree



01 - GOLDRER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSL\DAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109 AP1 MCDONOUGH LOGS\_COMBINED.GPJ

# RECORD OF BOREHOLE B-06

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: July 30, 2020 08:10  
 DRILLING END: July 30, 2020 11:15  
 COORDINATES: N: 1,390,489 E: 2,201,596

SHEET: 2 of 2  
 GS ELEV.: 790  
 TOC ELEV.: na  
 DATUM: NAD 83

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSL\DAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109 AP1 MCDONOUGH LOGS\_COMBINED.GPJ

DEPTH (ft)	BORING METHOD	SOIL PROFILE				SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING	
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic				REC ATT (in)
40		40.0	RESIDUUM, (SC), GRAVELLY CLAYEY SAND, fine to coarse, fine gravel, brown with gray; micaceous, non-cohesive, loose, wet (continued)	750.0	SC		DO S-07	2-2-4-11 (6)	24/24	6		
45		43.0	RESIDUUM, (SM), SILTY SAND, fine to coarse, non plastic fines, trace fine gravel, brown with black; micaceous, non-cohesive, loose to compact, wet	747.0	SM		DO S-08	2-2-5-11 (7)	24/24	7		
50					SM		DO S-09	9-8-12-13 (20)	15/24	20		
55					SM		DO S-10	6-7-11-12 (18)	16/24	18		
60					SM		DO S-11	7-10-16-18 (26)	13/24	26		
65		63.0	PARTIALLY WEATHERED ROCK, SAMPLED AS, (ML), GRAVELLY SILT, non plastic, some fine sand, brown with black; micaceous, non-cohesive, very dense, wet	727.0	ML		DO S-12	40-50/3" (50/3")	9/9		100	
70					ML		DO S-13	23-40-50/3" (90/9")	12/15		100	
75					ML		DO S-14	19-50/5" (50/5")	11/11		100	
80		77.0	Refusal at 77.0 ft. Bottom of borehole at 77.0 ft. Backfilled with soil cuttings	713.0								

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Cliff Lackey  
 DRILL RIG: CME 75

LOGGED: Ayushi Tiwari  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree





# RECORD OF BOREHOLE B-07

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: August 14, 2020 13:40  
 DRILLING END: August 14, 2020 14:40  
 COORDINATES: N: 1,390,301 E: 2,201,397

SHEET: 1 of 2  
 GS ELEV.: 755  
 TOC ELEV.: na  
 DATUM: NAD 83

DEPTH (ft)	BORING METHOD	SOIL PROFILE				SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING				
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic				REC ATT (in)	WATER CONTENT (%) W <sub>c</sub>  -----  W <sub>l</sub>		
0		0.0	FILL, (GP), GRAVEL, fine to coarse, poorly graded, angular, some fine sand, trace non plastic fines; trace cobbles to 6"	755.0	GP										
5															
10		10.0	RESIDUUM, (CL), SANDY SILTY CLAY, medium plasticity, fine to coarse sand, brown; cohesive, soft to very stiff, w ~ PL	745.0	CL		DO S-01	WOH-WOH-1-1 (1)	15 24		1				
15							DO S-02	7-7-13-16 (20)	10 24		20				
20		20.0	RESIDUUM, (CL-ML), CLAY AND SAND, low plasticity, and fine to coarse sand, trace fine gravel, brown; cohesive, soft, w ~ PL	735.0	CL-ML		TO ST-01		20 24						
25		22.0	RESIDUUM, (SM), GRAVELLY SILTY SAND, fine to coarse, and non plastic fines, fine to coarse gravel, black-brown; non-cohesive, loose, wet	733.0	SM		DO S-03	5-3-4-9 (7)	15 24		7				
30							DO S-04	1-1-4-6 (5)	12 24		5				
35							DO S-05	2-4-4-6 (8)	18 24		8				
40		38.0		717.0	ML			10-11-16-22 (27)	20 24		27				

Log continued on next page

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Scott Sanders  
 DRILL RIG: Geoprobe 7822

LOGGED: Nick Moran  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree



01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSL\DAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109 AP1 MCDONOUGH\_LOGS\_COMBINED.GPJ

# RECORD OF BOREHOLE B-07

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: August 14, 2020 13:40  
 DRILLING END: August 14, 2020 14:40  
 COORDINATES: N: 1,390,301 E: 2,201,397

SHEET: 2 of 2  
 GS ELEV.: 755  
 TOC ELEV.: na  
 DATUM: NAD 83

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSLIDAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109\_AP1 MCDONOUGH\_LOGS\_COMBINED.GPJ

DEPTH (ft)	BORING METHOD	SOIL PROFILE			SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER			
40		40.0		715.0						
41.0		41.0	RESIDUUM, (ML), GRAVELLY SANDY SILT, non plastic, fine to coarse sand, fine subangular gravel, brown to black; non-cohesive, dense, wet (continued) Refusal at 39.0 ft. Bottom of borehole at 41.0 ft. Backfilled with soil cuttings	714.0	ML		X DO S-06			
45										
50										
55										
60										
65										
70										
75										
80										

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Scott Sanders  
 DRILL RIG: Geoprobe 7822

LOGGED: Nick Moran  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree



# RECORD OF BOREHOLE B-08

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: August 17, 2020 10:00  
 DRILLING END: August 17, 2020 12:20  
 COORDINATES: N: 1,390,379 E: 2,201,114

SHEET: 1 of 1  
 GS ELEV.: 758  
 TOC ELEV.: na  
 DATUM: NAD 83

DEPTH (ft)	BORING METHOD	SOIL PROFILE			SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER			
0		0.0		758.0						
0 - 13.0			FILL, (ML), CLAYEY SILT AND SAND, non plastic, and fine to coarse sand, trace fine to coarse subangular gravel, brown; non-cohesive, compact, moist							
5					ML					
10										
13.0				745.0						
13.0 - 34.0			RESIDUUM, (SM), SILTY SAND, fine to coarse, and non plastic fines, trace fine subangular gravel, brown; non-cohesive, compact to very dense, moist							
15					SM					
20										
25										
30										
34.0				724.0						
34.0 - 39.0			RESIDUUM, (ML), SILT AND SAND, non plastic, and fine to coarse sand, trace fine subangular gravel, brown; non-cohesive, dense, moist to wet							
35					ML					
40										
39.0				719.0						
39.0 - 40			Refusal at 37.0 ft. Bottom of borehole at 39.0 ft.							

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSL\DAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109 AP1 MCDONOUGH LOGS\_COMBINED.GPJ

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Scott Sanders  
 DRILL RIG: Geoprobe 7822

LOGGED: Nick Moran  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree





# RECORD OF BOREHOLE B-09

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: August 4, 2020 07:45  
 DRILLING END: August 4, 2020 10:30  
 COORDINATES: N: 1,390,746 E: 2,200,851

SHEET: 1 of 2  
 GS ELEV.: 764  
 TOC ELEV.: na  
 DATUM: NAD 83

DEPTH (ft)	BORING METHOD	SOIL PROFILE			SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER			
0		0.0	(ML), SANDY CLAYEY SILT, non plastic, trace organics, brown; soft, w < PL, contains quartz and a lot of muscovite	764.0	ML					
5										
10										
13.0		13.0	RESIDUUM, (ML), SILT WITH SLIGHT PLASTICITY AND SAND, low plasticity, and fine to coarse sand, trace gravel, gray; micaceous, loose to compact, dry to moist, contains muscovite, gneiss, and quartz, saprolite	751.0	ML					
15										
20										
25										
30										
35										
38.0		38.0		726.0	SM					
40			Log continued on next page							

01 - GOLDR - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSL\DAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109\_AP1 MCDONOUGH\_LOGS\_COMBINED.GPJ

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Cliff Lackey  
 DRILL RIG: CME 75

LOGGED: Michael Boatman  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree



# RECORD OF BOREHOLE B-09

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: August 4, 2020 07:45  
 DRILLING END: August 4, 2020 10:30  
 COORDINATES: N: 1,390,746 E: 2,200,851

SHEET: 2 of 2  
 GS ELEV.: 764  
 TOC ELEV.: na  
 DATUM: NAD 83

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSL\DAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109\_AP1 MCDONOUGH\_LOGS\_COMBINED.GPJ

DEPTH (ft)	BORING METHOD	SOIL PROFILE				SAMPLES			■ PENETRATION RESISTANCE BLOWS / ft 20 40 60 80 WATER CONTENT (%) W <sub>e</sub>  -----  W <sub>i</sub>	NOTES WATER LEVELS	ADDITIONAL LAB TESTING	
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic				REC ATT (in)
40		40.0		724.0								
			PARTIALLY WEATHERED ROCK, SAMPLED AS, (SM), SILTY SAND, fine to medium, non plastic fines, red-brown to olive-gray; dense to very dense, dry <i>(continued)</i>		SM	X DO S-06	17-33-50/5" <b>(83/11")</b>	17 17			100	
45						X DO S-07	28-50/4" <b>(50/4")</b>	10 10			100	
		47.0		717.0								
			PARTIALLY WEATHERED ROCK, SAMPLED AS, (ML), SILT, non plastic, trace fine sand; very dense, dry to moist, contains foliated saprolite and gneiss		ML	X DO S-08	50/5" <b>(50/5")</b>	5 5			100	
50						X DO S-09	50/5" <b>(50/5")</b>	5 5			100	
55												
		58.0		706.0								
60			Refusal at 58.0 ft. Bottom of borehole at 58.0 ft. Backfilled with soil cuttings									
65												
70												
75												
80												

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Cliff Lackey  
 DRILL RIG: CME 75

LOGGED: Michael Boatman  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree



# RECORD OF BOREHOLE B-10

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: August 4, 2020 13:00  
 DRILLING END: August 4, 2020 14:30  
 COORDINATES: N: 1,391,116 E: 2,200,786

SHEET: 1 of 1  
 GS ELEV.: 767  
 TOC ELEV.: na  
 DATUM: NAD 83

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSL\DAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109 AP1 MCDONOUGH LOGS\_COMBINED.GPJ

DEPTH (ft)	BORING METHOD	SOIL PROFILE				SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic			
0		0.0	(SM), SILTY SAND, fine, non plastic fines; non-cohesive, loose, dry to moist	767.0	SM						
5											
10		10.0	RESIDUUM, (ML), CLAYEY SILT AND SAND, non plastic, and fine to coarse sand, brown to black; non-cohesive, compact to dense, moist	757.0	ML	DO S-01	5-5-13-14 (18)	20/24	18	▼ 10.0 ft, 08/05/2020 00:00 Bulk sample from 10 to 15 ft	
15						DO S-02	15-17-20-24 (37)	21/24	37		
20		20.0 20.5	PARTIALLY WEATHERED ROCK, SAMPLED AS, (SM), SILTY SAND, fine to coarse, light gray to dark; non-cohesive, dry, contains rock fragments Refusal at 20.5 ft. Bottom of borehole at 20.5 ft. Backfilled with soil cuttings	747.0 746.5	SM	DO S-03	50/2" (50/2")	2/2	100		
25											
30											
35											
40											

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Cliff Lackey  
 DRILL RIG: CME 75

LOGGED: Michael Boatman  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree



# RECORD OF BOREHOLE B-11

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: August 4, 2020 15:10  
 DRILLING END: August 4, 2020 16:05  
 COORDINATES: N: 1,391,428 E: 2,200,706

SHEET: 1 of 1  
 GS ELEV.: 768  
 TOC ELEV.: na  
 DATUM: NAD 83

DEPTH (ft)	BORING METHOD	SOIL PROFILE				SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic			
0		0.0		768.0							
5		5.0	(SP), SAND, fine to coarse, poorly graded; non-cohesive, dry to moist	763.0	SP						
10		10.0	(SC), CLAYEY SAND, fine to coarse, low to medium plasticity fines, yellow-tan to white; cohesive, w ~ PL	758.0	SC						
15			PARTIALLY WEATHERED ROCK, SAMPLED AS, (ML), SANDY SILT, non plastic, fine to coarse sand, some fine gravel, grayish brown; non-cohesive, compact, moist, relict structure, contains saprolite, quartz, gneiss		ML		DO S-01	32-50/3" (50/3")	9/9	OH	100 10.0 ft, 08/05/2020 00:00 Collected B-01 bucket sample from 10-15 feet
20			PARTIALLY WEATHERED ROCK, SAMPLED AS, (SM), SILTY SAND, fine to coarse, low to non plastic plasticity fines, dark brown to white; non-cohesive, very dense, dry to moist		SM		DO S-02	11-28-50/4" (78/10")	16/16		100
25		23.0	Refusal at 23.0 ft. Bottom of borehole at 23.0 ft. Backfilled with soil cuttings	745.0			DO S-03	5-10-10-25 (20)	21/24	20 MP	
30											
35											
40											

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSL\DAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109 AP1 MCDONOUGH LOGS\_COMBINED.GPJ

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Cliff Lackey  
 DRILL RIG: CME 75

LOGGED: Michael Boatman  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree





# RECORD OF BOREHOLE B-12

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: August 18, 2020 09:25  
 DRILLING END: August 18, 2020 12:00  
 COORDINATES: N: 1,391,841 E: 2,200,768

SHEET: 1 of 1  
 GS ELEV.: 770  
 TOC ELEV.: na  
 DATUM: NAD 83

DEPTH (ft)	BORING METHOD	SOIL PROFILE			SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER			
0		0.0		770.0						
5			RESIDUUM, (ML), SANDY CLAYEY SILT, non plastic, fine to coarse sand, trace fine subrounded gravel; non-cohesive, moist to wet							
10		10.0		760.0	ML					Bulk sample collected 0 to 10 feet ▼ 6.5 ft, 08/19/2020 10:00
15		15.0	RESIDUUM, (SM), GRAVELLY SILTY SAND, fine to coarse, fine subrounded to subangular gravel, red-brown to gray; non-cohesive, compact, moist to wet			DO S-02	4-5-10-32 (15)	18 24		▼ 10.0 ft, 08/18/2020 10:00
18.0		18.0	RESIDUUM, (SW), SAND, fine to coarse, well graded, some fine subrounded gravel, trace non plastic fines, gray; non-cohesive, dense to very dense, dry			DO S-02	11-13-25-17 (38)	9 24		
18.2		18.2	PARTIALLY WEATHERED ROCK, SAMPLED AS, (SW), SAND, fine to coarse, well graded, some fine subrounded gravel, trace non plastic fines, gray; non-cohesive, very dense, dry Refusal at 18.2 ft. Bottom of borehole at 18.2 ft. Backfilled with soil cuttings			DO S-03	50/2" (50/2")	2 2		
20				752.0	SW					
25				751.8	SW					
30										
35										
40										

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSL\DATA\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109 AP1 MCDONOUGH LOGS\_COMBINED.GPJ

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Scott Sanders  
 DRILL RIG: Geoprobe 7822

LOGGED: Nick Moran  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree



# RECORD OF BOREHOLE B-13

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: August 18, 2020 13:45  
 DRILLING END: August 18, 2020 14:45  
 COORDINATES: N: 1,391,922 E: 2,200,927

SHEET: 1 of 1  
 GS ELEV.: 794  
 TOC ELEV.: na  
 DATUM: NAD 83

DEPTH (ft)	BORING METHOD	SOIL PROFILE				SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic			
0		0.0		794.0							
5			RESIDUUM, (ML), SANDY SILT, non plastic, fine to medium sand, trace fine subangular gravel, red-brown; non-cohesive, compact, dry to moist		ML						No Groundwater encountered
10		10.0	RESIDUUM, (SM), SILTY SAND, fine to coarse, brown-red; non-cohesive, compact, dry to moist	784.0	SM	DO S-02	4-4-7-10 (11)	22/24	11		5: Bulk sample collected 0 to 10 feet
15		15.0	RESIDUUM, (SM), SILTY SAND, fine to coarse, non plastic fines, trace fine subangular gravel, gray; non-cohesive, dense, moist	779.0	SM	DO S-02	11-24-21-20 (45)	20/24	45		
20					SM	DO S-03	19-28-22-28 (50)	24/24	50		
25		25.0	PARTIALLY WEATHERED ROCK, SAMPLED AS: Fractured rock	769.0							
		25.8	Refusal at 25.8 ft. Bottom of borehole at 25.8 ft. Backfilled with soil cuttings	768.3		DO S-04	25-50/3" (50/3")	0/9		100	
30											
35											
40											

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSL\DAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109 AP1 MCDONOUGH LOGS\_COMBINED.GPJ

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Scott Sanders  
 DRILL RIG: Geoprobe 7822

LOGGED: Nick Moran  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree



# RECORD OF BOREHOLE B-14

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: August 18, 2020 16:30  
 DRILLING END: August 18, 2020 17:15  
 COORDINATES: N: 1,391,808 E: 2,201,033

SHEET: 1 of 1  
 GS ELEV.: 792  
 TOC ELEV.: na  
 DATUM: NAD 83

DEPTH (ft)	BORING METHOD	SOIL PROFILE			SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER			
0		0.0		792.0						
5			RESIDUUM, (SM), SILTY SAND, fine to coarse, non plastic fines, trace fine angular gravel, white to gray; non-cohesive, compact, dry to moist							
10					SM					
15										
18.0				774.0						
18.3			PARTIALLY WEATHERED ROCK, SAMPLED AS, (SM), SILTY SAND, fine to coarse, non plastic fines, trace fine angular gravel, white to gray; non-cohesive, very dense, dry to moist Refusal at 18.3 ft. Bottom of borehole at 18.3 ft. Backfilled with soil cuttings	773.7	SM					
20						DO S-02	6-10-10-10 (20)	22/24	20	No Groundwater encountered Hand Auger utility clearance 0 to 10 feet
25						DO S-02	4-7-6-9 (13)	24/24	13	Bulk B-01 sample collected from 10 to 20 feet. (CL-ML) sandy CLAYEY SILT, fine to coarse sand, trace fine to coarse gravel.
30						DO S-03	50/4" (50/4")	4/4	100	

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSL\DAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109 AP1 MCDONOUGH LOGS\_COMBINED.GPJ

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Scott Sanders  
 DRILL RIG: Geoprobe 7822

LOGGED: Nick Moran  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree



# RECORD OF BOREHOLE B-15

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: August 18, 2020 17:25  
 DRILLING END: August 18, 2020 18:45  
 COORDINATES: N: 1,391,743 E: 2,201,197

SHEET: 1 of 1  
 GS ELEV.: 787  
 TOC ELEV.: na  
 DATUM: NAD 83

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSL\DAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109 AP1 MCDONOUGH LOGS\_COMBINED.GPJ

DEPTH (ft)	BORING METHOD	SOIL PROFILE				SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic			
0		0.0	(ML), SANDY SILT, non plastic, fine to coarse sand, trace fine subangular gravel, yellow brown; Bulk Sample	787.0							
5					ML						Hydrovac 0 to 10 feet  Bulk Sample B-01 collected between 0 to 15 feet
10		10.0	RESIDUUM, (SM), SILTY SAND, fine to coarse, non plastic fines, trace fine subangular gravel, gray to brown; micaceous, non-cohesive, compact, moist	777.0		DO S-01	3-6-8-6 (14)	20/24			
15					SM	DO S-02	8-10-10-11 (20)	0/24			14.5 ft, 08/19/2020 22:30
20					SM	DO S-03	15-13-14-13 (27)	20/24			
25					SM						
26.0		26.0	RESIDUUM, (ML), SANDY SILT, non plastic, fine to medium sand, red-orange; non-cohesive, compact, moist	761.0		DO S-04	5-5-12-25 (17)	24/24			
26.5		26.5	RESIDUUM, (SM), SILTY SAND, fine to coarse, non plastic fines, trace fine subangular gravel, gray; non-cohesive, compact, moist	760.5	ML						27.0 ft, 08/18/2020 18:00
30					SM						
30.5		30.5	PARTIALLY WEATHERED ROCK, SAMPLED AS, (SM), SILTY SAND, fine to coarse, non plastic fines, trace fine subangular gravel, gray; non-cohesive, very dense, moist	756.5		DO S-05	12-50/5" (50/5")	11			
31.0		31.0	Refusal at 31.0 ft. Bottom of borehole at 31.0 ft. Backfilled with soil cuttings	756.0	SM			11			100
35											
40											

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Scott Sanders  
 DRILL RIG: Geoprobe 7822

LOGGED: Nick Moran  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree





# RECORD OF BOREHOLE SC-01

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: July 31, 2020 11:05  
 DRILLING END: July 31, 2020 13:50  
 COORDINATES: N: 1,390,228 E: 2,201,410

SHEET: 1 of 2  
 GS ELEV.: 753  
 TOC ELEV.: na  
 DATUM: NAD 83

DEPTH (ft)	BORING METHOD	SOIL PROFILE			SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER			
0		0.0		753.0						
0 - 18.0			(SP), GRAVELLY SAND, coarse, poorly graded, coarse gravel, brown to gray; non-cohesive, very loose to compact, wet							
5										
10					SP					
11.5						DO S-01	1-1-1-5 (2)	6/24	2	Hand Augered utility clearance 0 to 10 feet 2.5 ft, 07/31/2020 14:40
15										
17.5						DO S-02	3-7-11-13 (18)	6/24	18	Collected B-01 bucket sample from 10-20 feet
18.0		18.0		735.0						
18.0 - 33.0			RESIDUUM, (ML), GRAVELLY SANDY SILT, non plastic, fine sand, brown with gray; micaceous, non-cohesive, loose, wet							
20										
22.5						DO S-03	2-2-3-7 (5)	12/24	5	
25					ML					
27.5						DO S-04	2-3-7-13 (10)	20/24	10	
30										
32.5						DO S-05	1-3-5-6 (8)	16/24	8	
33.0		33.0		720.0						
33.0 - 40			RESIDUUM, (ML), GRAVELLY SANDY SILT, non plastic, fine to medium sand, coarse gravel, brown to tan; non-cohesive, dense to very dense, wet							
35					ML					
37.5						DO S-06	23-27-33-45 (60)	14/24	60	Shelby Tube pushed at 35'. No Recovery
40										

Log continued on next page

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSL\DAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109 AP1 MCDONOUGH LOGS\_COMBINED.GPJ

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Cliff Lackey  
 DRILL RIG: CME 75

LOGGED: Ayushi Tiwari  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree



# RECORD OF BOREHOLE SC-01

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: July 31, 2020 11:05  
 DRILLING END: July 31, 2020 13:50  
 COORDINATES: N: 1,390,228 E: 2,201,410

SHEET: 2 of 2  
 GS ELEV.: 753  
 TOC ELEV.: na  
 DATUM: NAD 83

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSL\DAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109\_AP1 MCDONOUGH\_LOGS\_COMBINED.GPJ

DEPTH (ft)	BORING METHOD	SOIL PROFILE			SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER			
40		40.0		713.0						
		41.5		711.5	ML		DO S-07	4-18-29-50/4" (47)	18 22	47
45		42.0	PARTIALLY WEATHERED ROCK, SAMPLED AS, (ML), GRAVELLY SANDY SILT, non plastic, fine to medium sand, coarse gravel, brown to tan; non-cohesive, very dense, wet Refusal at 42.0 ft. Bottom of borehole at 42.0 ft. Backfilled with soil cuttings	711.0	ML					
50										
55										
60										
65										
70										
75										
80										

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Cliff Lackey  
 DRILL RIG: CME 75

LOGGED: Ayushi Tiwari  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree



# RECORD OF BOREHOLE SC-02

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: July 30, 2020 13:45  
 DRILLING END: July 30, 2020 16:00  
 COORDINATES: N: 1,390,224 E: 2,201,335

SHEET: 1 of 2  
 GS ELEV.: 754  
 TOC ELEV.: na  
 DATUM: NAD 83

DEPTH (ft)	BORING METHOD	SOIL PROFILE				SAMPLES			PENETRATION RESISTANCE BLOWS / ft		NOTES WATER LEVELS	ADDITIONAL LAB TESTING	
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic	REC ATT (in)	WATER CONTENT (%)			
										W <sub>c</sub>			W <sub>l</sub>
0		0.0		754.0									
5			(SP), GRAVELLY SAND, coarse, poorly graded, medium to coarse gravel, brown to tan; non-cohesive, loose, wet										
10													
15													
20													
23.0				731.0									
25			RESIDUUM, (ML), GRAVELLY SANDY SILT WITH SLIGHT PLASTICITY, coarse sand, brown to tan; micaceous, non-cohesive, compact, wet										
30													
35													
40													

Log continued on next page

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Cliff Lackey  
 DRILL RIG: CME 75

LOGGED: Ayushi Tiwari  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree



01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSLIDAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109 AP1 MCDONOUGH LOGS\_COMBINED.GPJ

# RECORD OF BOREHOLE SC-02

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: July 30, 2020 13:45  
 DRILLING END: July 30, 2020 16:00  
 COORDINATES: N: 1,390,224 E: 2,201,335

SHEET: 2 of 2  
 GS ELEV.: 754  
 TOC ELEV.: na  
 DATUM: NAD 83

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSL\DAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109 AP1 MCDONOUGH LOGS\_COMBINED.GPJ

DEPTH (ft)	BORING METHOD	SOIL PROFILE				SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING		
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic	REC ATT (in)			WATER CONTENT (%)	
												W <sub>p</sub>	W <sub>i</sub>
40		40.0		714.0					20 40 60 80				
			ML		DO S-07	12-18-31-39 (49)	18 24		49				
45					DO S-08	5-10-17-26 (27)	18 24		27				
		48.0		706.0									
			ML		DO S-09	33-37-50 (87)	17 18		87				
		51.5		702.5									
		53.0	ML	701.0									
55													
60													
65													
70													
75													
80													

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Cliff Lackey  
 DRILL RIG: CME 75

LOGGED: Ayushi Tiwari  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree





# RECORD OF BOREHOLE SP-01

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: July 29, 2020 08:15  
 DRILLING END: July 29, 2020 11:00  
 COORDINATES: N: 1,390,744 E: 2,201,815

SHEET: 1 of 2  
 GS ELEV.: 782  
 TOC ELEV.: na  
 DATUM: NAD 83

DEPTH (ft)	BORING METHOD	SOIL PROFILE				SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING			
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic				REC ATT (in)	WATER CONTENT (%)	
													W <sub>c</sub>	W <sub>l</sub>
0		0.0		782.0										
5			RESIDUUM, (ML), SANDY SILT, non plastic, fine sand, some fine gravel, brown; micaceous, non-cohesive, loose to compact, dry to wet								Hand Augered utility clearance 0 to 10 feet			
10														
15					ML						Collected B-01 bucket sample from 10 to 20 feet.			
20											▽ 19.0 ft, 07/31/2020 08:30 ▽ 21.0 ft, 07/29/2020 13:05 - Shelby Tube pushed at 22'			
25														
30														
35		31.0		751.0										
35			RESIDUUM, (SM), SILTY SAND, some gravel, orange with brown; micaceous, non-cohesive, compact, wet		SM									
40		39.0		743.0	ML									
Log continued on next page														

01 - GOLDR - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSL\DAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109\_AP1 MCDONOUGH\_LOGS\_COMBINED.GPJ

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Cliff Lackey  
 DRILL RIG: CME 75

LOGGED: Ayushi Tiwari  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree



# RECORD OF BOREHOLE SP-01

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: July 29, 2020 08:15  
 DRILLING END: July 29, 2020 11:00  
 COORDINATES: N: 1,390,744 E: 2,201,815

SHEET: 2 of 2  
 GS ELEV.: 782  
 TOC ELEV.: na  
 DATUM: NAD 83

DEPTH (ft)	BORING METHOD	SOIL PROFILE			SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER			
40		40.0	RESIDUUM, (ML), GRAVELLY SANDY SILT, non plastic, orange with brown; micaceous, non-cohesive, compact to dense, wet (continued)	742.0						
45					ML		DO S-07	7-11-14-19 (25)	24/24	25
50					ML		DO S-08	7-8-12-15 (20)	24/24	20
55					ML		DO S-09	9-18-26-33 (44)	24/24	44
60					ML		DO S-10	8-16-26-28 (42)	18/24	42
65		61.5	PARTIALLY WEATHERED ROCK, SAMPLED AS, (ML), GRAVELLY SANDY SILT, non plastic, orange with brown; micaceous, non-cohesive, compact to very dense, wet	720.5			DO S-11	19-32-50 (82)	18/18	82
68.0		68.0	Refusal at 68.0 ft. Bottom of borehole at 68.0 ft. Backfilled with soil cuttings	714.0			DO S-12	13-50/4" (50/4")	10/10	100
70										
75										
80										

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSL\DAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109\_AP1 MCDONOUGH\_LOGS\_COMBINED.GPJ

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Cliff Lackey  
 DRILL RIG: CME 75

LOGGED: Ayushi Tiwari  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree



# RECORD OF BOREHOLE SP-02

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: July 29, 2020 13:45  
 DRILLING END: July 29, 2020 15:20  
 COORDINATES: N: 1,390,523 E: 2,201,752

SHEET: 1 of 2  
 GS ELEV.: 774  
 TOC ELEV.: na  
 DATUM: NAD 83

DEPTH (ft)	BORING METHOD	SOIL PROFILE			SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING						
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER				BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic	REC ATT (in)	WATER CONTENT (%)			
													W <sub>c</sub>	W <sub>l</sub>		
0		0.0		774.0												
5			RESIDUUM, (ML), SANDY GRAVELLY SILT, non plastic, brown to tan; non-cohesive, compact, dry to wet													
10																Hand Augered utility clearance 0 to 10 feet
15																Collected B-01 bucket sample from 10-20 feet
20																Shelby Tube pushed at 23'
25																
30																
35																
40																

Log continued on next page

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSLIDAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\2020\1109\_AP1 MCDONOUGH\_LOGS\_COMBINED.GPJ

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Cliff Lackey  
 DRILL RIG: CME 75

LOGGED: Ayushi Tiwari  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree



# RECORD OF BOREHOLE SP-02

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: July 29, 2020 13:45  
 DRILLING END: July 29, 2020 15:20  
 COORDINATES: N: 1,390,523 E: 2,201,752

SHEET: 2 of 2  
 GS ELEV.: 774  
 TOC ELEV.: na  
 DATUM: NAD 83

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSLIDAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109\_AP1 MCDONOUGH\_LOGS\_COMBINED.GPJ

DEPTH (ft)	BORING METHOD	SOIL PROFILE			SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER			
40		40.0		734.0						
		41.5		732.5	ML		DO S-07	17-28-50/5" (78/11")	6 17	
		43.0	PARTIALLY WEATHERED ROCK, SAMPLED AS, (GM), SANDY SILTY GRAVEL, coarse, brown; non-cohesive, very dense, wet Refusal at 43.0 ft. Bottom of borehole at 43.0 ft. Backfilled with soil cuttings	731.0	GM					
45										
50										
55										
60										
65										
70										
75										
80										

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Cliff Lackey  
 DRILL RIG: CME 75

LOGGED: Ayushi Tiwari  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree





# RECORD OF BOREHOLE SP-03

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: August 17, 2020 16:15  
 DRILLING END: August 17, 2020 06:30  
 COORDINATES: N: 1,390,290 E: 2,201,514

SHEET: 1 of 2  
 GS ELEV.: 756  
 TOC ELEV.: na  
 DATUM: NAD 83

DEPTH (ft)	BORING METHOD	SOIL PROFILE				SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING			
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic				REC ATT (in)	WATER CONTENT (%)	
													W <sub>c</sub>	W <sub>l</sub>
0		0.0		756.0										
5			(ML), SANDY SILT, non plastic, fine to coarse sand, trace fine subangular gravel, brown; cohesive, w ~ PL		ML						▼ 5.0 ft, 08/18/2020 18:30			
8.0		8.0	(ML), SANDY SILT, non plastic, fine to coarse sand, trace fine subangular gravel, brown to gray; non-cohesive, loose to compact, moist to wet		ML						Grab sample from Hand Auger between 8 to 10 feet			
10						DO S-01	2-2-3-3 (5)	18/24	5					
15					ML									
15						DO S-02	12-14-17-18 (31)	16/24	31					
20														
20						DO S-03	14-15-21-22 (36)	24/24	36		▼ 20.0 ft, 08/17/2020 18:30			
22.0		22.0	RESIDUUM, (ML), SILT AND SAND, non plastic, and fine to coarse SAND, trace fine subangular to angular gravel, brown to gray; non-cohesive, loose to dense, wet		ML									
25						DO S-04	8-7-7-8 (14)	17/24	14					
30														
30					ML	DO S-05	7-11-9-12 (20)	13/24	20					
35														
35						DO S-06	2-2-5-6 (7)	14/24	7					
40														

Log continued on next page

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSL\DAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109 AP1 MCDONOUGH LOGS\_COMBINED.GPJ

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Scott Sanders  
 DRILL RIG: Geoprobe 7822

LOGGED: Nick Moran  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree



# RECORD OF BOREHOLE SP-03

PROJECT: Plant McDonough - Barrier Wall Field Investigation  
 PROJECT NO.: 19124362  
 LOCATION: Atlanta, Georgia

DRILLING START: August 17, 2020 16:15  
 DRILLING END: August 17, 2020 06:30  
 COORDINATES: N: 1,390,290 E: 2,201,514

SHEET: 2 of 2  
 GS ELEV.: 756  
 TOC ELEV.: na  
 DATUM: NAD 83

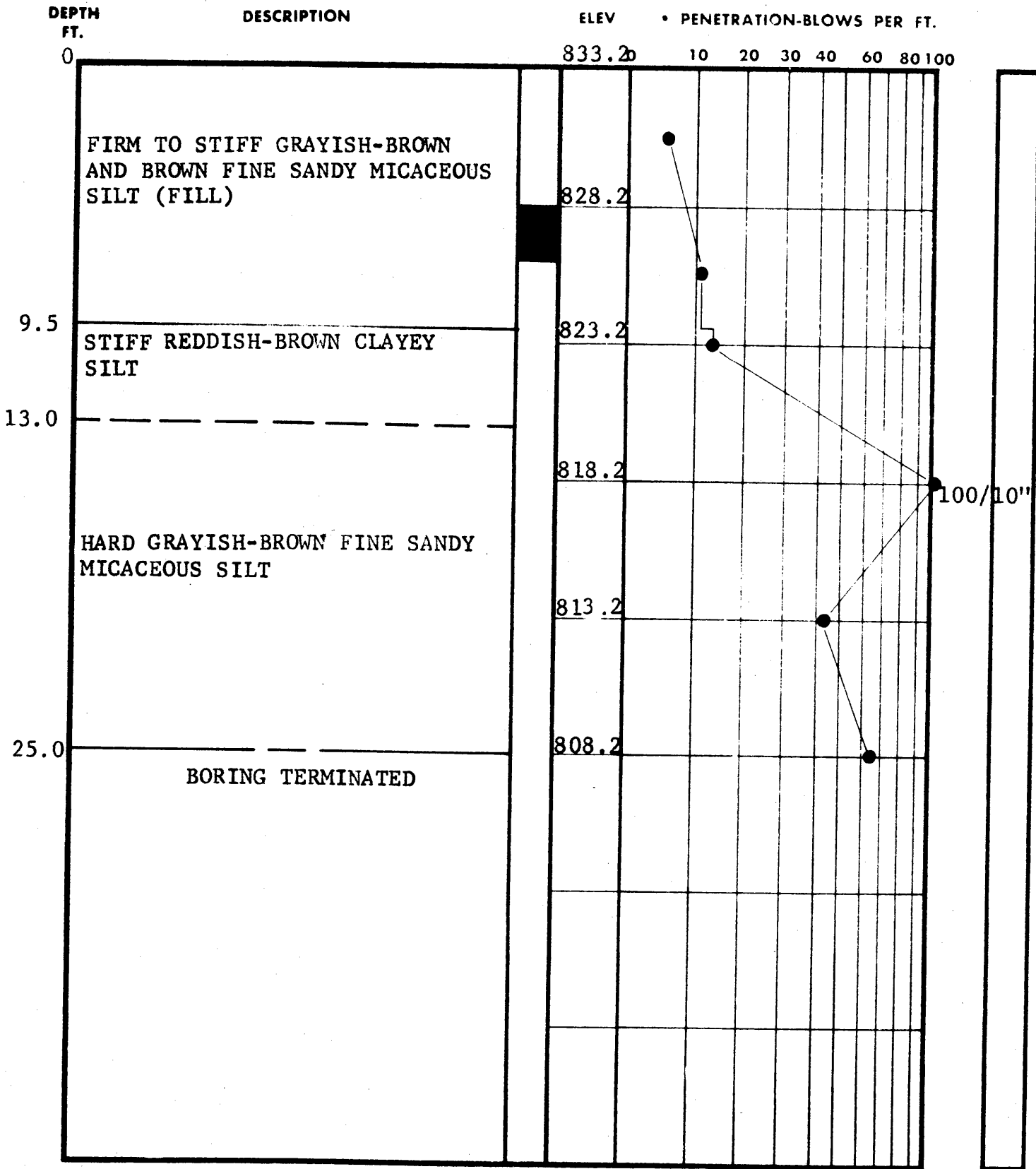
DEPTH (ft)	BORING METHOD	SOIL PROFILE				SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic	REC ATT (in)		
40		40.0		716.0							
		41.0	Transitions to partially weathered rock	715.0	ML		24-27-20-27 <b>(47)</b>	24 24			
45		Refusal at 42.0 ft. Bottom of borehole at 42.0 ft.									
50											
55											
60											
65											
70											
75											
80											

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59  
 \GOLDER\ASSOCIATES\SHAREPOINT.COM\SSL\DAV\WWW\FROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109\_AP1 MCDONOUGH\_LOGS\_COMBINED.GPJ

DRILLING CO.: Betts Environmental Drilling  
 DRILLER: Scott Sanders  
 DRILL RIG: Geoprobe 7822

LOGGED: Nick Moran  
 CHECKED: K. Gray  
 REVIEWED: Pieter DePree





NO GROUND WATER ENCOUNTERED

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-101

DATE DRILLED 3/5/68

JOB NO. 5862

jj

UNDISTURBED SAMPLE

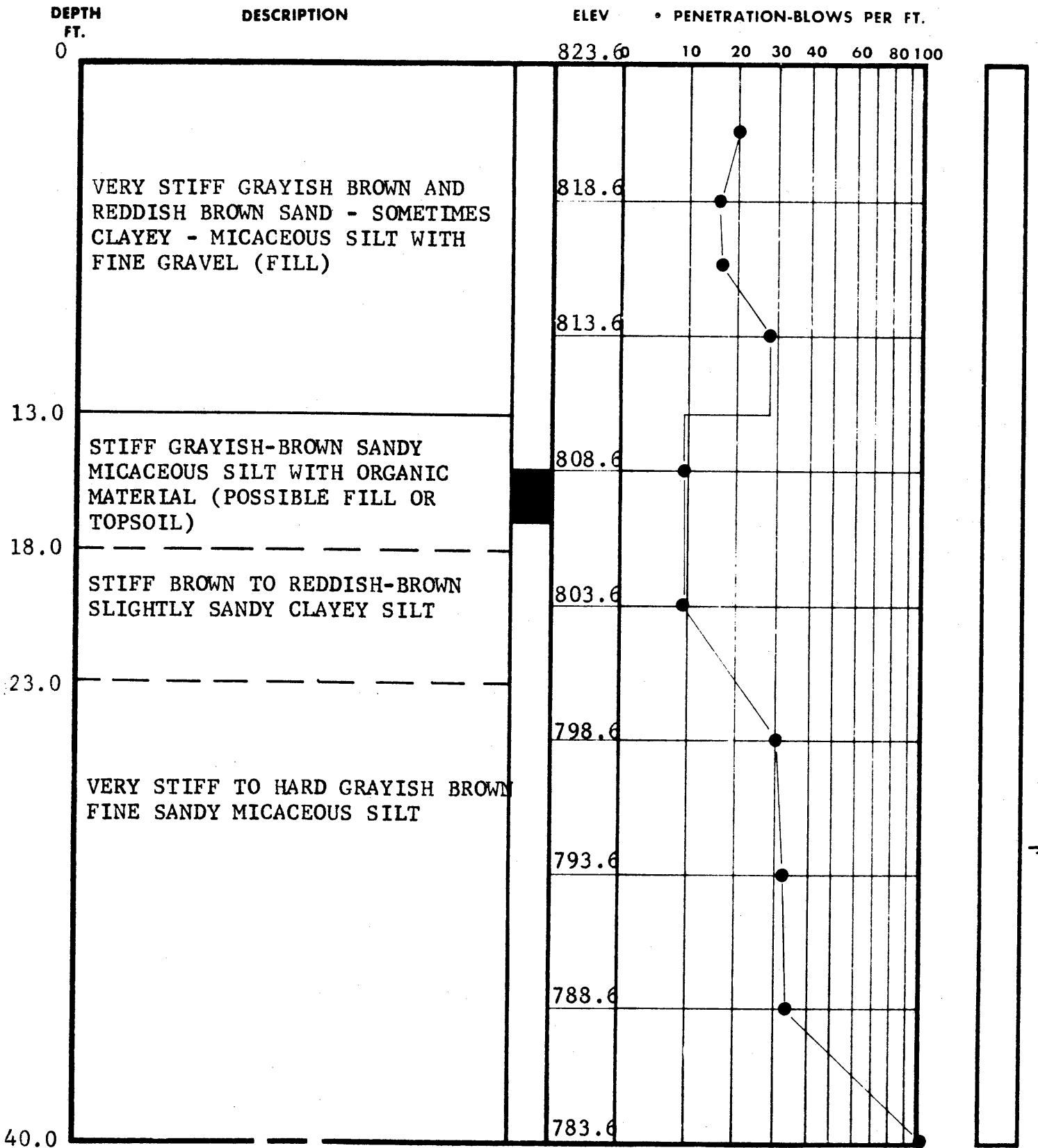
WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

% ROCK CORE RECOVERY

LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.








BORING TERMINATED

100/9"

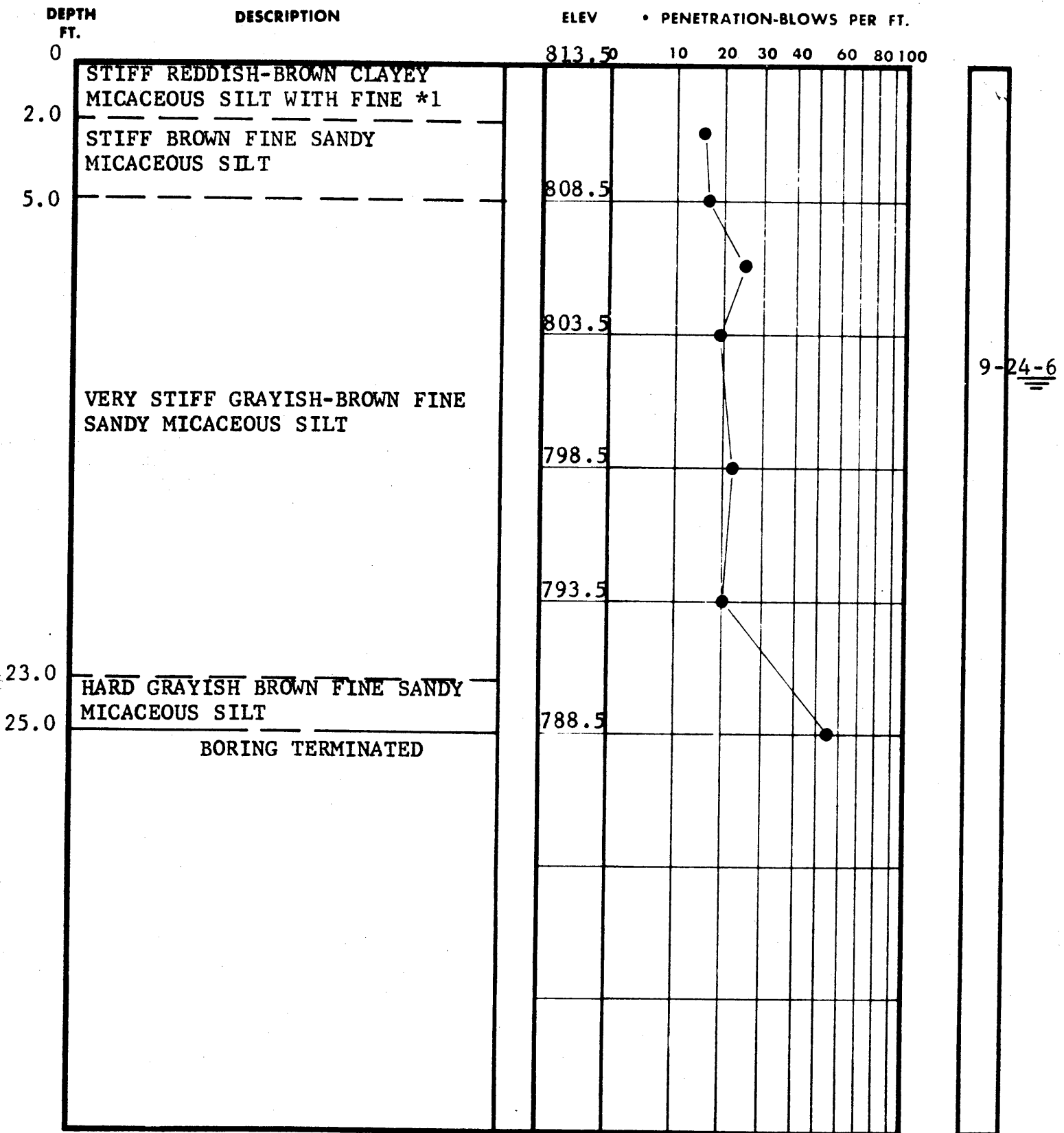
### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-102  
 DATE DRILLED 8/2/68  
 JOB NO. 5862

- jj  UNDISTURBED SAMPLE
-  WATER TABLE, 24 HR.
-  WATER TABLE, 1 HR.
-  LOSS OF DRILLING WATER
-  % ROCK CORE RECOVERY





9-24-6






NO GROUND WATER ENCOUNTERED AT TIME OF BORING

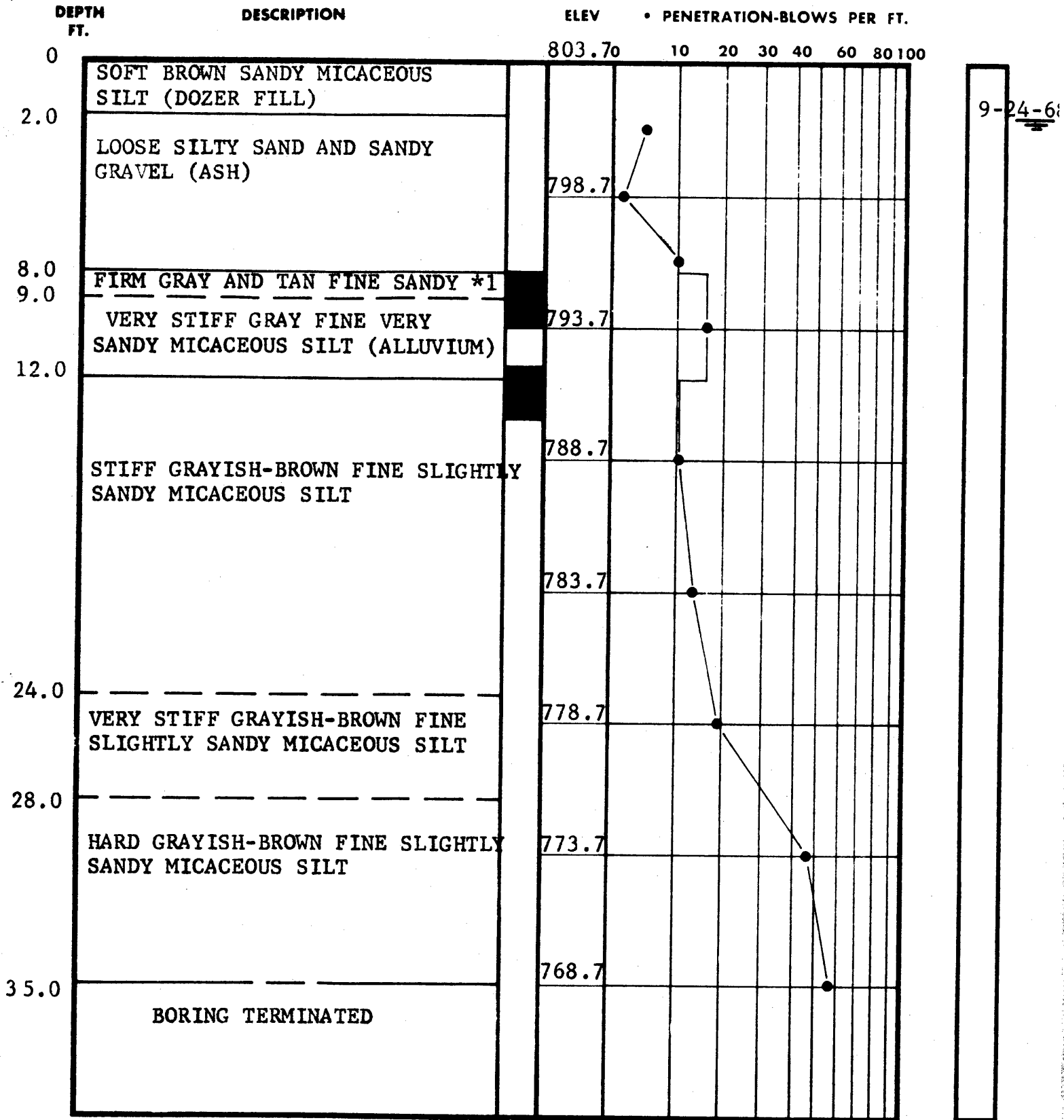
\*1 QUARTZ GRAVEL

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-103  
 DATE DRILLED 8/2/68  
 JOB NO. 5862

- jj  UNDISTURBED SAMPLE
-  WATER TABLE, 24 HR.
-  WATER TABLE, 1 HR.
-  % ROCK CORE RECOVERY
-  LOSS OF DRILLING WATER



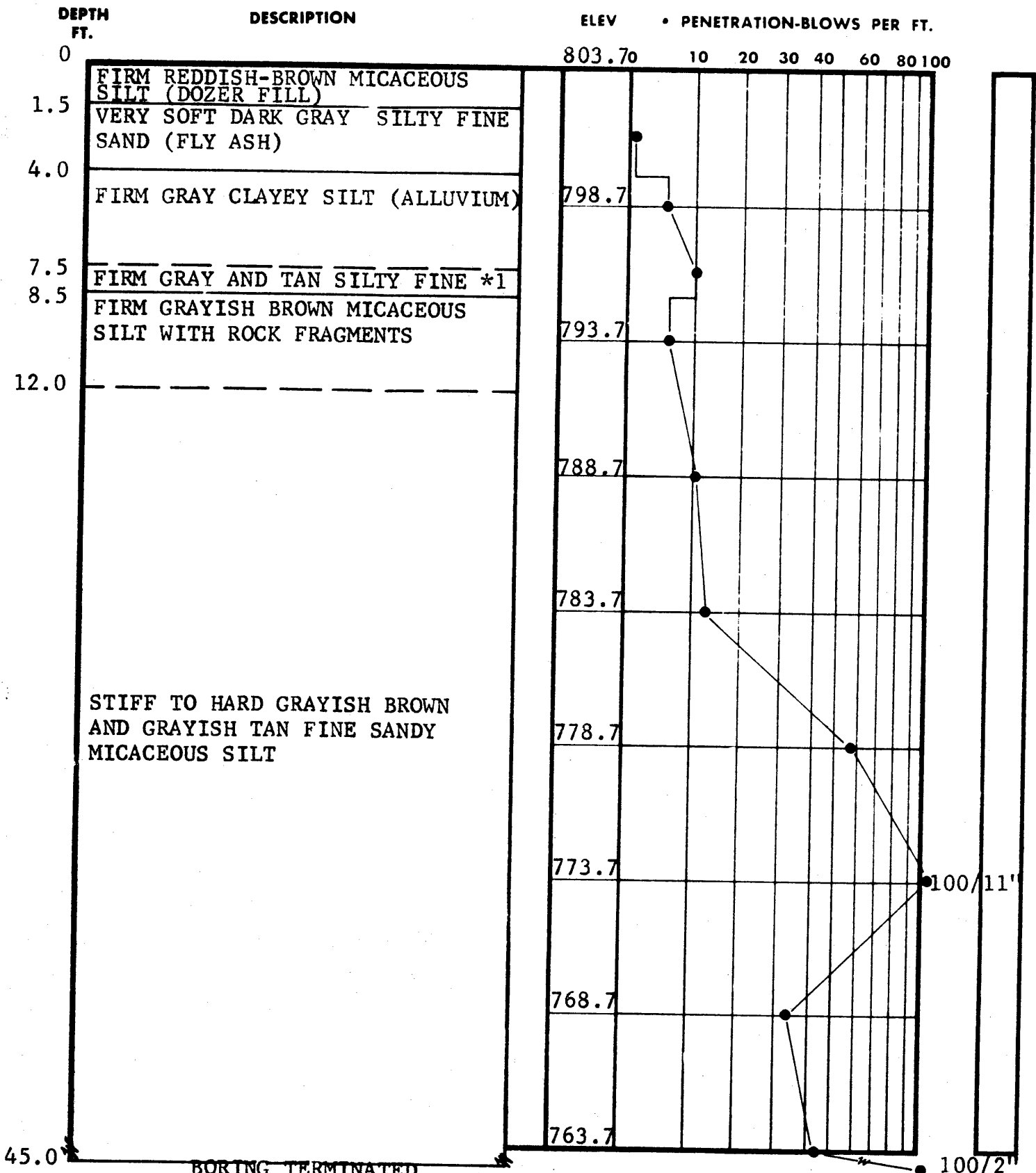
\*1 SLIGHTLY CLAYEY MICACEOUS SILT (ALLUVIUM) **TEST BORING RECORD**

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-104  
 DATE DRILLED 8/2/68  
 JOB NO. 5862

jj

UNDISTURBED SAMPLE	WATER TABLE, 24 HR.
% ROCK CORE RECOVERY	WATER TABLE, 1 HR.
	LOSS OF DRILLING WATER



\*1 TO COARSE SAND WITH SOME FINE GRAVEL (ALLUVIUM)

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

UNDISTURBED SAMPLE

50% ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

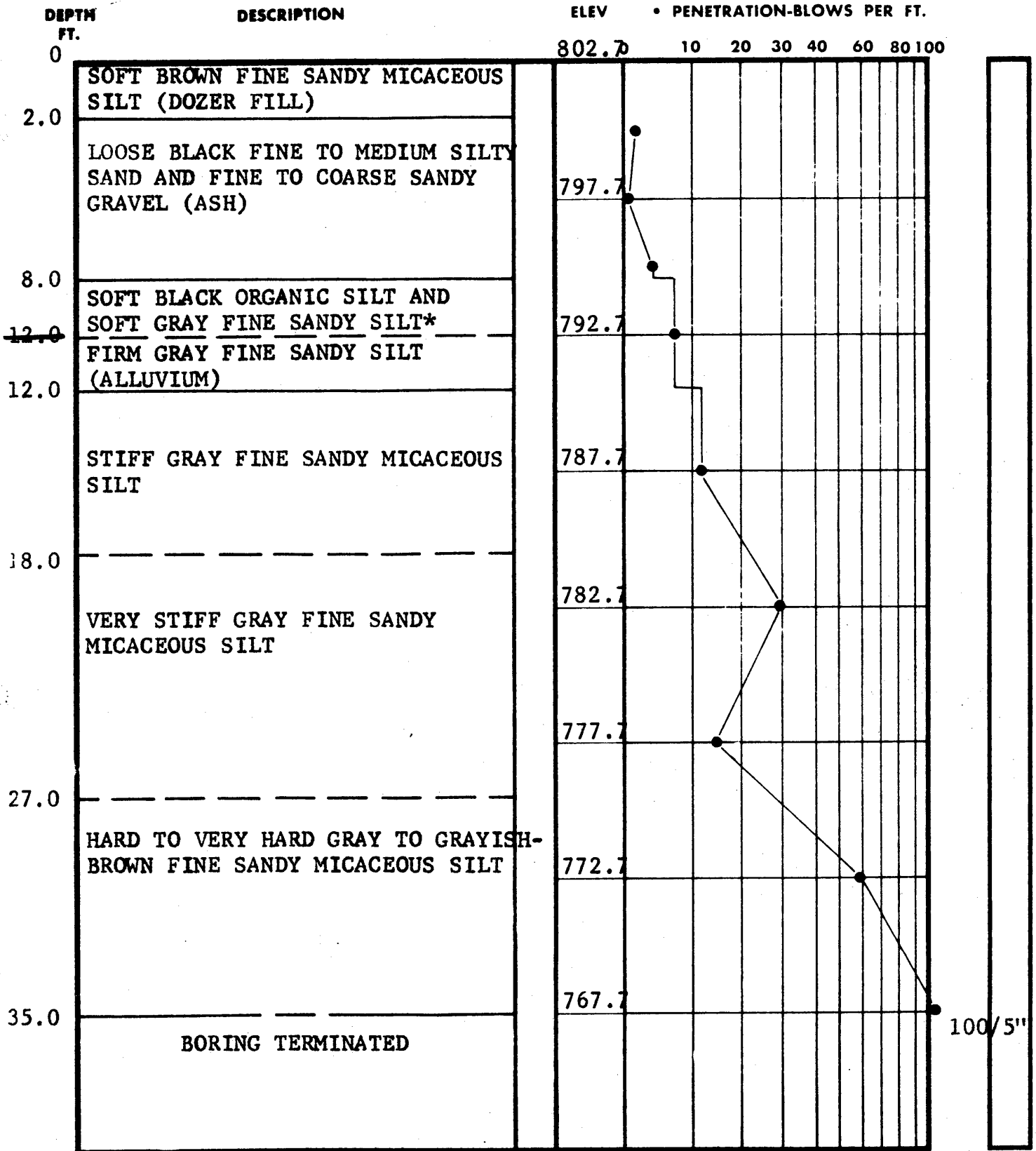
LOSS OF DRILLING WATER

### TEST BORING RECORD

BORING NO. B-105

DATE DRILLED 8/1/68

JOB NO. 5862



\* (ALLUVIUM)

### TEST BORING RECORD

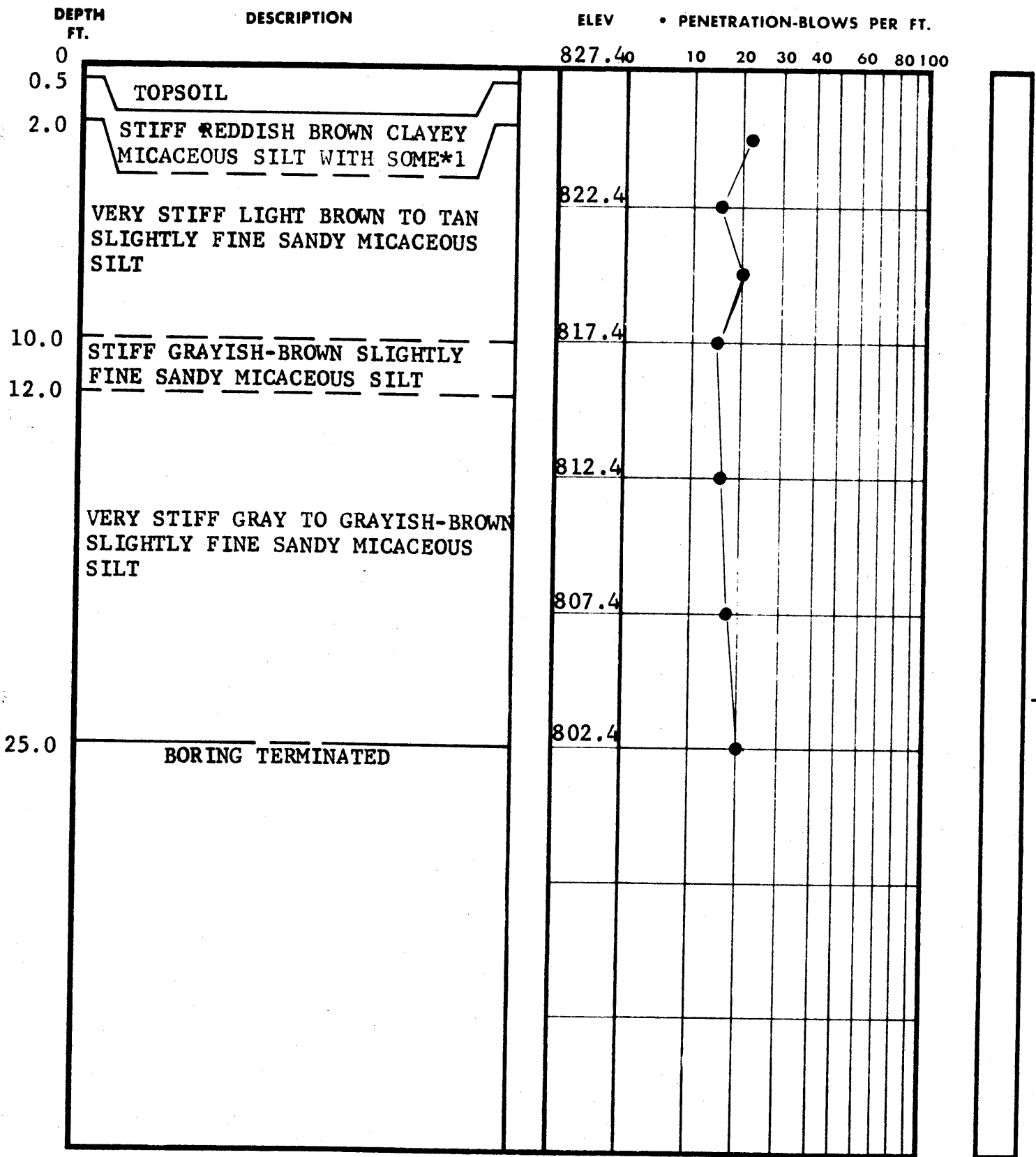
BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-106  
 DATE DRILLED 8/1/68  
 JOB NO. 5862

jj UNDISTURBED SAMPLE  
 WATER TABLE, 24 HR.  
 WATER TABLE, 1 HR.  
 50% ROCK CORE RECOVERY  
 LOSS OF DRILLING WATER












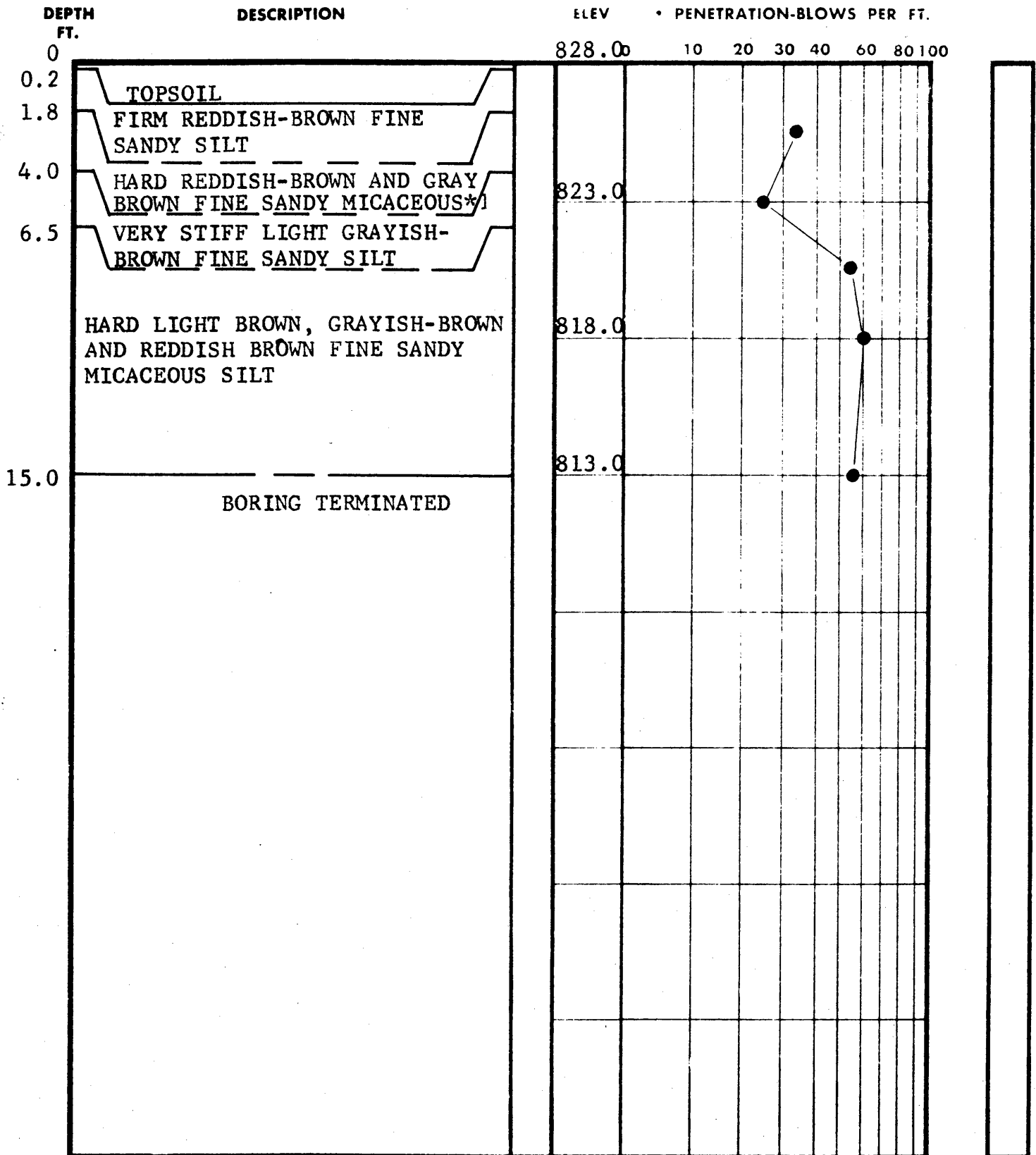
\*1 FINE GRAVEL

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-108  
 DATE DRILLED 8/1/68  
 JOB NO. 5862

- jj  UNDISTURBED SAMPLE
-  WATER TABLE, 24 HR.
-  WATER TABLE, 1 HR.
-  50% ROCK CORE RECOVERY
-  LOSS OF DRILLING WATER



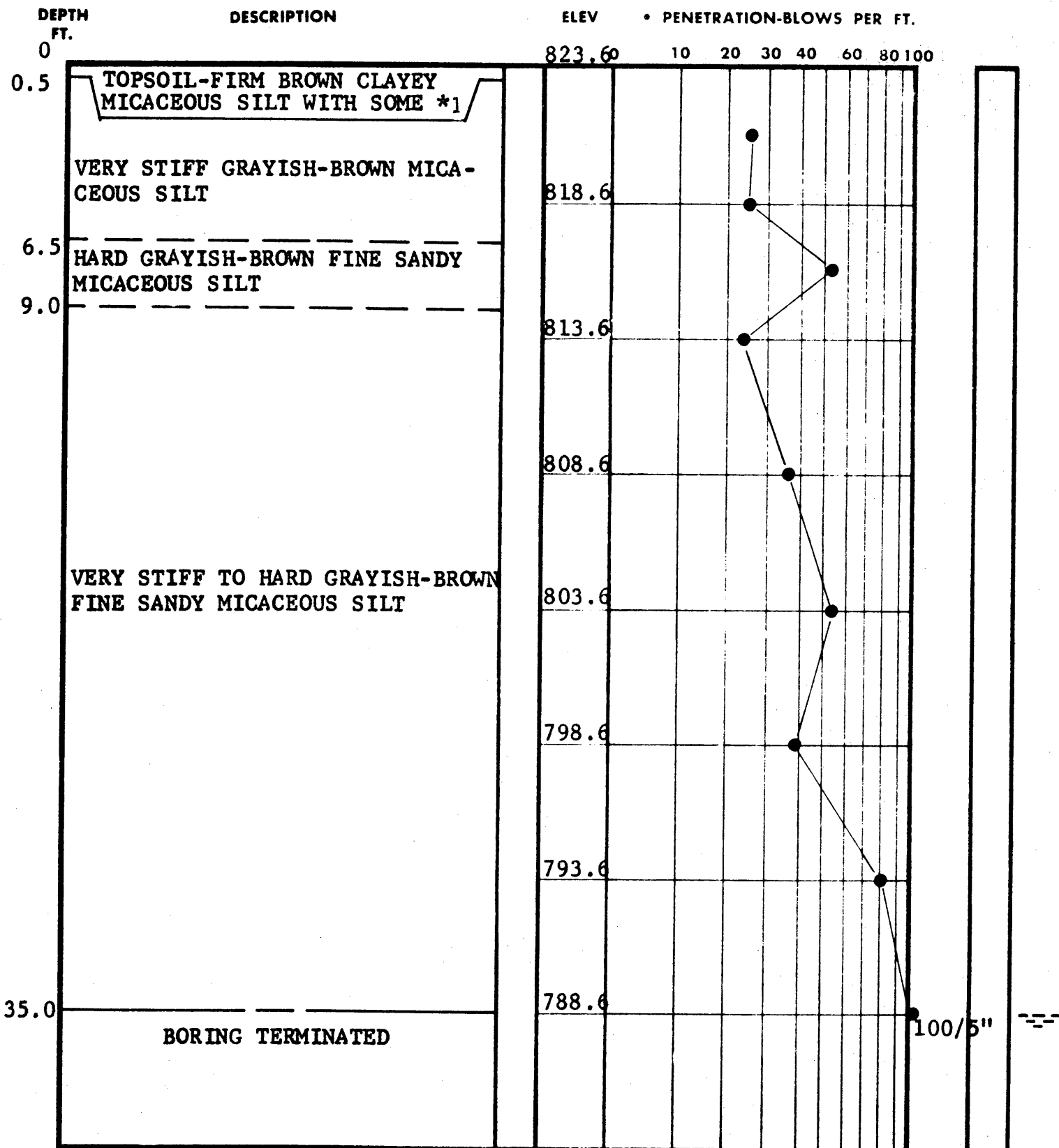
NO GROUND WATER ENCOUNTERED  
\*1 SILT

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113  
PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-109  
DATE DRILLED 7/25/68  
JOB NO. 5862

jj UNDISTURBED SAMPLE  
 WATER TABLE, 24 HR.  
 WATER TABLE, 1 HR.  
 % ROCK CORE RECOVERY  
 LOSS OF DRILLING WATER



\*1 FINE GRAVEL

## TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-110  
 DATE DRILLED 7/30/68  
 JOB NO. 5862

jj

■ UNDISTURBED SAMPLE

≡ WATER TABLE, 24 HR.

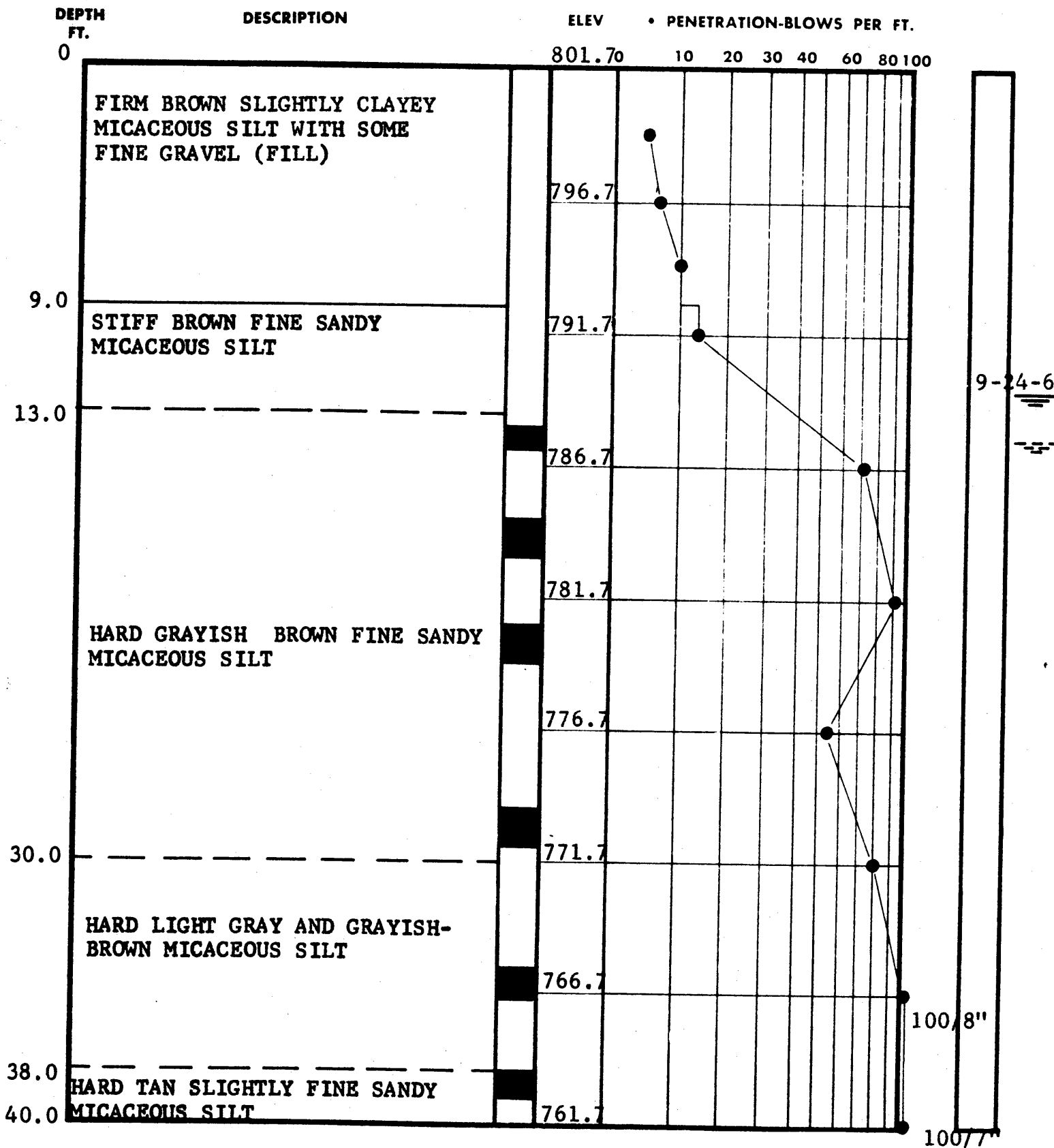
≡ WATER TABLE, 1 HR.

|50| % ROCK CORE RECOVERY

◀ LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.





### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-111  
DATE DRILLED 7/30/68  
JOB NO. 5862






■ UNDISTURBED SAMPLE  
 [50] % ROCK CORE RECOVERY  
 ≡ WATER TABLE, 24 HR.  
 ≡ WATER TABLE, 1 HR.  
 ◀ LOSS OF DRILLING WATER

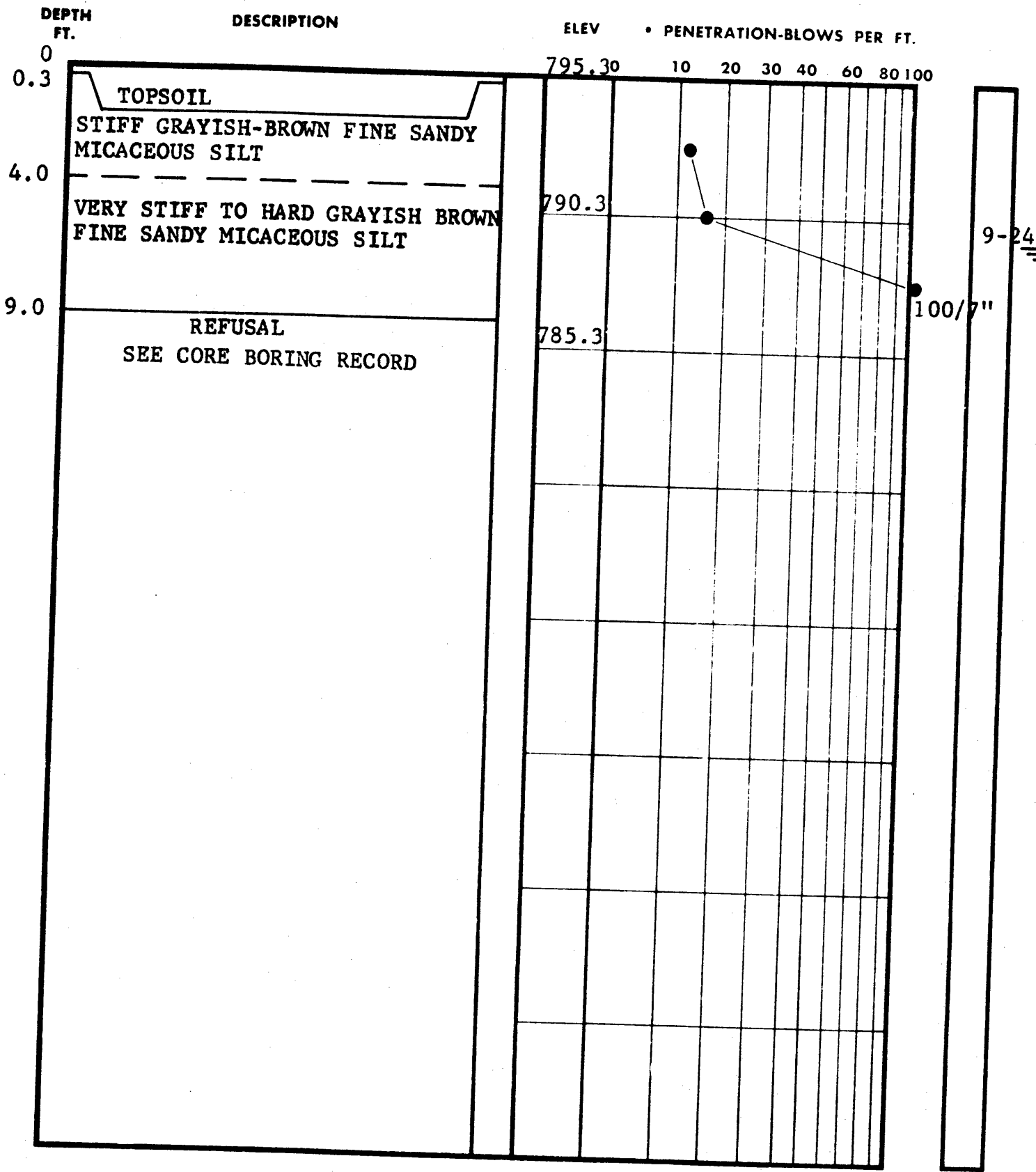
DEPTH FT.	DESCRIPTION	ELEV	• PENETRATION-BLOWS PER FT.							
			10	20	30	40	60	80	100	
40.0	HARD TAN SLIGHTLY FINE SANDY MICACEOUS SILT	761.7								100/7"
		756.7								100/2"
47.5	REFUSAL	751.7								

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-111  
 DATE DRILLED 7/30/68  
 JOB NO. 5862

 UNDISTURBED SAMPLE  
 WATER TABLE, 24 HR.  
 WATER TABLE, 1 HR.  
 % ROCK CORE RECOVERY  
 LOSS OF DRILLING WATER



### TEST BORING RECORD

BORING NO. B-112  
 DATE DRILLED 7/25/68  
 JOB NO. 5862

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

- UNDISTURBED SAMPLE
- WATER TABLE, 24 HR.
- WATER TABLE, 1 HR.
- 50% ROCK CORE RECOVERY
- LOSS OF DRILLING WATER

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
9.0	MODERATELY HARD GRAY SCHIST	80	786.3	9.0'-14.0' HIGHLY FRACTURED, NUMEROUS STAINED JOINTS (PIECES 1/2"-6" IN LENGTH)
17.3	HARD GRAY SCHIST	100	781.3	JOINTS DIPPING 40°, 60°, 70°, SOME INTER- SECTING
24.0	CORING TERMINATED	94	776.3	14.0'-15.6' FRACTURED (PIECES 1"-6" IN LENGTH)
			771.3	15.6'-16.3' HIGHLY FRACTURED (PIECES LESS THAN 1" IN LENGTH)
				16.5'-16.8' CLOSED JOINT DIPPING 60°
				16.8'-17.1' HIGHLY FRACTURED (PIECES LESS THAN 1" IN LENGTH)
				17.1'-19.0' FRACTURED (PIECES 1"-6" IN LENGTH)
				17.8'-18.0' OPEN JOINT DIPPING 50°
				18.3'-18.7' CLOSED INTERSECTING JOINTS DIPPING AT 60° AND 40°
				20.3'-20.8' OPEN STAINED JOINTS DIPPING 50°
				21.5' STAINED FRACTURE
				21.5'-22.1' NUMEROUS CLOSED JOINTS DIPPING 80°

LOST 50% OF DRILLING WATER AT 12 FEET





DEPTH  
FT.  
8.5

DESCRIPTION

CORE BIT ELEV.  
% SIZE 779.4

REMARKS

DEPTH FT.	DESCRIPTION	CORE BIT %	ELEV. SIZE	REMARKS
8.5	HARD GRAY SCHIST	100	774.4	8.5'-8.7' CLOSED VERTICAL JOINT 8.5'-13.5' CONTINUOUS
		100		18.2'-18.9' OPEN JOINT DIPPING 60° 19.4'-OPEN FRACTURE
			NX 769.4	8.5'-23.5' HARD AND CONTINUOUS
			100	
23.5	CORING TERMINATED		764.4	

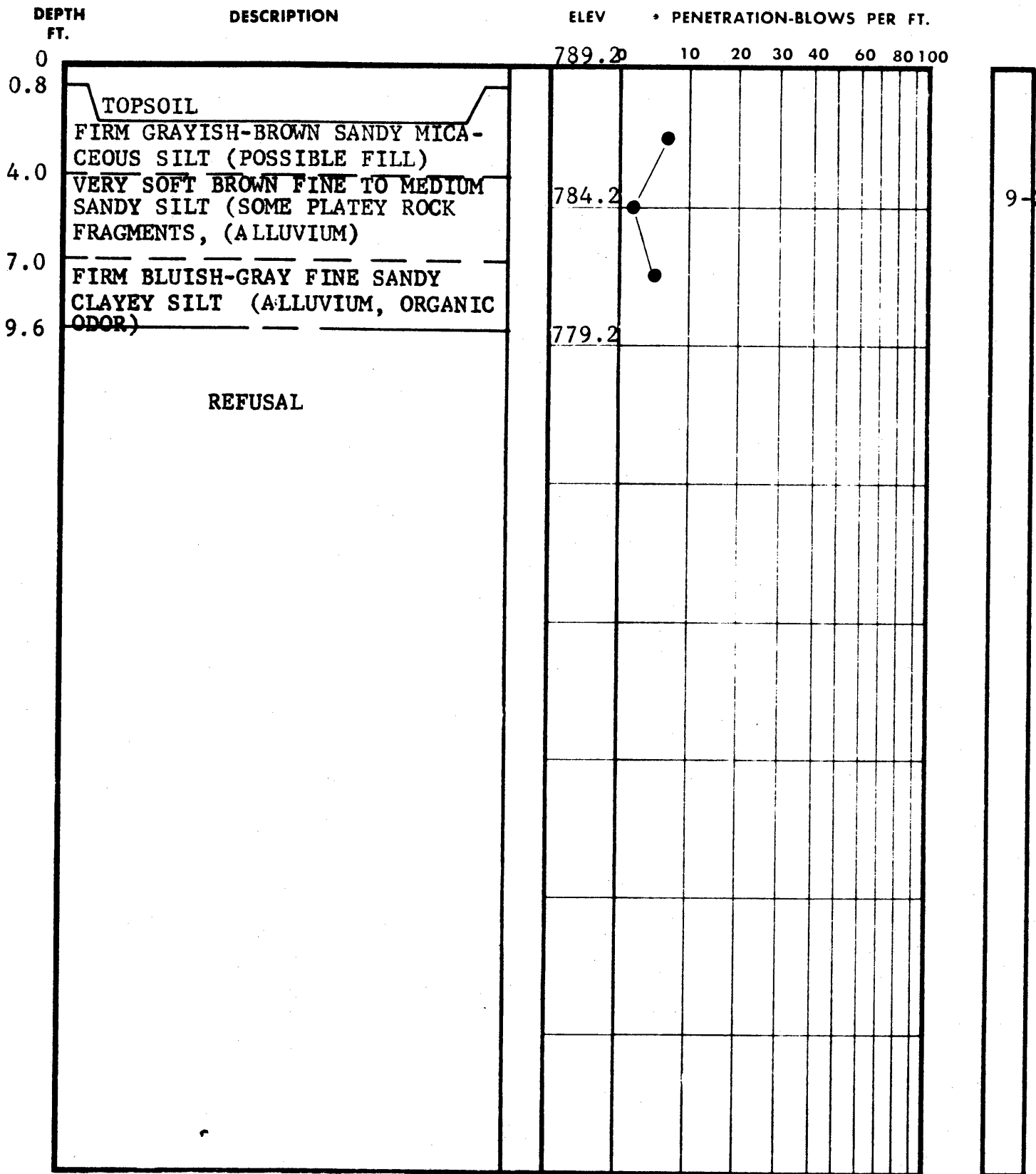
NO DRILLING WATER LOSS RECORDED

CORE BORING RECORD

BORING NO. 113  
JOB NO. 5862

jj

WATER TABLE



9-24-6

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-114

DATE DRILLED 7/25/68

JOB NO. 5862

jj

 UNDISTURBED SAMPLE

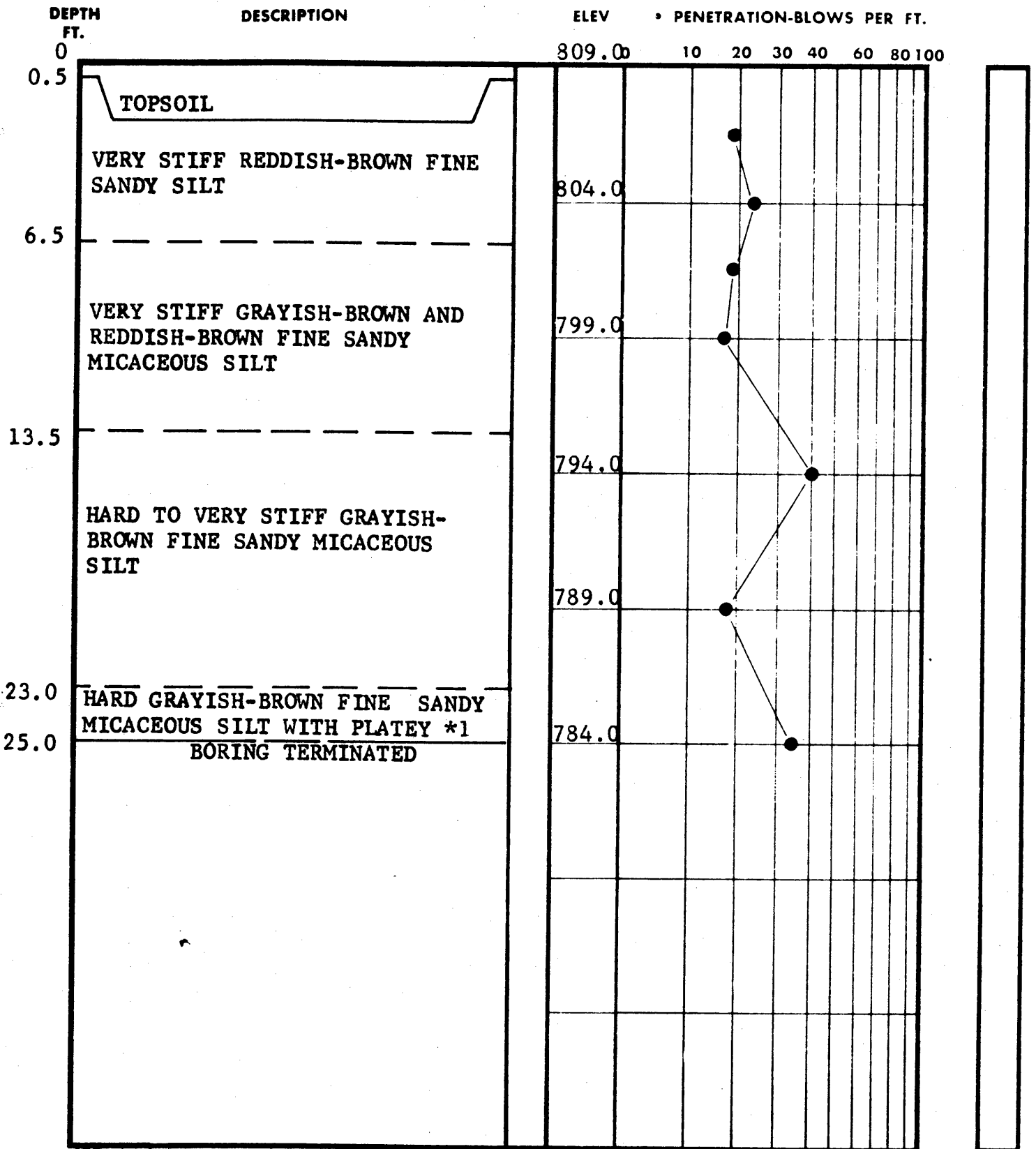
 WATER TABLE, 24 HR.

 WATER TABLE, 1 HR.

 50% ROCK CORE RECOVERY

 LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.








NO GROUND WATER ENCOUNTERED  
\*1 ROCK FRAGMENTS

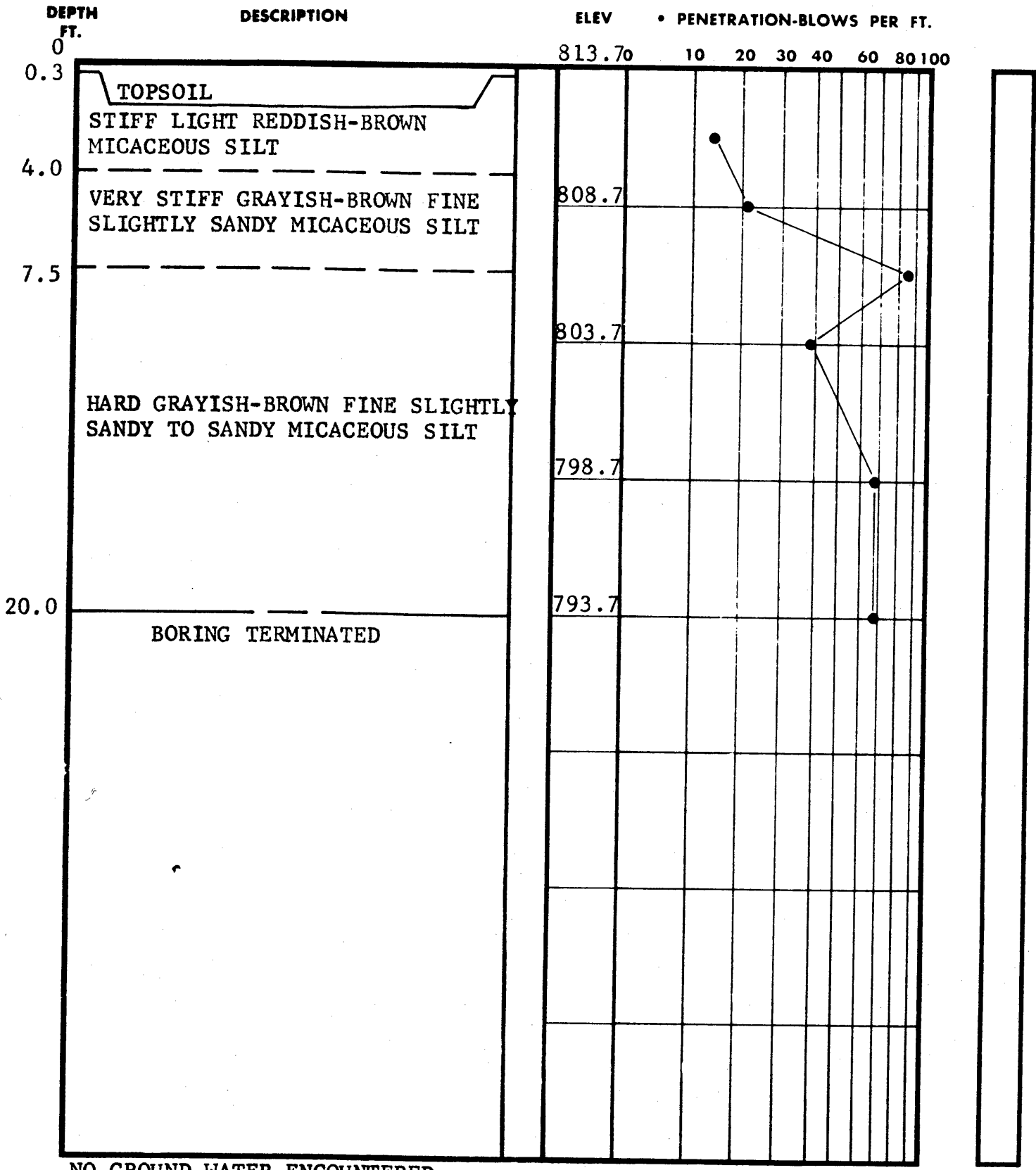
### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113  
PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-115  
DATE DRILLED 7/25/68  
JOB NO. 5862

jj  UNDISTURBED SAMPLE  
 WATER TABLE, 24 HR.  
 WATER TABLE, 1 HR.  
 % ROCK CORE RECOVERY  
 LOSS OF DRILLING WATER





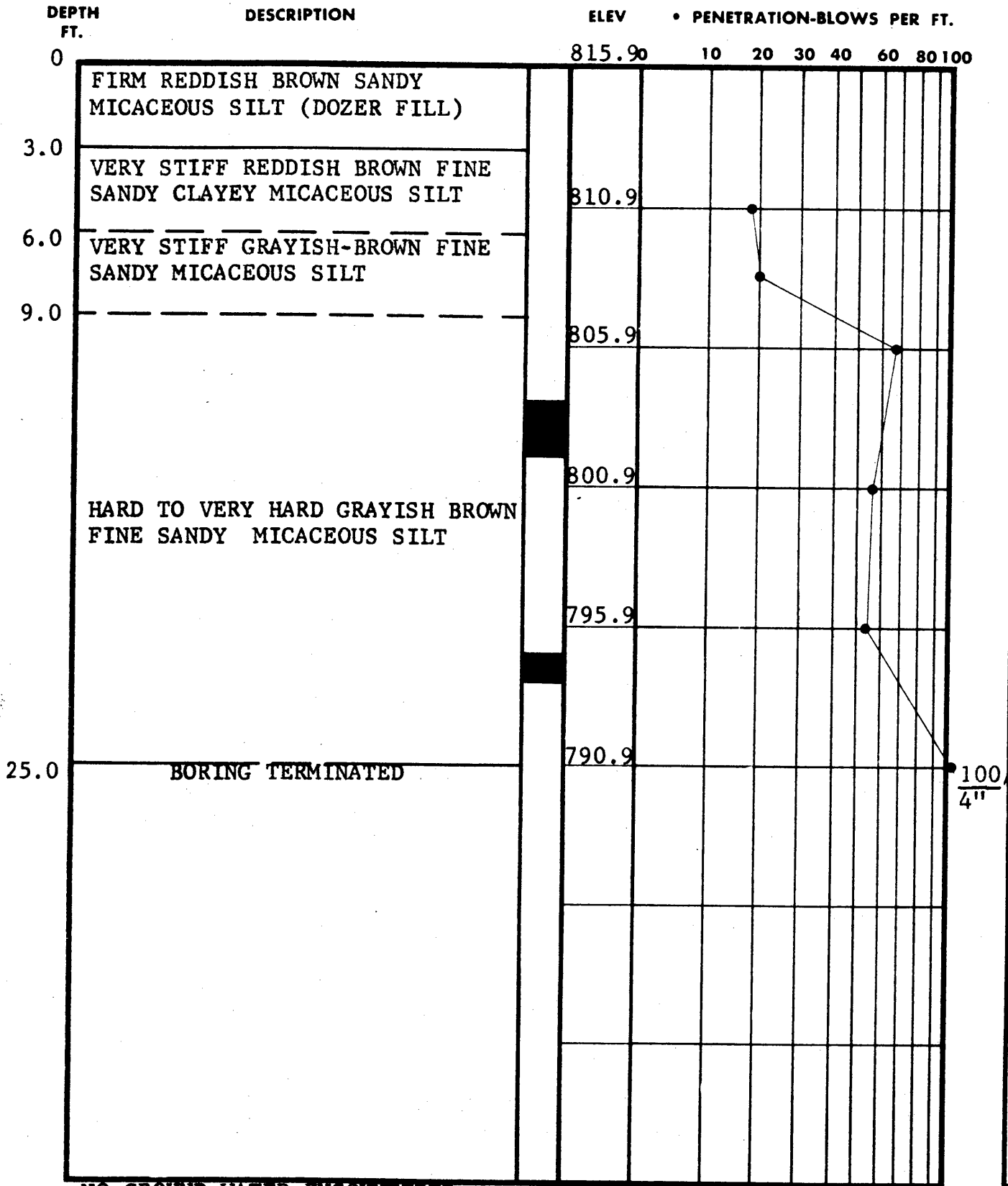
NO GROUND WATER ENCOUNTERED

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-116  
 DATE DRILLED 8/5/68  
 JOB NO. 5862

- jj UNDISTURBED SAMPLE
- WATER TABLE, 24 HR.
- WATER TABLE, 1 HR.
- % ROCK CORE RECOVERY
- LOSS OF DRILLING WATER



NO GROUND WATER ENCOUNTERED

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-117  
 DATE DRILLED 8/5/68  
 JOB NO. 5862

jj

UNDISTURBED SAMPLE

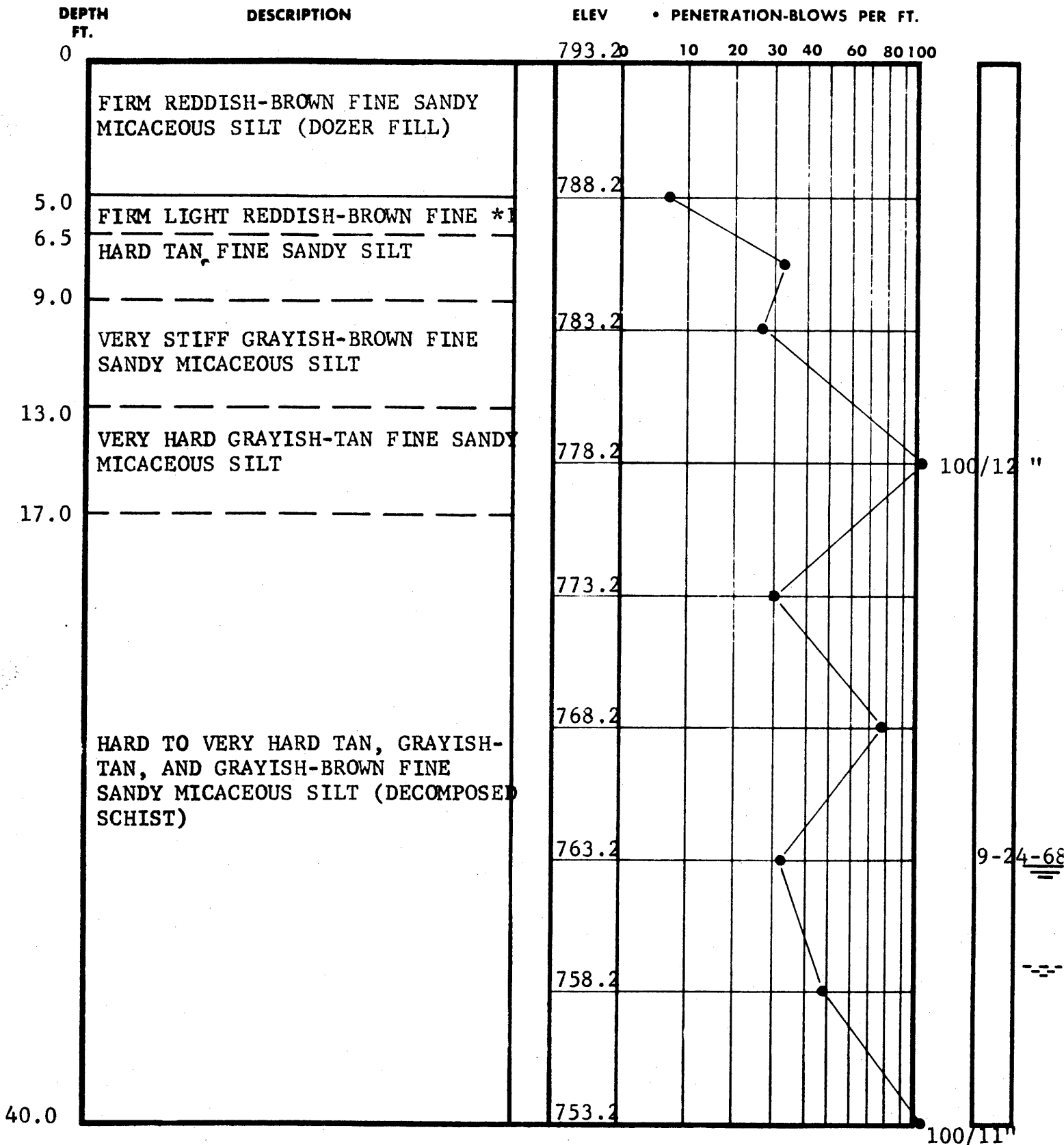
WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

% ROCK CORE RECOVERY

LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.








\*1 SANDY SILT

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-118  
 DATE DRILLED 8/5/68  
 JOB NO. 5862

jj





 UNDISTURBED SAMPLE  
 WATER TABLE, 24 HR.  
 WATER TABLE, 1 HR.  
 LOSS OF DRILLING WATER  
 % ROCK CORE RECOVERY

DEPTH FT.	DESCRIPTION	ELEV • PENETRATION-BLOWS PER FT.												
		753.20	10	20	30	40	60	80	100					
40.0	HARD TO VERY HARD TAN, GRAYISH TAN, AND GRAYISH-BROWN FINE SANDY MICACEOUS SILT (DECOMPOSED SCHIST)													100/11"
		748.2												100/6"
		743.2												100/4"
		738.2												100/1 1/2"
55.0	BORING TERMINATED													

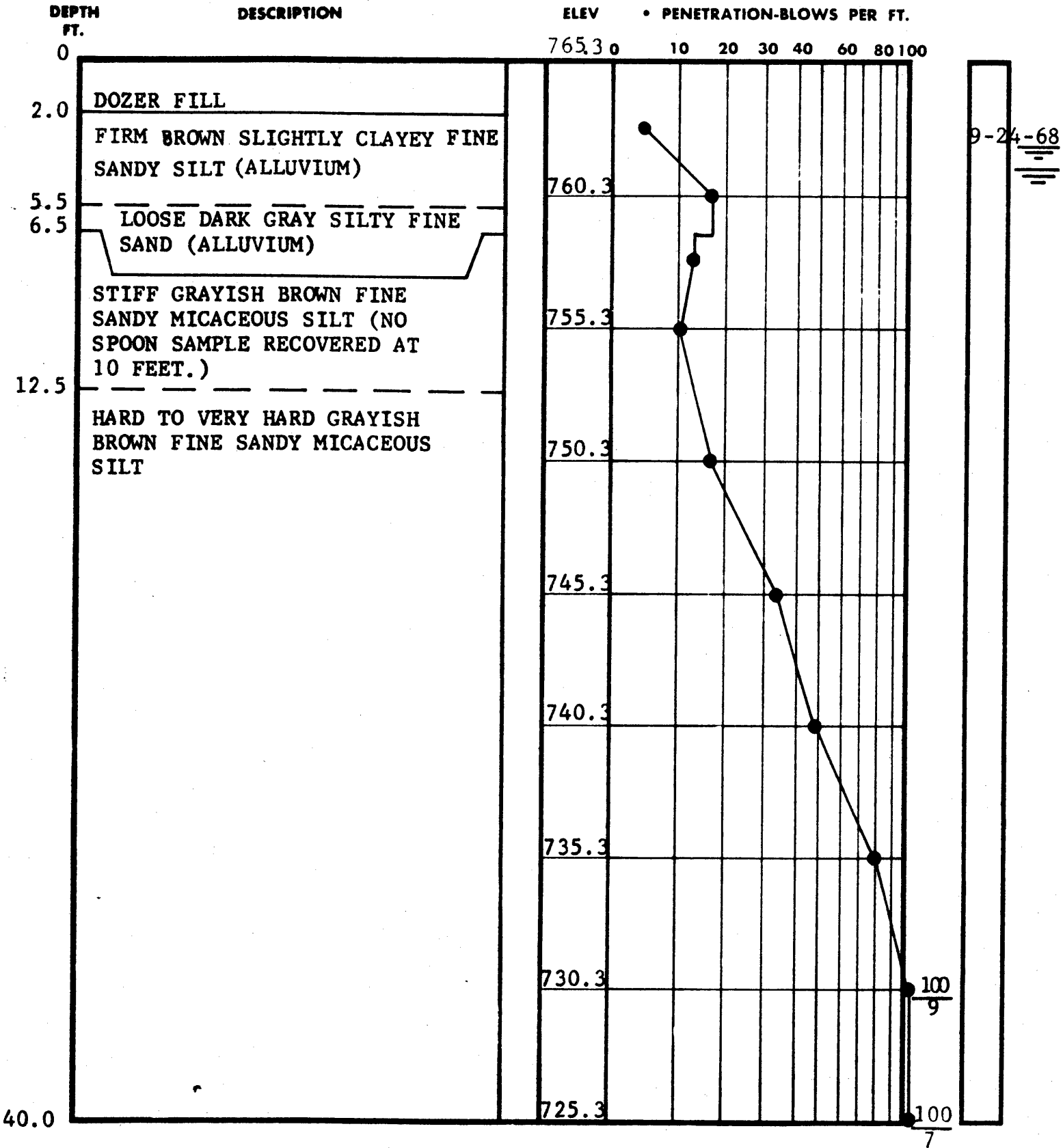
## TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-118  
 DATE DRILLED 8/5/68  
 JOB NO. 5862

jj  **UNDISTURBED SAMPLE**  
 **WATER TABLE, 24 HR.**  
 **WATER TABLE, 1 HR.**  
**[50] % ROCK CORE RECOVERY**  
 **LOSS OF DRILLING WATER**





## TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-119  
 DATE DRILLED 8-19-68  
 JOB NO. 5862

- UNDISTURBED SAMPLE
- WATER TABLE, 24 HR.
- WATER TABLE, 1 HR.
- % ROCK CORE RECOVERY
- LOSS OF DRILLING WATER



DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV. 721.3	REMARKS
44.0	SOFT GRAYISH TAN SCHIST			47.0'-49.0' FRACTURED AND NUMEROUS OPEN JOINTS DIPPING 60° AND NEARLY VERTICAL 49.0'-51.2' NUMEROUS FRACTURES, CLOSED AND OPEN JOINTS DIPPING 45°, 70° AND VERTICAL 54.8'-55.2' CLOSED INTERSECTING JOINTS DIPPING 70° AND 50° 55.4'-56.5' HIGHLY FRACTURED, OPEN VERTICAL JOINT 56.5'-56.7' STAINED JOINT DIPPING 70° 58.3'-59.5' HIGHLY FRACTURED 59.6'-59.8' CLOSED JOINT DIPPING 75° 61.5'-66.5' VERY BROKEN (PIECES MOSTLY LESS THAN 1", SOME 3" IN LENGTH) 66.5'-71.5' FRACTURED AND BROKEN (PIECES 6"-1 1/2" IN LENGTH) 71.5'-76.5' BROKEN (PIECES 4"-1" IN LENGTH)
46.3 47.0	VERY SOFT GRAYISH TAN SCHIST	83	716.3	
	MODERATELY HARD GRAY SCHIST			
51.2	SOFT GRAYISH TAN SCHIST	94		
53.5	MODERATELY HARD GRAY SCHIST		NX 711.3	
55.4 55.9	SOFT GRAYISH TAN *1	100		
	SOFT AND MODERATELY HARD GRAYISH TAN SCHIST	98	706.3	
59.9	MODERATELY HARD GRAY SCHIST			
62.0	HARD, MODERATELY HARD AND SOFT GRAY SCHIST	45	701.3	
		63	BX 696.3	
71.5		HARD GRAY SCHIST	86	
76.5	CORING TERMINATED		686.3	

NO DRILLING WATER LOSS RECORDED  
\*1 SCHIST

CORE BORING RECORD

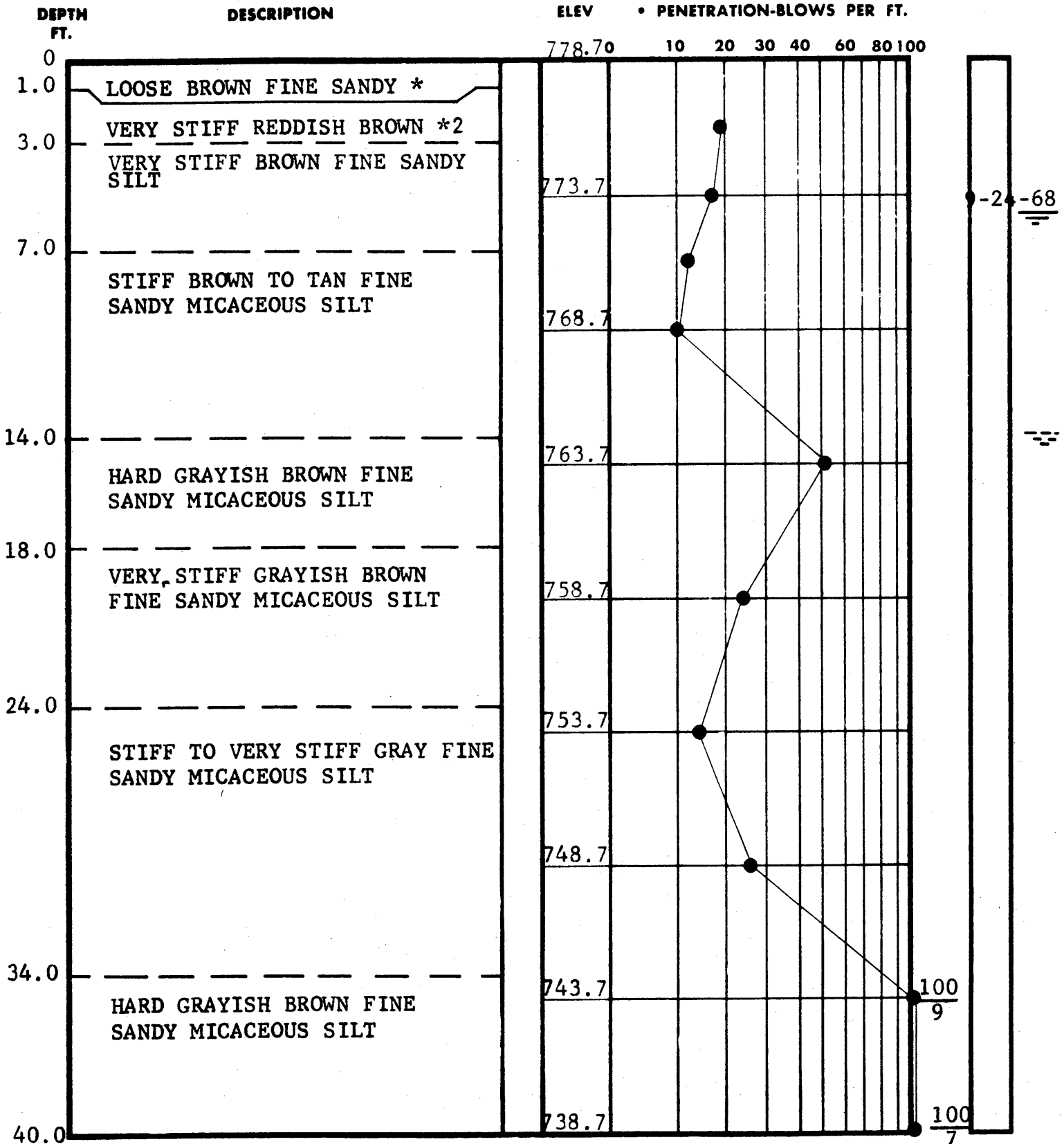
PAGE 3 OF 3

BORING NO. 119  
JOB NO. 5862

jj

WATER TABLE

LAW ENGINEERING TESTING CO.



\* MICACEOUS SILT (DOZER FILL)

\*2 SLIGHTLY CLAYEY FINE SANDY SILT WITH SOME GRAVEL

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

PAGE 1 OF 3

BORING NO. B-120

DATE DRILLED 8-22-68

JOB NO. 5862

UNDISTURBED SAMPLE

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

% ROCK CORE RECOVERY

LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.








DEPTH FT.	DESCRIPTION	ELEV • PENETRATION-BLOWS PER FT.													
		738.70	10	20	30	40	60	80	100	100	7				
40.0	HARD GRAYISH BROWN FINE SANDY MICACEOUS SILT	733.7													100
															2½
			728.7												100
51.5	REFUSAL  SEE CORE BORING RECORD													2	
			723.7												

## TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

PAGE 2 OF 3

BORING NO. B-120  
 DATE DRILLED 8-22-68  
 JOB NO. 5862

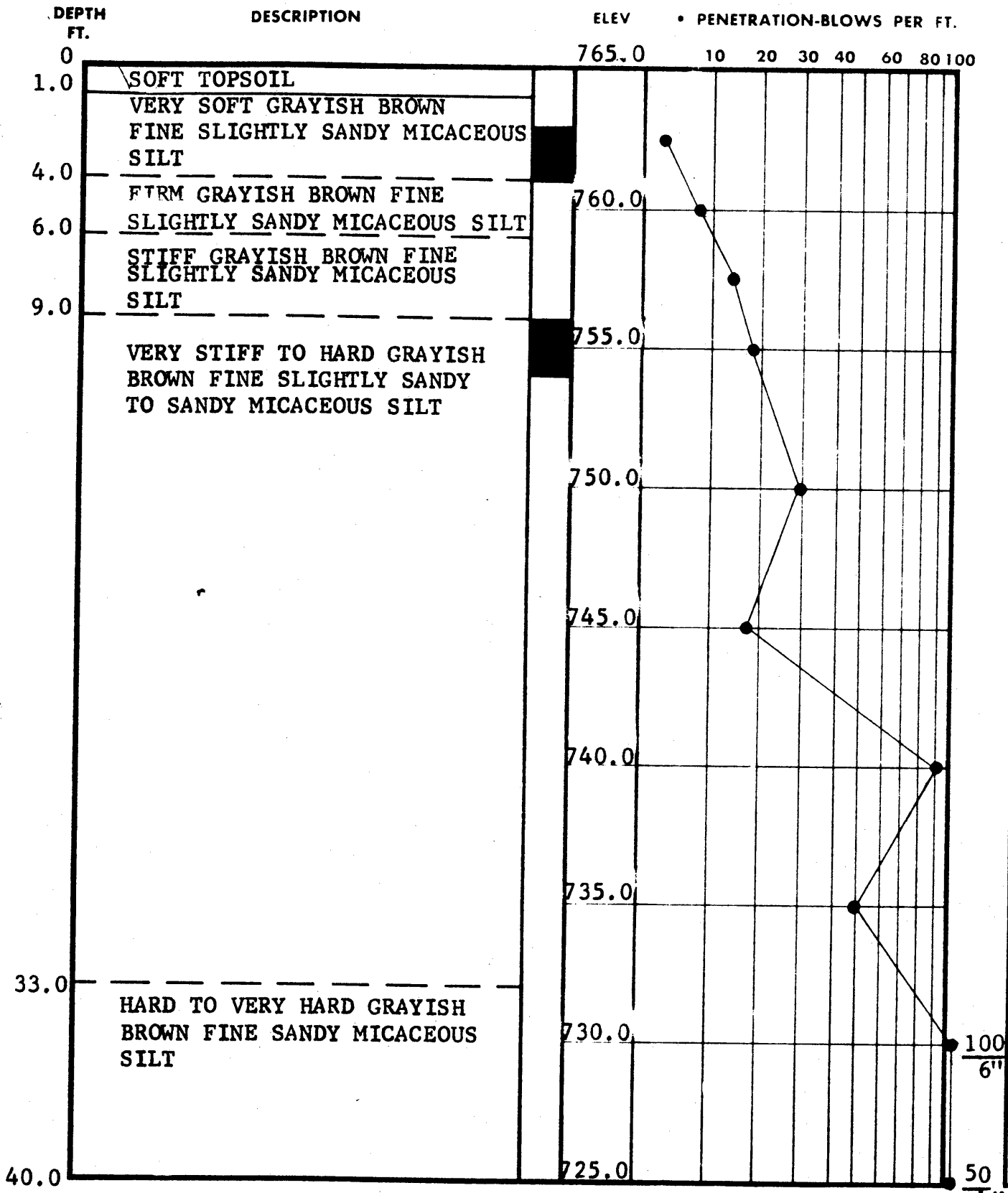
 UNDISTURBED SAMPLE  
 WATER TABLE, 24 HR.  
 WATER TABLE, 1 HR.  
 % ROCK CORE RECOVERY  
 LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.

DEPTH FT.	DESCRIPTION	CORE BIT %	ELEV. SIZE	REMARKS
51.5	MODERATELY HARD GRAY SCHIST			
52.2	HARD GRAY SCHIST	85		51.5'-56.5' ROCK IS BROKEN AND FRACTURED (PIECES 3"-6" IN LENGTH)
54.2	MODERATELY HARD GRAY SCHIST		722.2	56.5'-57.9' ROCK IS CONTINUOUS
54.9	HARD GRAY SCHIST			57.9'-59.6' FRACTURED AND BROKEN (PIECES 6"-8" IN LENGTH)
57.7	MODERATELY HARD GRAY SCHIST	93		59.2'-59.6' STAINED VERTICAL JOINT DIPPING 75°
57.9	HARD GRAY SCHIST	87	717.2	59.6'-61.5' FRACTURED (PIECES 1"-3" IN LENGTH)
			712.2	64.3'-64.5' CLOSED VERTICAL JOINT DIPPING 70°
		100		62.5'-62.9' TWO STAINED FRACTURES
71.5	CORING TERMINATED		707.2	66.5'-67.2' HIGHLY FRACTURED
				67.8'-69.6' FRACTURED (PIECES 6"-1" IN LENGTH)
				68.5'-69.6' TWO STAINED JOINTS, ONE NEARLY VERTICAL AND ONE DIPPING 70°
				70.1'-73.4' BROKEN
				71.9'-72.2' CLOSED JOINT DIPPING 60°

NO DRILLING WATER LOSSES RECORDED

CORE BORING RECORD



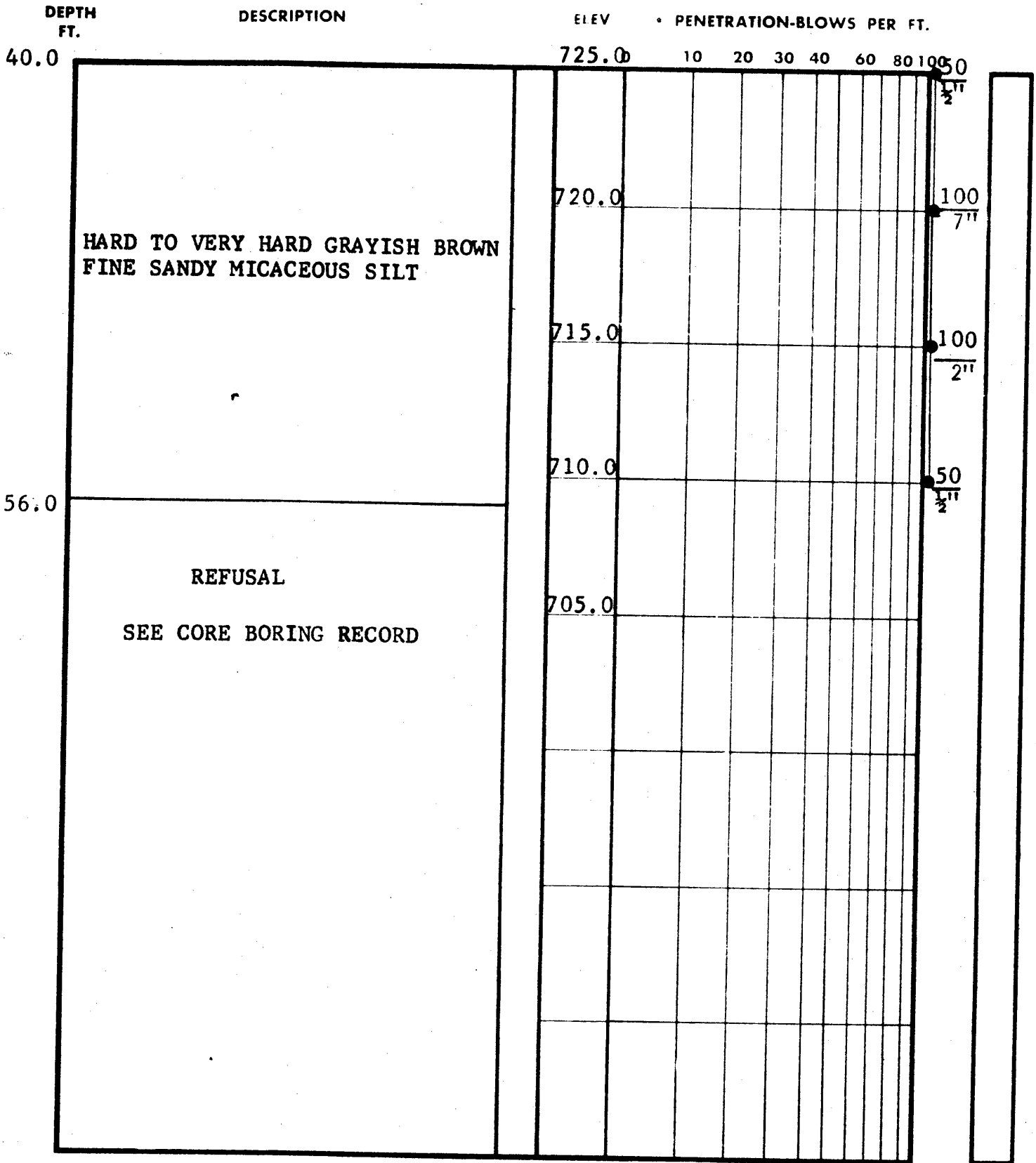
9-24-68

**TEST BORING RECORD**

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-121  
 DATE DRILLED 8-6-68  
 JOB NO. 5862

- UNDISTURBED SAMPLE
- WATER TABLE, 24 HR.
- WATER TABLE, 1 HR.
- % ROCK CORE RECOVERY
- LOSS OF DRILLING WATER



### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-121

DATE DRILLED 8-6-68

JOB NO. 5862

 UNDISTURBED SAMPLE

 WATER TABLE, 24 HR.

 WATER TABLE, 1 HR.

 50% ROCK CORE RECOVERY

 LOSS OF DRILLING WATER





DEPTH ET	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
57.5	SOFT AND MODERATELY HARD GRAYISH TAN SCHIST	62	707.5	57.5'-62.5' FRACTURED CLOSED VERTICAL JOINT
62.5	MODERATELY HARD GRAYISH*1		702.5	62.5'-67.5' FRACTURED (PIECES 3"-1" IN LENGTH)
64.0	SOFT GRAYISH TAN SCHIST	100		62.6'-62.8' INTER- SECTING STAINED JOINTS, DIPPING 60° AND ONE VERTICAL
66.0	MODERATELY HARD GRAYISH TAN SCHIST		697.5	63.3'-63.9' TWO CLOSED VERTICAL JOINTS WITH TWO INTERSECTING CLOSED JOINTS DIPPING 45°
70.4		93		
70.6	SOFT GRAYISH TAN *2			
	MODERATELY HARD GRAYISH TAN SCHIST		692.5	66.0'-66.5' CLOSED INTERSECTING JOINTS, DIPPING 80° AND 40°
75.0		100	NX	67.5'-72.5' FRACTURED (PIECES 1"-6" IN LENGTH)
75.6	SOFT GRAY SCHIST			
			687.5	68.4'-68.7' CLOSED VERTICAL JOINT
	MODERATELY HARD GRAY SCHIST	73		69.1'-69.3' STAINED VERTICAL JOINT
			682.5	70.2'-70.4' CLOSED VERTICAL JOINT
		76		71.2'-72.5' THREE CLOSED JOINTS, DIPPING 60°, 50° AND VERTICAL
			677.5	72.5'-73.1' TWO VERTICAL CLOSED JOINTS
		97	BX	72.9' - STAINED FRACTURE
		93		73.1'-74.3' FRACTURED (PIECES 1"-6" IN LENGTH)
93.0	HARD GRAY SCHIST		672.5	
		100		
97.5			667.5	

\*1 TAN SCHIST

\*2 SCHIST

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
97.5	HARD GRAY SCHIST		667.5	74.1'-74.3' TWO STAINED JOINTS, DIPPING 40° AND VERTICAL
	VERY SOFT GRAYISH-TAN SCHIST			75.6'-75.9' CLOSED JOINT DIPPING 65°
	HARD GRAY SCHIST	100	BX 662.5	76.2'-76.4' FRACTURED AND SOFT SEAM
105.5	CORING TERMINATED		657.5	76.7'-77.2' TWO OPEN JOINTS DIPPING 40°
				77.5'-77.6' FRACTURE AND STAINED VERTICAL JOINT
				77.8'-78.2' INTERSECTING CLOSED JOINTS, DIPPING 60° AND 40°
				78.3'-79.4' STAINED FRACTURES (PIECES 4"- 5" IN LENGTH)
				79.4'-82.5' STAINED FRACTURES (PIECES 1"- 3" IN LENGTH)
				79.6'-80.5' TWO STAINED JOINTS DIPPING 50° AND 60°
				82.5'-85.2' FRACTURED (PIECES 2"-8" IN LENGTH)
				84.2'-85.2' TWO STAINED JOINTS DIPPING 50° AND 60°
				85.2'-87.5' HIGHLY FRACTURED

NO DRILLING WATER LOSS RECORDED

CORE BORING RECORD

DEPTH  
FT.

DESCRIPTION

CORE BIT ELEV.  
% SIZE

REMARKS

				87.5'-90.5' FRACTURED AND JOINTED
				88.0'-88.3' CLOSED STAINED JOINT DIPPING 60°
				88.4'-88.9' TWO CLOSED JOINTS DIPPING 70°
				89.0'-89.5' CLOSED INTERSECTING JOINTS DIPPING 60° AND 70°
				90.8'-90.9' OPEN JOINT DIPPING 45°
				91.4'-92.4' FRACTURED AND BROKEN (PIECES ABOUT 1" IN LENGTH)
				92.4'-95.5' FRACTURED AND BROKEN (PIECES 3"-6" IN LENGTH)
				93.0'-93.4' STAINED VERTICAL JOINT
				95.0'-95.2' OPEN JOINT DIPPING 60°
				95.5'-100.5' FRACTURED AND BROKEN (PIECES 1"-6" IN LENGTH)
				95.5'-96.0' CLOSED VERTICAL JOINT
				96.0'-96.3' OPEN JOINT DIPPING 50°
				97.0'-98.0' TWO VERTICAL CLOSED JOINTS AND ONE CLOSED JOINT DIPPING 80°
				98.3'-99.1' THREE CLOSED STAINED JOINTS DIPPING 75° AND ONE INTERSECTING JOINT DIPPING 60°
				100.5'-102.2' FRACTURED AND BROKEN
				101.2'-102.2' FOUR STAINED JOINTS. *

\*VERTICAL, DIPPING 60°, 80°, AND 45°

CORE BORING RECORD

PAGE 3 OF 4 BORING NO. 121-A  
JOB NO. 5862

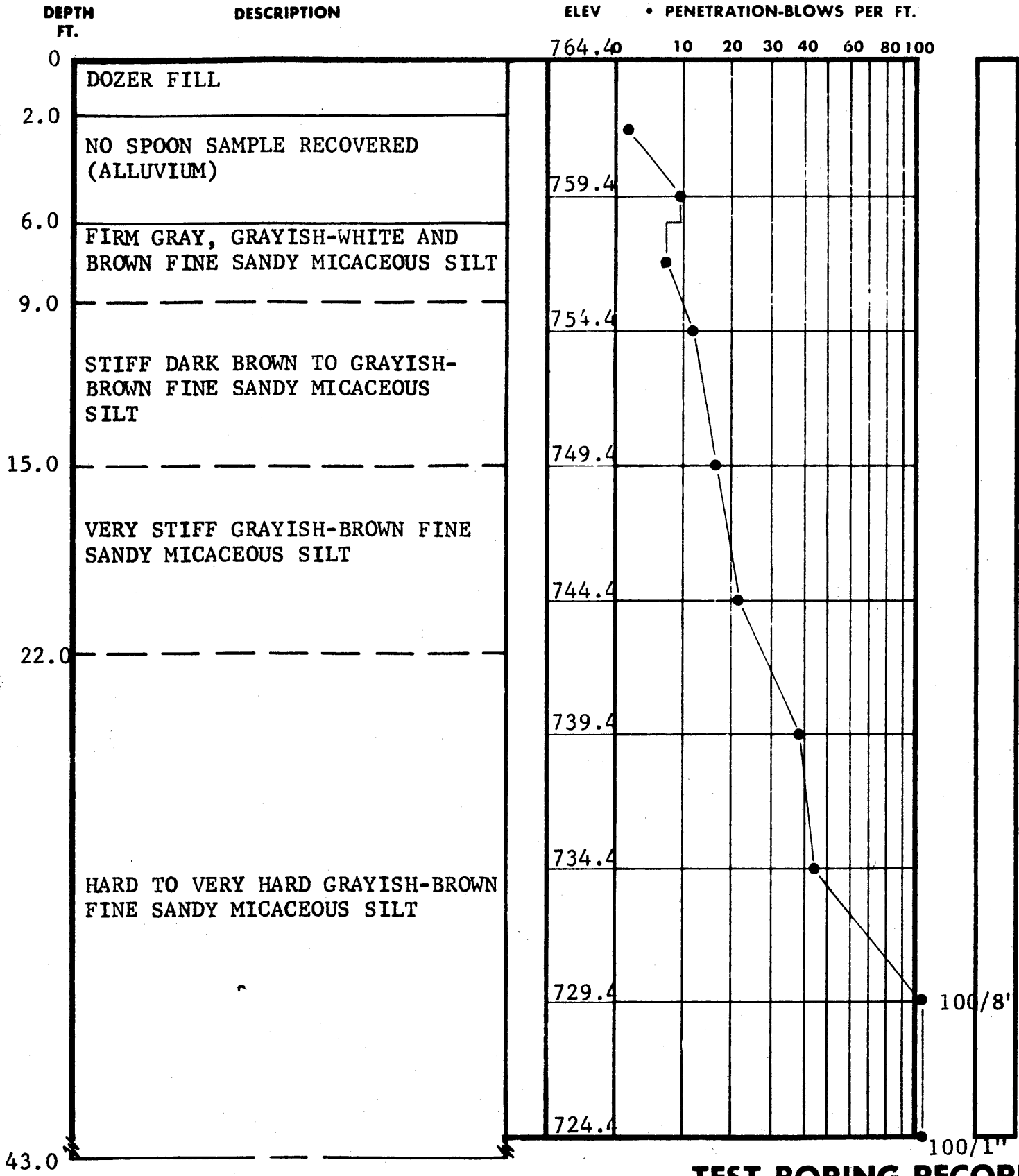
WATER TABLE

LAW ENGINEERING TESTING CO.

jj










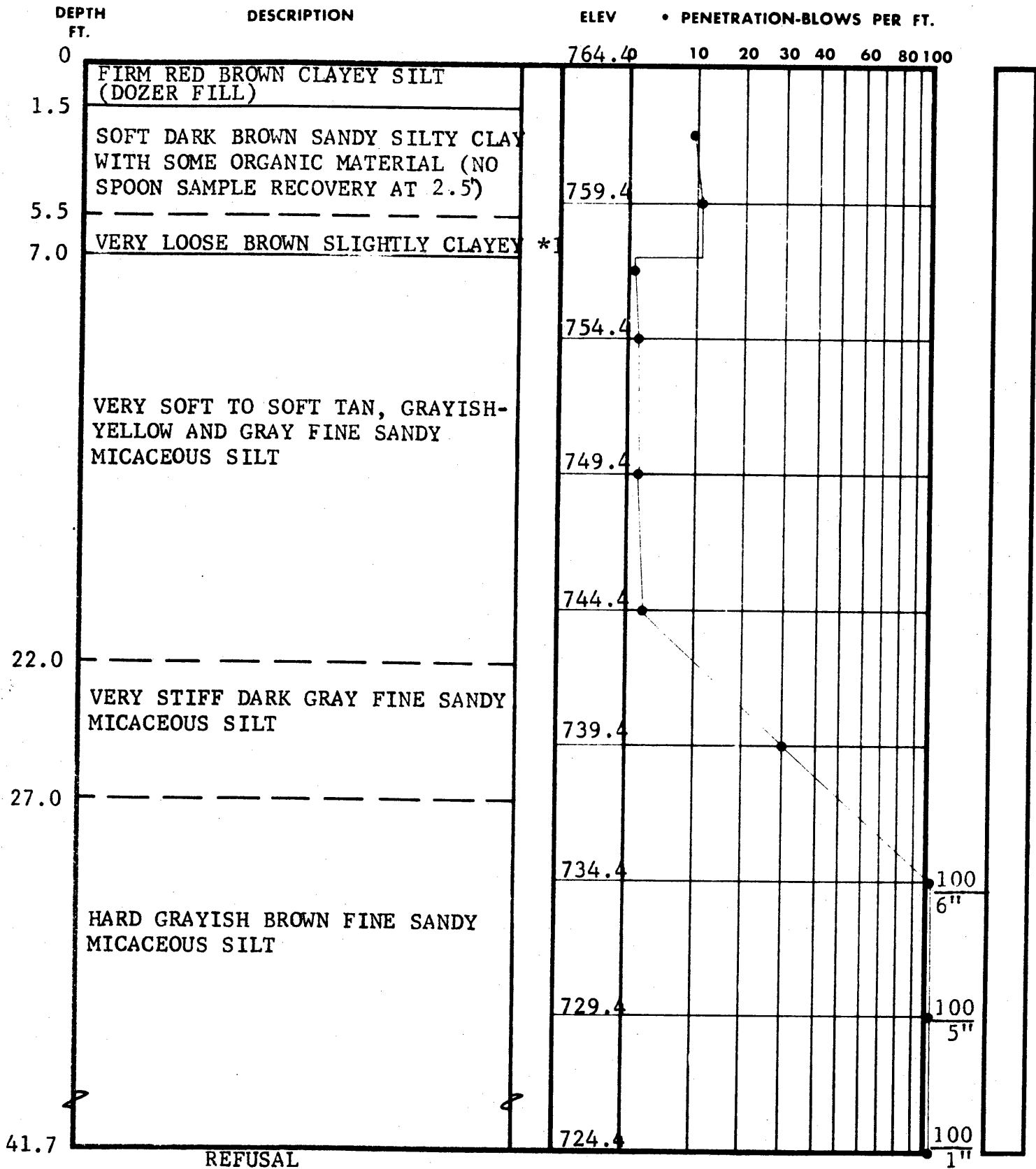


**TEST BORING RECORD**

BORING NO. B-122  
 DATE DRILLED 8/19/68  
 JOB NO. 5862

**REFUSAL**  
 BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

jj  **UNDISTURBED SAMPLE**  
 **WATER TABLE, 24 HR.**  
 **WATER TABLE, 1 HR.**  
 **% ROCK CORE RECOVERY**  
 **LOSS OF DRILLING WATER**



### TEST BORING RECORD

SEE CORE BORING RECORD  
 \*1 SILTY FINE TO COARSE SAND WITH SOME GRAVEL  
 (ALLUVIUM) PAGE 1 OF 2

BORING NO. B-123  
 DATE DRILLED 8/14/68  
 JOB NO. 5862

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

- jj
- UNDISTURBED SAMPLE
- ▬ WATER TABLE, 24 HR.
- ▬ WATER TABLE, 1 HR.
- |50| % ROCK CORE RECOVERY
- ◀ LOSS OF DRILLING WATER

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
41.7			722.7	
42.5	MODERATELY HARD GRAYISH TAN SCHIST			41.9'-42.1' SOFT AND HIGHLY FRACTURED
43.0	SOFT TO VERY SOFT GRAYISH TAN SCHIST	100		(PIECES LESS THAN 1/2" IN LENGTH)
	MODERATELY HARD GRAYISH TAN SCHIST WITH SOFT SEAMS		717.7	43.0'-46.7' NUMEROUS CLOSED JOINTS DIPPING 45°
46.7				49.2'-50.3' SOFT AND FRACTURED
	HARD GRAY SCHIST	88	712.7	54.0' SOFT AND FRAC- TURED
		100		
			NX	
			707.7	
57.0	SOFT AND MODERATELY HARD GRAYISH TAN *1			
57.6				
	HARD GRAY SCHIST	82	702.7	61.7'-64.7' CONTINUOUS 64.7'-64.9' FRACTURED
				65.3'-65.9' CLOSED JOINT DIPPING 75°
64.7	MODERATELY HARD *2	100		66.1'-66.7' FRACTURED AND JOINTED
64.9				66.8'-66.9' CLOSED VERTICAL JOINT
66.1	HARD GRAY SCHIST		697.7	67.3'-67.6' CLOSED VERTICAL JOINT
66.7	SOFT GRAY SCHIST			69.2'-70.2' FRACTURED (PIECES 1"-4" IN LENGTH)
	HARD GRAY SCHIST	100		70.8'-71.3' FRACTURED CLOSED JOINT DIPPING 45°
71.7	CORING TERMINATED		692.7	

\*1 SCHIST

\*2 GRAY SCHIST

NO DRILLING WATER LOSS RECORDED

PAGE 2 of 2

CORE BORING RECORD

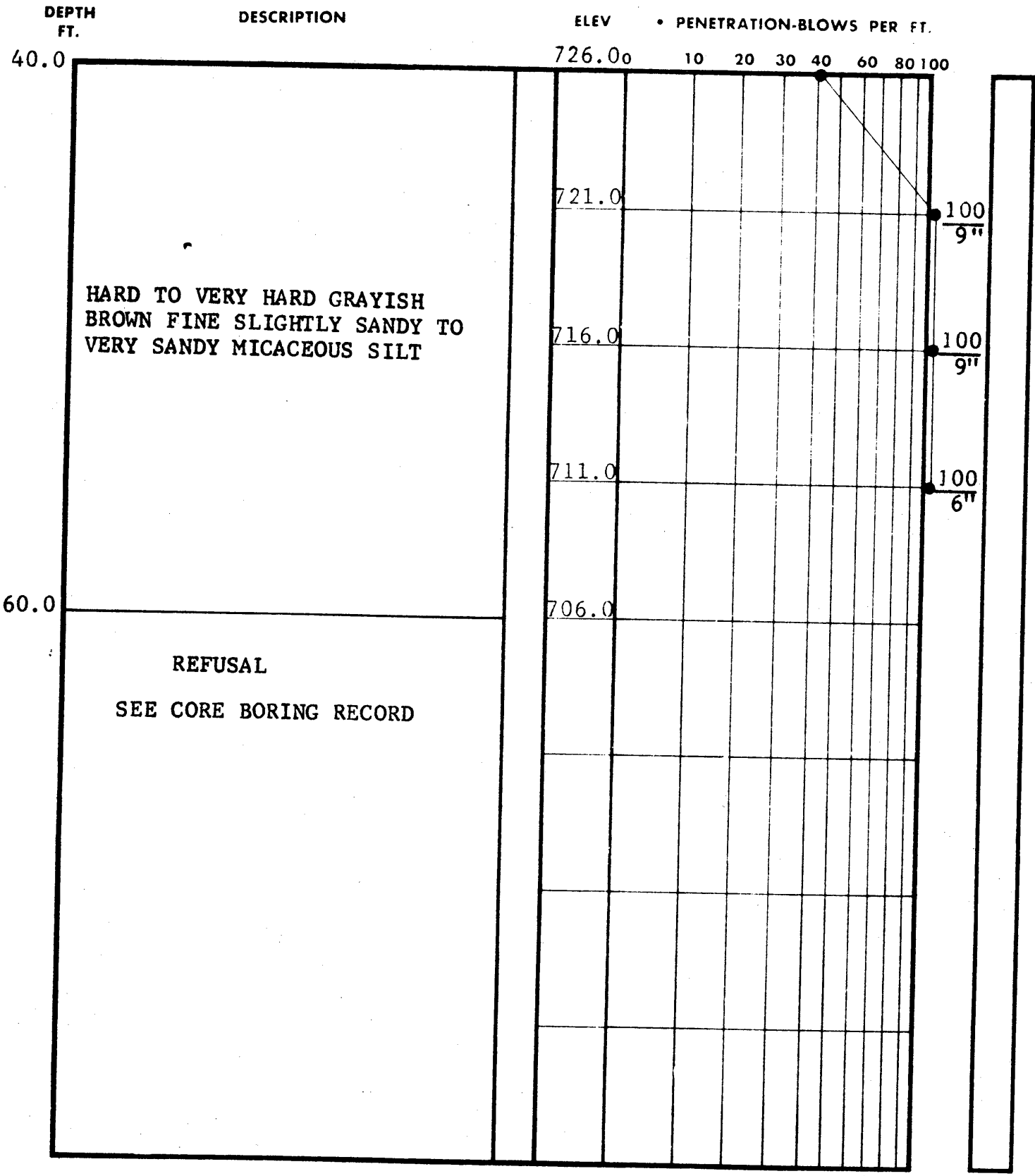
BORING NO. 123  
JOB NO. 5862

jj

WATER TABLE

LAW ENGINEERING TESTING CO.










### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-124

DATE DRILLED 8-9-68

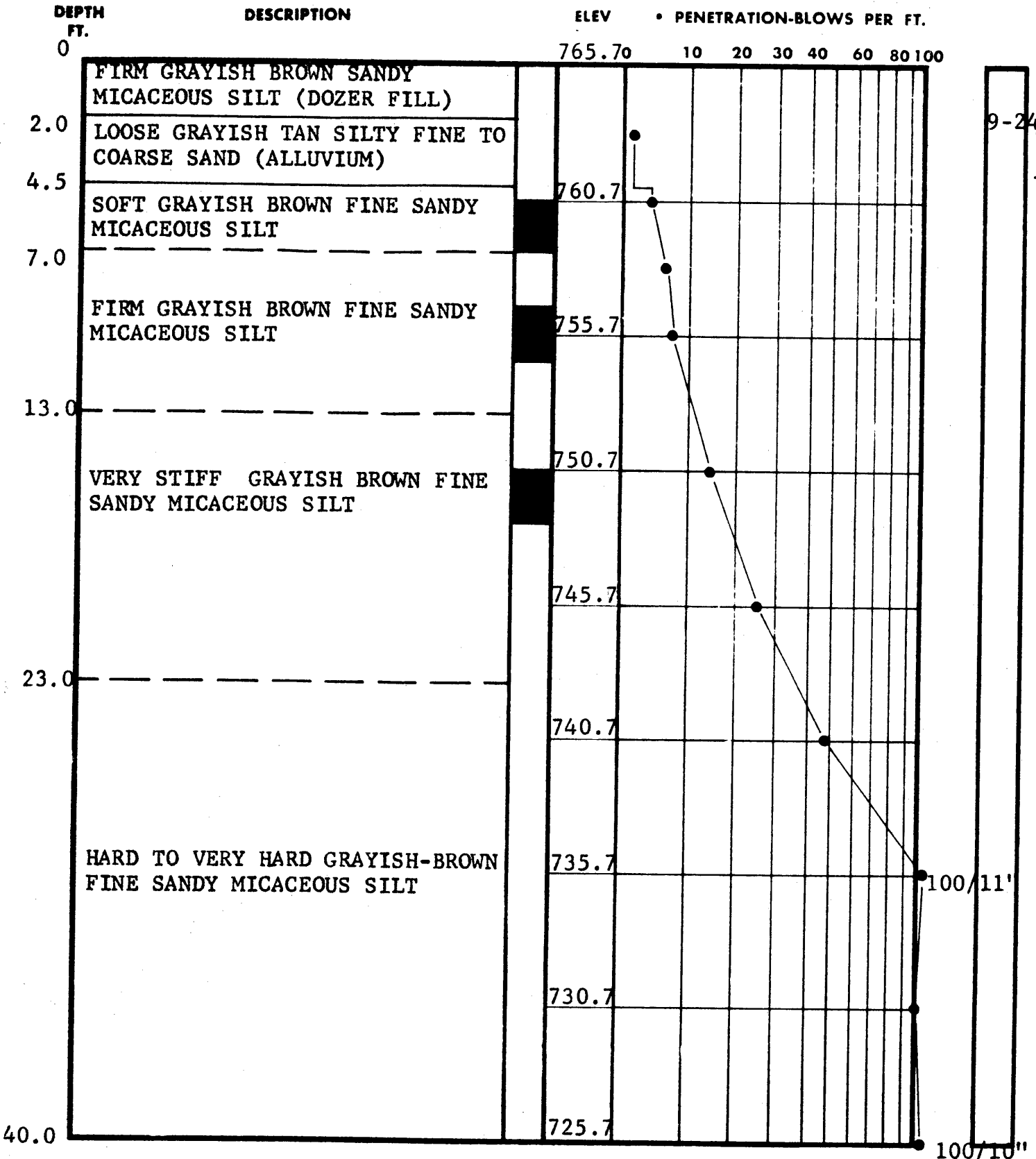
JOB NO. 5862

-  UNDISTURBED SAMPLE
-  WATER TABLE, 24 HR.
-  WATER TABLE, 1 HR.
-  50% ROCK CORE RECOVERY
-  LOSS OF DRILLING WATER

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
60.0	SOFT GRAYISH-TAN SCHIST	45	706.0	60.5'-65.0' FRACTURED AND BROKEN (PIECES LESS THAN 3" IN LENGTH) OPEN JOINT DIPPING 45°
65.0	MODERATELY HARD GRAY SCHIST	96	701.0	65.1'-65.3' CLOSED JOINT DIPPING 50°
66.2		90	696.0	65.5'-65.7' CLOSED JOINT DIPPING 45° 66.2'-66.4' AND 66.9'-67.0' TWO CLOSED JOINTS DIPPING 80°
	HARD GRAY SCHIST	98	691.0	67.3'-70.0' FRACTURED (PIECES 2"-10" IN LENGTH) 69.1'-69.4' OPEN JOINT DIPPING 50°
		96	686.0	70.0'-70.2' FRACTURED 70.2'-70.5' CLOSED JOINT DIPPING 60° 71.4'-OPEN FRACTURE 72.7'-73.1' OPEN JOINT DIPPING 50°
83.5	MODERATELY HARD GRAY SCHIST WITH SOFT SEAMS	95	681.0	73.4'-OPEN FRACTURE 74.3'-74.6' CLOSED JOINT DIPPING 40°
84.5	HARD GRAY SCHIST			80.8'-81.4' THREE VERTICAL JOINTS, TWO CLOSED AND ONE OPEN
90.0	CORING TERMINATED		676.0	83.5'-84.5' HIGHLY FRACTURED, JOINTED AND BROKEN (PIECES LESS THAN 1" IN LENGTH) 85.4' OPEN FRACTURE 88.4'-88.6' SOFT SEAM 89.8'-90.0' OPEN JOINT DIPPING 45°

NO DRILLING WATER LOSS RECORDED

CORE BORING RECORD



### TEST BORING RECORD

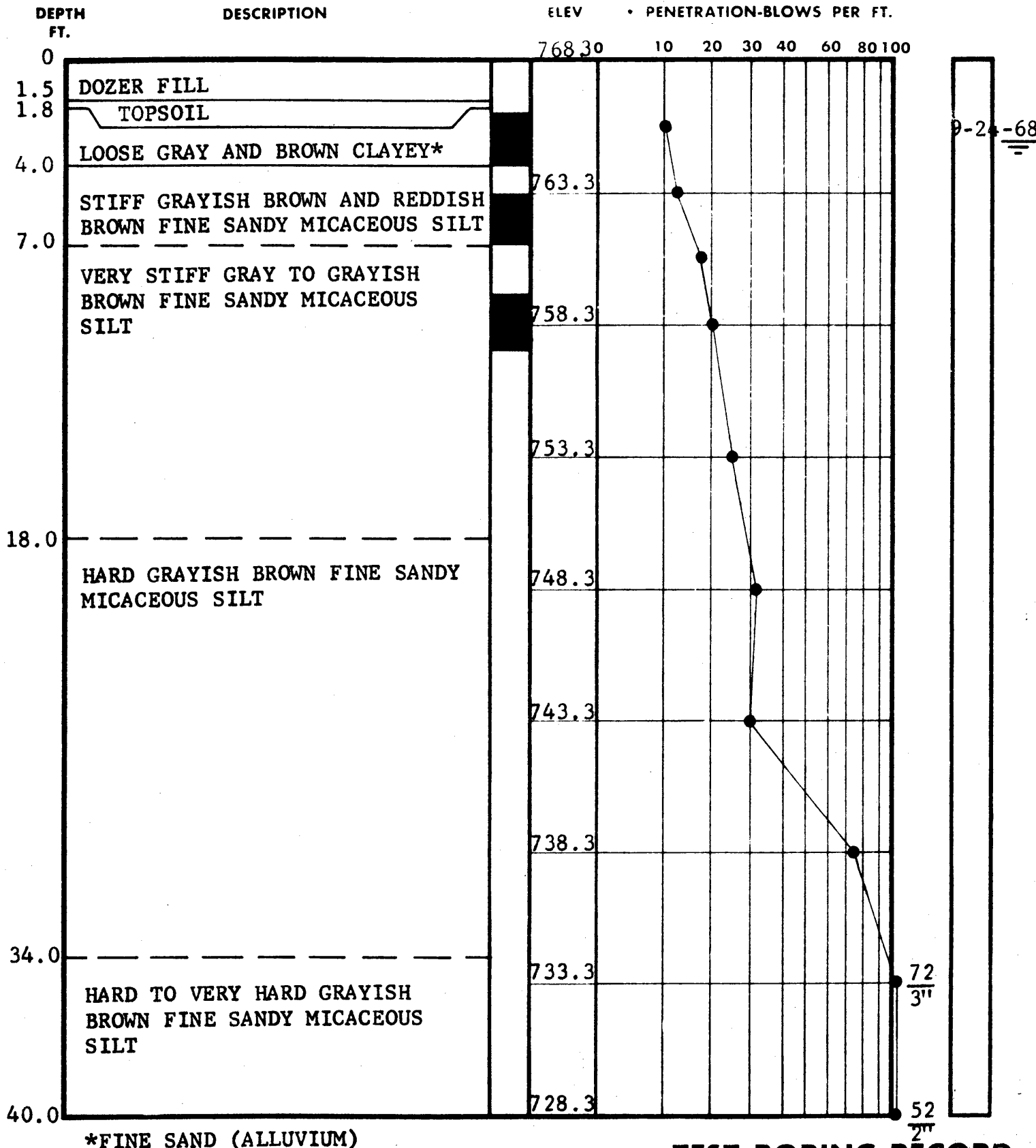
BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-125  
 DATE DRILLED 8/7/68  
 JOB NO. 5862

- WATER TABLE, 24 HR.
- WATER TABLE, 1 HR.
- UNDISTURBED SAMPLE
- % ROCK CORE RECOVERY
- LOSS OF DRILLING WATER












\*FINE SAND (ALLUVIUM)

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

PAGE 1 of 3

BORING NO. B-126  
 DATE DRILLED 8-6-68  
 JOB NO. 5862






 UNDISTURBED SAMPLE  
 WATER TABLE, 24 HR.  
 WATER TABLE, 1 HR.  
 % ROCK CORE RECOVERY  
 LOSS OF DRILLING WATER

DEPTH FT.	DESCRIPTION	ELEV	• PENETRATION-BLOWS PER FT.																
			10	20	30	40	60	80	100										
40.0	HARD TO VERY HARD GRAYISH BROWN FINE SANDY MICACEOUS SILT	728.30																52 2"	
		723.3																100 5 1/2"	
		718.3																	100 5"
		713.3																	100 2"
57.0	REFUSAL SEE CORE BORING RECORD	708.3																100 NP	

## TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-126  
 DATE DRILLED 8-6-68  
 JOB NO. 5862

 UNDISTURBED SAMPLE	 WATER TABLE, 24 HR.
 50% ROCK CORE RECOVERY	 WATER TABLE, 1 HR.
	 LOSS OF DRILLING WATER

DEPTH  
FT.

DESCRIPTION

CORE BIT ELEV.  
% SIZE 711.3

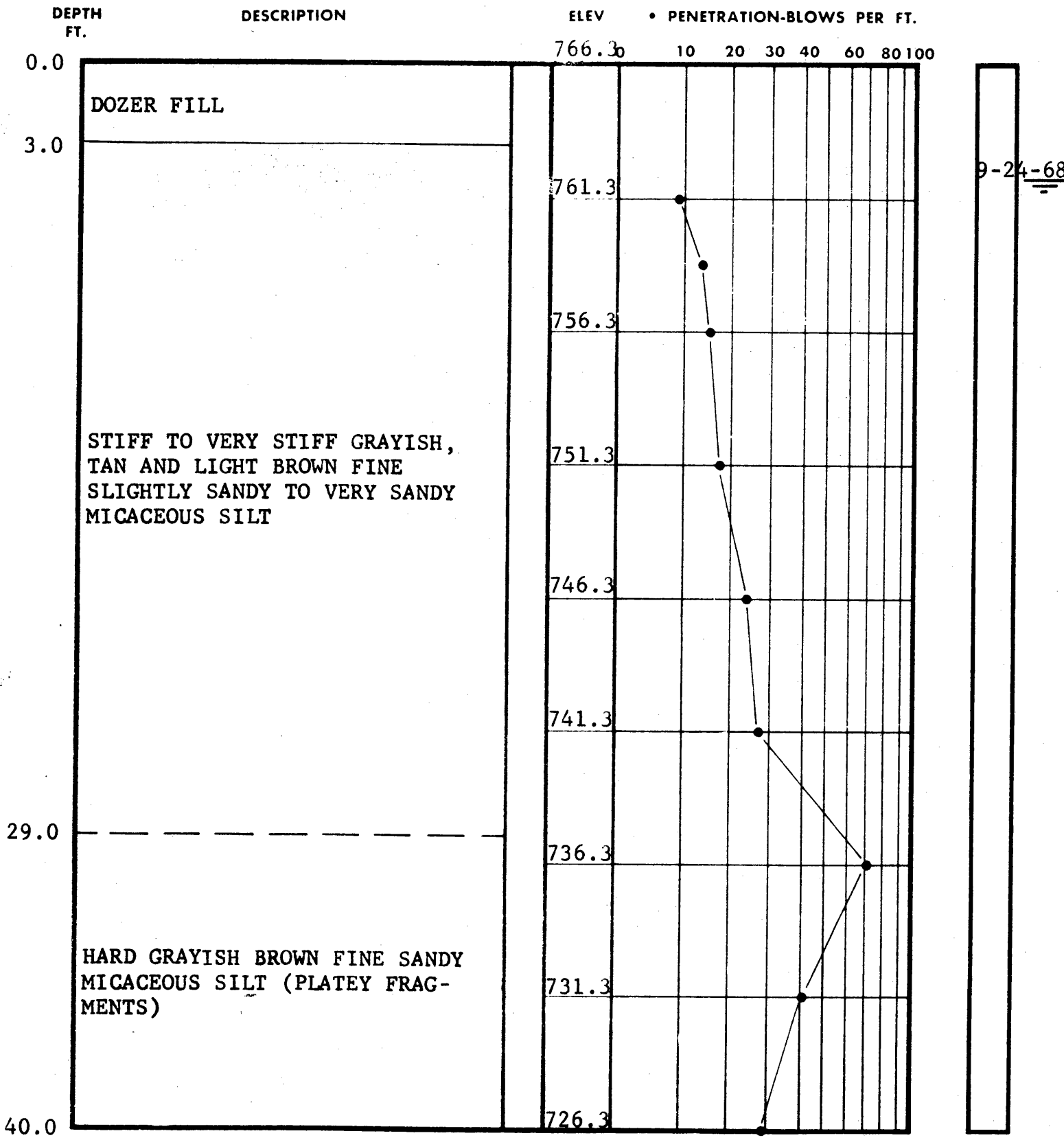
REMARKS

57.0

VERY SOFT, SOFT AND MODERATELY HARD GRAYISH TAN SCHIST	55		706.3	57.0'-62.0' HIGHLY FRACTURED AND BROKEN WITH STAINED JOINTS AND FRACTURES
	75		701.3	62.0'-67.0' HIGHLY FRACTURED AND BROKEN, PIECES SHOW NUMEROUS STAINED FRACTURES AND JOINTS, SOME INTER- SECTING NEARLY VER- TICAL JOINTS
	35			67.0'-72.0' HIGHLY FRACTURED AND BROKEN
			696.3	72.0'-77.0' HIGHLY FRACTURED AND BROKEN, SOME STAINED JOINTS AND FRACTURES
	70	BX	691.3	77.0'-82.0' HIGHLY FRACTURED, SOME STAINED JOINTS AND FRACTURES (PIECES 4" TO LESS THAN 1" IN LENGTH)
	50		686.3	
	57		681.3	
87.0	CORING TERMINATED			

NO DRILLING WATER LOSS RECORDED

CORE BORING RECORD



9-24-68

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-127  
 DATE DRILLED 8-13-68  
 JOB NO. 5862

abc  UNDISTURBED SAMPLE

 WATER TABLE, 24 HR.

 WATER TABLE, 1 HR.

|50| % ROCK CORE RECOVERY

 LOSS OF DRILLING WATER



DEPTH FT.	DESCRIPTION	ELEV	• PENETRATION-BLOWS PER FT.							
			10	20	30	40	60	80	100	
40.0	HARD GRAYISH BROWN FINE SANDY*	726.30								
41.0										
	VERY DENSE LIGHT BROWN SILTY FINE TO MEDIUM SAND (NO SPOON SAMPLE RECOVERED AT 50.0 FEET)	721.3								100 4"
50.0	REFUSAL SEE CORE BORING RECORD	716.3								100 1"

\* MICACEOUS SILT (PLATEY FRAGMENTS)

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-127

DATE DRILLED 8-13-68

JOB NO. 5862

sn  
abc



UNDISTURBED SAMPLE



WATER TABLE, 24 HR.



WATER TABLE, 1 HR.

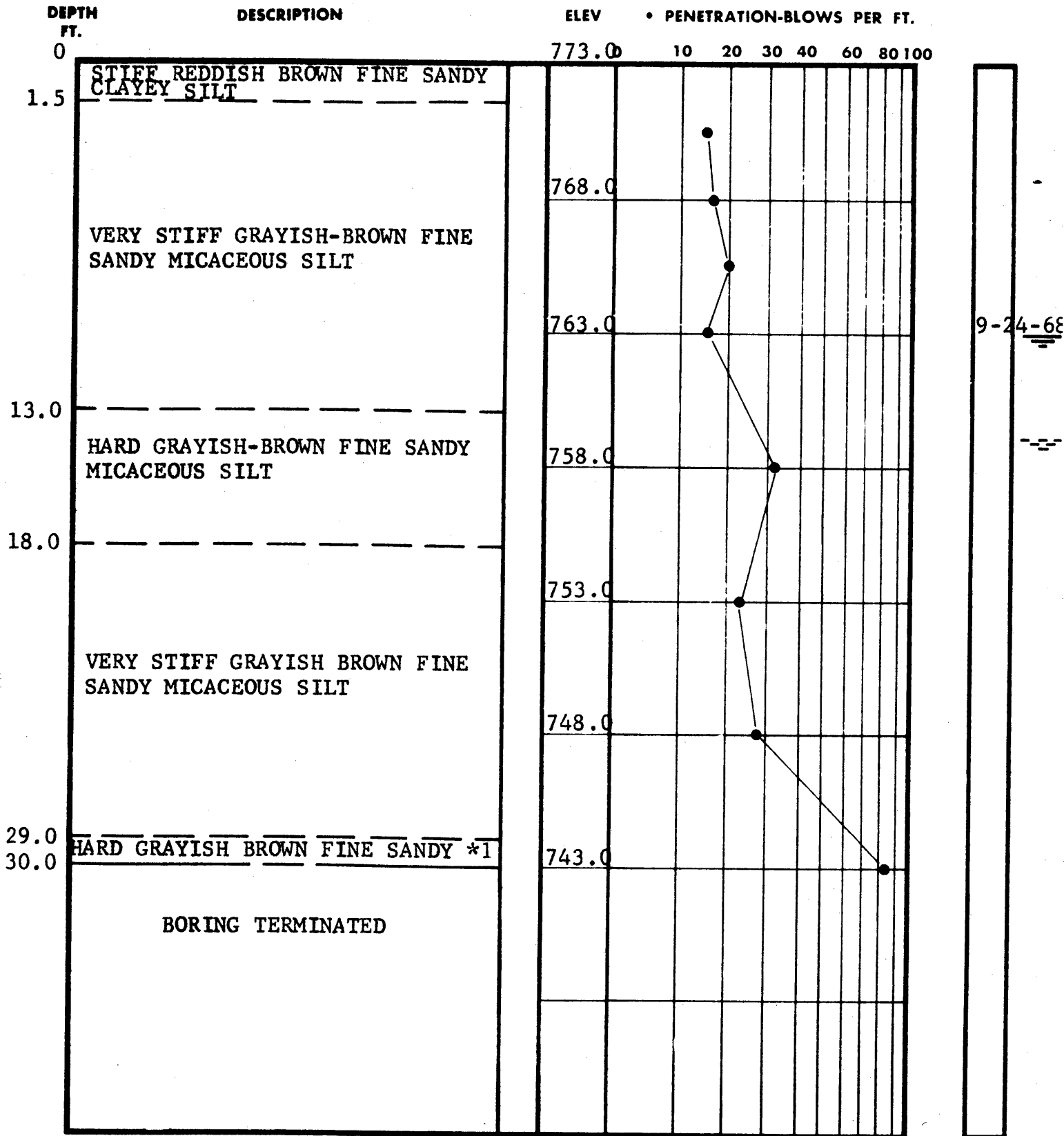
[50] % ROCK CORE RECOVERY



LOSS OF DRILLING WATER

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV. 716.3	REMARKS
50.0	VERY SOFT GRAY BROWN SCHIST	73		50.0' - 52.2' ROCK IS FRACTURED AND THINLY FOLIATED; ALSO, SEVERAL STAINED FRACTURED FOLIATION PLANES AND STAINED JOINTS DIPPING ABOUT 80°
52.2	MODERATELY HARD GRAY SCHIST		711.3	
53.2		25		
			706.3	52.2' - 53.2' TWO INTERSECTING OPEN STAINED JOINTS, ONE NEARLY VERTICAL AND ONE DIPPING ABOUT 80°
		51		
	MODERATELY HARD DARK GRAY SCHIST WITH OCCASIONAL THIN SOFT SEAMS	NX	701.3	53.2' - 65.0' HIGHLY FRACTURED (PIECES UP TO 1" IN LENGTH)
		90		
			696.3	61.0' - 65.0' (CLOSED JOINT DIPPING 80°, OPEN STAINED JOINT DIPPING 80°)
		94		
			691.3	68.0' - 68.3' OPEN STAINED JOINT DIPPING 45°
		97		
			686.3	68.8' - 68.9' OPEN STAINED JOINT DIPPING 40°
80.0	CORING TERMINATED			

**CORE BORING RECORD**



\*1 MICACEOUS SILT

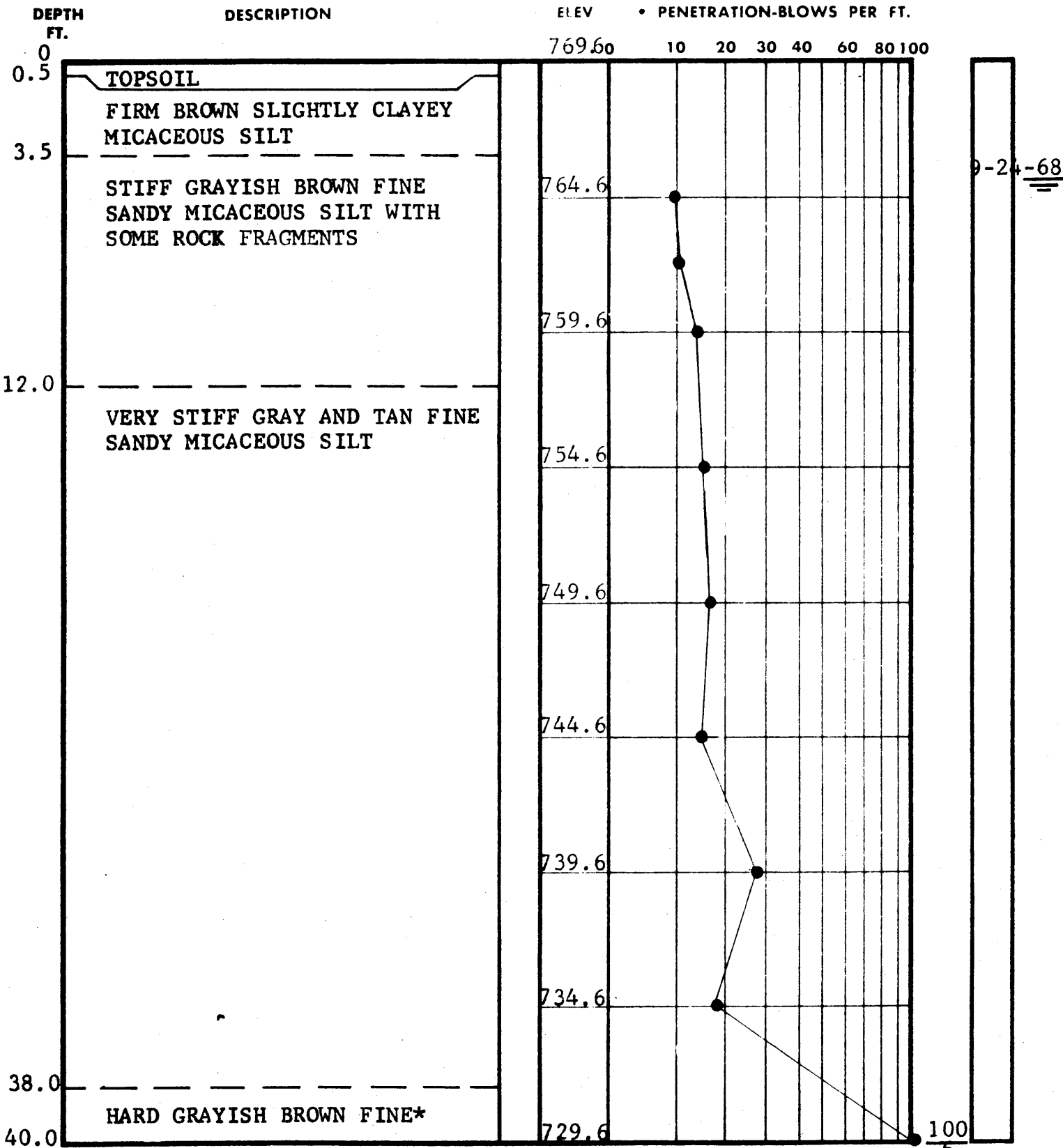
### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-128  
 DATE DRILLED 8/6/68  
 JOB NO. 5862

jj UNDISTURBED SAMPLE  
 [50] % ROCK CORE RECOVERY

WATER TABLE, 24 HR.  
 WATER TABLE, 1 HR.  
 ◀ LOSS OF DRILLING WATER








9-24-68

\* SANDY MICACEOUS SILT WITH SOME ROCK FRAGMENTS

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-129  
 DATE DRILLED 8-19-68  
 JOB NO. 5862

-  UNDISTURBED SAMPLE
-  WATER TABLE, 24 HR.
-  WATER TABLE, 1 HR.
-  50% ROCK CORE RECOVERY
-  LOSS OF DRILLING WATER








DEPTH FT.	DESCRIPTION	ELEV • PENETRATION-BLOWS PER FT.												
		729.60	10	20	30	40	60	80	100	100	100			
40.0	HARD GRAYISH BROWN FINE SANDY MICACEOUS SILT WITH SOME ROCK FRAGMENTS													100 6"
		724.6												100 12"
		719.6												50 1"
		714.6												50 1/2"
59.5	REFUSAL SEE CORE BORING RECORD	709.6												

## TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

PAGE 2 OF 3

BORING NO. B-129  
 DATE DRILLED 8-19-68  
 JOB NO. 5862

 UNDISTURBED SAMPLE  
 WATER TABLE, 24 HR.  
 WATER TABLE, 1 HR.  
 % ROCK CORE RECOVERY  
 LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.

DEPTH  
FT.  
59.5

DESCRIPTION

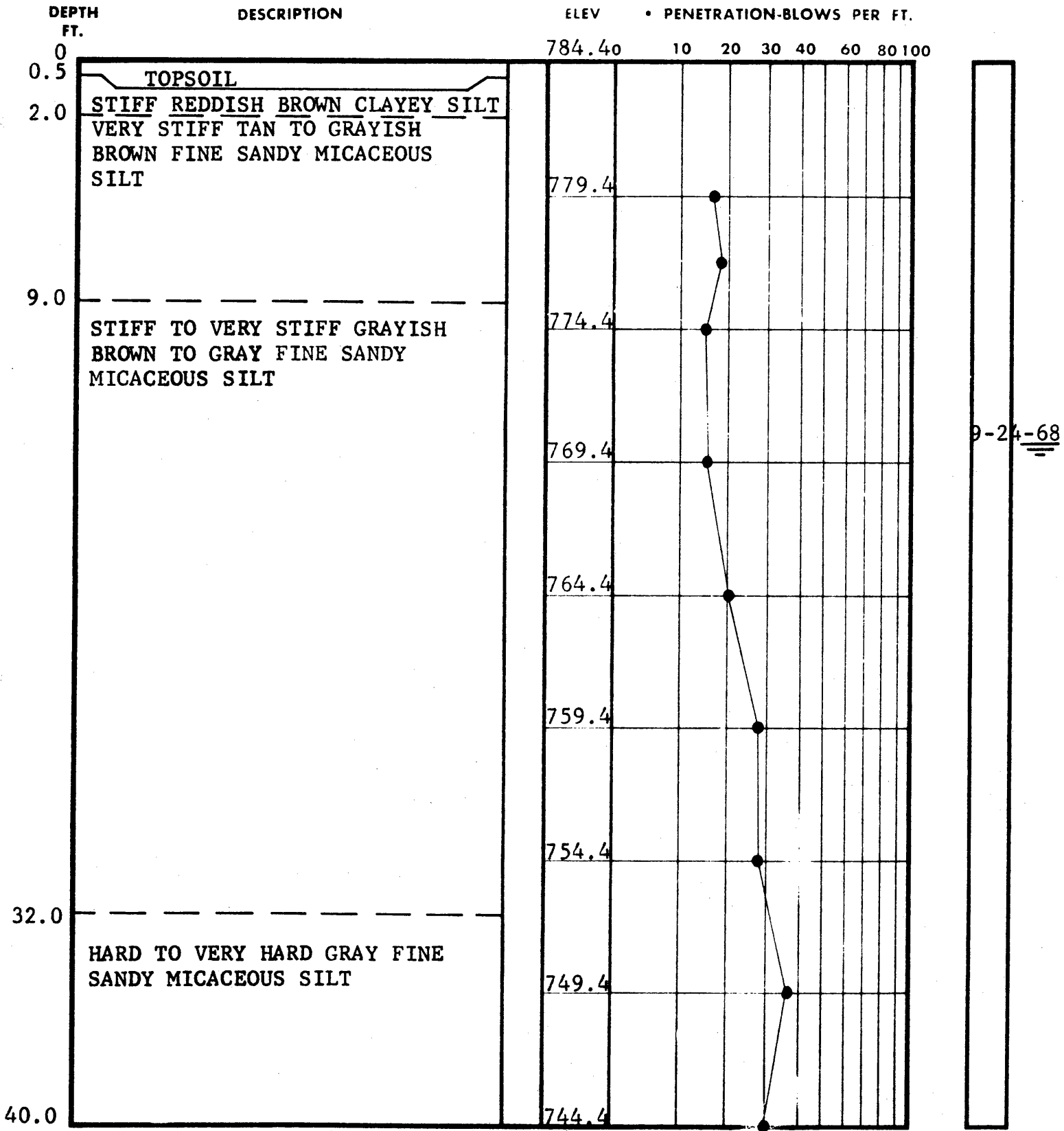
CORE BIT ELEV.  
% SIZE 710.1

REMARKS

DEPTH FT.	DESCRIPTION	CORE BIT %	ELEV. SIZE	REMARKS
59.5	MODERATELY HARD GRAYISH TAN SCHIST	100	705.1	59.5'-64.5' FRACTURED AND BROKEN (PIECES 1"-6" IN LENGTH) 59.5'-60.3' NUMEROUS CLOSED JOINTS DIPPING 80°
		100	700.1	60.3' OPEN FRACTURE 61.5'-62.2' OPEN STAINED JOINT DIPPING 80°
		97	695.1	64.5'-69.6' FRACTURED AND BROKEN (PIECES 1"-10" IN LENGTH) 65.4'-66.6' OPEN FRACTURE
		100	690.1	67.9'-68.2' INTER- SECTING OPEN JOINTS, BOTH DIPPING 50° 68.3'-68.5' OPEN JOINT DIPPING 50°
79.5	CORING TERMINATED			69.5'-74.5' FRACTURED AND BROKEN 70.2'-70.8' OPEN STAINED JOINT DIPPING 80° AND HIGHLY FRAC- TURED 71.6'-OPEN FRACTURE 72.7'-73.8' CLOSED JOINT DIPPING 80° 74.5'-78.2' SLIGHTLY FRACTURED AND BROKEN (PIECES 2"-8" IN LENGTH) 78.2'-78.9' HIGHLY FRACTURED

NO DRILLING WATER LOSS RECORDED

CORE BORING RECORD








9-24-68

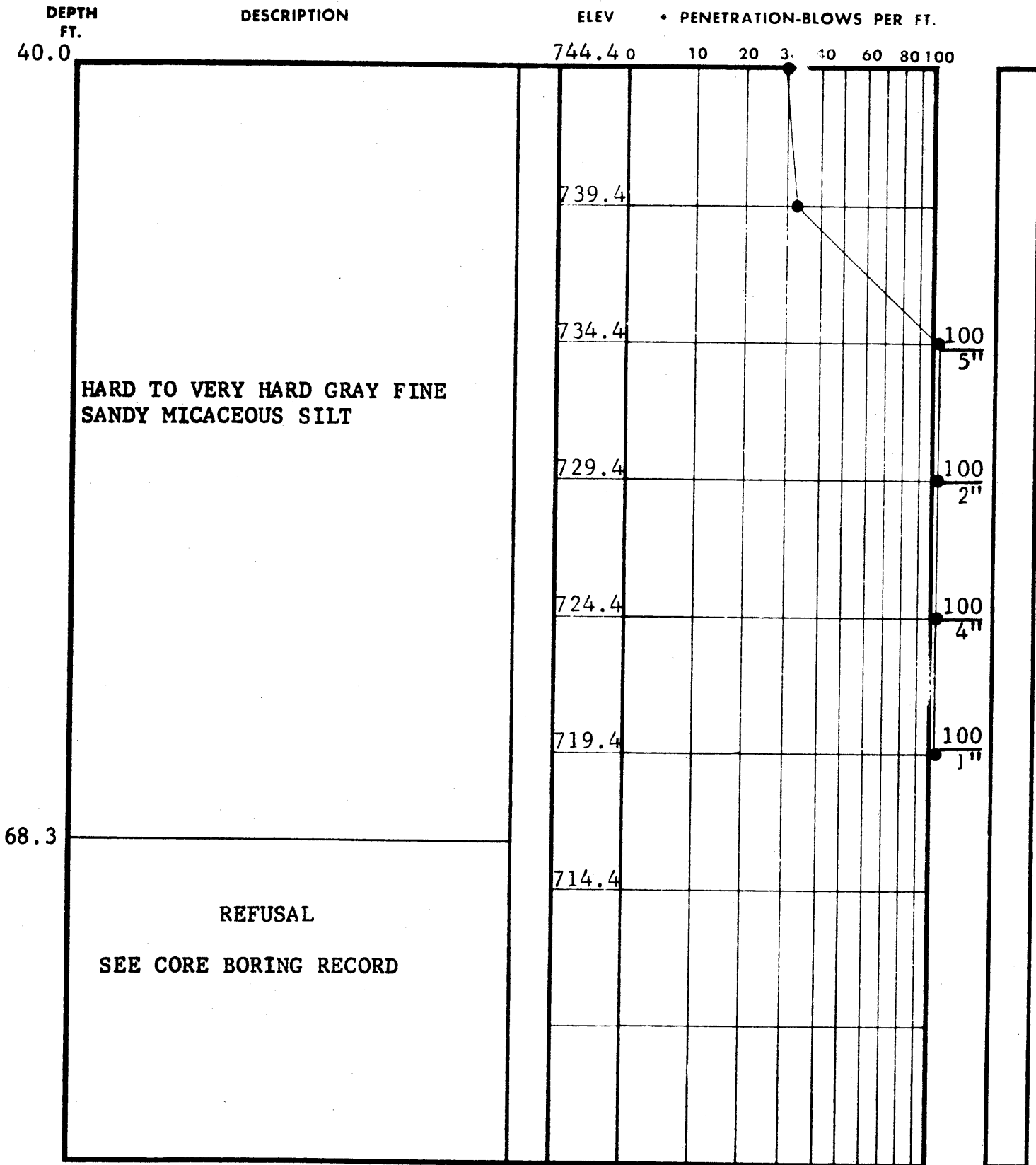
### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

PAGE 1 OF 3

BORING NO. B-131  
 DATE DRILLED 8-21-68  
 JOB NO. 5862

 UNDISTURBED SAMPLE  
 WATER TABLE, 24 HR.  
 WATER TABLE, 1 HR.  
 % ROCK CORE RECOVERY  
 LOSS OF DRILLING WATER



## TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

PAGE 2 OF 3

BORING NO. B-131  
 DATE DRILLED 8-21-68  
 JOB NO. 5862

UNDISTURBED SAMPLE

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

% ROCK CORE RECOVERY

LOSS OF DRILLING WATER

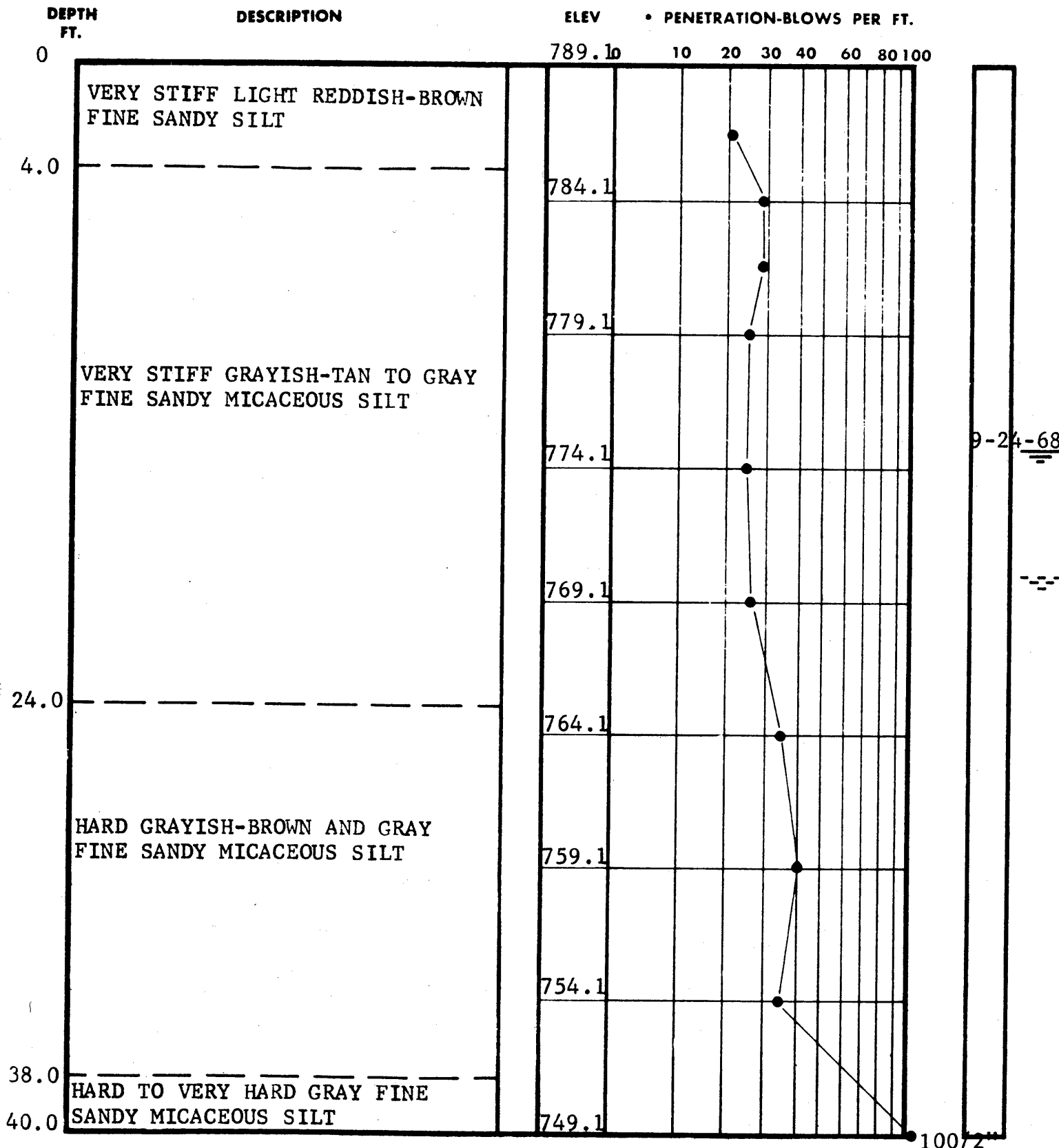
LAW ENGINEERING TESTING CO.



DEPTH FT.	DESCRIPTION	CORE BIT %	ELEV. SIZE	REMARKS
68.3	MODERATELY HARD GRAY SCHIST	98	711.1	68.3'-73.3'SLIGHTLY FRACTURED 68.7'-68.8'TWO STAINED FRACTURES 69.6'CLOSED STAINED FRACTURE 72.2'-72.4' AND 73.0'-73.3'SOFT SEAM 73.3'-78.3'BROKEN (PIECES 3"-6" IN LENGTH)
78.3		98	706.1	
78.3	HARD GRAY SCHIST	93	NX 701.1	75.3'-75.7'CLOSED JOINT DIPPING 80° 76.6'-76.7'SOFTER AND HIGHLY FRACTURED 77.6'-78.0'CLOSED STAINED JOINT DIPPING 60° 78.0'-78.3'HIGHLY FRACTURED
88.3				
88.3	CORING TERMINATED			78.7'-STAINED FRACTURE 79.4'-80.0'TWO CLOSED JOINTS DIPPING 80° AND 50° 80.0'-80.5'CLOSED JOINT DIPPING 80° 80.7'-81.7'HIGHLY FRACTURED, STAINED VERTICAL JOINT 81.7'-81.9'NUMEROUS JOINTS DIPPING 70° 84.4'-85.1'STAINED OPEN JOINT DIPPING 75°

NO DRILLING WATER LOSS RECORDED

CORE BORING RECORD



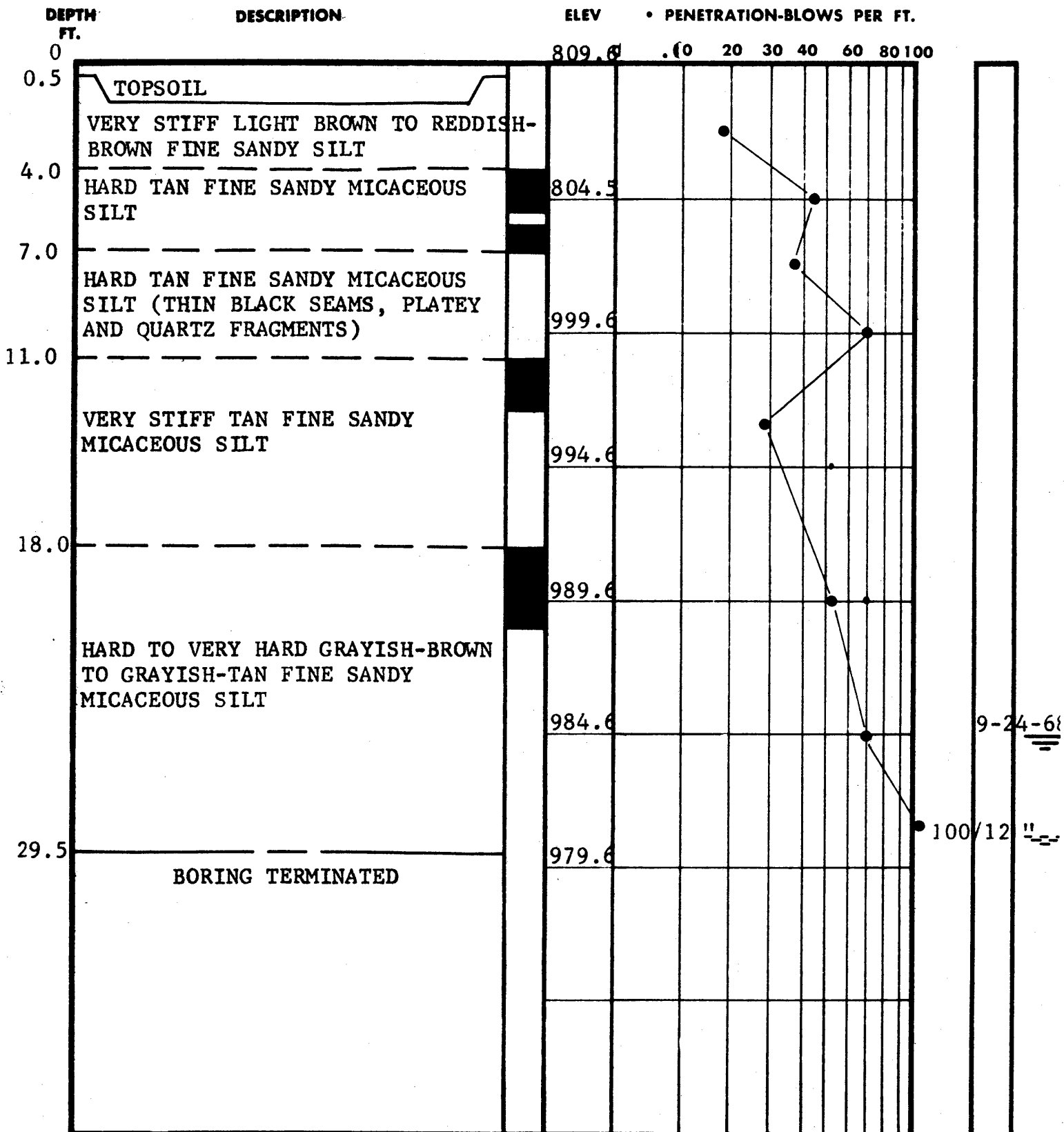
### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-132  
 DATE DRILLED 8/26/68  
 JOB NO. 5862

jj  UNDISTURBED SAMPLE  
 WATER TABLE, 24 HR.  
 WATER TABLE, 1 HR.  
 % ROCK CORE RECOVERY  
 LOSS OF DRILLING WATER





## TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

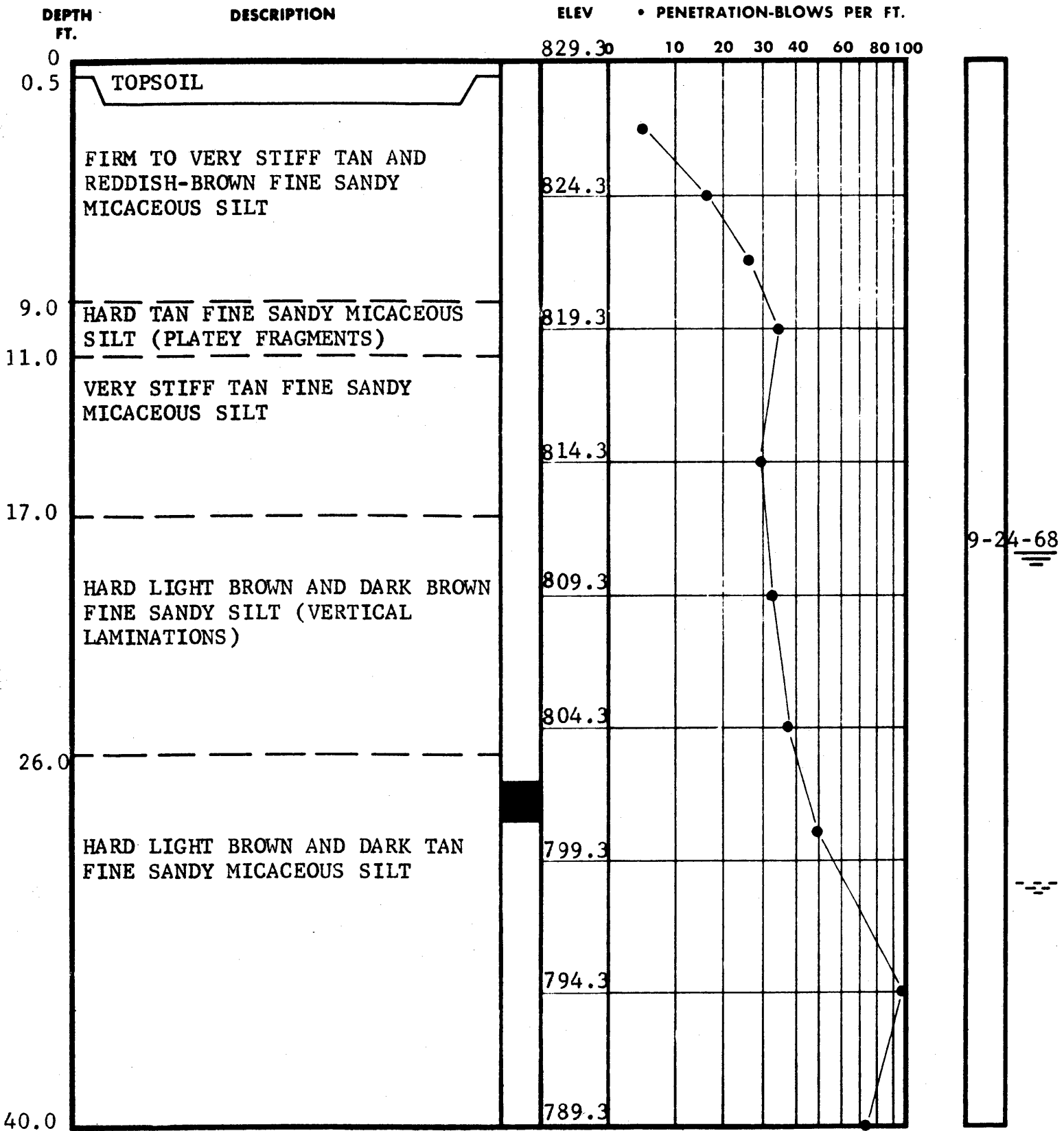
BORING NO. B-133  
 DATE DRILLED 8/26/68  
 JOB NO. 5862

jj

■ UNDISTURBED SAMPLE  
 ≡ WATER TABLE, 24 HR.  
 ≡ WATER TABLE, 1 HR.  
 |50| % ROCK CORE RECOVERY  
 ◀ LOSS OF DRILLING WATER










## TEST BORING RECORD


BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.


BORING NO. B-135  
 DATE DRILLED 8/26/68  
 JOB NO. 5862

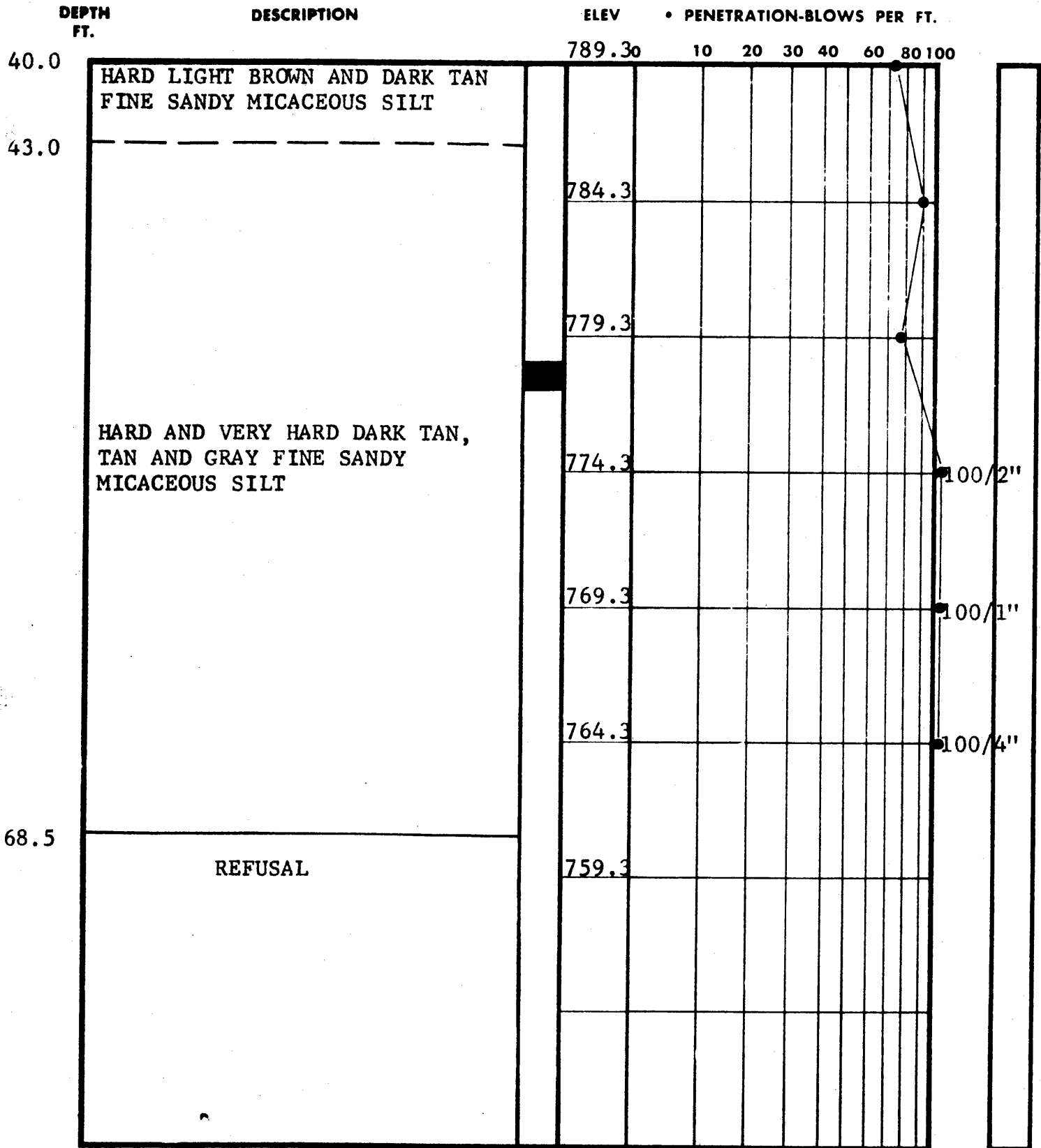
jj  UNDISTURBED SAMPLE

 WATER TABLE, 24 HR.

 WATER TABLE, 1 HR.

 % ROCK CORE RECOVERY

 LOSS OF DRILLING WATER



## TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-135

DATE DRILLED 8/26/68

JOB NO. 5862

PAGE 2 of 2

kk  
jj

 UNDISTURBED SAMPLE

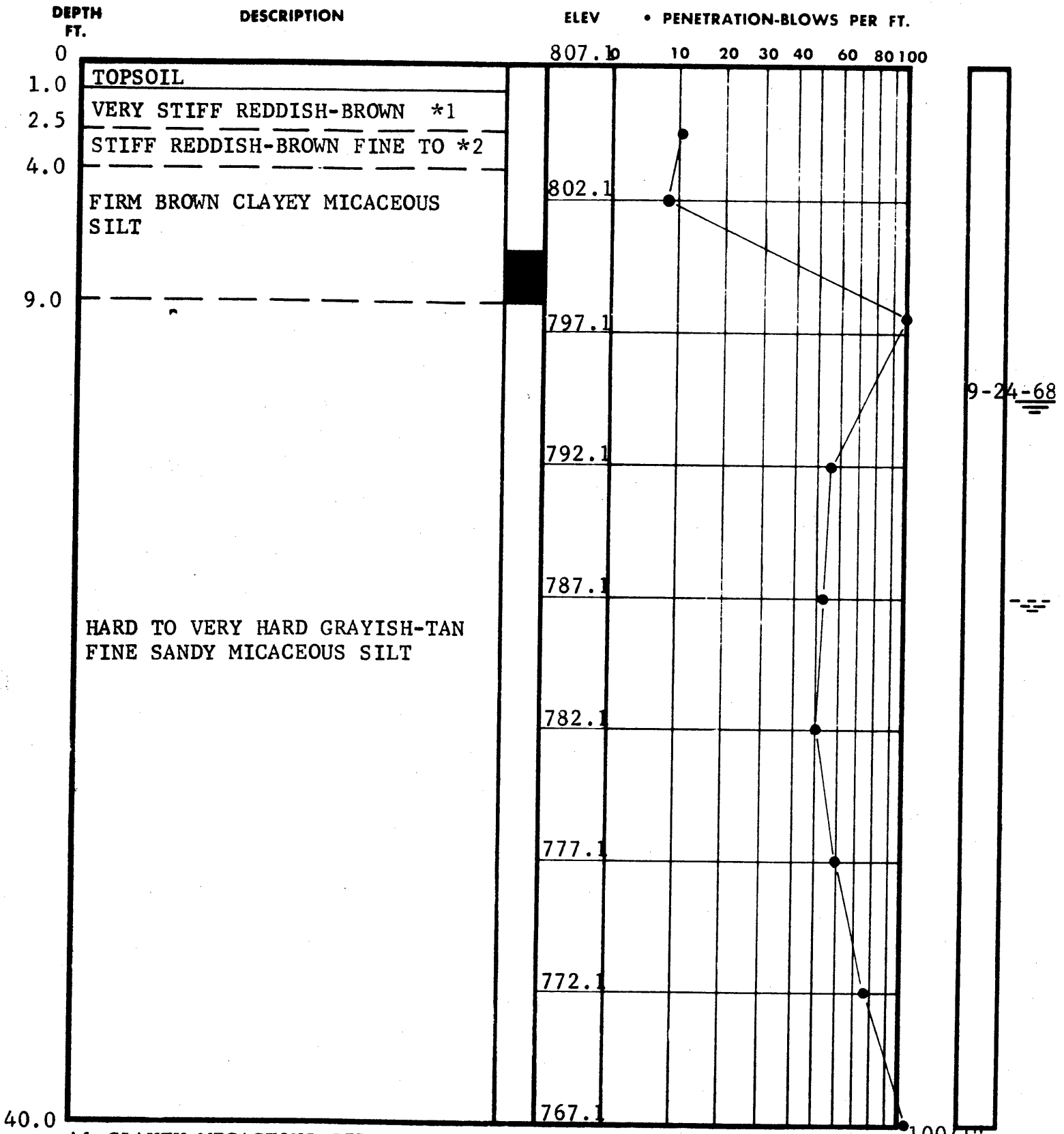
 WATER TABLE, 24 HR.

 WATER TABLE, 1 HR.

 % ROCK CORE RECOVERY

 LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.



\*1 CLAYEY MICACEOUS SILT WITH GRAVEL

\*2 MEDIUM SANDY SLIGHTLY CLAYEY MICACEOUS SILT **TEST BORING RECORD**

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

PAGE 1 of 2

BORING NO. B-136

DATE DRILLED 8/27/68

JOB NO. 5862

jj  UNDISTURBED SAMPLE

 WATER TABLE, 24 HR.

 WATER TABLE, 1 HR.

[50] % ROCK CORE RECOVERY

 LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.



DEPTH FT.	DESCRIPTION	ELEV	• PENETRATION-BLOWS PER FT.								
			10	20	30	40	60	80	100		
40.0	HARD TO VERY HARD GRAYISH-TAN FINE SANDY MICACEOUS SILT	767.10									100/1"
		762.1									100/2"
		757.1									100/6"
52.5	REFUSAL	752.1									

## TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

PAGE 2 of 2

BORING NO. B-136

DATE DRILLED 8/27/68

JOB NO. 5862

 UNDISTURBED SAMPLE

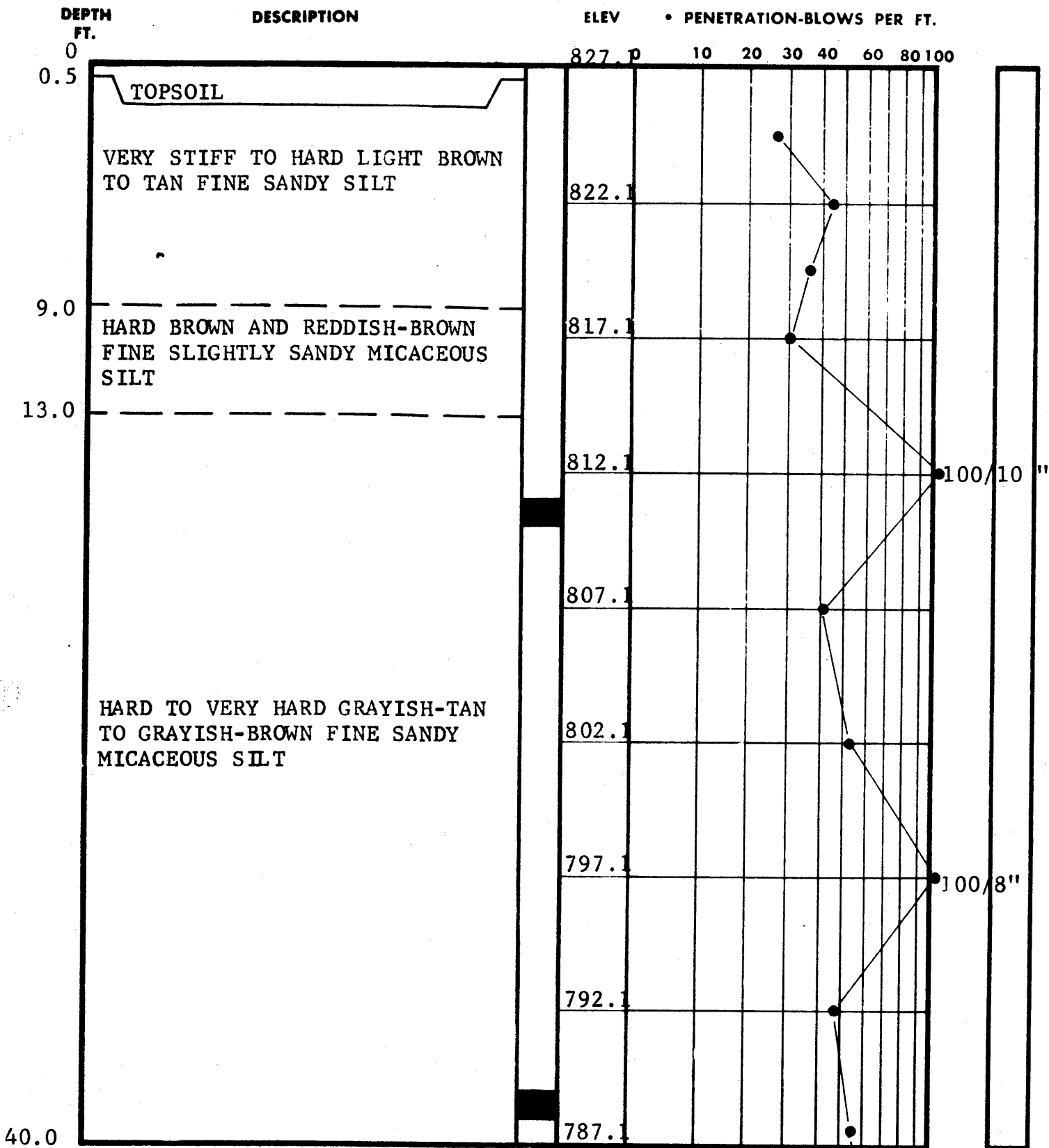
 WATER TABLE, 24 HR.

 WATER TABLE, 1 HR.

 % ROCK CORE RECOVERY

 LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.



## TEST BORING RECORD

PAGE 1 of 2

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-137

DATE DRILLED 8/28/68

JOB NO. 5862

jj  UNDISTURBED SAMPLE

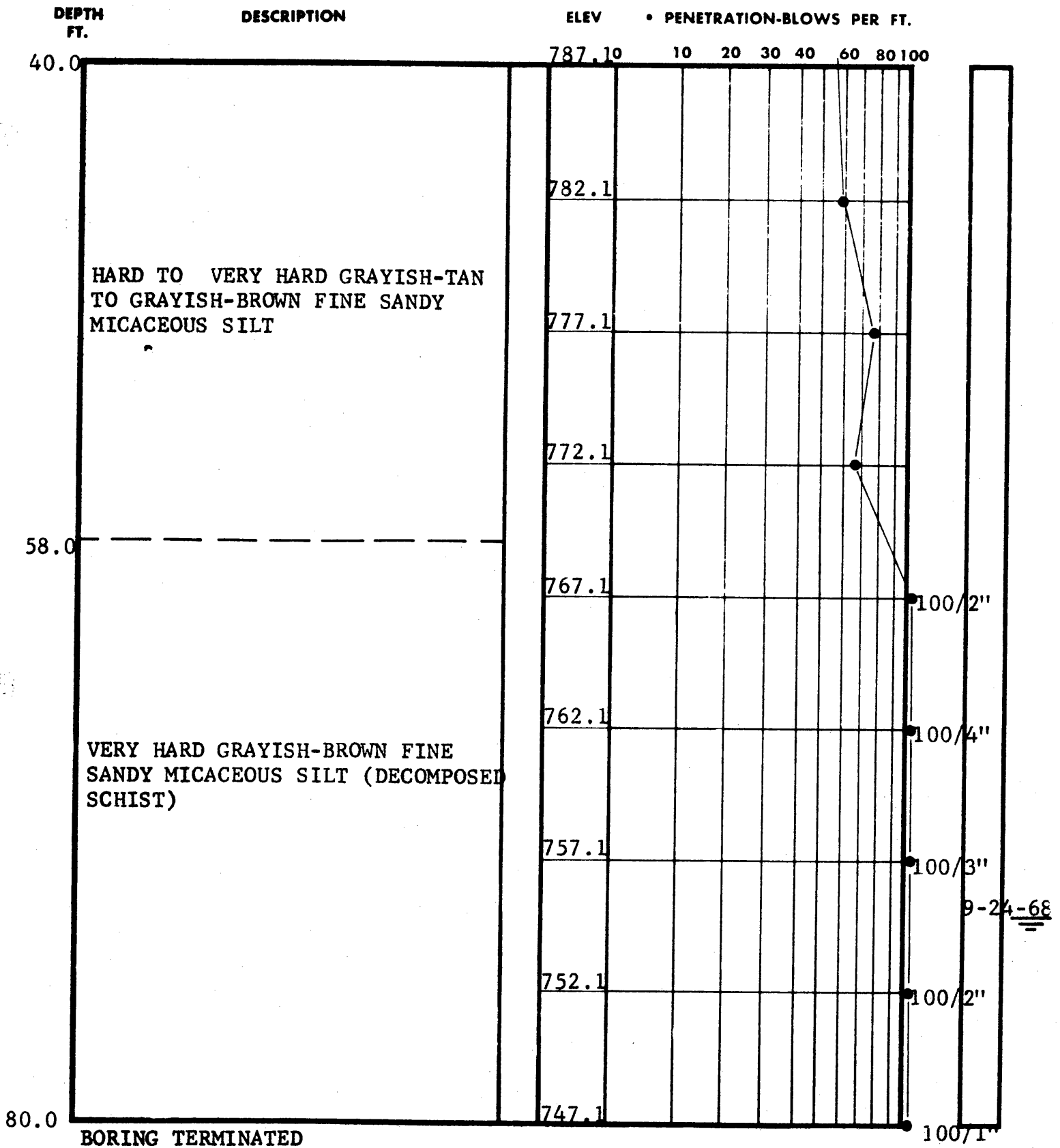
 WATER TABLE, 24 HR.

 WATER TABLE, 1 HR.

 % ROCK CORE RECOVERY

 LOSS OF DRILLING WATER






LAW ENGINEERING TESTING CO.

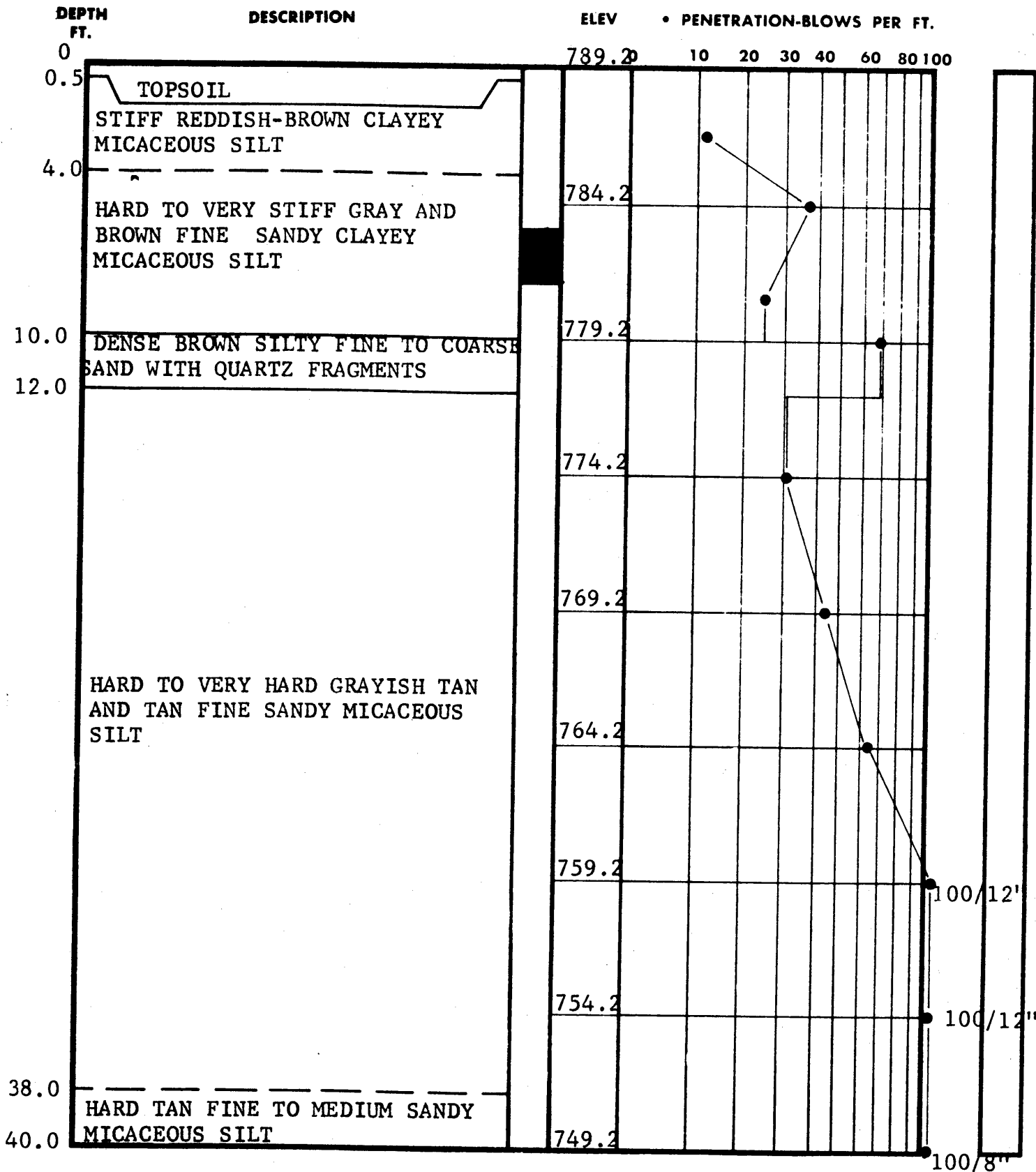


9-24-68

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-137  
 DATE DRILLED 8/28/68  
 JOB NO. 5862






jj  UNDISTURBED SAMPLE  
 WATER TABLE, 24 HR.  
 WATER TABLE, 1 HR.  
 % ROCK CORE RECOVERY  
 LOSS OF DRILLING WATER



### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-138  
 DATE DRILLED 8/28/68  
 JOB NO. 5862

-  UNDISTURBED SAMPLE
-  WATER TABLE, 24 HR.
-  WATER TABLE, 1 HR.
-  LOSS OF DRILLING WATER
-  % ROCK CORE RECOVERY



DEPTH FT.	DESCRIPTION	ELEV • PENETRATION-BLOWS PER FT.													
		749.20	10	20	30	40	60	80	100	100	8"				
40.0	HARD TAN FINE TO MEDIUM SANDY MICACEOUS SILT	744.2												100	6"
50.0		739.2													50
	BORING TERMINATED														

## TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-138

DATE DRILLED 8/28/68

JOB NO. 5862

 UNDISTURBED SAMPLE

 WATER TABLE, 24 HR.

 WATER TABLE, 1 HR.

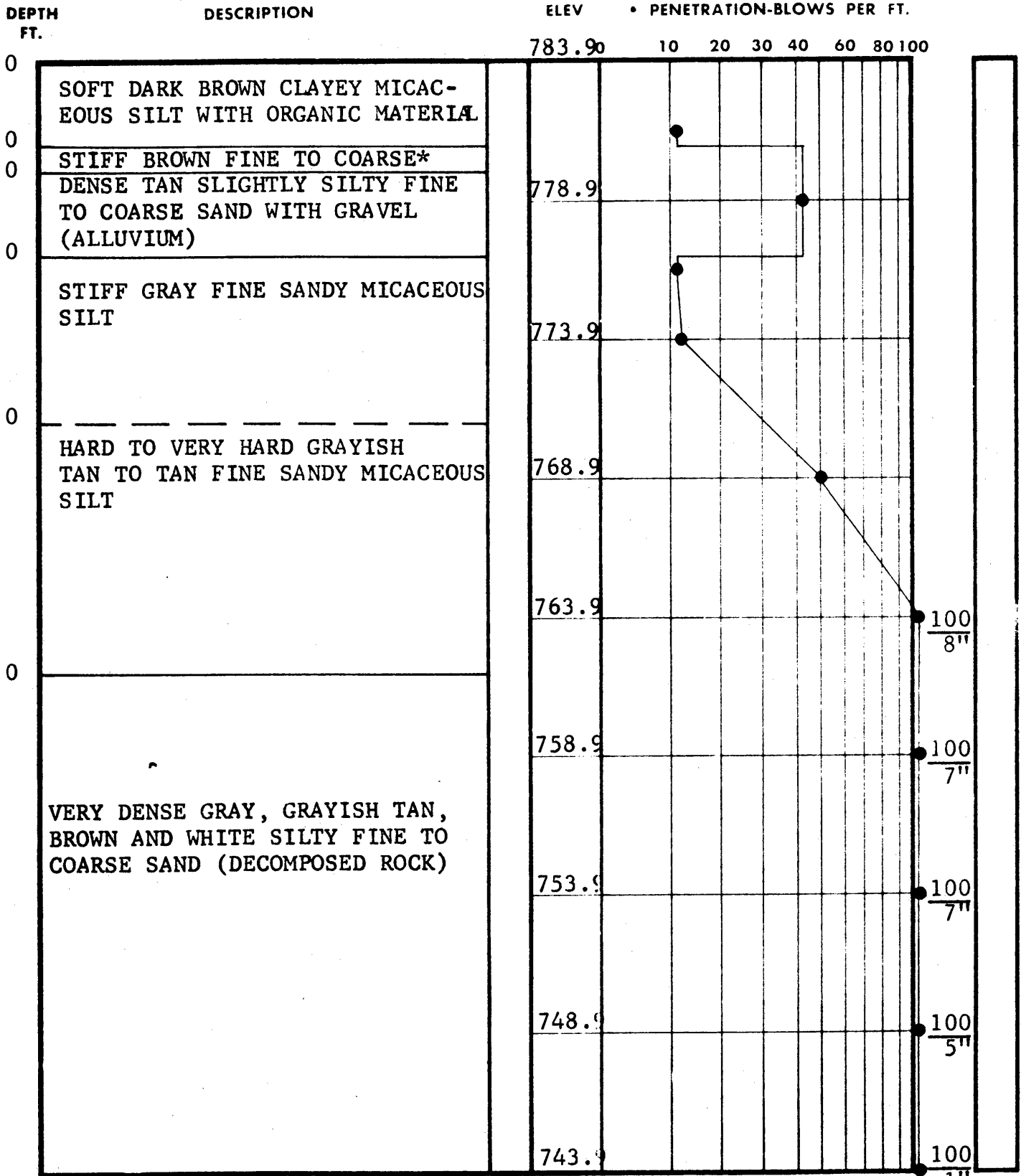
PAGE 2 of 2

LAW ENGINEERING TESTING CO.

 % ROCK CORE RECOVERY

 LOSS OF DRILLING WATER

jj



\*SANDY CLAY WITH SOME QUARTZ GRAVEL (ALLUVIUM)

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

PAGE 1 OF 3

BORING NO. B-139  
 DATE DRILLED 8-28-68  
 JOB NO. 5862

UNDISTURBED SAMPLE  
 WATER TABLE, 24 HR.  
 WATER TABLE, 1 HR.  
 |50| % ROCK CORE RECOVERY  
 LOSS OF DRILLING WATER



DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
54.5	MODERATELY HARD TAN GRAY GNEISS	25	729.4	54.5'-60.8' FRACTURED (PIECES 1"-2" IN LENGTH)
			724.4	
60.8	HARD GRAY GNEISS	95	719.4	60.8'-84.5' SOUND AND CONTINUOUS
68.2	HARD GRAYISH WHITE *1	100		
69.2			714.4	
		95		
			709.4	
	HARD GRAY GNEISS	87		74.5'-74.7'-CLOSED VERTICAL JOINT
			704.4	
		100		84.0'-84.5' BROKEN
			699.4	
84.5	CORING TERMINATED			

\*1 PEGMATITE  
NO DRILLING WATER LOSS RECORDED

CORE BORING RECORD

PAGE 3 OF 3

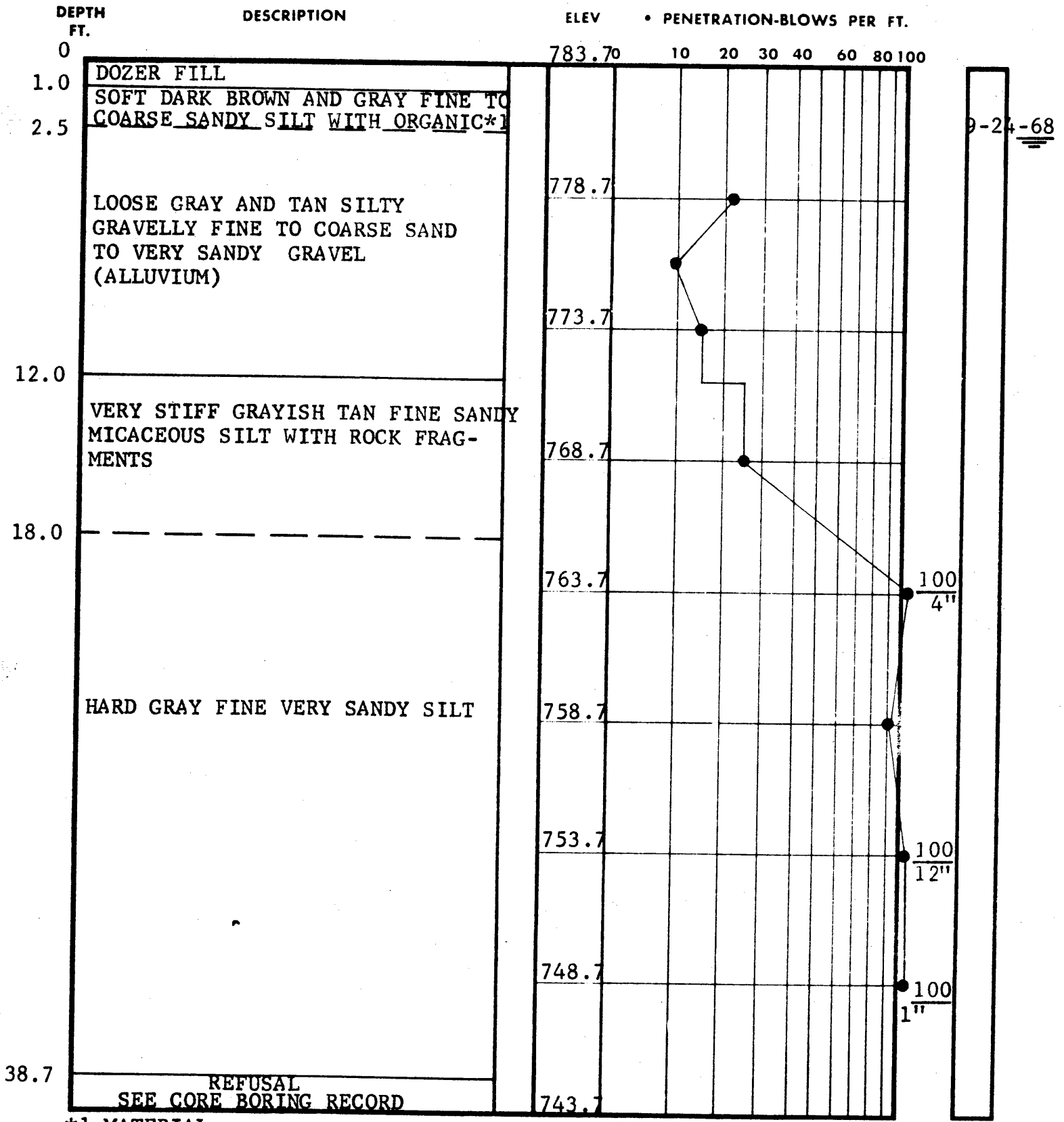
BORING NO. B-139  
JOB NO. 5862

jj

WATER TABLE

LAW ENGINEERING TESTING CO.





9-24-68

\*1 MATERIAL

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

PAGE 1 OF 2

BORING NO. B-140

DATE DRILLED 8/29/68

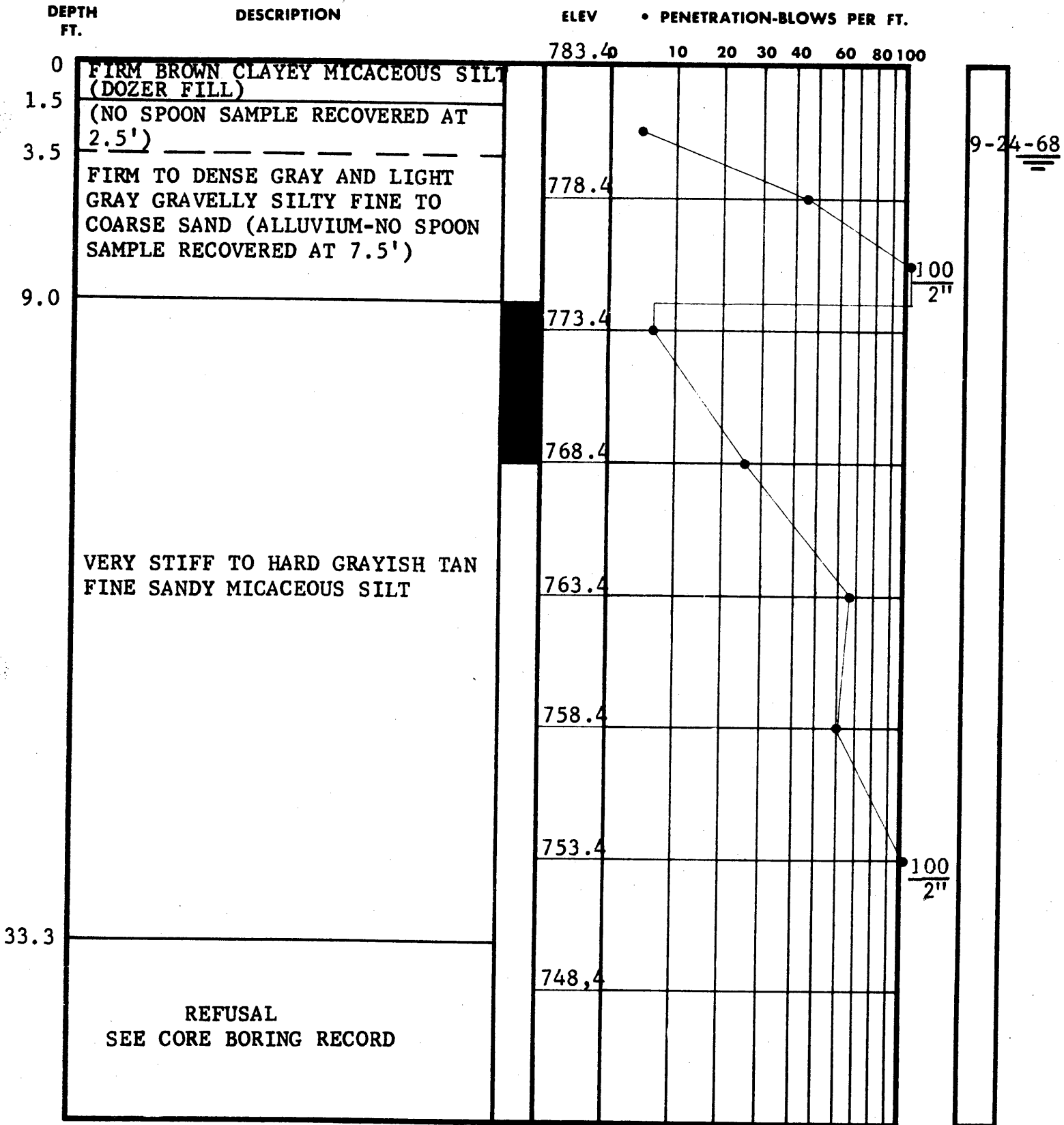
JOB NO. 5862

- jj UNDISTURBED SAMPLE
- WATER TABLE, 24 HR.
- WATER TABLE, 1 HR.
- 50% ROCK CORE RECOVERY
- LOSS OF DRILLING WATER

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS	
38.7	MODERATELY HARD GRAY GNEISS	37	745.0	38.7'-43.7' FRACTURED AND BROKEN (PIECES 1"-2" IN LENGTH)	
			740.0		
		97		43.7'-46.1' BROKEN (PIECES 6"-12" IN LENGTH)	
48.7	HARD GRAY GNEISS		735.0	46.1'-48.7' FRACTURED (PIECES 1"-10" IN LENGTH)	
		93		50.5'-51.0' TWO OPEN STAINED FRACTURES AND ONE CLOSED VERTICAL JOINT	
			100	730.0	53.7'-58.7' SLIGHTLY FRACTURED (PIECES 6"-10" IN LENGTH)
			74	725.0	54.5'-55.1' NUMEROUS FRACTURES
63.1	CORING TERMINATED	87	720.0	58.7'-61.8' SLIGHTLY BROKEN (PIECES 6"- 10" IN LENGTH)	
					61.8'-63.1' BROKEN (PIECES 1"-3" IN LENGTH)

NO DRILLING WATER LOSS RECORDED

CORE BORING RECORD



## TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

PAGE 1 OF 2

BORING NO. B-141

DATE DRILLED 9/4/68

JOB NO. 5862

jj  UNDISTURBED SAMPLE

 WATER TABLE, 24 HR.

 WATER TABLE, 1 HR.

[50] % ROCK CORE RECOVERY

 LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
33.2			750.1	
	VERY SOFT GRAYISH BROWN GNEISS	37	745.1	
		8	740.1	
43.4	SOFT GRAYISH TAN GNEISS			43.4'-44.7' FRACTURED (PIECES 1"-3" IN LENGTH)
44.7		30		44.7'-71.5' GENERALLY SOUND AND CONTINUOUS
	MODERATELY HARD GRAY GNEISS		735.1	48.2'-48.3' STAINED VERTICAL JOINT
		68		50.0'-50.2' STAINED JOINT DIPPING 50°
			730.1	53.2'-54.0' FRACTURED (PIECES 1"-2" IN LENGTH)
53.9				53.4'-54.3' THREE NEARLY VERTICAL CLOSED JOINTS
54.0	SOFT GREENISH GRAY SCHIST	91		61.6'-62.1' THREE NEARLY VERTICAL CLOSED JOINTS
			725.1	62.1'-62.7' FRACTURED, SEVERAL JOINTS DIPPING 75°
	HARD GRAY GNEISS	78		62.7'-63.1' TWO CLOSED JOINTS DIPPING 75°
			720.1	63.1'-63.2' OPEN JOINT DIPPING 75°
		93		63.2'-63.8' TWO CLOSED JOINTS DIPPING 75°
67.6	HARD WHITE QUARTZ			63.8'-64.0' CLOSED JOINT DIPPING 80°
68.5	HARD GRAY GNEISS	88		
			715.1	
71.5	CORING TERMINATED			
			710.1	

NO DRILLING WATER LOSS RECORDED

Page 2 of 2

CORE BORING RECORD

BORING NO. 141  
JOB NO. 5862

jj

WATER TABLE

LAW ENGINEERING TESTING CO.





DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV. 757.4	REMARKS
26.5	SOFT GRAY GNEISS	74		26.5'-26.8' QUARTZ SEAM 27.0'-27.7' OPEN STAINED JOINT DIPPING 70° INTERSECTED BY NEARLY VERTICAL STAINED JOINT
29.8	MODERATELY HARD GRAY GNEISS	100	752.4	28.5'-29.8' TWO STAINED JOINTS, VER- TICAL AND DIPPING 50° 31.7'-31.9' OPEN STAINED JOINT DIPPING 60°
36.8			747.4	
37.0	SOFT GRAY GNEISS	91		
	MODERATELY HARD GRAY GNEISS			
39.8			BX 742.4	
	HARD GRAY GNEISS	100		33.1'-34.1' FOUR STAINED FRACTURES 34.9'-36.4' CLOSED STAINED VERTICAL JOINT 35.2'-36.0' BROKEN (PIECES 1"-4" IN LENGTH)
		80	737.4	38.0'-39.8' BROKEN (PIECES 6" IN LENGTH) 39.0'-39.2' CLOSED VERTICAL JOINT 40.8'-41.2' TWO STAINED FRACTURES
			732.4	43.1' STAINED FRACTURE 44.8'-48.1' HARD AND CONTINUOUS
54.3	CORING TERMINATED		727.4	48.1'-48.3' FRACTURED 49.8'-50.6' BROKEN 50.6'-54.3' BROKEN (PIECES 2" TO 6" IN LENGTH)

NO DRILLING WATER LOSS RECORDED

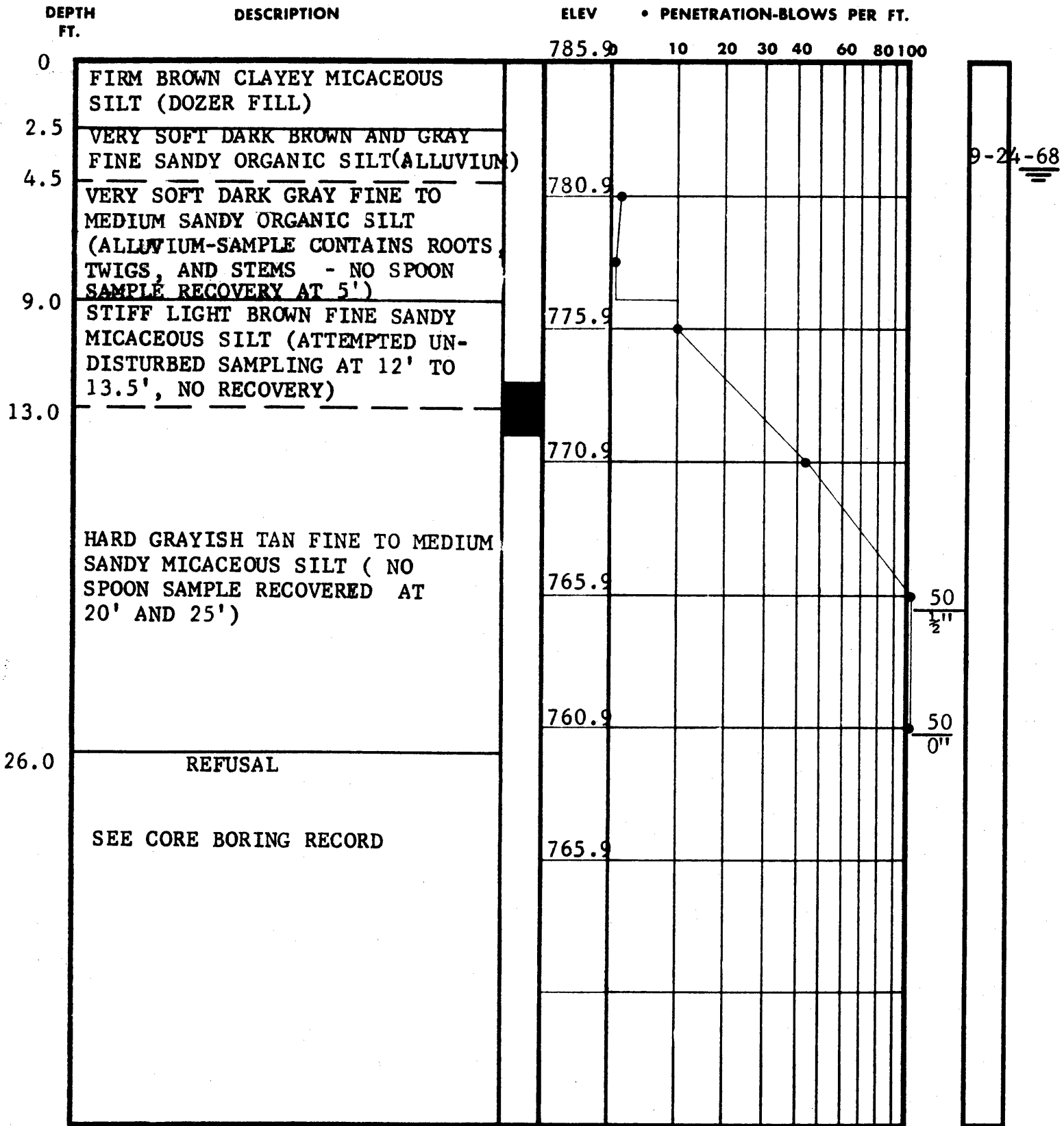
**CORE BORING RECORD**

BORING NO. 142  
JOB NO. 5862

jj

WATER TABLE

LAW ENGINEERING TESTING CO.







9-24-68

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

PAGE 1 OF 2

BORING NO. B-143  
 DATE DRILLED 9/10/68  
 JOB NO. 5862

- jj  UNDISTURBED SAMPLE
-  WATER TABLE, 24 HR.
-  WATER TABLE, 1 HR.
- [50] % ROCK CORE RECOVERY
-  LOSS OF DRILLING WATER

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
26.0	SOFT GRAY GNEISS		759.9	
26.5		84		26.7'-26.9' FRACTURED
				26.9'-31.0' SLIGHTLY
	MODERATELY HARD GRAY GNEISS	BX	754.9	FRACTURED (PIECES 6"-12" IN LENGTH)
				27.4'-29.0' CLOSED
		85		VERTICAL
				JOINT WITH CLOSED
35.5			749.9	INTERSECTING VERTICAL
				JOINTS
		90		32.0'-33.0' FRACTURED
				(PIECES 1"-2" IN
				LENGTH)
	HARD GRAY GNEISS	AX	744.9	33.8'-34.0' FRACTURED
				(PIECES 1"- $\frac{1}{4}$ " IN
				LENGTH)
		100		36.5'-37.3' FRACTURED
				(PIECES $\frac{1}{2}$ "-3" IN
				LENGTH)
45.5			739.9	37.3'-45.5' BROKEN
	CORING TERMINATED			(PIECES 3"-1")
				44.4'-44.9' CLOSED
				JOINT DIPPING 80°

NO DRILLING WATER LOSS RECORDED

CORE BORING RECORD

PAGE 2 OF 2 BORING NO. 143  
JOB NO. 5862

abc

WATER TABLE





DEPTH  
FT.  
37.3

DESCRIPTION

CORE BIT ELEV.  
% SIZE 747.8

REMARKS

DEPTH FT.	DESCRIPTION	CORE BIT %	ELEV. SIZE	REMARKS
37.3	HARD GRAY GNEISS	95	742.8	37.3'-37.7' FRACTURED 40.3'-41.1' STAINED FRACTURES 42.3'-44.9' BROKEN PIECES 1"-6" IN LENGTH)
		92	737.8	44.9'-47.3' CONTINUOUS 47.3'-49.3' CONTINUOUS 49.5' FRACTURE 50.5'-50.7' CLOSED JOINT DIPPING 70°
		100	732.8	50.6 FRACTURE 51.7'-52.3' FRACTURED AND STAINED NEARLY VERTICAL JOINT 52.3'-52.6' OPEN STAINED JOINT DIPPING 80°
		100	727.8	53.1'-53.4' FRACTURE AND CLOSED JOINT DIPPING 50° 55.8'-56.8' CLOSED JOINT DIPPING 70°
		57.3	CORING TERMINATED	

LOST DRILLING WATER AT 37 FEET

PAGE 2 of 2

CORE BORING RECORD

BORING NO. 145  
JOB NO. 5862

jj

WATER TABLE

LAW ENGINEERING TESTING CO.



DEPTH  
FT.  
25.0

DESCRIPTION

CORE BIT ELEV.  
% SIZE 766.2

REMARKS

28.6  
30.0  
32.8  
35.0

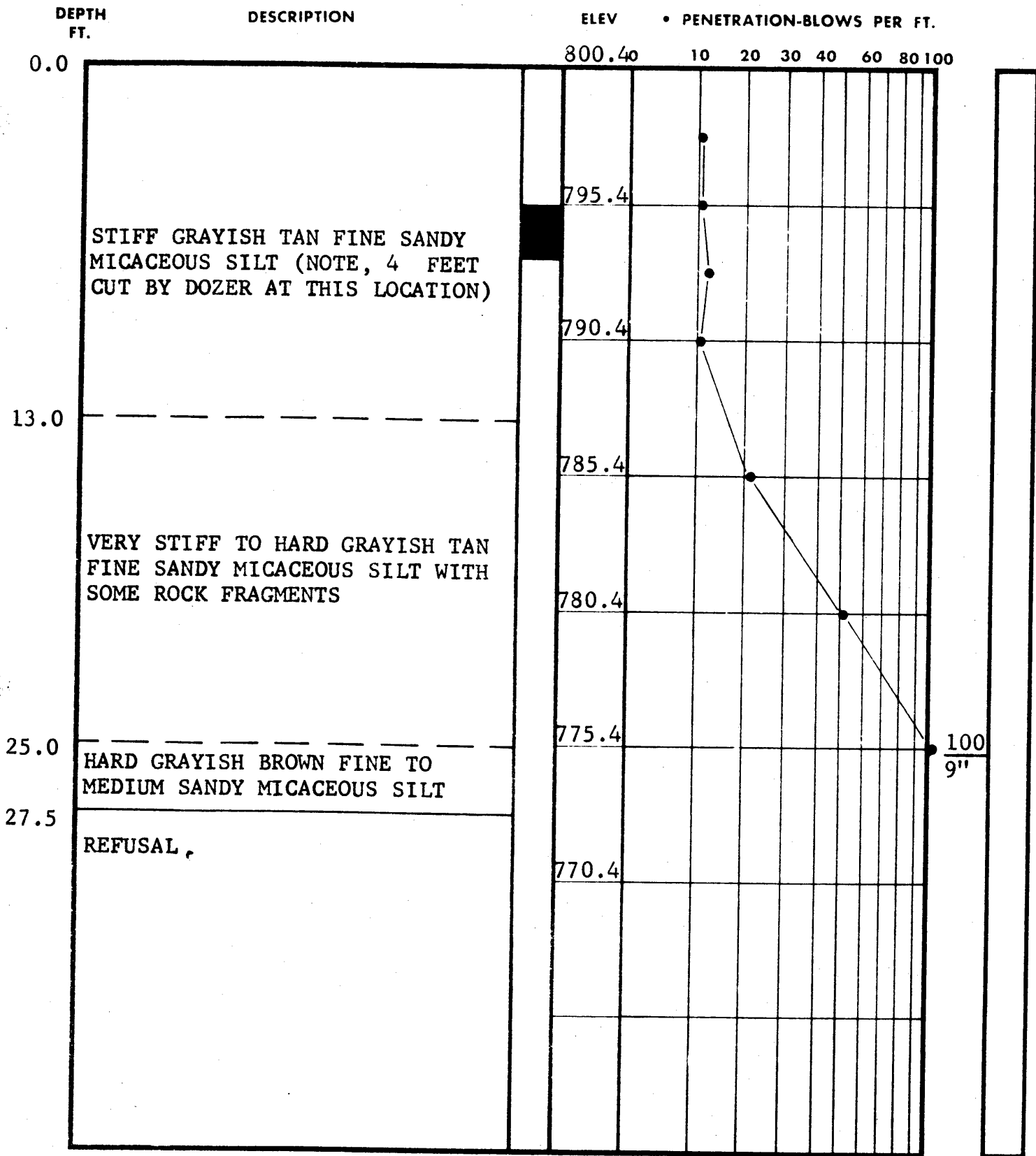
SOFT GRAY GNEISS	72	NX		25.0 - 30.0 SOME OPEN FRACTURES
VERY SOFT GRAY GNEISS			761.2	31.5 OPEN FRACTURE
MODERATELY HARD GRAY GNEISS				32.4 - 33.3 THREE OPEN FRACTURES
HARD GRAY GNEISS	100	NX		34.4 OPEN FRACTURE
CORING TERMINATED			756.2	

CORE BORING RECORD

BORING NO. B-146

JOB NO. 5862





## TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-147

DATE DRILLED 9-26-68

JOB NO. 5862

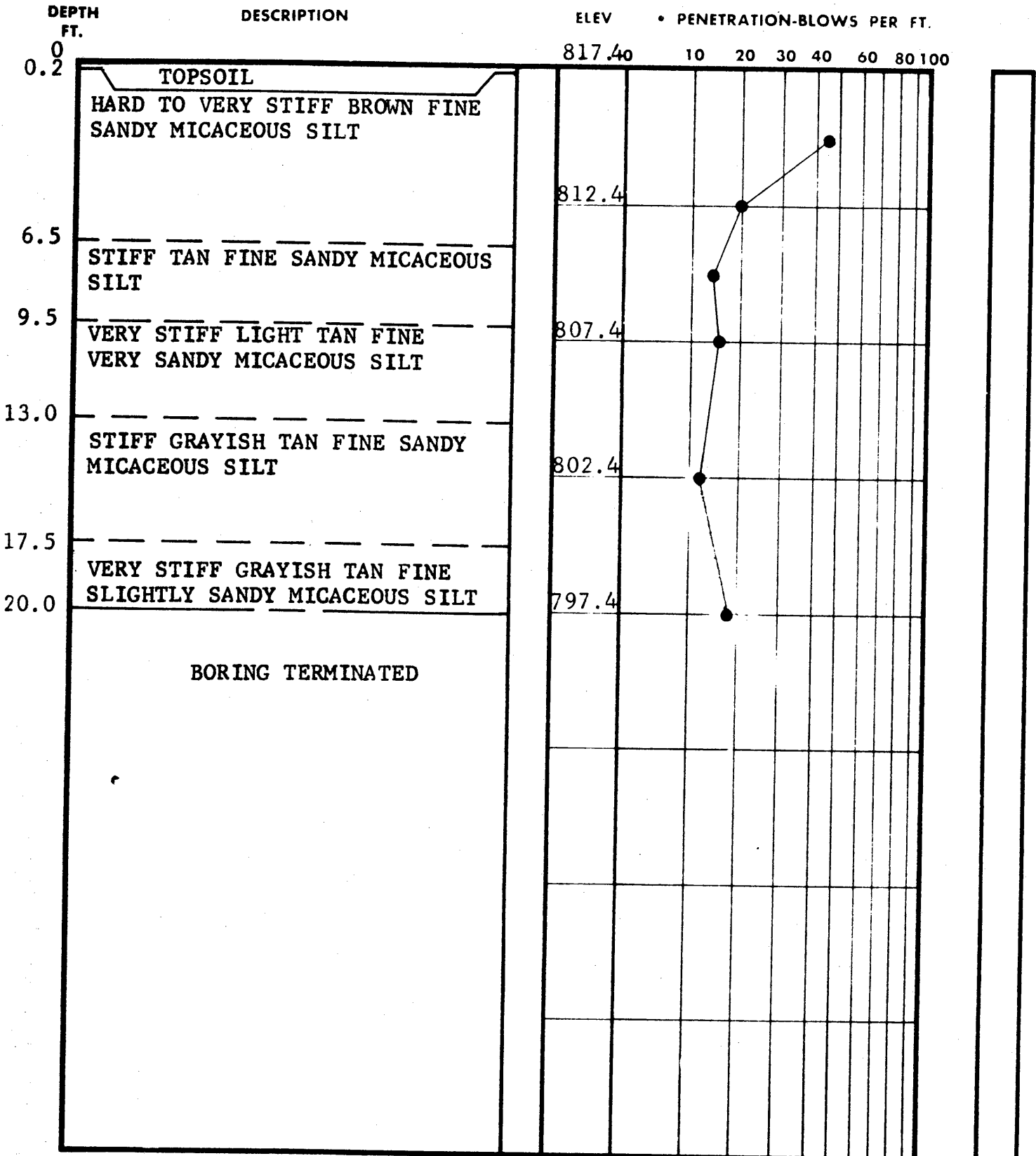
abc UNDISTURBED SAMPLE

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

[50] % ROCK CORE RECOVERY

LOSS OF DRILLING WATER



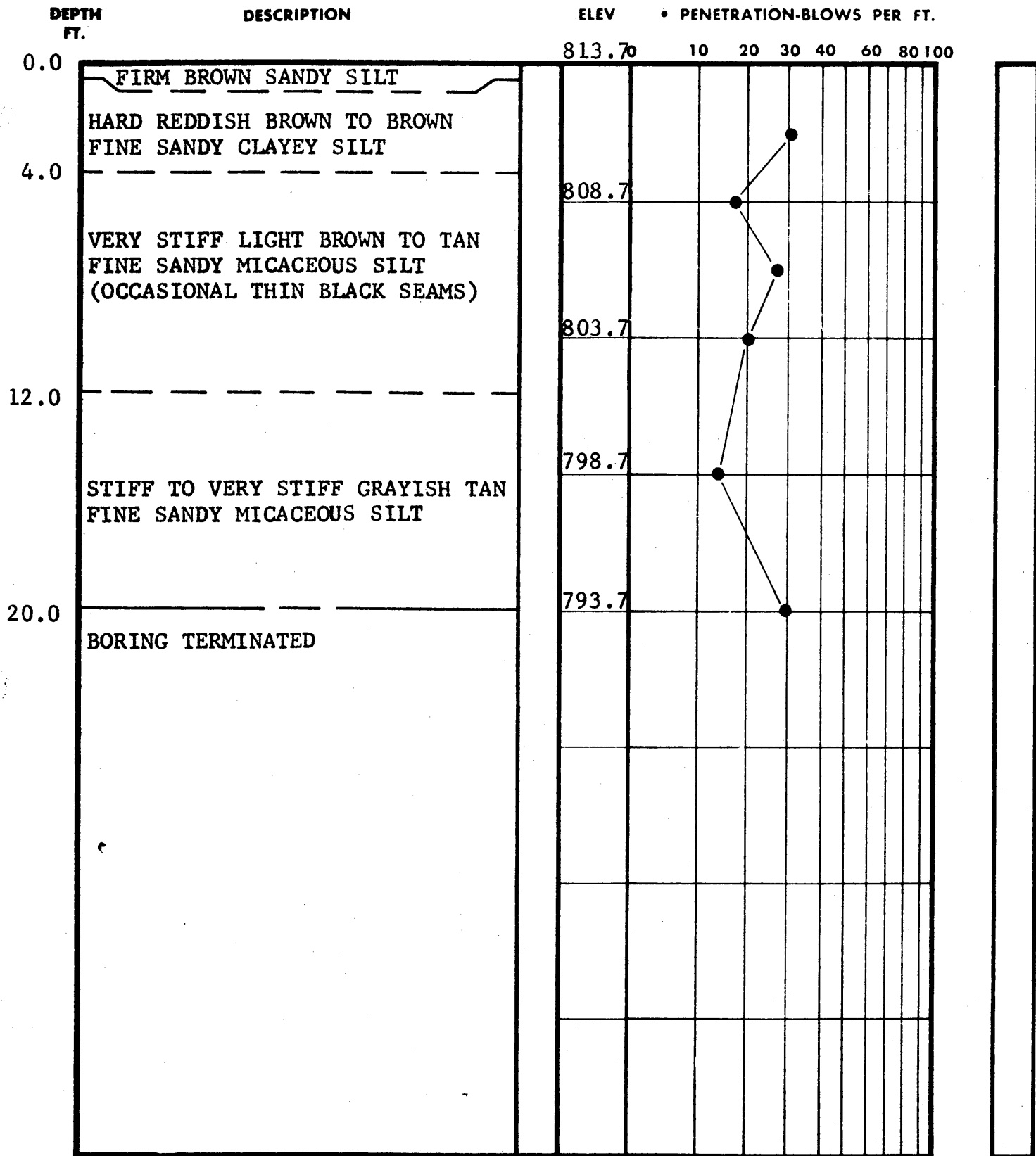
NO GROUND WATER ENCOUNTERED

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-148  
 DATE DRILLED 9-16-68  
 JOB NO. 5862

UNDISTURBED SAMPLE  
 WATER TABLE, 24 HR.  
 WATER TABLE, 1 HR.  
 50% ROCK CORE RECOVERY  
 LOSS OF DRILLING WATER



NO GROUND WATER ENCOUNTERED

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-149

DATE DRILLED 9-16-68

JOB NO. 5862

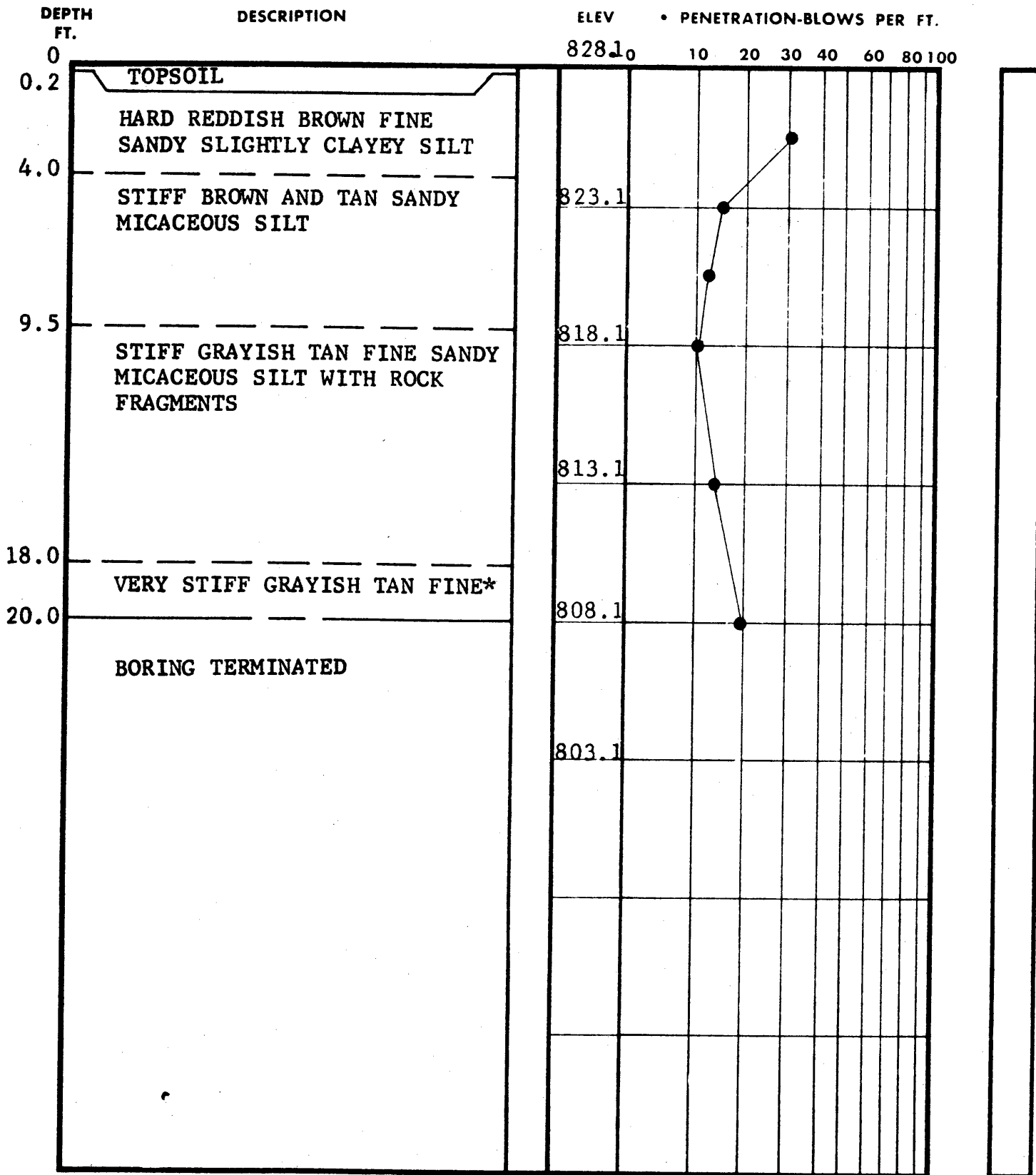
abc  UNDISTURBED SAMPLE

 WATER TABLE, 24 HR.

 WATER TABLE, 1 HR.

|50| % ROCK CORE RECOVERY

 LOSS OF DRILLING WATER



NO GROUND WATER ENCOUNTERED  
 \*SANDY TO VERY SANDY MICACEOUS SILT

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-150  
 DATE DRILLED 9-16-68  
 JOB NO. 5862

■ UNDISTURBED SAMPLE      ≡ WATER TABLE, 24 HR.  
 ◻ WATER TABLE, 1 HR.  
 |30| % ROCK CORE RECOVERY      ◀ LOSS OF DRILLING WATER



DEPTH FT.	DESCRIPTION	ELEV	• PENETRATION-BLOWS PER FT.												
			10	20	30	40	60	80	100						
40.0	HARD TO VERY HARD GRAY FINE SANDY MICACEOUS SILT (DECOM- POSED SCHIST)	726.90													45
		721.9													100
															1"
50.0	REFUSAL	716.9													

## TEST BORING RECORD

PAGE 2 of 2

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-151  
DATE DRILLED 8/6/68  
JOB NO. 5862

jj

 UNDISTURBED SAMPLE

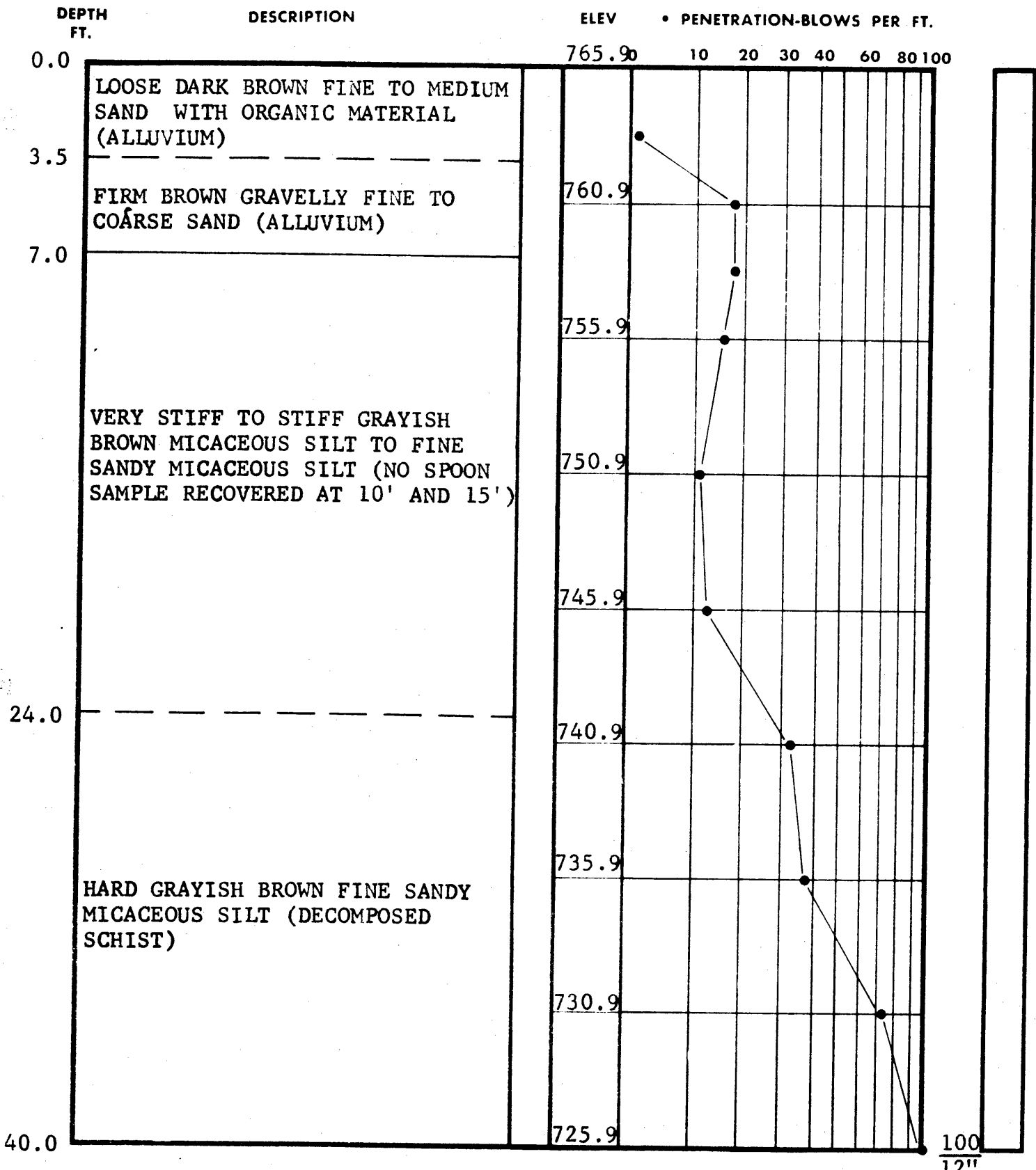
 WATER TABLE, 24 HR.

 WATER TABLE, 1 HR.

 % ROCK CORE RECOVERY

 LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.



### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

Page 1 of 2

BORING NO. B-152

DATE DRILLED 9-17-68


JOB NO. 5862

abc  UNDISTURBED SAMPLE

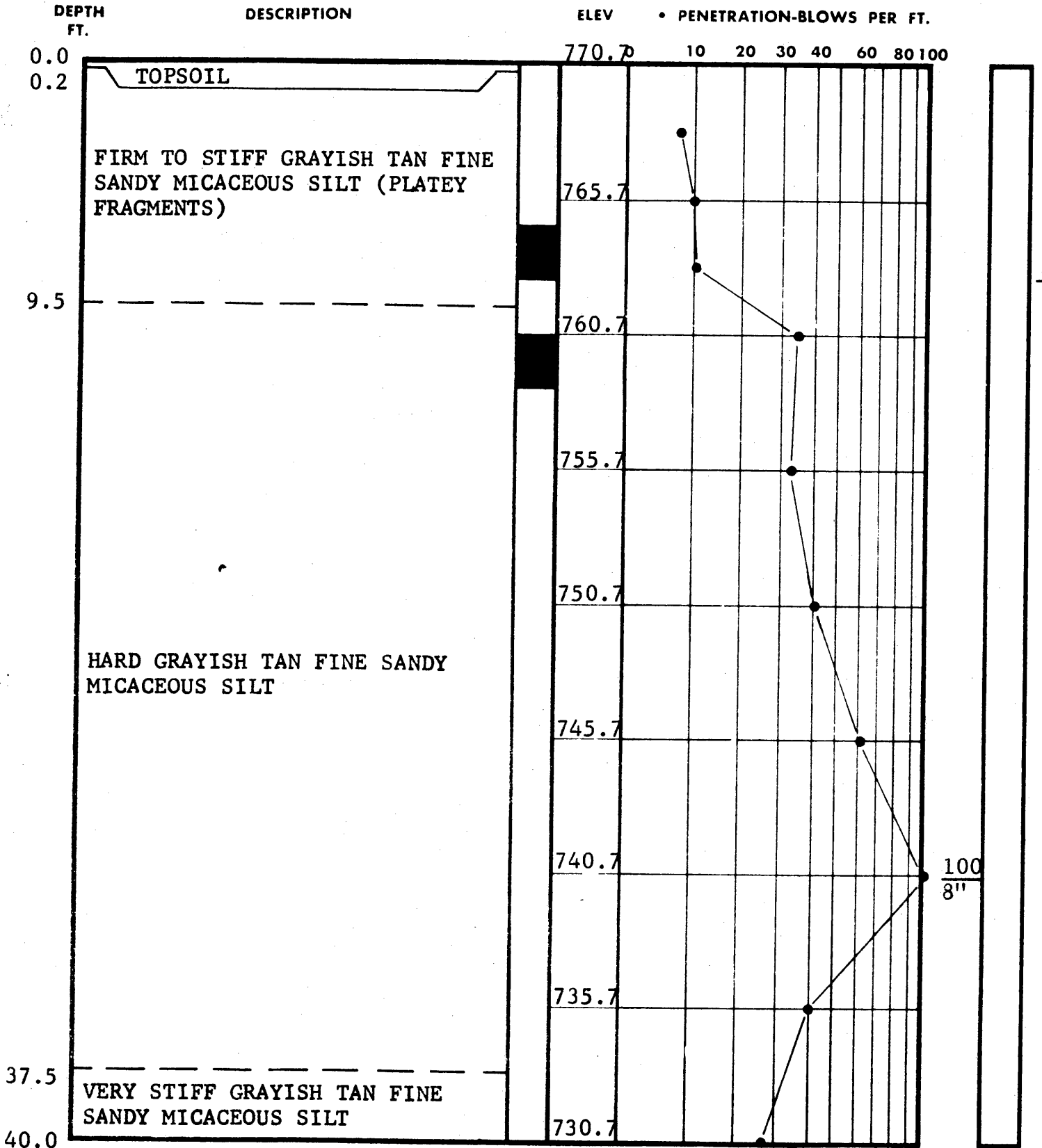
 WATER TABLE, 24 HR.

 WATER TABLE, 1 HR.

|50| % ROCK CORE RECOVERY

 LOSS OF DRILLING WATER





## TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

Page 1 of 2

BORING NO. B-153

DATE DRILLED 9-17-68

JOB NO. 5862

abc  UNDISTURBED SAMPLE

 WATER TABLE, 24 HR.

 WATER TABLE, 1 HR.

|50| % ROCK CORE RECOVERY

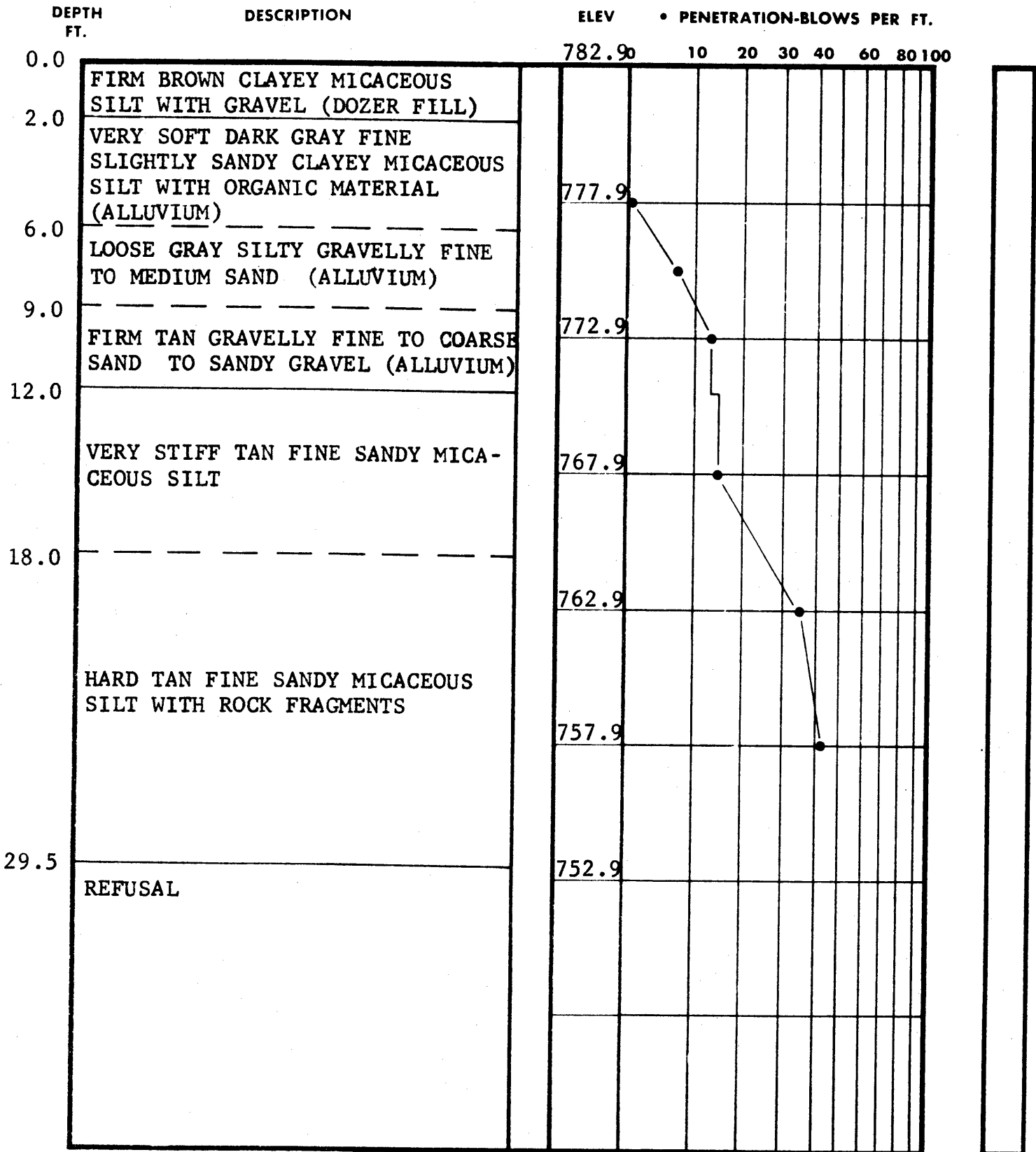
 LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO












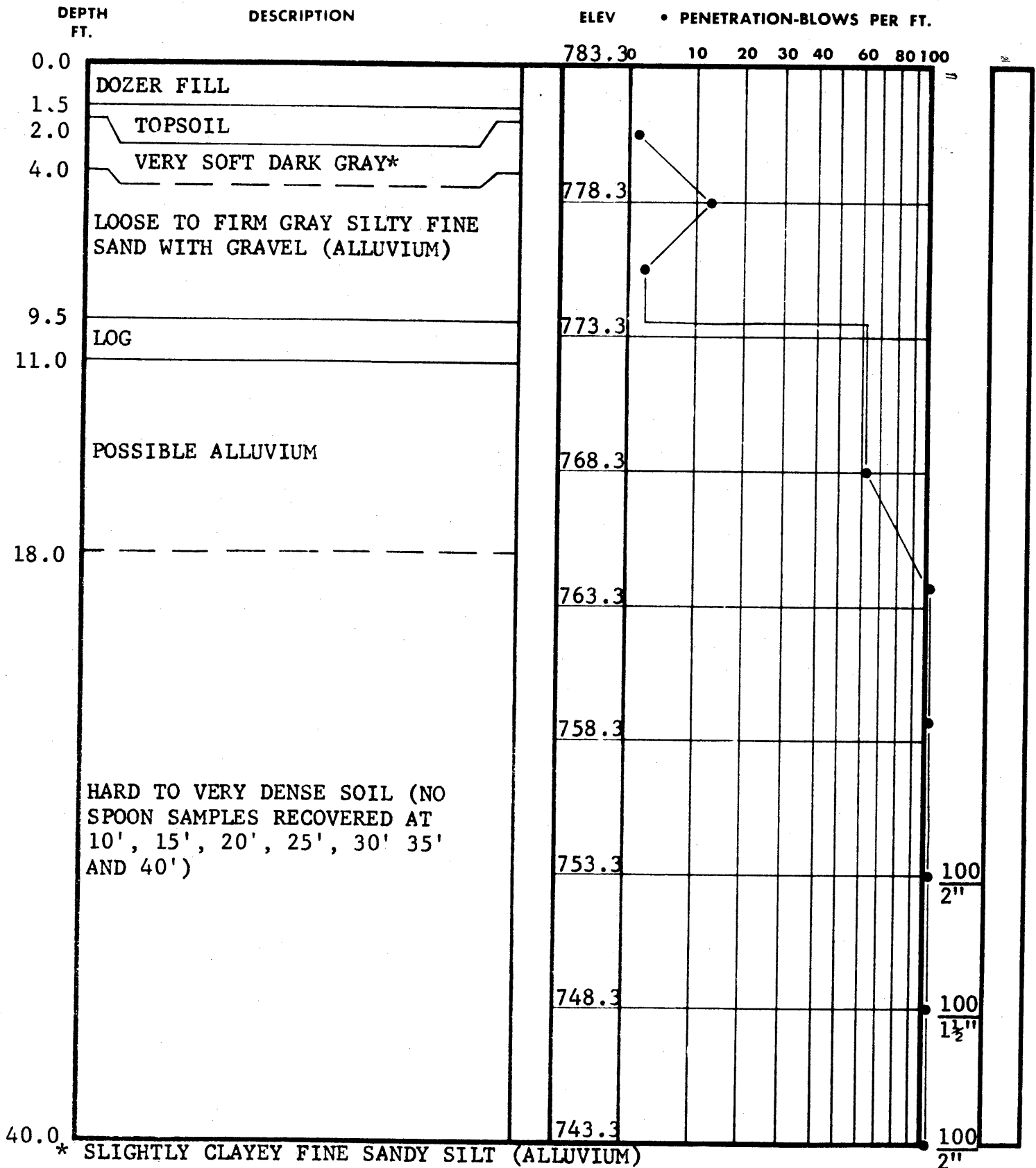


## TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-154  
 DATE DRILLED 9-23-68  
 JOB NO. 5862

abc  UNDISTURBED SAMPLE  
 WATER TABLE, 24 HR  
 WATER TABLE, 1 HR.  
 % ROCK CORE RECOVERY  
 LOSS OF DRILLING WATER



### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-155  
 DATE DRILLED 9-23-68  
 JOB NO. 5862

abc UNDISTURBED SAMPLE  
 WATER TABLE, 24 HR.  
 WATER TABLE, 1 HR.  
 50% ROCK CORE RECOVERY  
 LOSS OF DRILLING WATER







DEPTH FT.	DESCRIPTION	ELEV • PENETRATION-BLOWS PER FT.												
		783.50	10	20	30	40	60	80	100					
0.0	FIRM BROWN CLAYEY MICACEOUS SILT WITH SOME GRAVEL (DOZER FILL)													
2.0	FIRM GRAY AND TAN VERY SILTY FINE TO MEDIUM SAND WITH SOME GRAVEL (ALLUVIUM)	778.5												
9.0	VERY STIFF TAN AND GRAY FINE TO MEDIUM VERY SANDY MICACEOUS SILT	773.5												
12.0	HARD TO VERY HARD SOIL (ATTEMPTED UNDISTURBED SAMPLING FROM 12' - 13', NO RECOVERY; NO SPOON SAMPLE RECOVERED AT 15')	768.5												
18.5	REFUSAL SEE CORE BORING RECORD	763.5												

100  
2"

NO GROUND WATER ENCOUNTERED

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113  
PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-156  
DATE DRILLED 9-23-68  
JOB NO. 5862

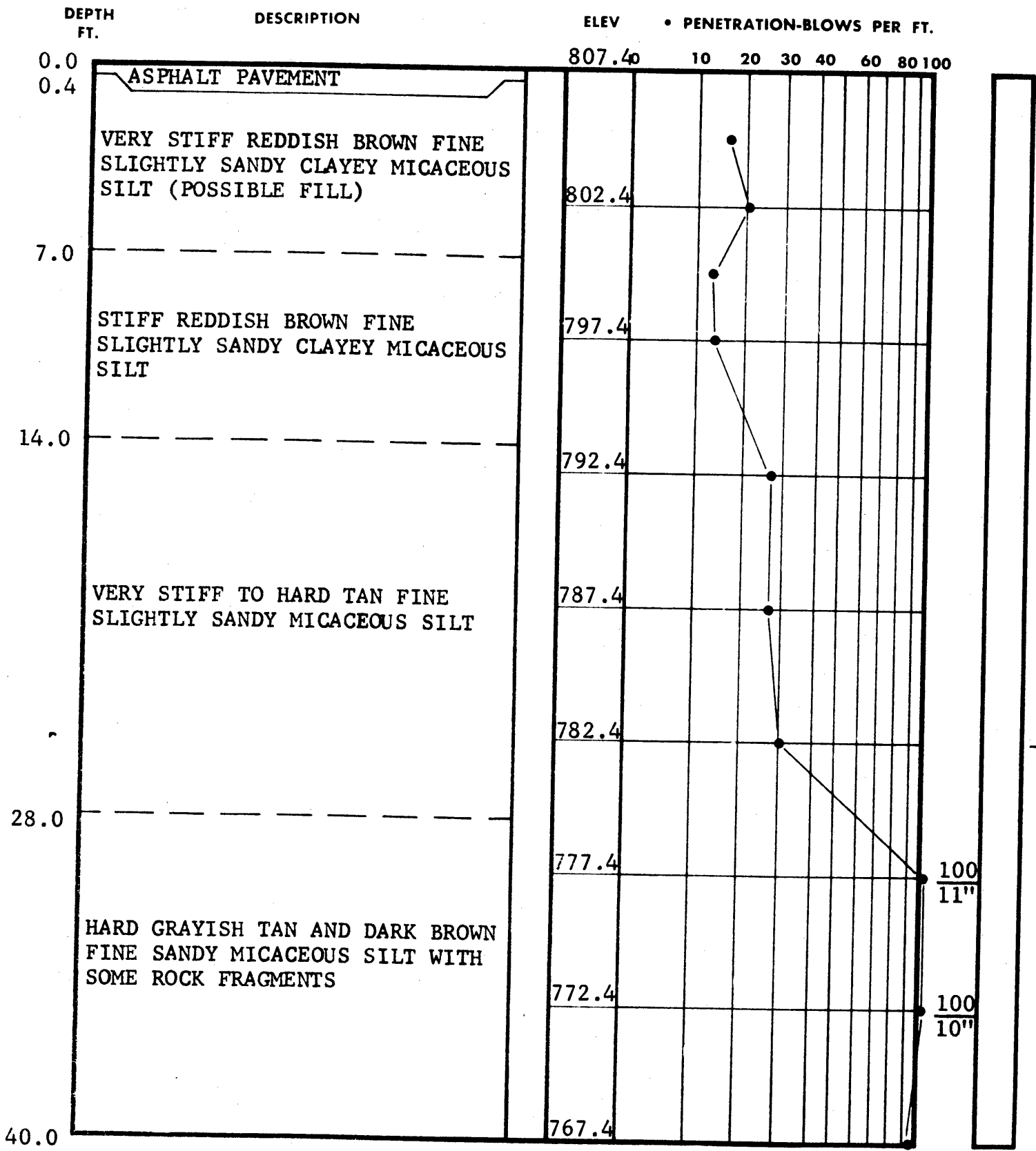
abc  UNDISTURBED SAMPLE

 WATER TABLE, 24 HR.

 WATER TABLE, 1 HR.

|50| % ROCK CORE RECOVERY

 LOSS OF DRILLING WATER



## TEST BORING RECORD

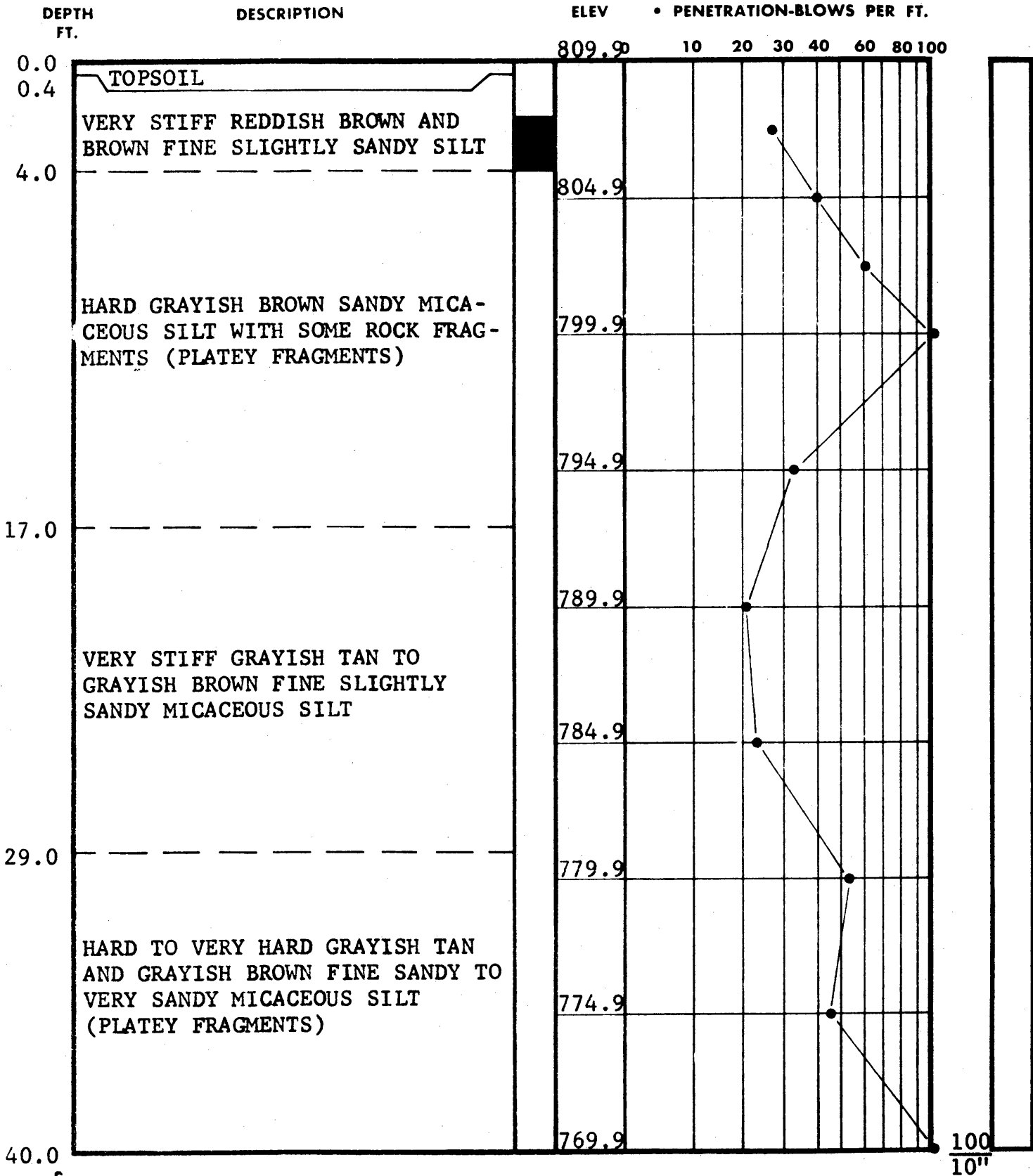
BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-157  
 DATE DRILLED 9-27-68  
 JOB NO. 5862

abc  UNDISTURBED SAMPLE  
 WATER TABLE, 24 HR.  
 WATER TABLE, 1 HR.  
 % ROCK CORE RECOVERY  
 LOSS OF DRILLING WATER







### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

Page 1 of 2

BORING NO. B-158  
DATE DRILLED 9-27-68  
JOB NO. 5862

abc  UNDISTURBED SAMPLE

 WATER TABLE, 24 HR.

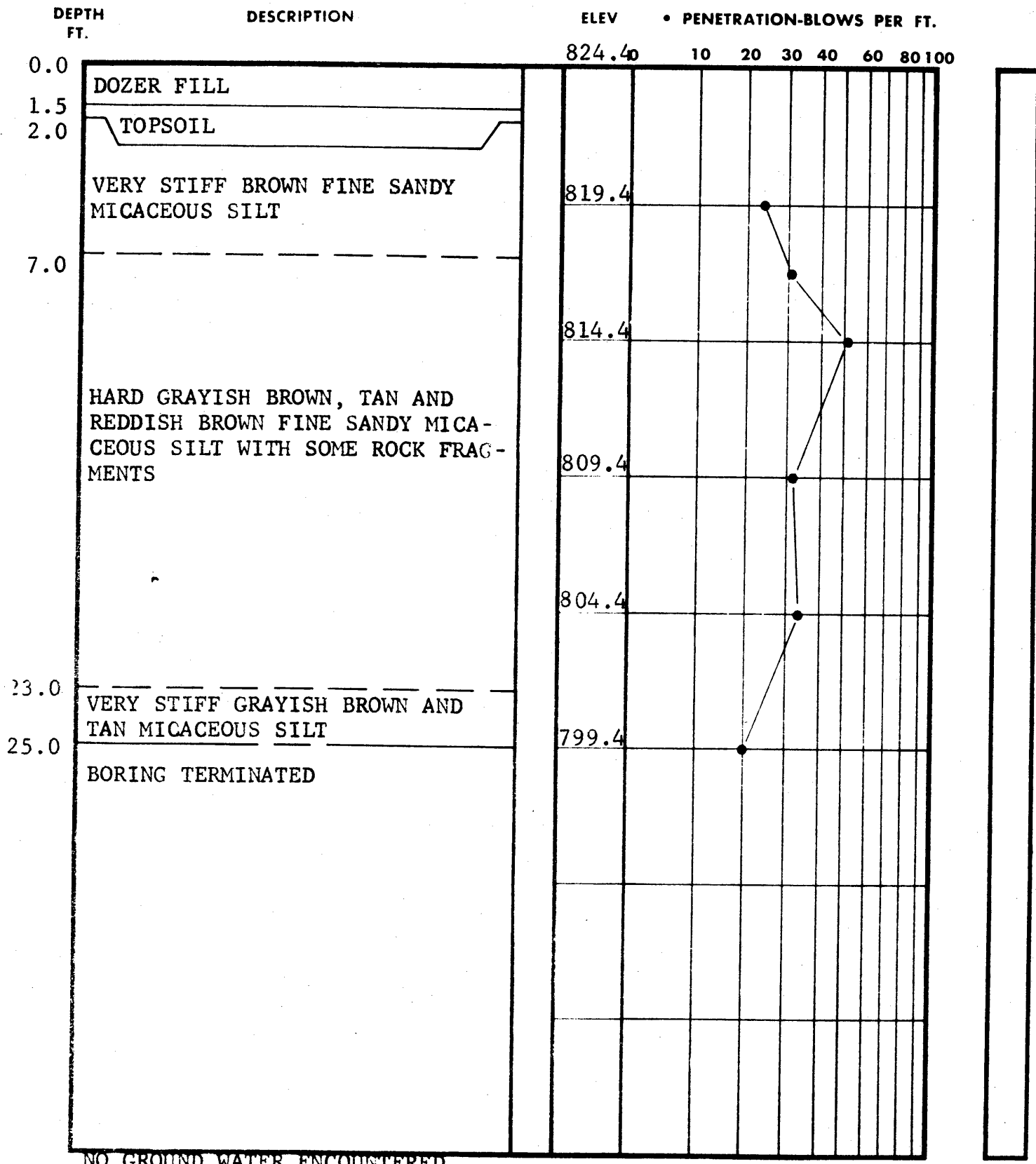
 WATER TABLE, 1 HR.

|50| % ROCK CORE RECOVERY

 LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.










NO GROUND WATER ENCOUNTERED

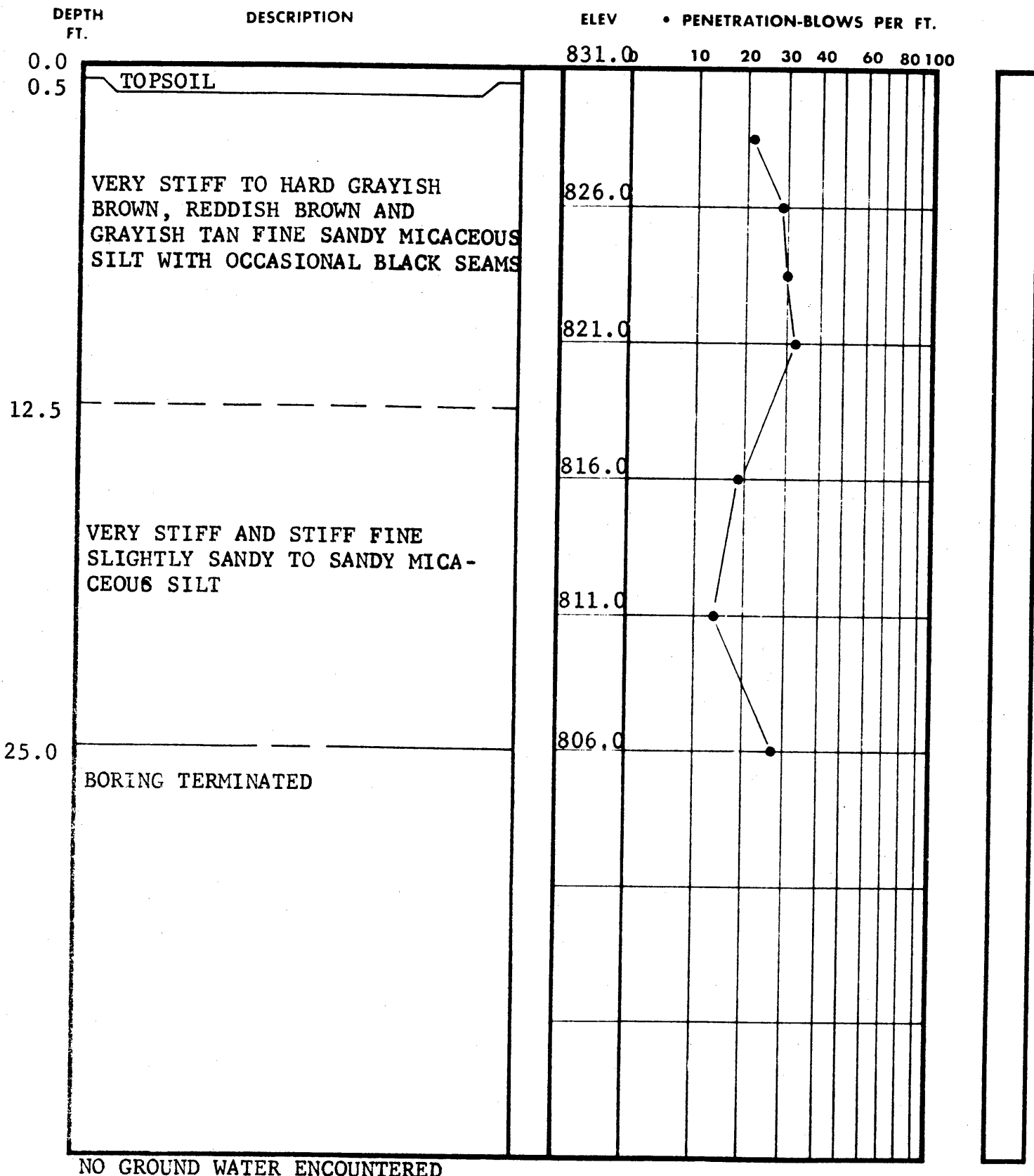
### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORF DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-159  
 DATE DRILLED 9-26-68  
 JOB NO. 5862

abc  UNDISTURBED SAMPLE  
 WATER TABLE, 24 HR.  
 WATER TABLE, 1 HR.  
 50% ROCK CORE RECOVERY  
 LOSS OF DRILLING WATER





NO GROUND WATER ENCOUNTERED

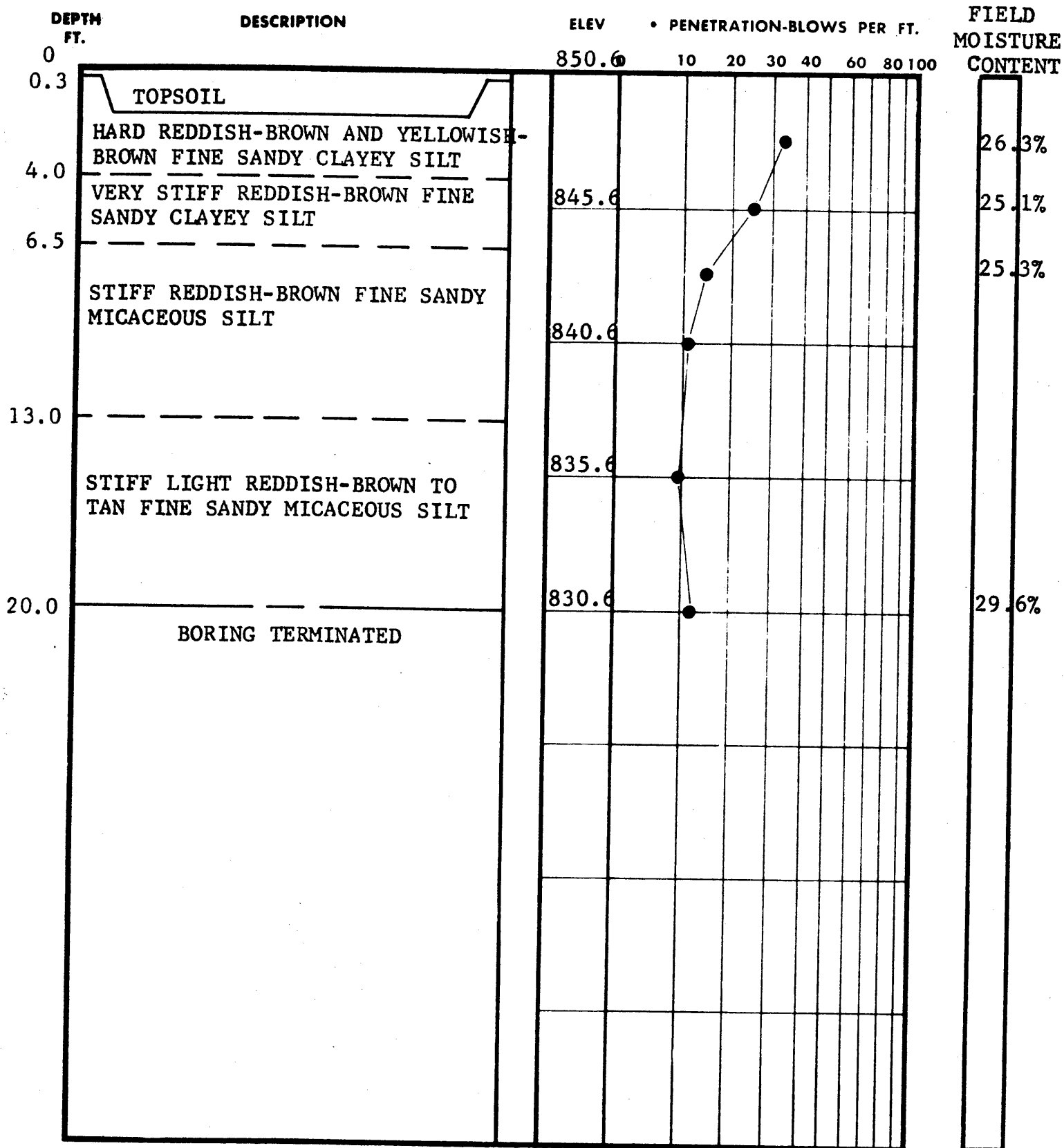
### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-160  
 DATE DRILLED 9-26-68  
 JOB NO. 5862

abc UNDISTURBED SAMPLE  
 WATER TABLE, 24 HR.  
 WATER TABLE, 1 HR.  
 % ROCK CORE RECOVERY  
 LOSS OF DRILLING WATER





NO GROUND WATER ENCOUNTERED

## TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-201

DATE DRILLED 7/23/68

JOB NO. 5862

jj  UNDISTURBED SAMPLE

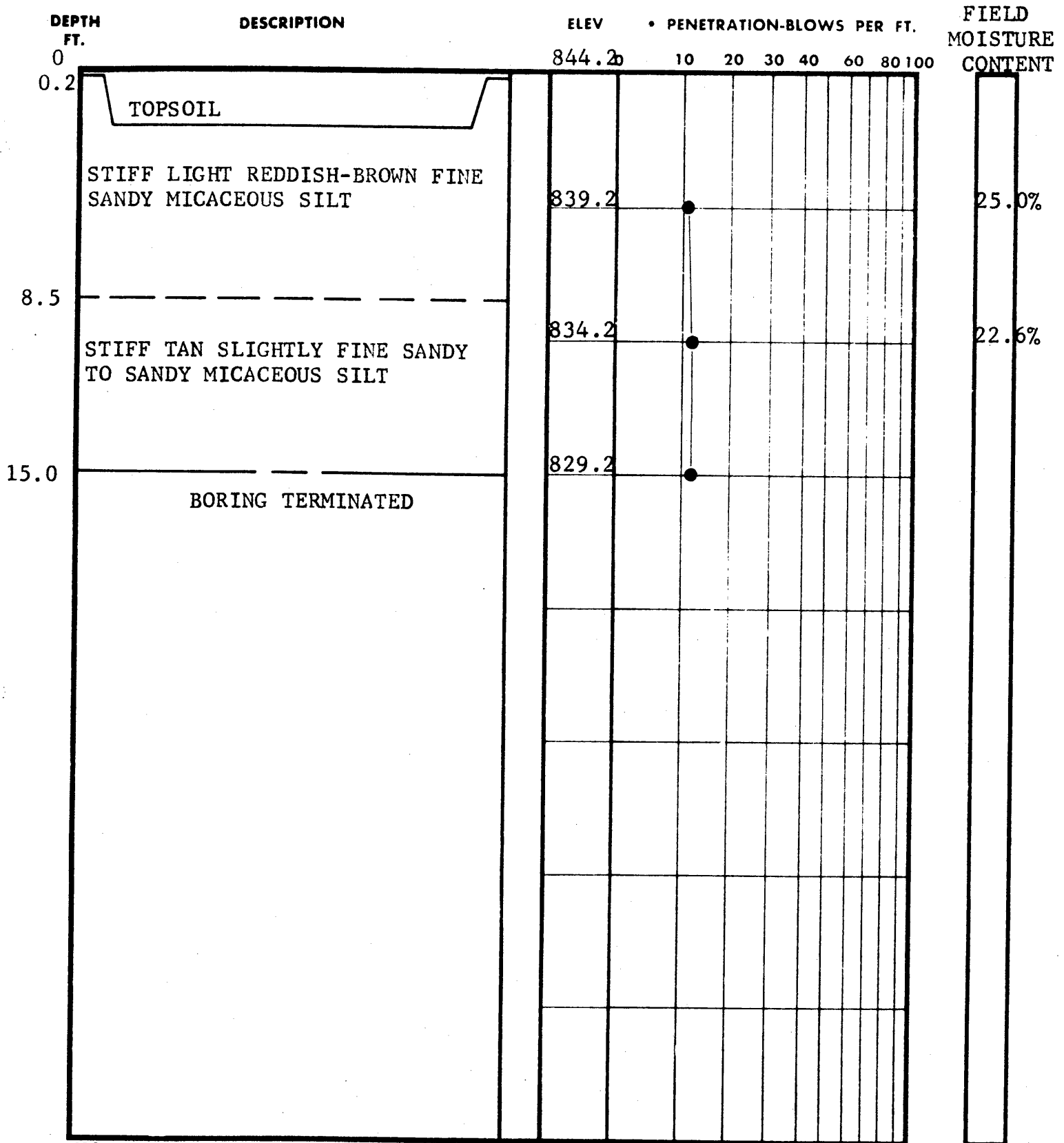
 WATER TABLE, 24 HR.

 WATER TABLE, 1 HR.

 % ROCK CORE RECOVERY

 LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.








NO GROUND WATER ENCOUNTERED

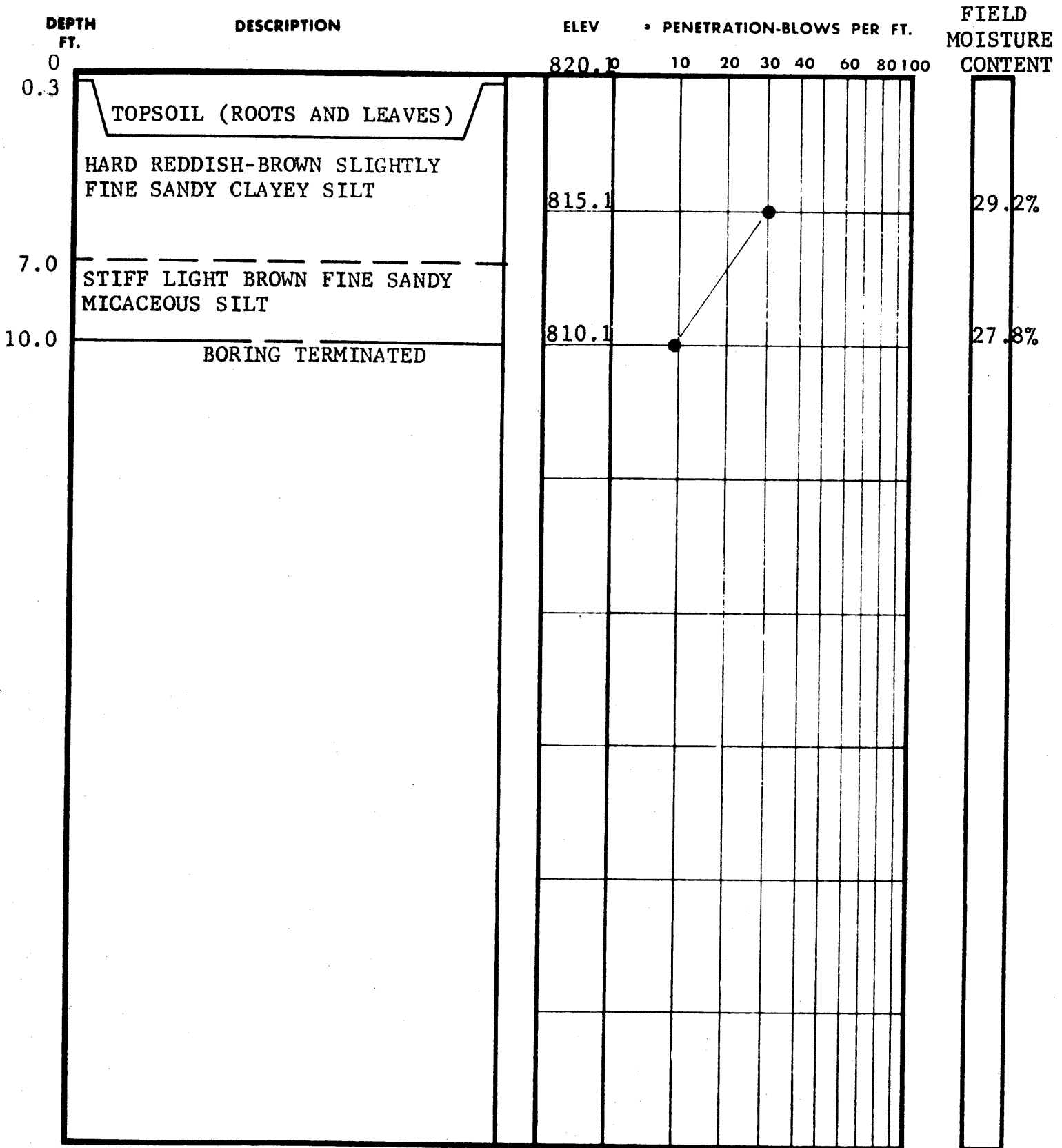
### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-202  
 DATE DRILLED 7/24/68  
 JOB NO. 5862

-  UNDISTURBED SAMPLE
-  WATER TABLE, 24 HR.
-  WATER TABLE, 1 HR.
-  % ROCK CORE RECOVERY
-  LOSS OF DRILLING WATER





NO GROUND WATER ENCOUNTERED

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-203  
DATE DRILLED 7/3/68  
JOB NO. 5862

jj

 UNDISTURBED SAMPLE

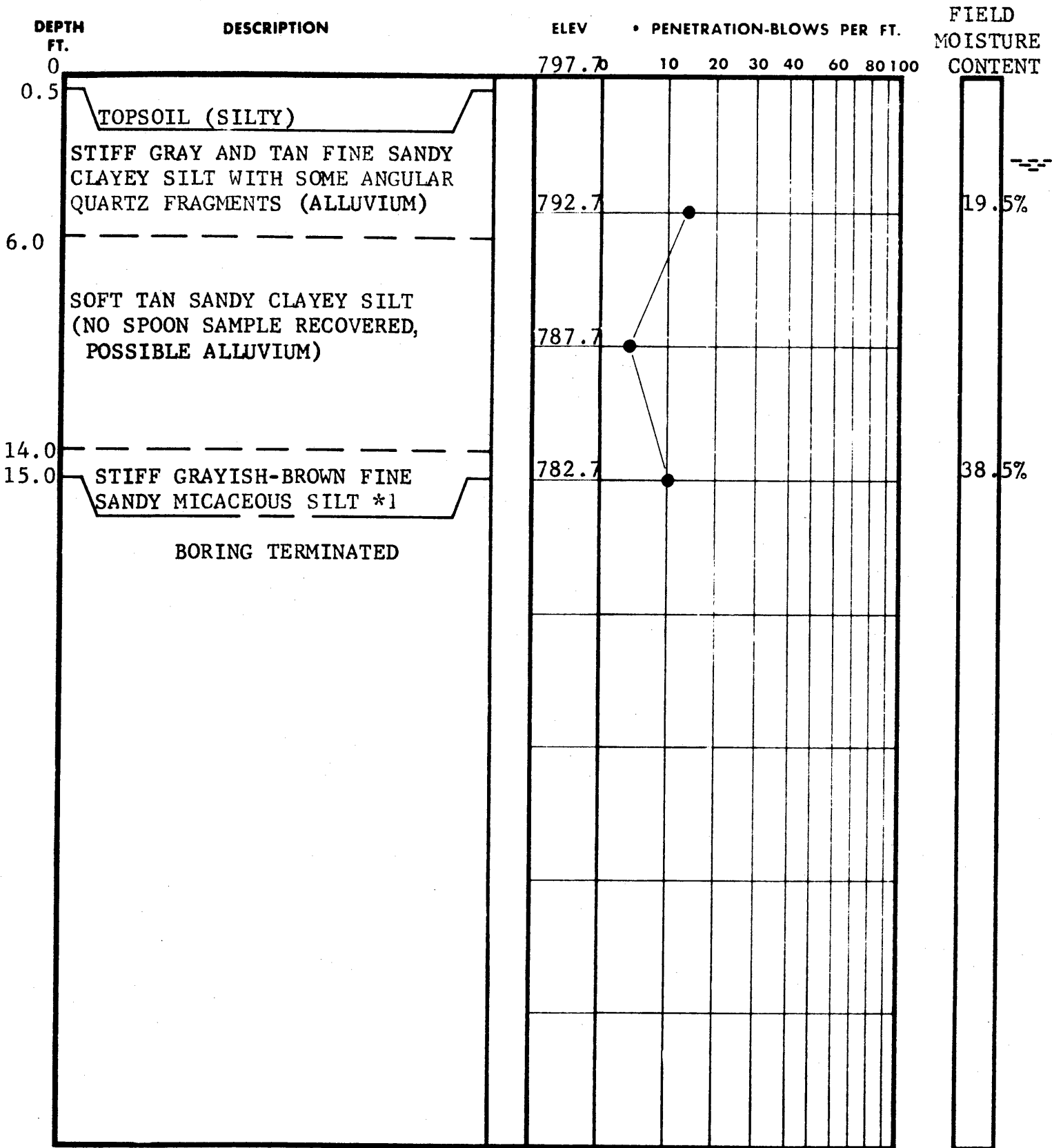
 WATER TABLE, 24 HR.

 WATER TABLE, 1 HR.

 % ROCK CORE RECOVERY

 LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.



\*1 (PLATEY FRAGMENTS)

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-204

DATE DRILLED 7/31/68

JOB NO. 5862

jj  UNDISTURBED SAMPLE

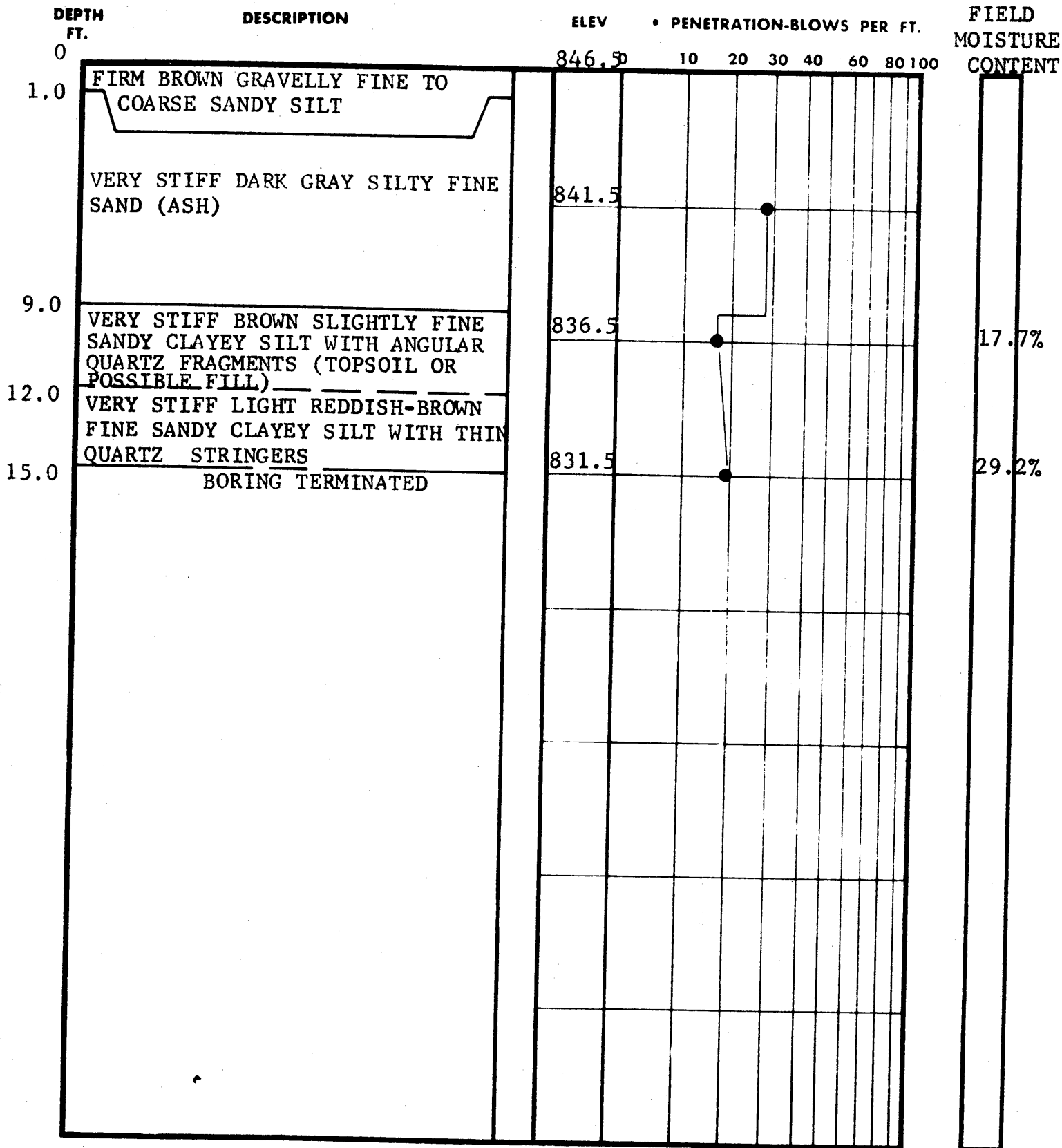
 WATER TABLE, 24 HR.

 WATER TABLE, 1 HR.

 % ROCK CORE RECOVERY

 LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.








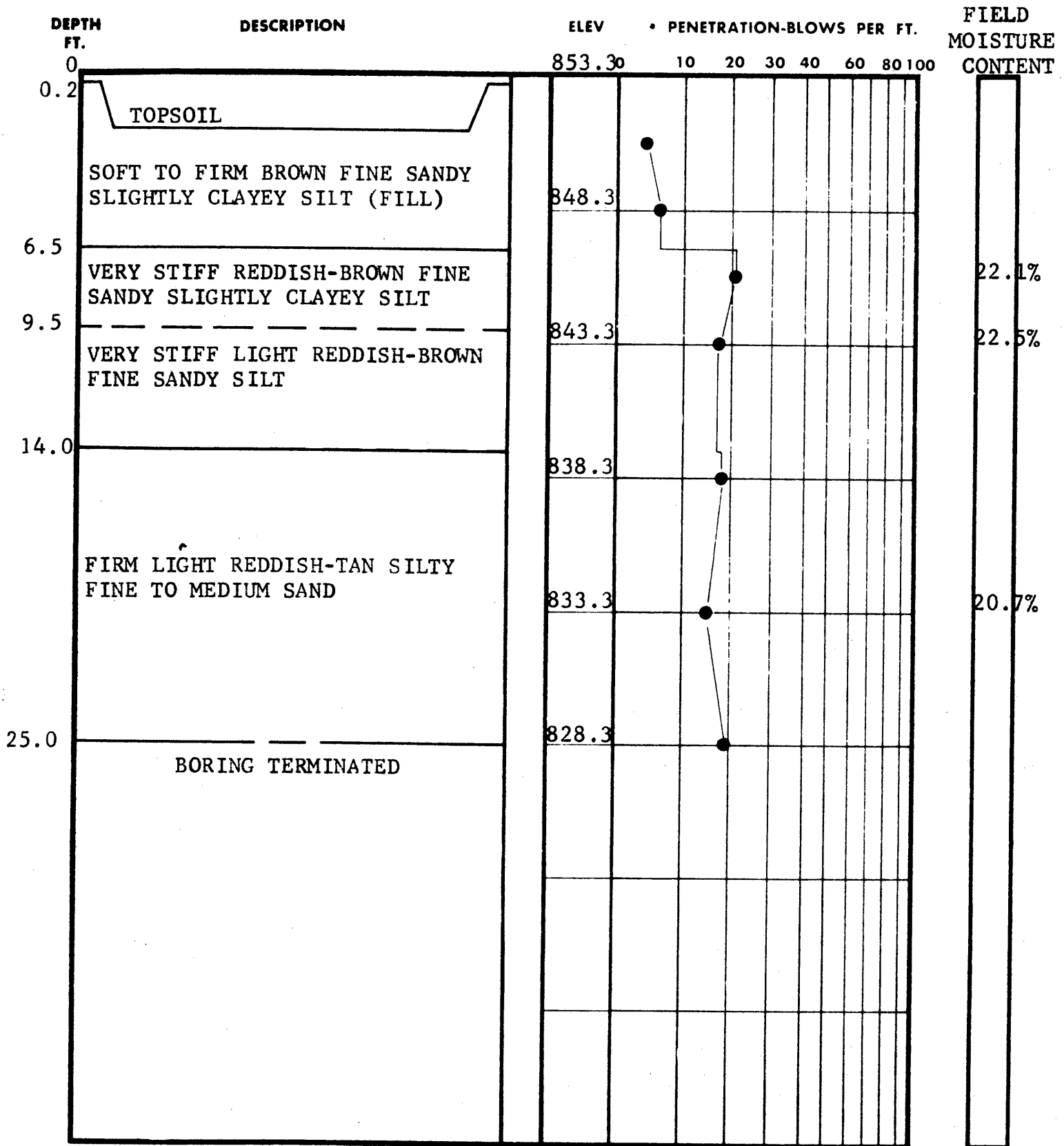
NO GROUND WATER ENCOUNTERED

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-205  
 DATE DRILLED 7/31/68  
 JOB NO. 5862

jj  UNDISTURBED SAMPLE  
 WATER TABLE, 24 HR.  
 WATER TABLE, 1 HR.  
 50% ROCK CORE RECOVERY  
 LOSS OF DRILLING WATER



NO GROUND WATER ENCOUNTERED

## TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-206  
 DATE DRILLED 7/22/68  
 JOB NO. 5862

jj

 UNDISTURBED SAMPLE

 WATER TABLE, 24 HR.

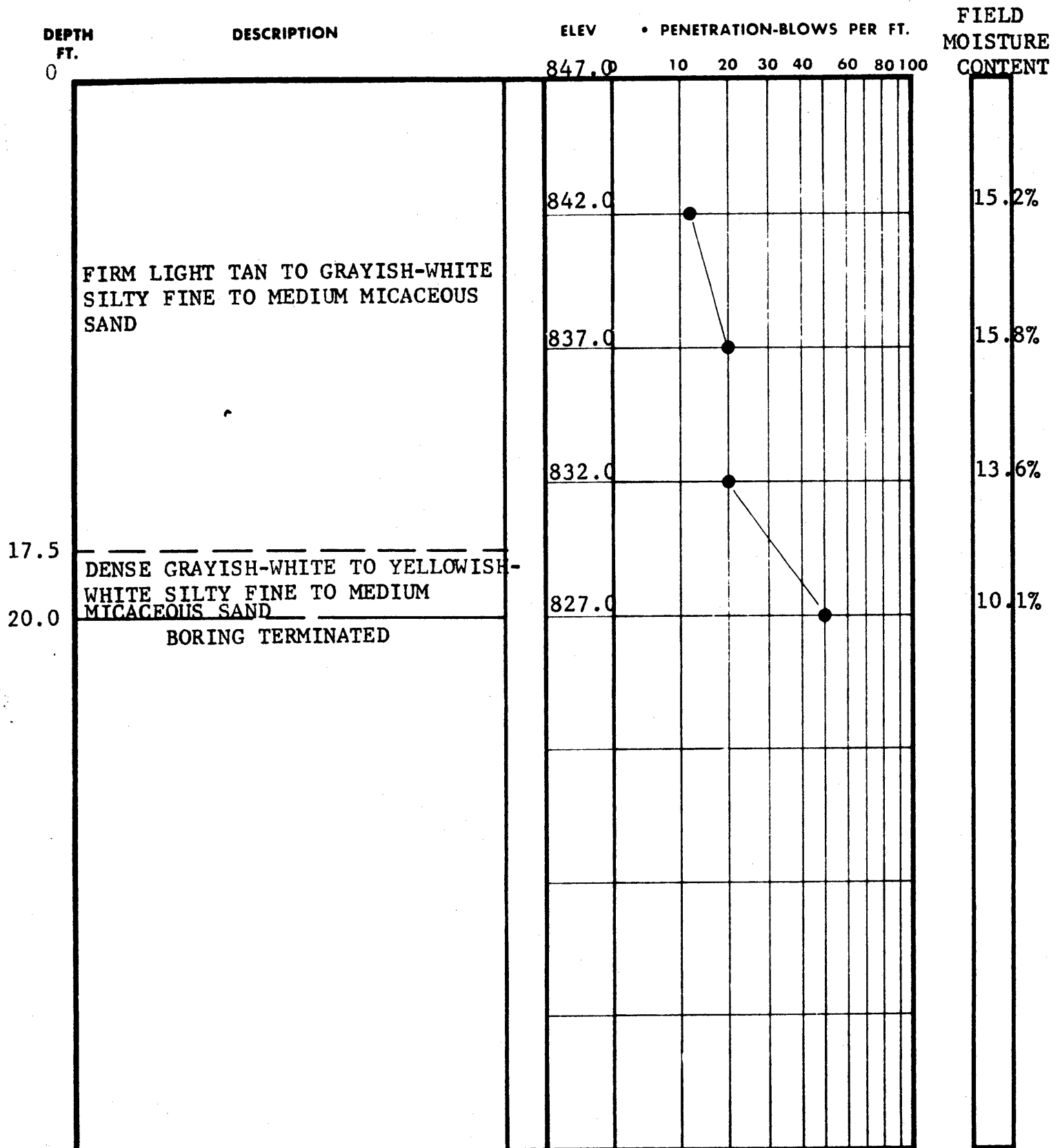
 WATER TABLE, 1 HR.

 % ROCK CORE RECOVERY

 LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.










NO GROUND WATER ENCOUNTERED

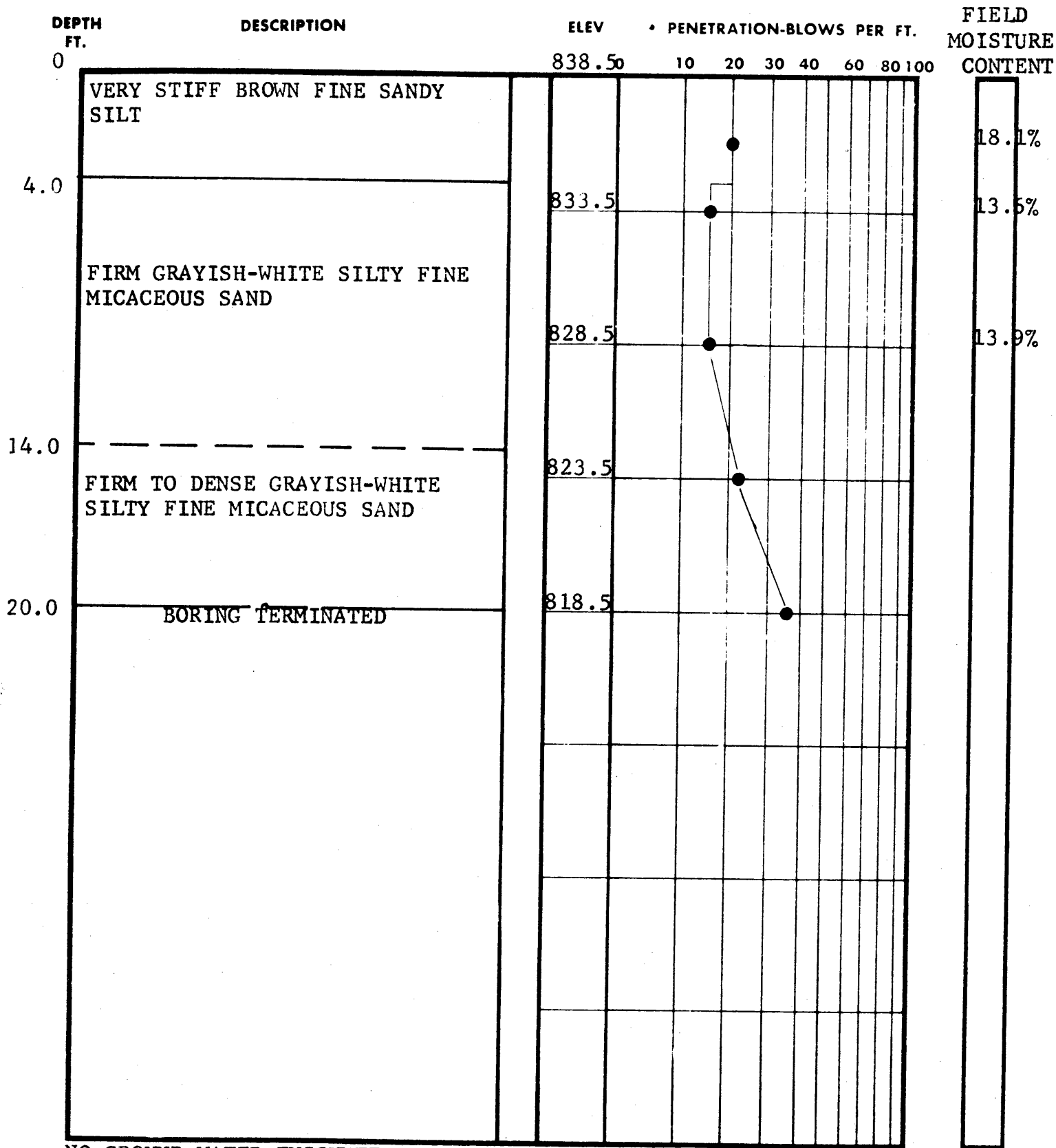
### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-207  
 DATE DRILLED 7/24/68  
 JOB NO. 5862

jj  UNDISTURBED SAMPLE  
 WATER TABLE, 24 HR.  
 WATER TABLE, 1 HR.  
 50% ROCK CORE RECOVERY  
 LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.



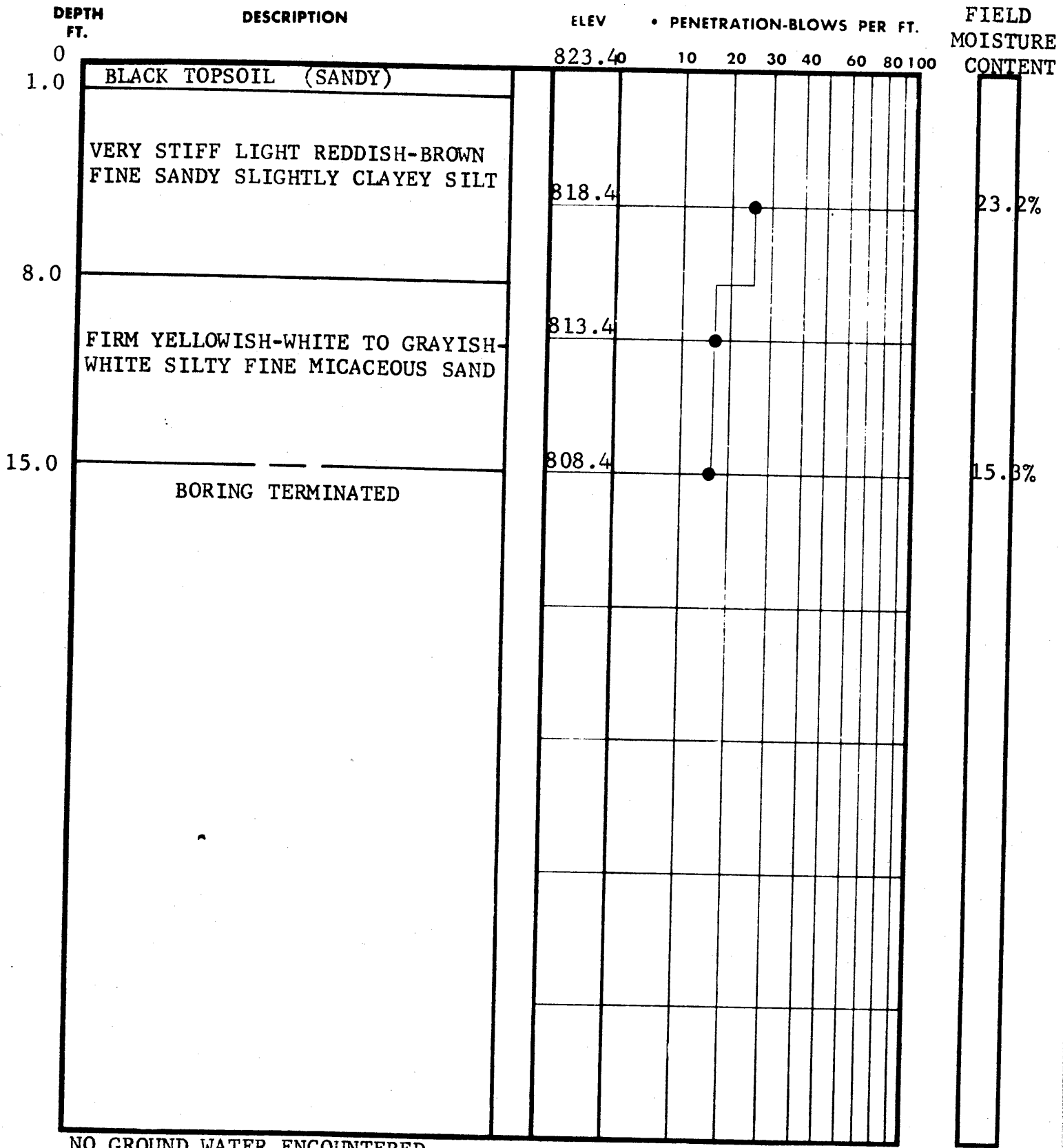
NO GROUND WATER ENCOUNTERED

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-208  
 DATE DRILLED 7/24/68  
 JOB NO. 5862

- jj UNDISTURBED SAMPLE
- WATER TABLE, 24 HR.
- WATER TABLE, 1 HR.
- % ROCK CORE RECOVERY
- LOSS OF DRILLING WATER



NO GROUND WATER ENCOUNTERED

## TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-209

DATE DRILLED 7/31/68

JOB NO. 5862

jj

UNDISTURBED SAMPLE

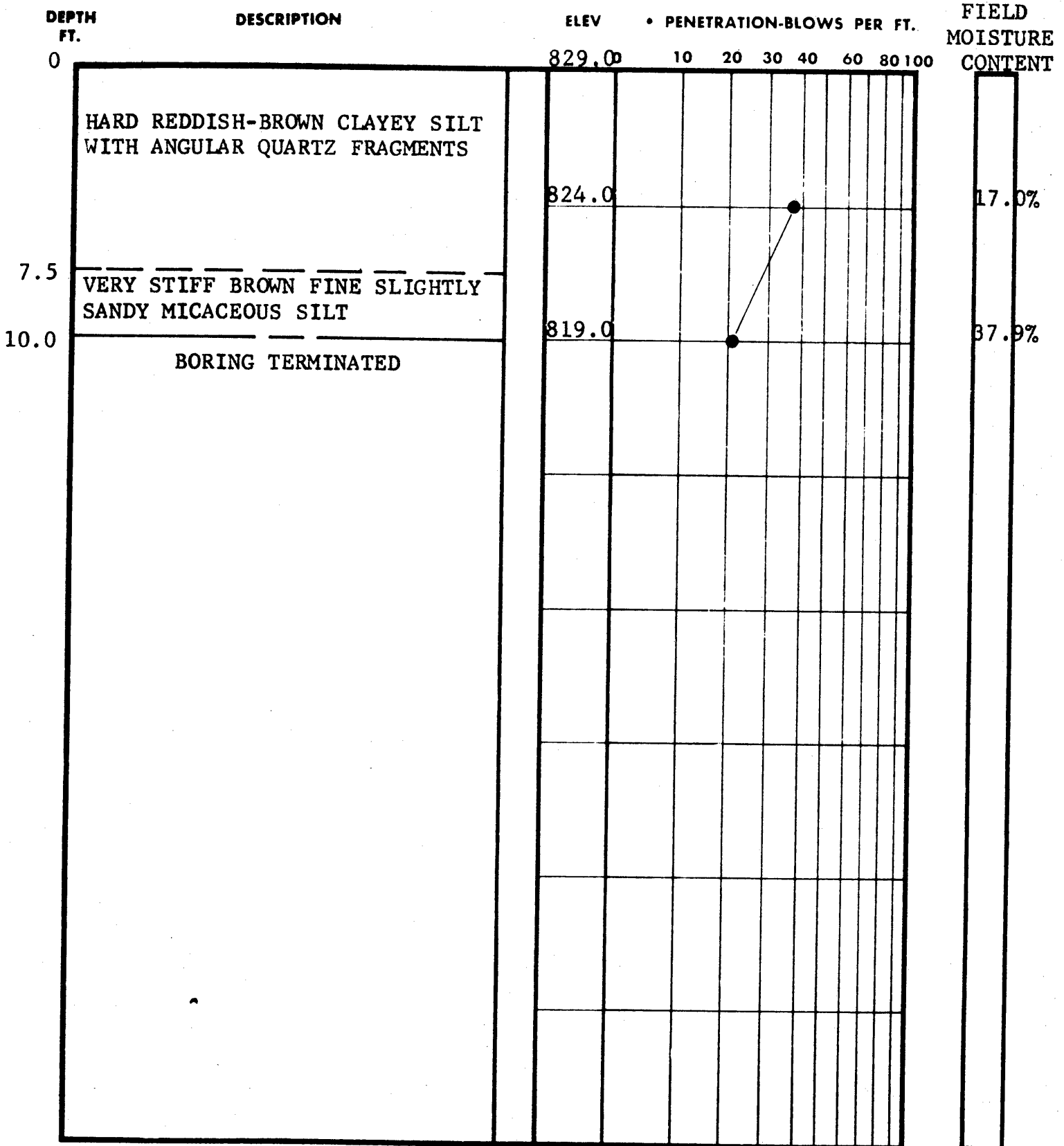
WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

% ROCK CORE RECOVERY

LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.



NO GROUND WATER ENCOUNTERED

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-210

DATE DRILLED 7/31/68

JOB NO. 5862

jj UNDISTURBED SAMPLE

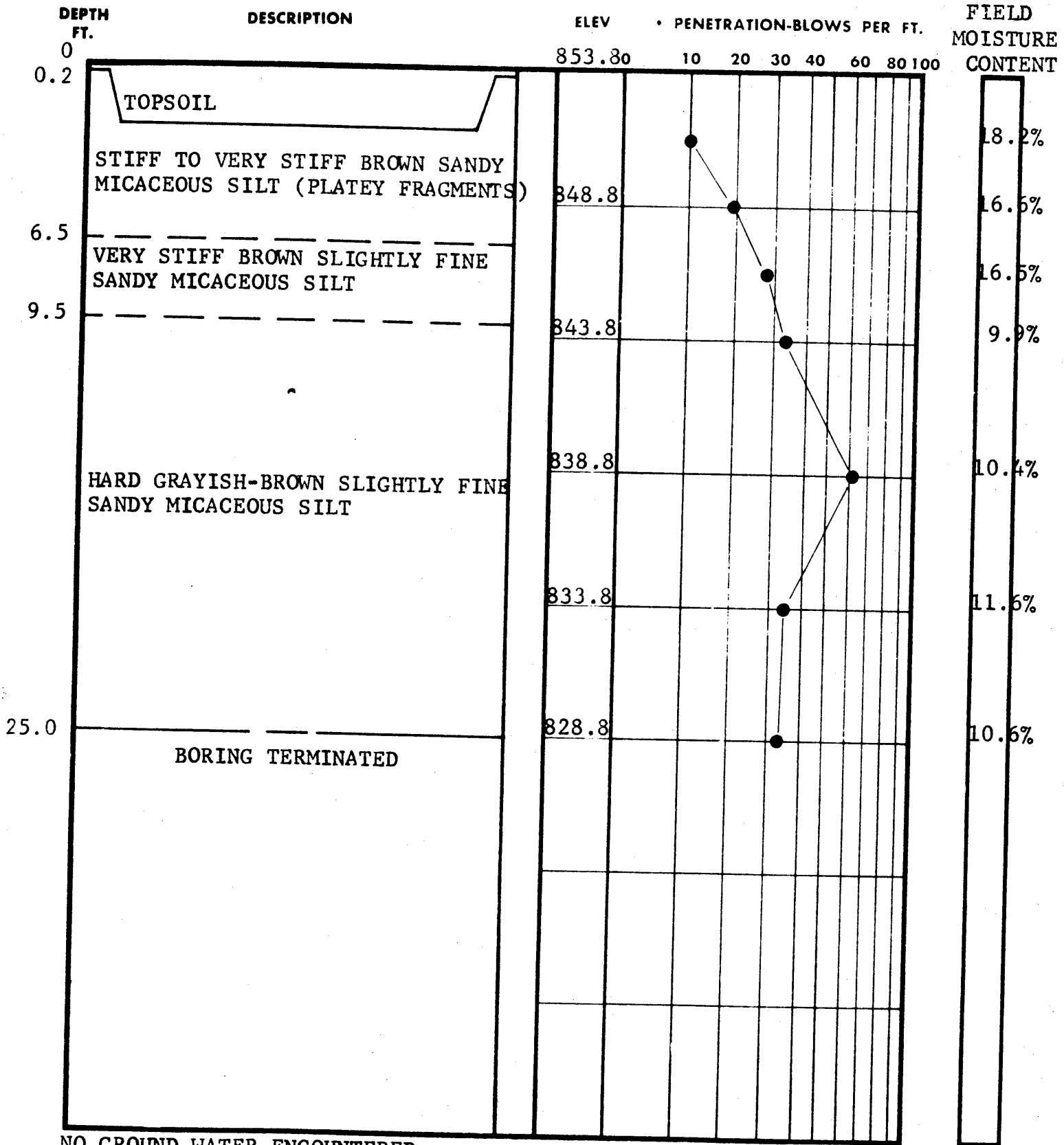
% ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.



NO GROUND WATER ENCOUNTERED

## TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-211  
 DATE DRILLED 7/22/68  
 JOB NO. 5862

jj

UNDISTURBED SAMPLE

WATER TABLE, 24 HR.

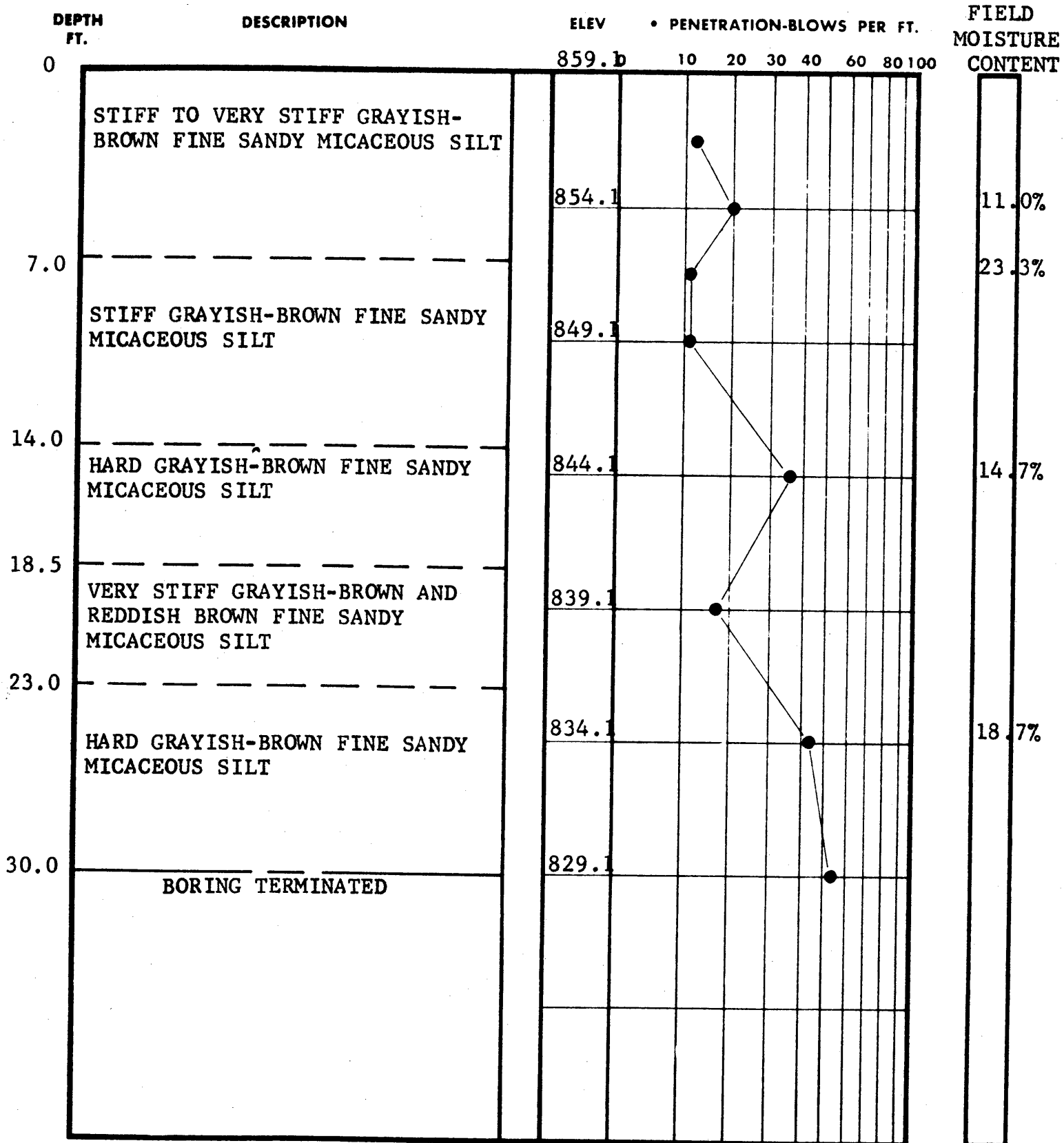
WATER TABLE, 1 HR.

50% ROCK CORE RECOVERY

LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.





NO GROUND WATER ENCOUNTERED

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-212  
DATE DRILLED 7/23/68  
JOB NO. 5862

jj

UNDISTURBED SAMPLE

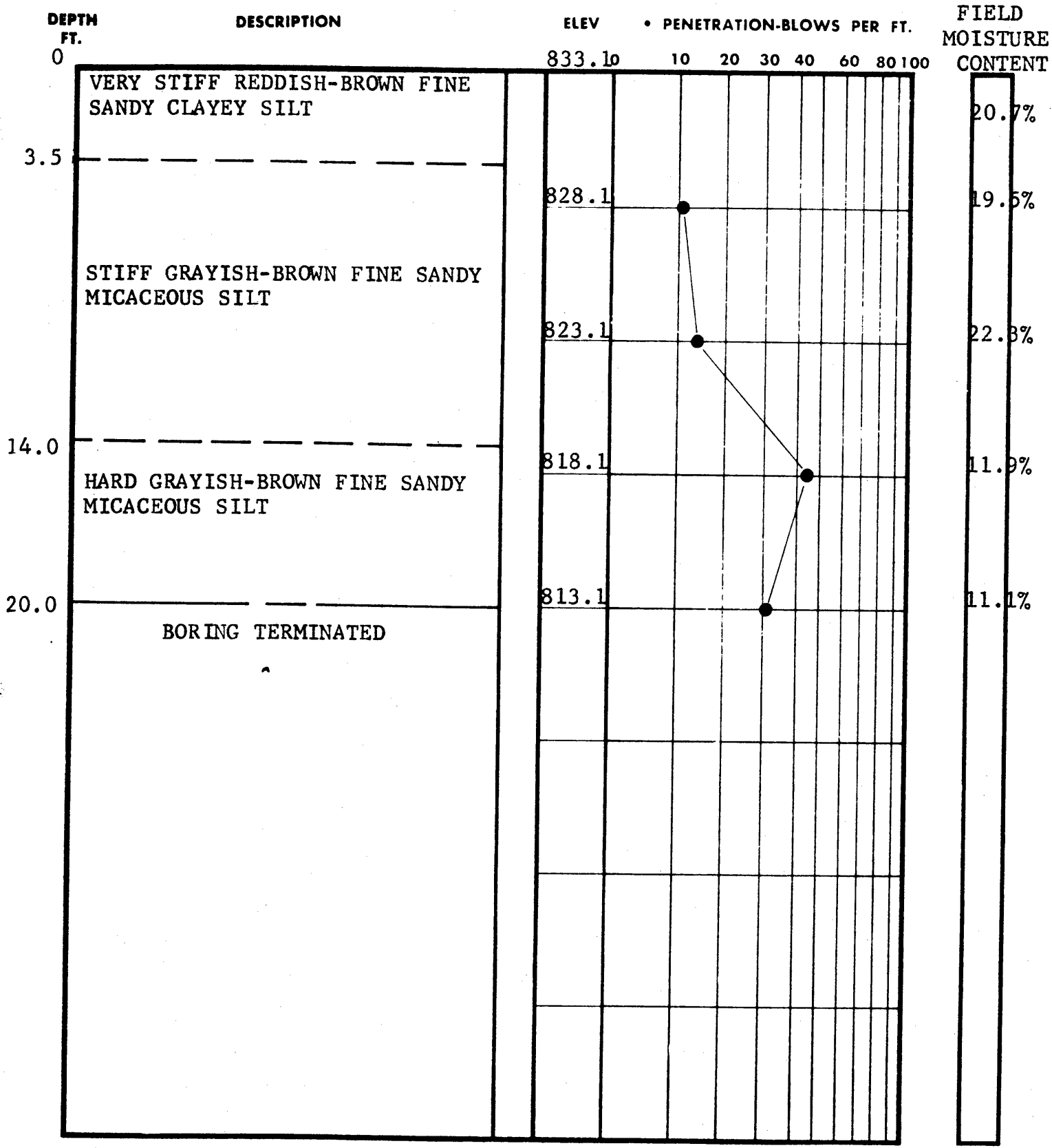
WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

% ROCK CORE RECOVERY

LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.








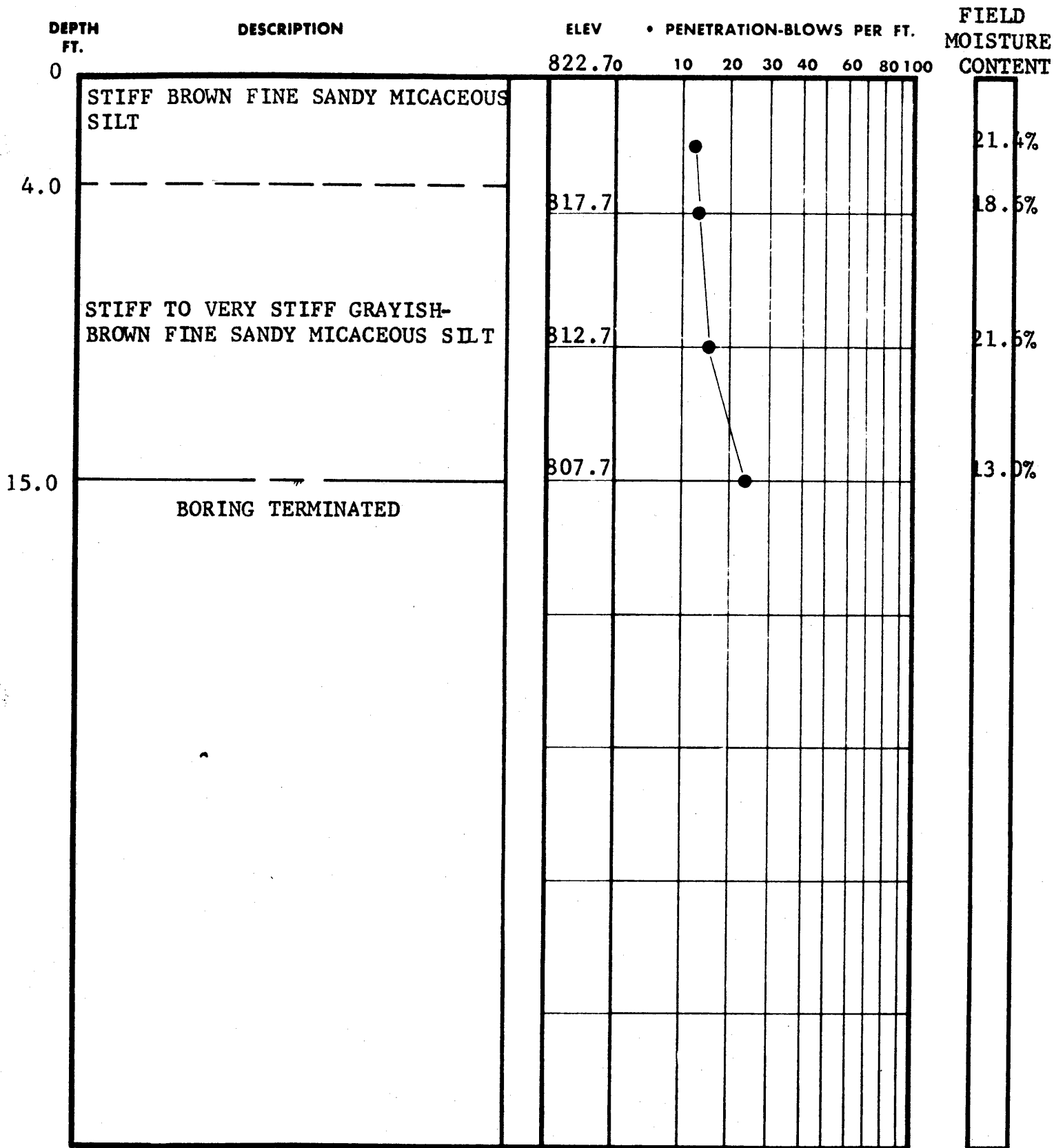
NO GROUND WATER ENCOUNTERED

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-213  
 DATE DRILLED 7/22/68  
 JOB NO. 5862

-  UNDISTURBED SAMPLE
-  WATER TABLE, 24 HR.
-  WATER TABLE, 1 HR.
-  50% ROCK CORE RECOVERY
-  LOSS OF DRILLING WATER



NO GROUND WATER ENCOUNTERED

## TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-214

DATE DRILLED 7/24/68

JOB NO. 5862

jj

 UNDISTURBED SAMPLE

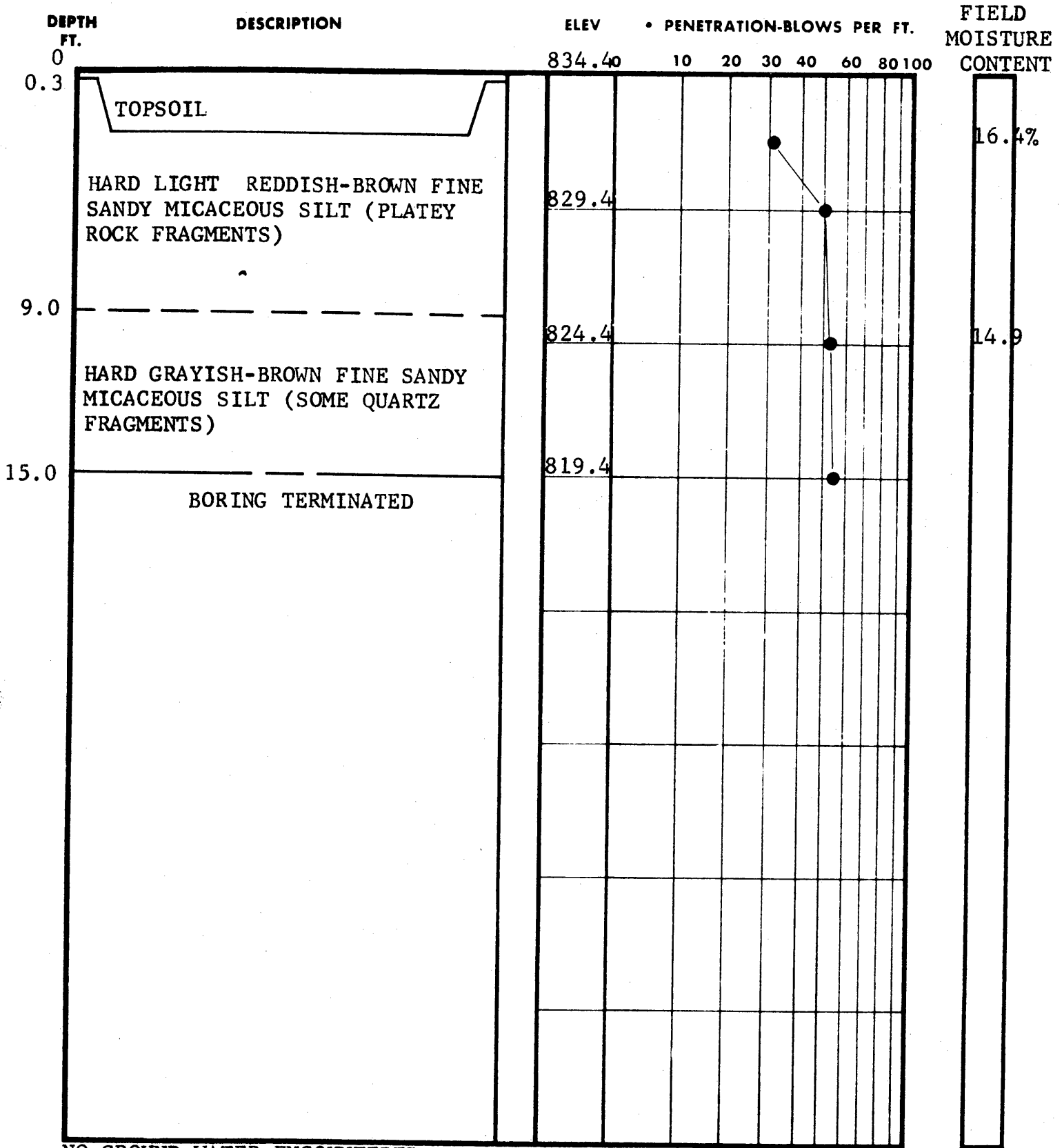
 WATER TABLE, 24 HR.

 WATER TABLE, 1 HR.

 % ROCK CORE RECOVERY

 LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.



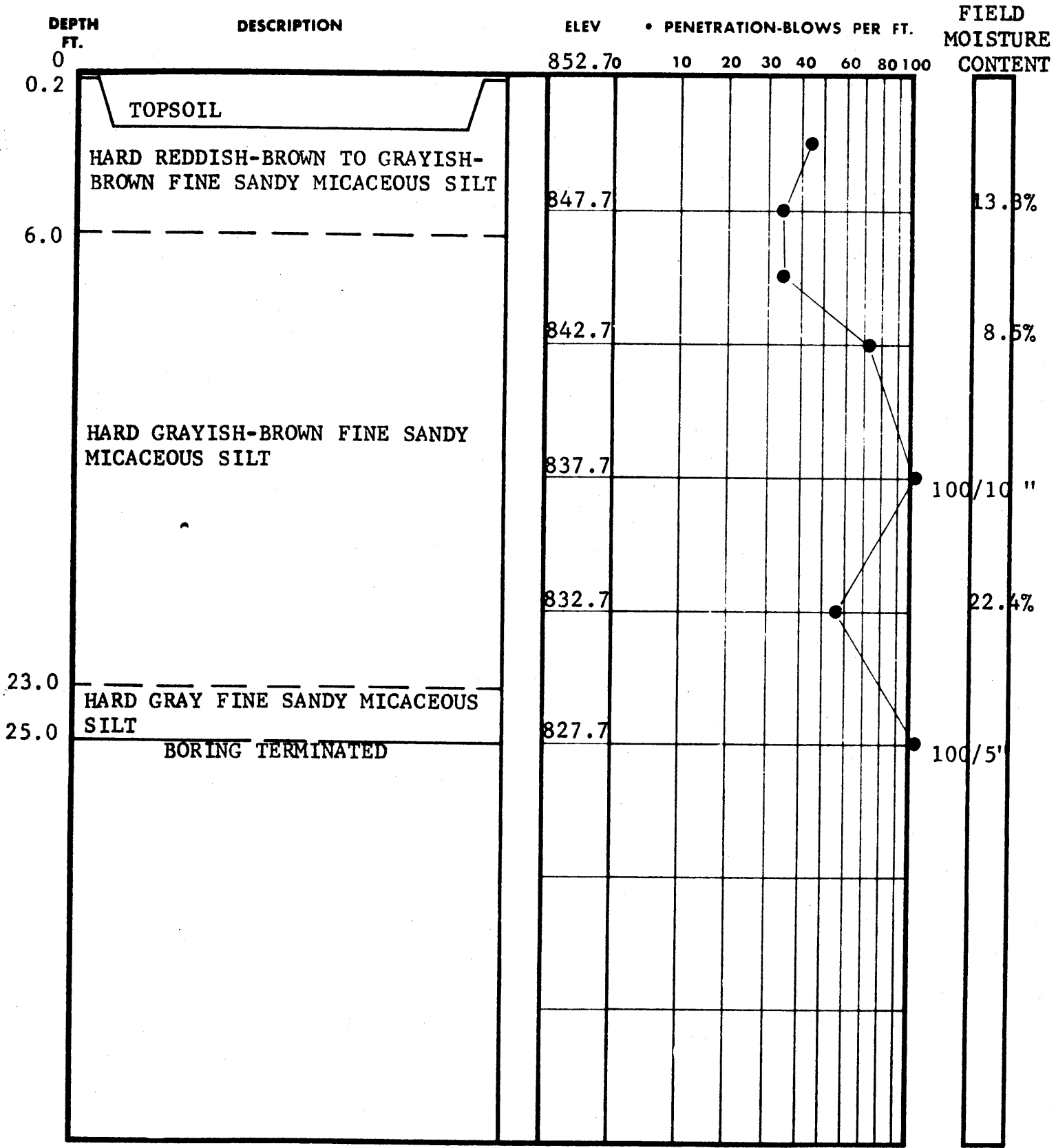
NO GROUND WATER ENCOUNTERED

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-215  
 DATE DRILLED 7/25/68  
 JOB NO. 5862

jj UNDISTURBED SAMPLE  
 WATER TABLE, 24 HR.  
 WATER TABLE, 1 HR.  
 % ROCK CORE RECOVERY  
 LOSS OF DRILLING WATER



NO GROUND WATER ENCOUNTERED

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-216  
 DATE DRILLED 7/22/68  
 JOB NO. 5862

jj UNDISTURBED SAMPLE

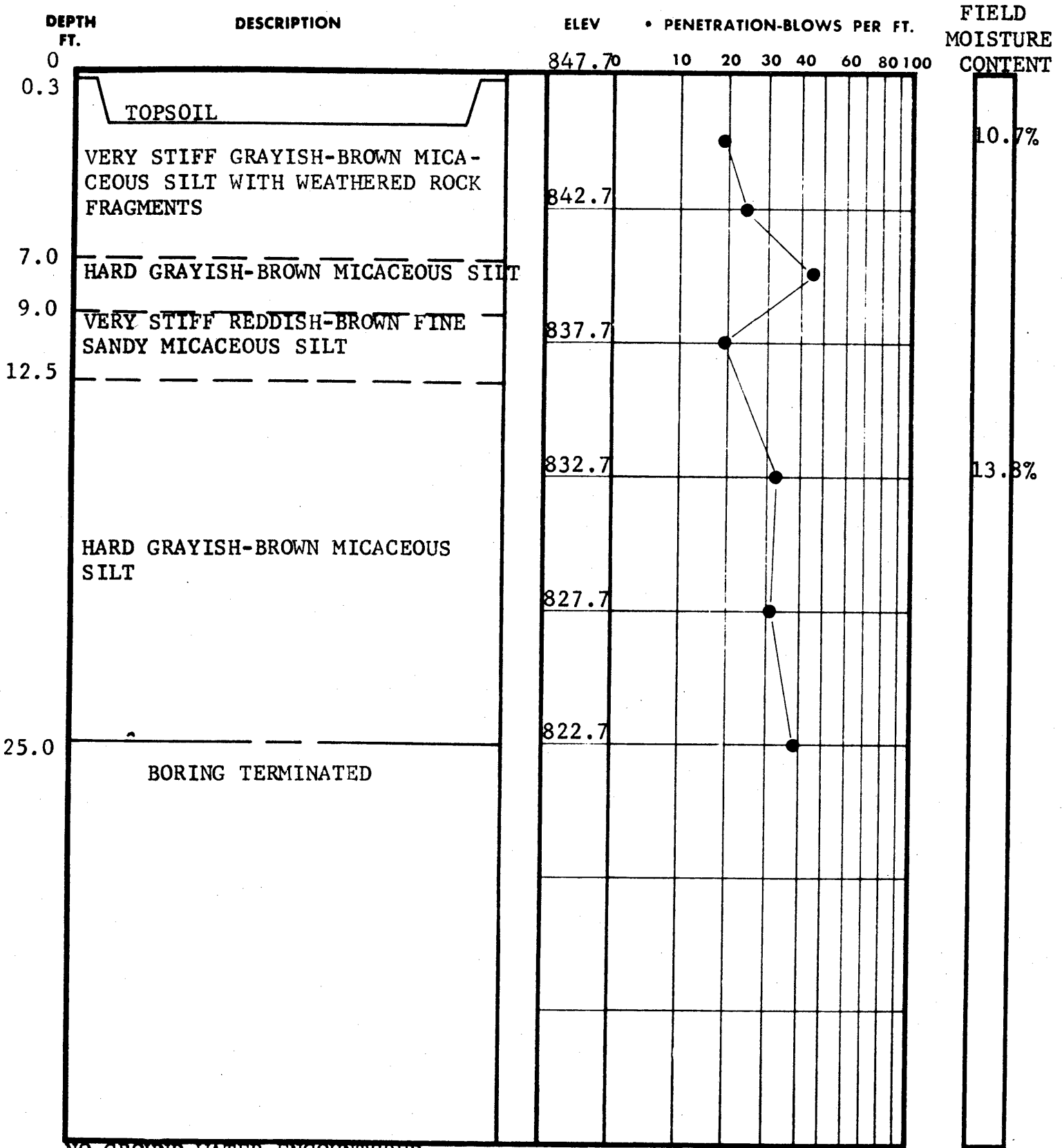
WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

50 | % ROCK CORE RECOVERY

LOSS OF DRILLING WATER





NO GROUND WATER ENCOUNTERED

## TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-217  
DATE DRILLED 7/23/68  
JOB NO. 5862

jj  UNDISTURBED SAMPLE

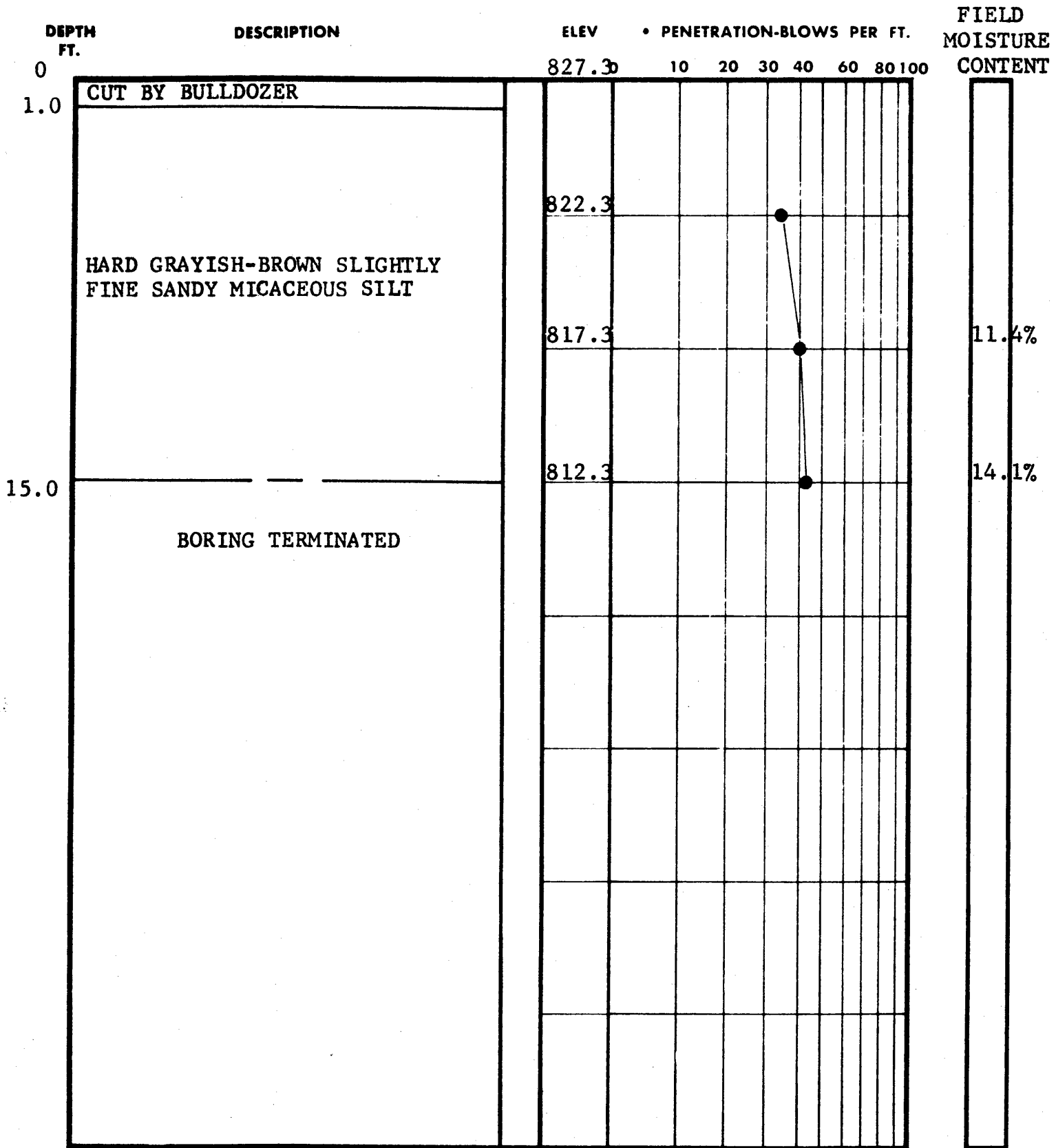
 WATER TABLE, 24 HR.

 WATER TABLE, 1 HR.

 [50] % ROCK CORE RECOVERY

 LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.



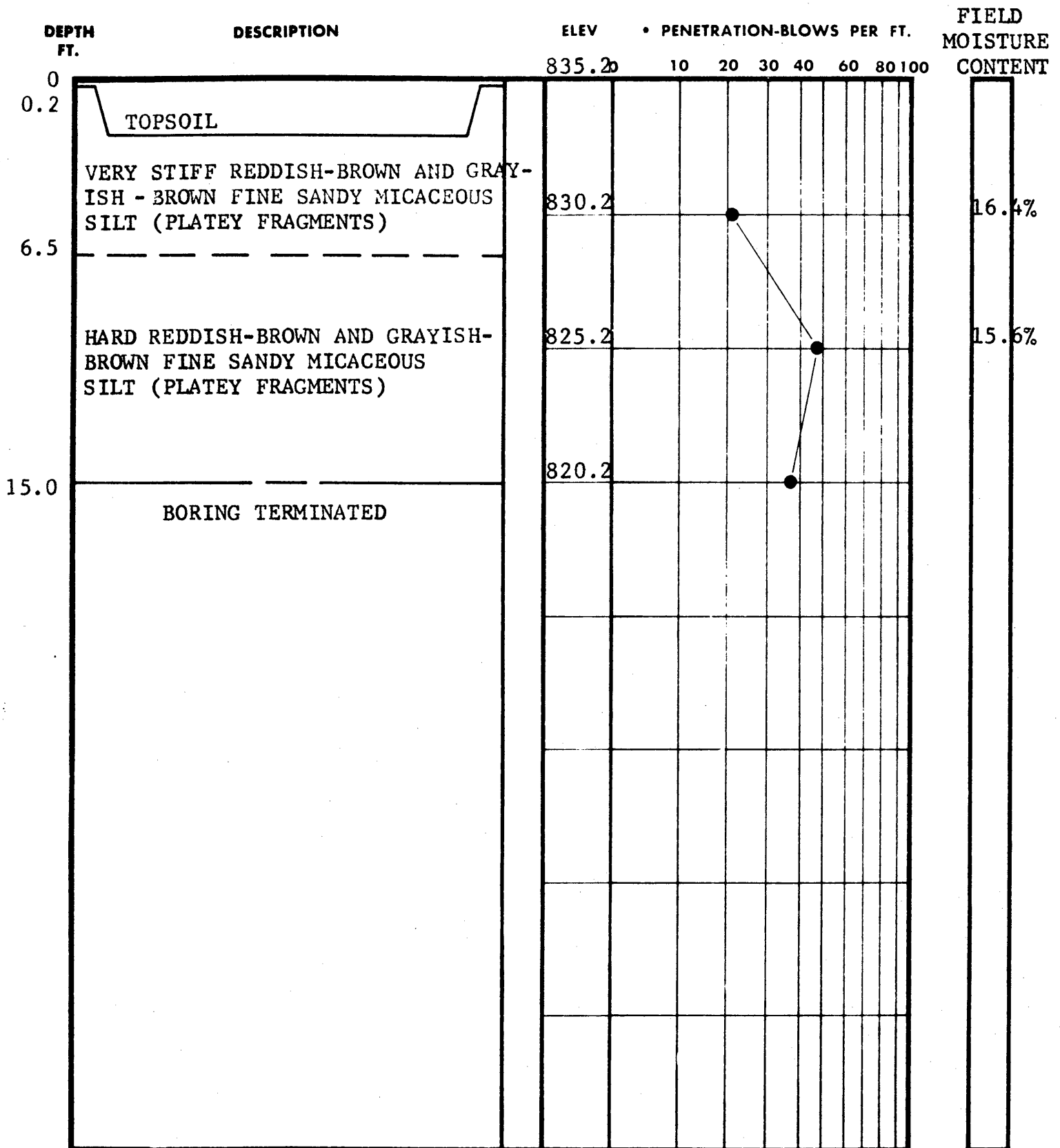
NO GROUND WATER ENCOUNTERED

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-218  
 DATE DRILLED 7/31/68  
 JOB NO. 5862

- jj UNDISTURBED SAMPLE
- WATER TABLE, 24 HR.
- WATER TABLE, 1 HR.
- % ROCK CORE RECOVERY
- LOSS OF DRILLING WATER



NO GROUND WATER ENCOUNTERED

## TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-219  
DATE DRILLED 7/24/68  
JOB NO. 5862

jj

UNDISTURBED SAMPLE

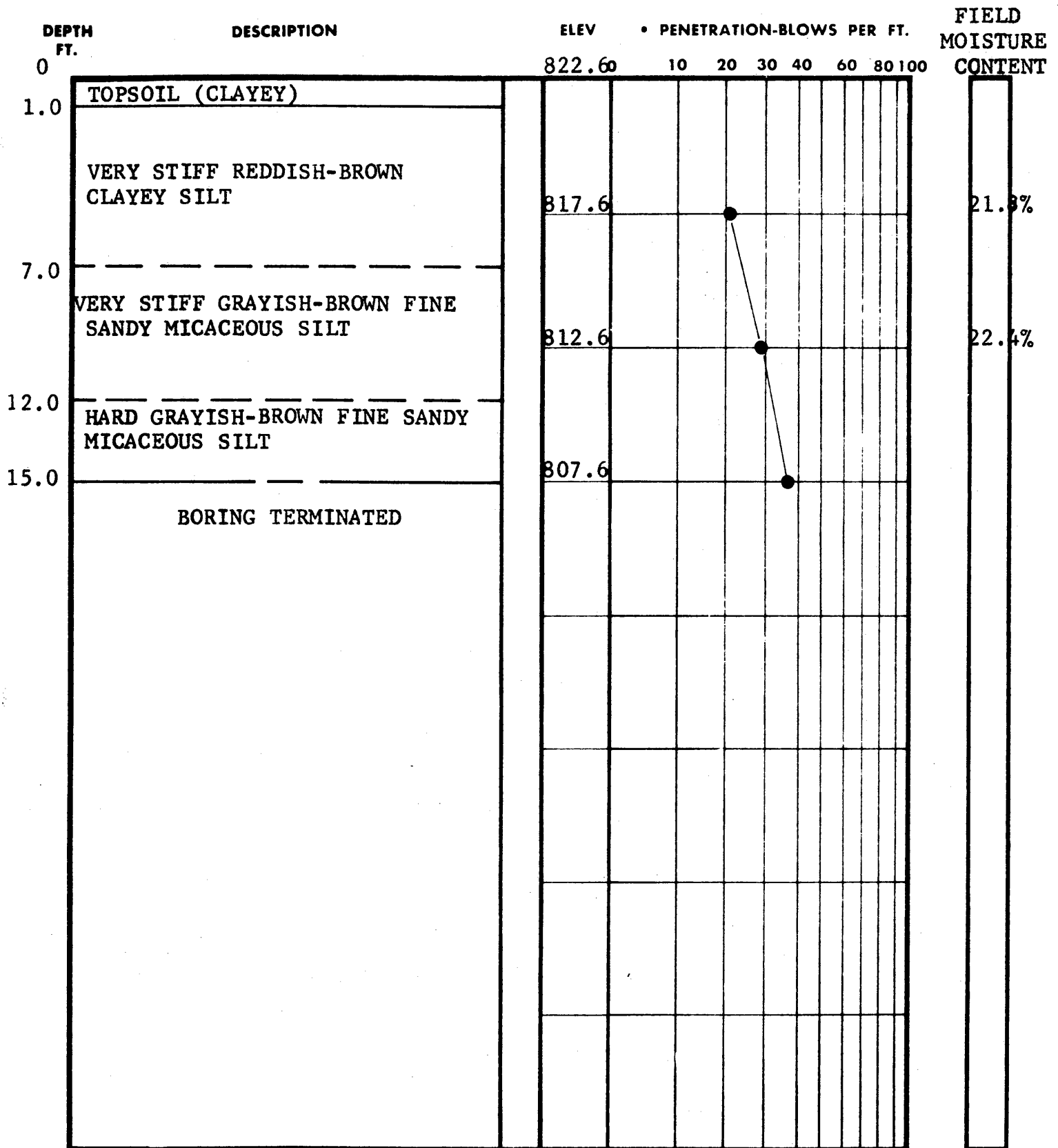
WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

% ROCK CORE RECOVERY

LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.



NO GROUND WATER ENCOUNTERED

## TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-220  
 DATE DRILLED 7/30/68  
 JOB NO. 5862

jj

UNDISTURBED SAMPLE

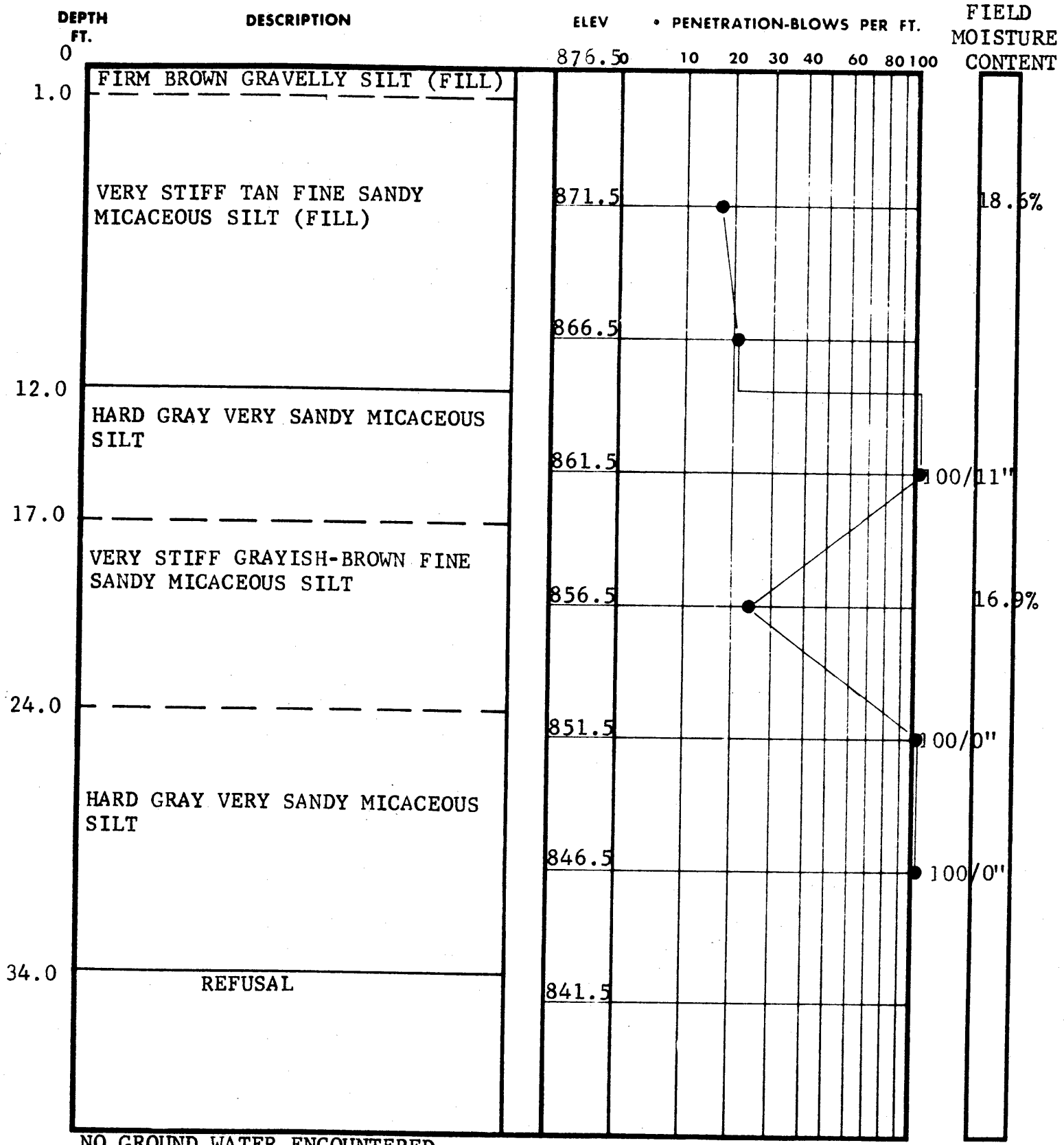
WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

{50} % ROCK CORE RECOVERY

LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.



NO GROUND WATER ENCOUNTERED

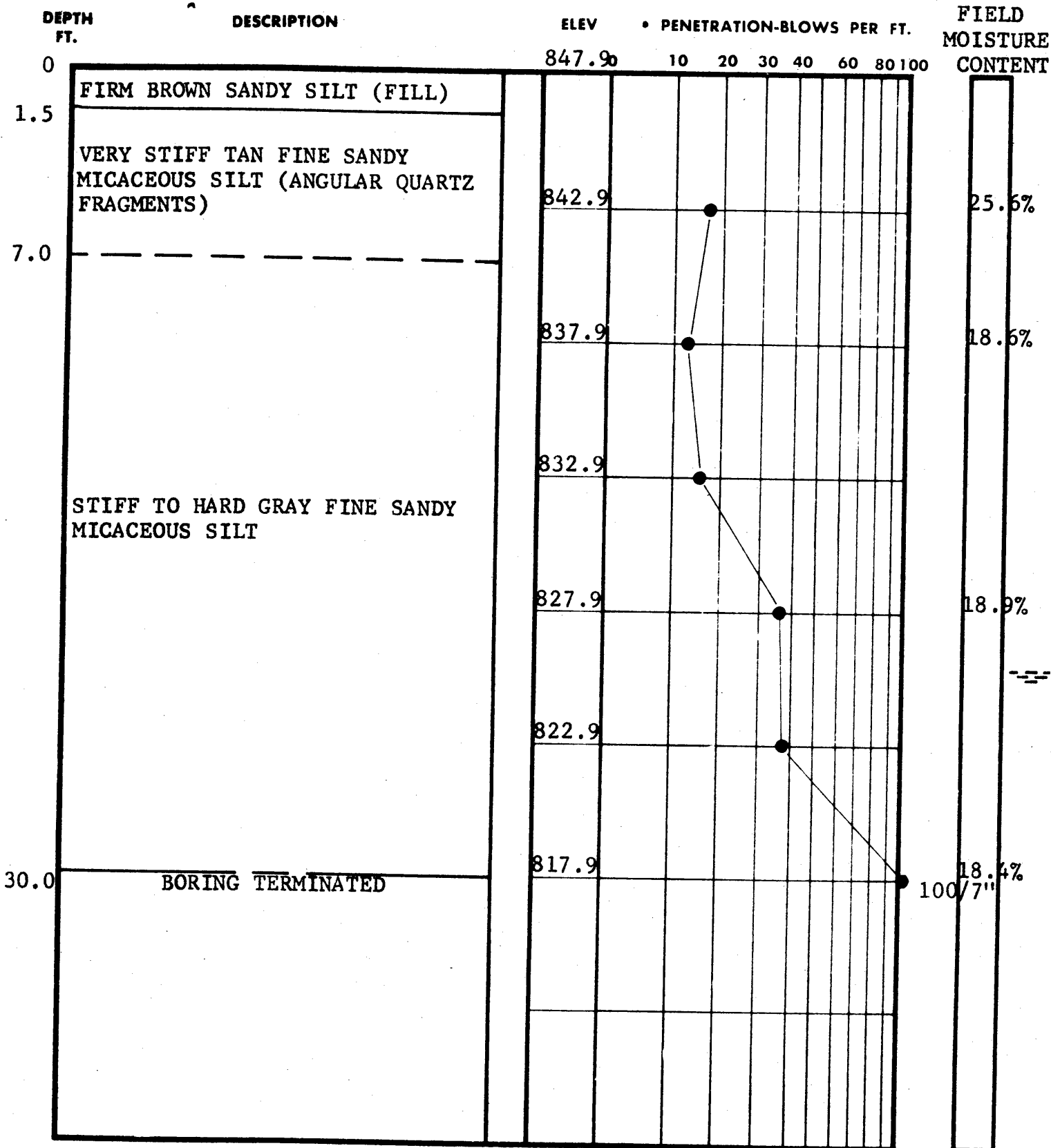
### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-221  
 DATE DRILLED 8/1/68  
 JOB NO. 5862

- jj UNDISTURBED SAMPLE
- WATER TABLE, 24 HR.
- WATER TABLE, 1 HR.
- [50] % ROCK CORE RECOVERY
- LOSS OF DRILLING WATER



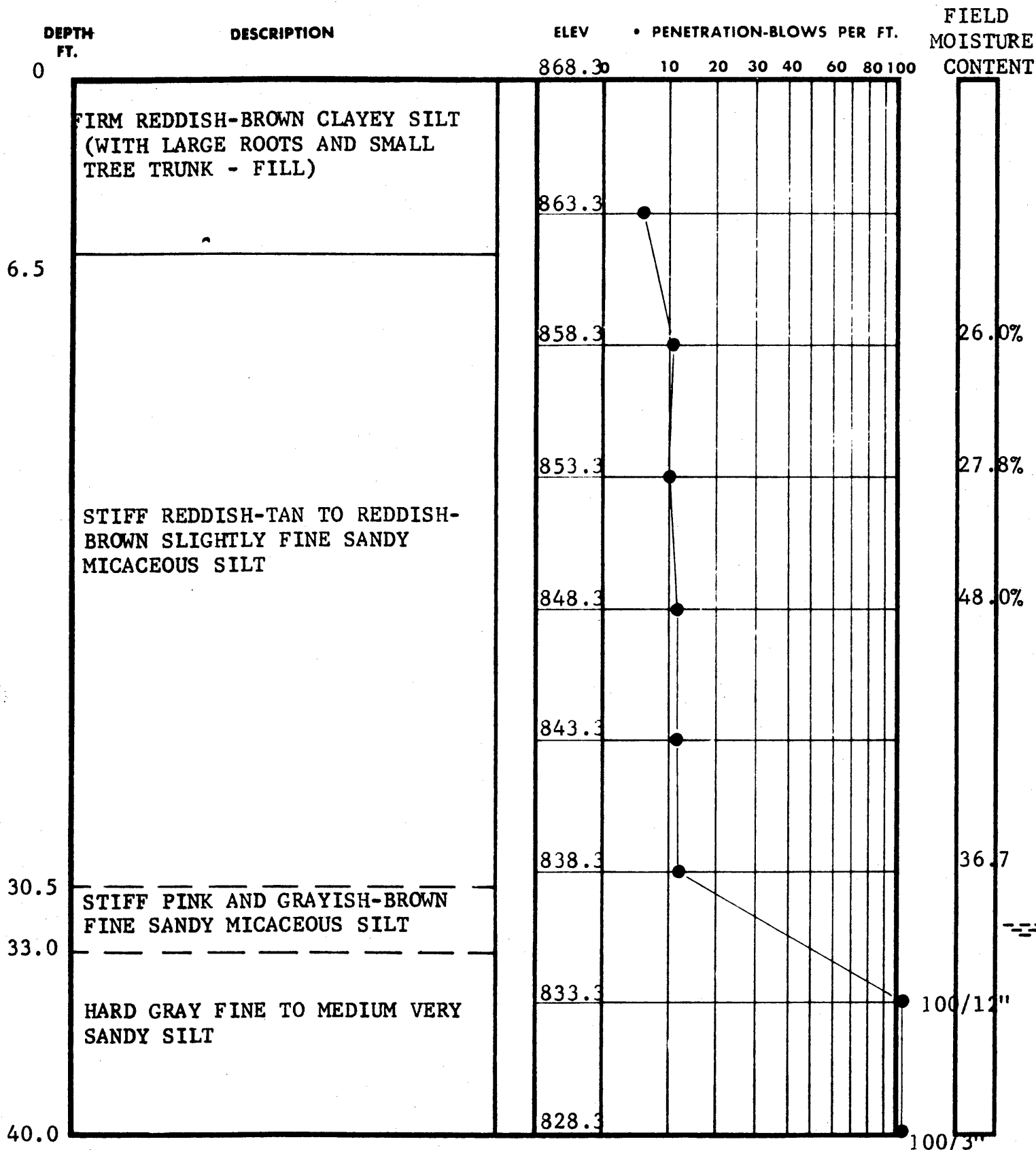


### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
 CORE DRILLING MEETS ASTM D-2113  
 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
 FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-222  
 DATE DRILLED 8/1/68  
 JOB NO. 5862

- jj UNDISTURBED SAMPLE
- WATER TABLE, 24 HR.
- WATER TABLE, 1 HR.
- % ROCK CORE RECOVERY
- LOSS OF DRILLING WATER



### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-223

DATE DRILLED 7/31/68

JOB NO. 5862

jj  UNDISTURBED SAMPLE

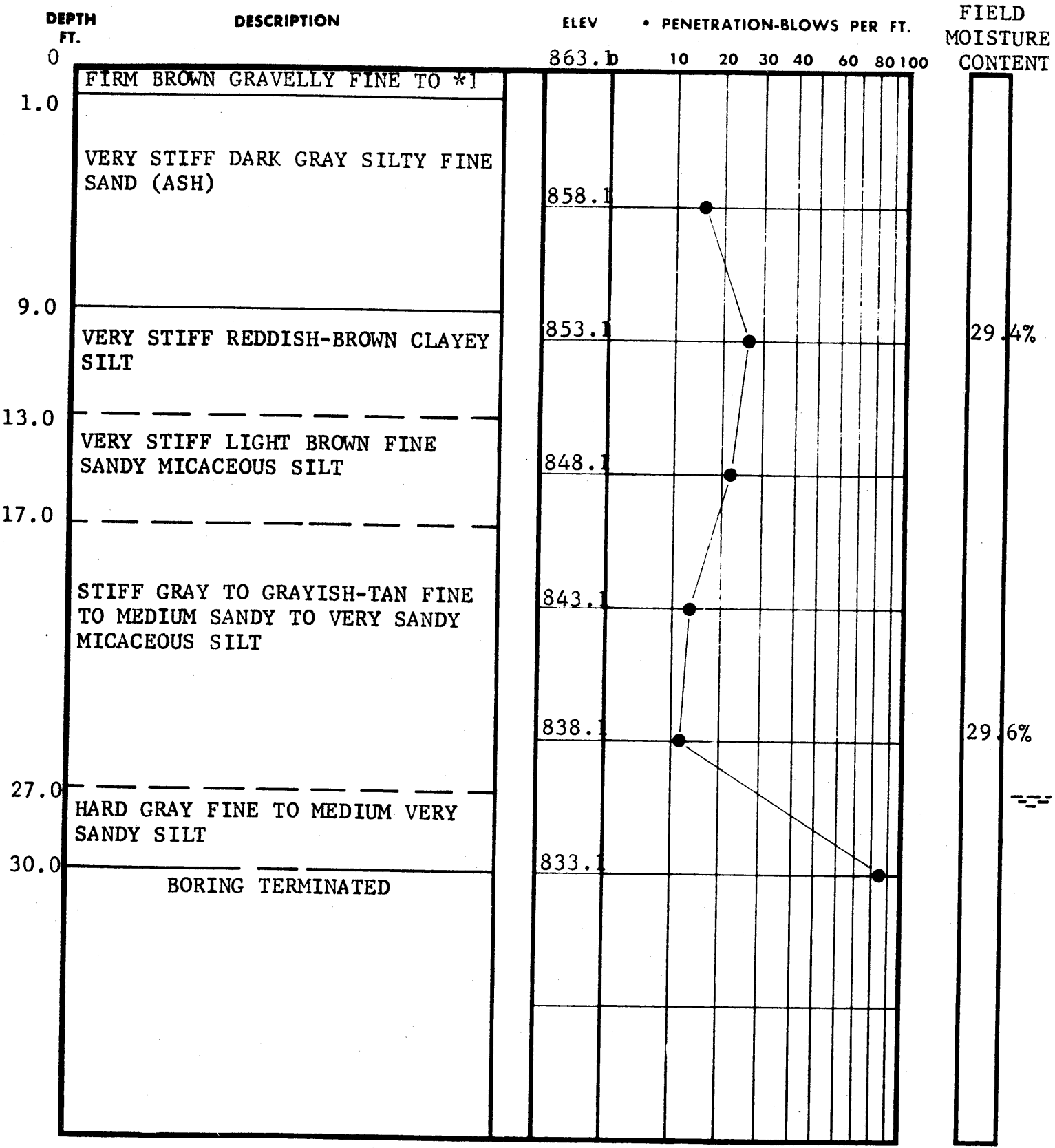
 WATER TABLE, 24 HR.

 WATER TABLE, 1 HR.

 % ROCK CORE RECOVERY

 LOSS OF DRILLING WATER





\*1 COARSE SANDY SILT (FILL)

### TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586  
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER  
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-224

DATE DRILLED 7/31/68

JOB NO. 5862

jj UNDISTURBED SAMPLE

{50} % ROCK CORE RECOVERY

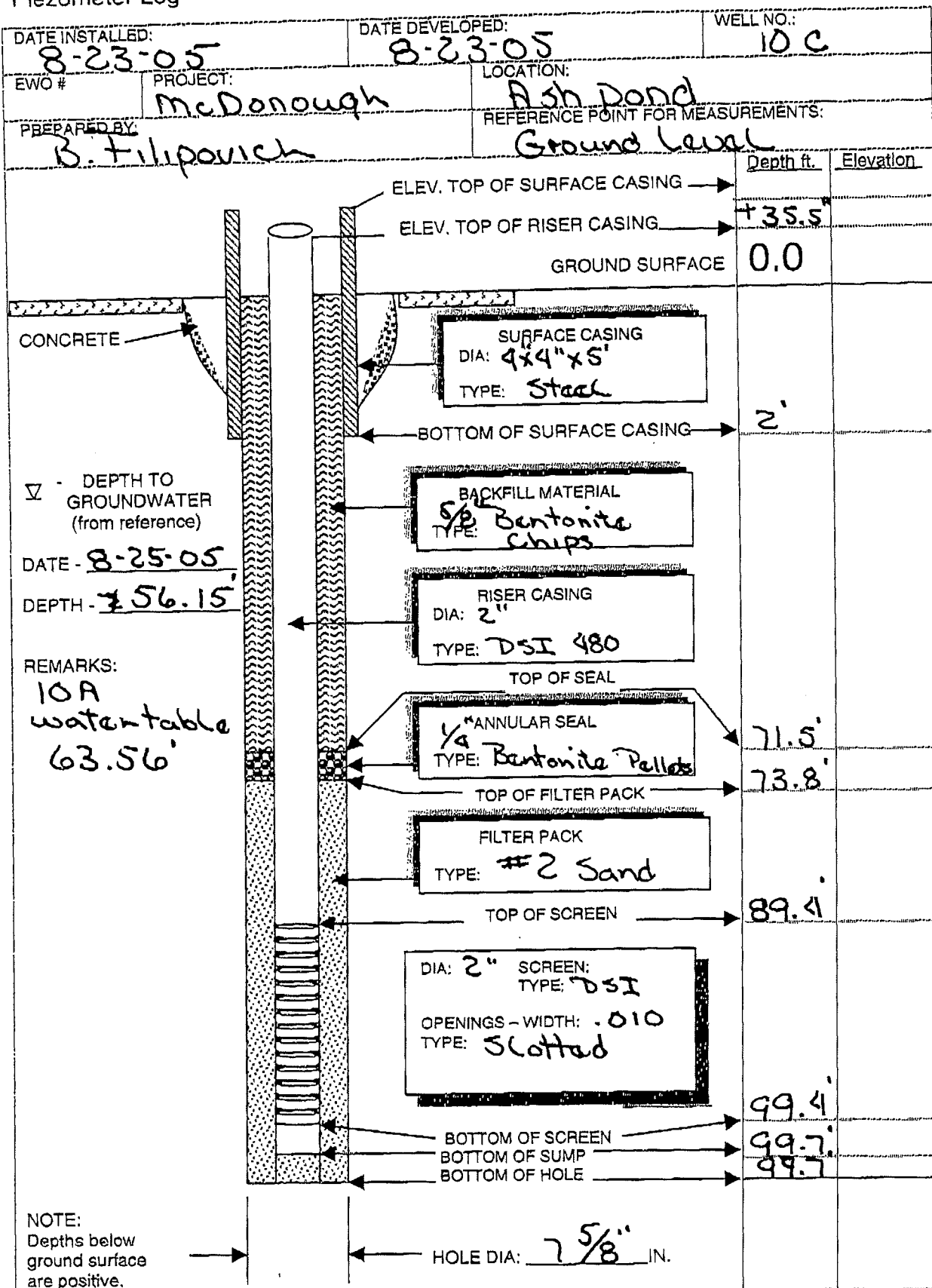
WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

Piezometer Log

Southern Company

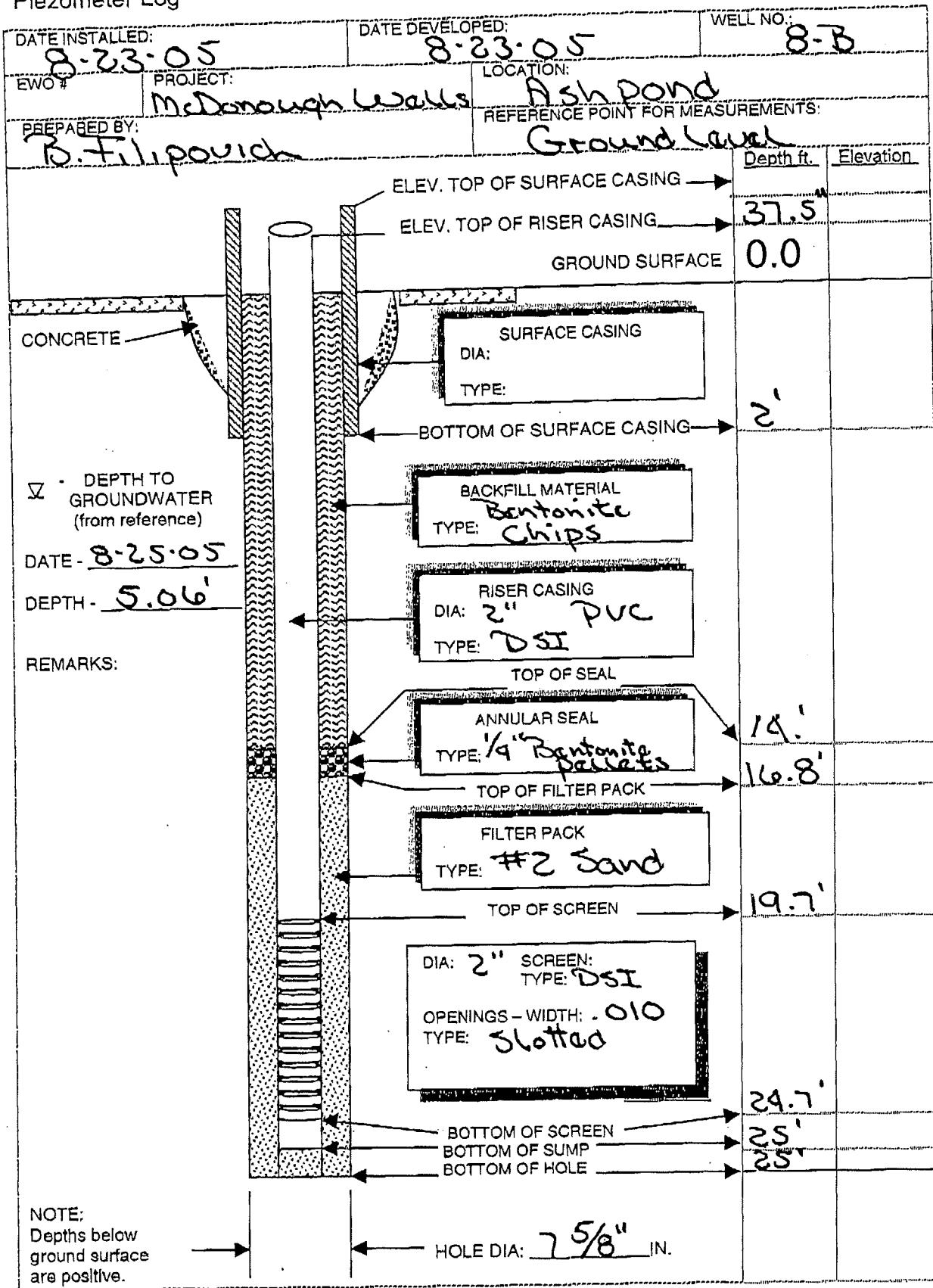


Remarks:




Southern Company

Piezometer Log



Remarks:

Field Test Boring Record  
Geotechnical Field Services

Southern Company Services 

PROJECT <i>Plant Mc Donah</i>		EWO #		LEAD DRILLER <i>B.F.</i>		DATE <i>9-22-05</i>		
LOCATION <i>Atlanta GA</i>						BORING # <i>P-10-C</i>		
DEPTH		DESCRIPTION	SAMPLE			N	CORE REQ.	
FROM	TO		NO	DEPTH	1st 6"			2nd 6"
0.0	7.5	Field Material Crush & Run Top Soil						
7.5	3'	Reddish Brown Micaceous Sandy Silt						
3'		Dark Brown Black Micaceous Sandy Silt						
6.5	12	Brown Micaceous Silt						
12	15	Brown & Red Silt						
15		Red Micaceous Silt						
		Residual Soils Approx 52'						
	60	Saprolite / w Rocks Lenses. Damp Approx 70'	1	61.5	9	9	11	20
		Red & Brown Micaceous Silt with Rock Red	2	66.5	4	7	11	18
			3	71.5	5	10	11	21
			4	76.5	2	3	5	8
			5	81.5	3	2	5	7
			6	86.5	12	13	18	31
			7	91.5	14	23	27	50
			8	96.5	9	20	24	44
	FROM	TO	4.25	FROM	TO	REMARKS <i>CME 550</i>		
SS			AUGER	7.5	100'			
WASH			TRI-CONE					
CASING			CORE					
BIT								
GWATOB			GW 24 HRS.			ELEVATION:		
DRILLED BY <i>B.F.</i>			LOGGED BY <i>M. K. Hughes</i>					

800961





# RECORD OF BOREHOLE CPT-28-AP4 (boring)

PROJECT: McDonough Ash Pond 3&4 Investigation and De-Waterin  
 PROJECT NO.: 1539180 / 1538098  
 LOCATION: Dry Stack #1

DRILLING START: October 26, 2015 13:20  
 DRILLING END: October 26, 2015 13:39  
 COORDINATES: N: 1,393,999 E: 2,203,453

SHEET: 1 of 1  
 GS ELEV.: 858.0  
 TOC ELEV.: na  
 DATUM:

DEPTH (ft)	BORING METHOD	SOIL PROFILE			SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER			
0		0.0		858.0						
2.0	3-1/4" HSA	2.0	FILL, (SP), SAND and GRAVEL, gravel fine grained, angular, sand fine to coarse grained, some non plastic fines; gray; non-cohesive, loose, moist, gravel road base / fill	856.0	SP					
5		5	ASH, (CL-ML), silty CLAY, poorly graded, non plastic fines, some sand fine grained; dark gray with black, homogeneous; non-cohesive, very loose, dry to moist, mostly fine-size particles / fly ash		CL-ML		DO S-1	1-3-2 (5)	13 18	5
10		10.5	10.5		847.5			DO S-2	0-1-1 (2)	18 18
15			Bottom of borehole at 10.5 ft. Backfilled with auger cuttings.							
20										
25										
30										
35										
40										
45										
50										
55										

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 12/22/15 11:07  
 X:\CLIENTS\SOUTHERN COMPANY\1539180\_MCDONOUGH ASH PONDS 3 AND 4 CLOSURE\300\_FIELD INFORMATION\GINT\PLANT MCD AP3&4 BORINGS.GPJ

DRILLING CO.: Premier Drilling  
 DRILLER: Scott Towe  
 DRILL RIG: CME 550

LOGGED: Randy Pettyjohn  
 CHECKED: Draft  
 REVIEWED: Draft





# RECORD OF BOREHOLE CPT-32-AP4 (boring)

PROJECT: McDonough Ash Pond 3&4 Investigation and De-Waterin  
 PROJECT NO.: 1539180 / 1538098  
 LOCATION: Dry Stack #1

DRILLING START: October 27, 2015 08:30  
 DRILLING END: October 27, 2015 08:50  
 COORDINATES: N: 1,393,697 E: 2,203,600

SHEET: 1 of 1  
 GS ELEV.: 858.0  
 TOC ELEV.: na  
 DATUM:

DEPTH (ft)	BORING METHOD	SOIL PROFILE			SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING	
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER				BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic hammer
0		0.0		858.0							
0.5	3-1/4" HSA	0.5	FILL, (SP), SAND, sand fine to medium grained, some non plastic fines; dark gray-brown with black, trace coal refuse; non-cohesive, loose, moist	857.5	SP	[Pattern]	DO S-1	3-3-5-5 (8)	24 24	8	
4.5		4.5	FILL, (SM), SILTY SAND, sand fine to medium grained, non plastic fines, trace gravel fine grained, angular; light gray-brown, homogeneous; cohesive, firm, moist	853.5	SM	[Pattern]	DO S-2	5-4-13-26 (17)	24 24	17	
10		10.0	ASH, (CL-ML), silty CLAY, poorly graded, non plastic fines, sand fine grained; very dark gray with black, homogeneous; non-cohesive, very loose, dry to moist, mostly fine-size particles / fly ash	848.0	CL-ML	[Pattern]	AS Bulk-1 DO S-3	1-1-2-1 (3)	60 15 24	3	
10		10.0	Bottom of borehole at 10.0 ft. Backfilled with auger cuttings.								
15											
20											
25											
30											
35											
40											
45											
50											
55											

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 12/22/15 11:07  
 X:\CLIENTS\SOUTHERN COMPANY\1539180\_MCDONOUGH ASH PONDS 3 AND 4 CLOSURE\300\_FIELD INFORMATION\INT\PLANT MCD AP3&4 BORINGS.GPJ

DRILLING CO.: Premier Drilling  
 DRILLER: Scott Towe  
 DRILL RIG: CME 550

LOGGED: P. Callahan / R. Pettyjohn  
 CHECKED: Draft  
 REVIEWED: Draft



# RECORD OF BOREHOLE CPT-33-AP4 (boring)

PROJECT: McDonough Ash Pond 3&4 Investigation and De-Waterin  
 PROJECT NO.: 1539180 / 1538098  
 LOCATION: Dry Stack #1

DRILLING START: October 27, 2015 09:00  
 DRILLING END: October 27, 2015 09:20  
 COORDINATES: N: 1,393,675 E: 2,203,570

SHEET: 1 of 1  
 GS ELEV.: 856.0  
 TOC ELEV.: na  
 DATUM:

DEPTH (ft)	BORING METHOD	SOIL PROFILE				SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING	
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic hammer				REC ATT (in)
0		0.0		856.0								
0.5	3-1/4" HSA	0.5	FILL, (SP), SAND, sand fine to medium grained, some non plastic fines, trace gravel fine grained, angular; dark gray, trace coal refuse; non-cohesive, very loose, moist	855.5	SP	[Pattern]	DO S-1	3-2-3-4 (5)	20 24	5		
2.0		2.0	FILL, (SM), SILTY SAND, sand fine to medium grained, non plastic fines, trace gravel fine grained, angular; dark gray-brown, homogeneous; non-cohesive, loose, moist	854.0	SM	[Pattern]	DO S-2	2-4-5-10 (9)	18 24	9		
5		5.0	FILL, (SM), SILTY SAND, sand fine to medium grained, non plastic to medium plasticity fines, trace gravel fine grained, angular; light brown, homogeneous; cohesive, firm to stiff, moist	851.0	SM	[Pattern]	AS Bulk-1					
10		10.0	ASH, (CL-ML), silty CLAY, poorly graded, non plastic fines, sand fine grained; gray, homogeneous; non-cohesive, very loose, dry to moist, mostly fine-size particles / fly ash	846.0	CL-ML	[Pattern]	DO S-3	1-2-2-1 (4)	60 12 24	4		
15		Bottom of borehole at 10.0 ft. Backfilled with auger cuttings.										
20												
25												
30												
35												
40												
45												
50												
55												

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 12/22/15 11:07  
 X:\CLIENTS\SOUTHERN COMPANY\1539180\_MCDONOUGH ASH PONDS 3 AND 4 CLOSURE\300\_FIELD INFORMATION\INPLANT MCD AP3&4 BORINGS.GPJ

DRILLING CO.: Premier Drilling  
 DRILLER: Scott Towe  
 DRILL RIG: CME 550

LOGGED: P. Callahan / R. Pettyjohn  
 CHECKED: Draft  
 REVIEWED: Draft



# RECORD OF BOREHOLE CPT-39-AP4 (boring)

PROJECT: McDonough Ash Pond 3&4 Investigation and De-Waterin  
 PROJECT NO.: 1539180 / 1538098  
 LOCATION: Dry Stack #1

DRILLING START: October 28, 2015 13:53  
 DRILLING END: October 28, 2015 14:08  
 COORDINATES: N: 1,393,878 E: 2,203,710

SHEET: 1 of 1  
 GS ELEV.: 854.0  
 TOC ELEV.: na  
 DATUM:

DEPTH (ft)	BORING METHOD	SOIL PROFILE			SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER			
0		0.0		854.0						
5	3-1/4" HSA	2.0	FILL, (SP), SAND and GRAVEL, gravel fine grained, angular, sand medium to coarse grained, some non plastic fines; gray; non-cohesive, loose, moist	852.0	SP	[Pattern]				
10		10.5	ASH, (CL-ML), silty CLAY, poorly graded, non plastic fines, some sand fine grained; brown-gray, homogeneous; non-cohesive, loose, moist, mostly fine-size particles / fly ash	843.5	CL-ML	[Pattern]	DO S-1	4-5-7/0" (12)	18 18	12
							AS Bulk-1		60	
							DO S-2	1-2-2/0" (4)	18 18	4
			Bottom of borehole at 10.5 ft. Backfilled with auger cuttings.							
15										
20										
25										
30										
35										
40										
45										
50										
55										

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 12/22/15 11:07  
 X:\CLIENTS\SOUTHERN COMPANY\1539180\_MCDONOUGH ASH PONDS 3 AND 4 CLOSURE\300\_FIELD INFORMATION\INT\PLANT MCD AP3&4 BORINGS.GPJ

DRILLING CO.: Premier Drilling  
 DRILLER: Scott Towe  
 DRILL RIG: CME 550

LOGGED: P. Callahan / R. Pettyjohn  
 CHECKED: Draft  
 REVIEWED: Draft



# RECORD OF BOREHOLE CPT-41-AP4 (boring)

PROJECT: McDonough Ash Pond 3&4 Investigation and De-Waterin  
 PROJECT NO.: 1539180 / 1538098  
 LOCATION: Dry Stack #1

DRILLING START: October 28, 2015 08:50  
 DRILLING END: October 28, 2015 09:10  
 COORDINATES: N: 1,393,709 E: 2,203,206

SHEET: 1 of 1  
 GS ELEV.: 859.0  
 TOC ELEV.: na  
 DATUM:

DEPTH (ft)	BORING METHOD	SOIL PROFILE				SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING	
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic hammer				REC ATT (in)
0		0.0		859.0								
5	3-1/4" HSA	2.0	FILL, (SP), SAND and GRAVEL, sand fine to medium grained, gravel fine grained, angular, some non plastic fines; dark gray with black, trace coal refuse; non-cohesive, compact, moist to wet  ASH, (CL-ML), silty CLAY, poorly graded, non plastic fines, sand fine grained; dark gray, homogeneous; non-cohesive, very loose, dry to moist, mostly fine-size particles / fly ash	857.0	SP	[Pattern]	DO S-1	18-22-23-17 (45)	2 24	45		
								DO S-2	2-2-3-3 (5)	14 24	5	
					CL-ML			DO S-3	3-3-2-2 (5)	24 24	5	
15		15.0		844.0			DO S-4	2-2-2-3 (4)	24 24	4		
20		Bottom of borehole at 15.0 ft. Backfilled with auger cuttings.										
25												
30												
35												
40												
45												
50												
55												

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 12/22/15 11:07  
 X:\CLIENTS\SOUTHERN COMPANY\1539180\_MCDONOUGH ASH PONDS 3 AND 4 CLOSURE\300\_FIELD INFORMATION\INT\PLANT MCD AP3&4 BORINGS.GPJ

DRILLING CO.: Premier Drilling  
 DRILLER: Scott Towe  
 DRILL RIG: CME 550

LOGGED: Patrick Callahan  
 CHECKED: Draft  
 REVIEWED: Draft



# RECORD OF BOREHOLE CPT-42-AP4 (boring)

PROJECT: McDonough Ash Pond 3&4 Investigation and De-Waterin  
 PROJECT NO.: 1539180 / 1538098  
 LOCATION: Dry Stack #1

DRILLING START: October 28, 2015 09:20  
 DRILLING END: October 28, 2015 09:35  
 COORDINATES: N: 1,393,507 E: 2,202,698

SHEET: 1 of 1  
 GS ELEV.: 859.0  
 TOC ELEV.: na  
 DATUM:

DEPTH (ft)	BORING METHOD	SOIL PROFILE				SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING	
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic hammer				REC ATT (in)
0		0.0		859.0								
5	3-1/4" HSA	4.0	FILL, (SP-SM), SAND, sand fine to coarse grained, low plasticity fines, trace gravel fine grained; dark brown, trace organics; cohesive, firm, moist	855.0	SP-SM	█	DO S-1	3-5-8-8 (13)	24 24	13		
							AS Bulk-01			4		
								DO S-2	4-2-2-2 (4)	24 24		
10			11.0	ASH, (CL-ML), silty CLAY, poorly graded, non plastic fines, sand fine to medium grained; dark brown-gray, homogeneous; non-cohesive, very loose, dry to moist, mostly fine-size particles / fly ash	848.0	CL-ML	█	DO S-3	2-2-2-2 (4)	24 24	4	
15		15.0	ASH, (CL-ML), silty CLAY, poorly graded, non plastic fines, sand fine to medium grained; dark brown-gray, homogeneous; non-cohesive, very loose, moist to wet, mostly fine-size particles / fly ash	844.0	CL-ML	█	DO S-4	2-1-1-1 (2)	19 24	2		
20		Bottom of borehole at 15.0 ft. Backfilled with auger cuttings.										
25												
30												
35												
40												
45												
50												
55												

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 12/22/15 11:07  
 X:\CLIENTS\SOUTHERN COMPANY\1539180\_MCDONOUGH ASH PONDS 3 AND 4 CLOSURE\300\_FIELD INFORMATION\GINT\PLANT MCD AP3&4 BORINGS.GPJ

DRILLING CO.: Premier Drilling  
 DRILLER: Scott Towe  
 DRILL RIG: CME 550

LOGGED: Patrick Callahan  
 CHECKED: Draft  
 REVIEWED: Draft





# RECORD OF BOREHOLE CPT-46-AP4 (boring)

PROJECT: McDonough Ash Pond 3&4 Investigation and De-Waterin  
 PROJECT NO.: 1539180 / 1538098  
 LOCATION: Dam Crest - Ash Pond 4

DRILLING START: October 27, 2015 10:05  
 DRILLING END: October 27, 2015 11:15  
 COORDINATES: N: 1,393,609 E: 2,204,021

SHEET: 1 of 1  
 GS ELEV.: 847.0  
 TOC ELEV.: na  
 DATUM:

01 - GOLDR - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 12/22/15 11:07  
 X:\CLIENTS\SOUTHERN COMPANY\1539180\_MCDONOUGH ASH PONDS 3 AND 4 CLOSURE\300\_FIELD INFORMATION\GINT\PLANT MCD AP3&4 BORINGS.GPJ

DEPTH (ft)	BORING METHOD	SOIL PROFILE			SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER			
0		0.0		847.0						
5		2.0	FILL, (SM), SILTY SAND, sand fine to medium grained, medium plasticity fines, trace gravel fine grained, angular; light gray-brown, trace organics; non-cohesive, compact, moist	845.0	SM		DO S-1	4-5-5-7 (10)	24 24	10
5		6.0	FILL, (SM), SILTY SAND, sand fine to medium grained, medium plasticity fines, trace gravel fine grained, angular; light gray-brown, homogeneous, trace organics; cohesive, firm to compact, moist	841.0	SM		DO S-2	4-5-8-11 (13)	24 24	13
10		6.0	FILL, (SP-SM), SILTY SAND, sand fine to medium grained, non plastic fines, trace gravel fine grained, angular; light yellow-gray and brown, homogeneous, trace mica; micaceous, non-cohesive, loose, dry to moist				AS Bulk-01 DO S-3	4-3-6-10 (9)	60 24 24	9
15							DO S-4	3-4-7-9 (11)	24 24	11
20							AS Bulk-02 DO S-5	2-3-7-8 (10)	60 24 24	10
25							DO S-6	2-3-6-7 (9)	24 24	9
30							DO S-7	15-13-15-12 (28)	8 24	28
35		33.0	(SP-SM), SILTY SAND, sand fine to coarse grained, gravel fine grained, angular, flat, medium plasticity fines; red-brown and black, mottled, RESIDUUM, trace mica; micaceous, non-cohesive, loose, moist to wet	814.0			DO S-8	1-2-3-3 (5)	24 24	5
40							DO S-9	16-9-13-12 (22)	5 24	22
45							DO S-10	5-4-6-7 (10)	4 24	10
50		47.0	(SP), SAND, sand fine to coarse grained, some gravel fine grained, angular, flat, trace non plastic fines; dark brown and black-gray, mottled, RESIDUUM, trace mica; micaceous, non-cohesive, dense, moist to wet	800.0			DO S-11	5-9-17-19 (26)	6 24	26
55		50.0	Bottom of borehole at 50.0 ft. Backfilled with bentonite grout.	797.0						

DRILLING CO.: Premier Drilling  
 DRILLER: Scott Towe  
 DRILL RIG: CME 550

LOGGED: Patrick Callahan  
 CHECKED: Draft  
 REVIEWED: Draft



# RECORD OF BOREHOLE CPT-49-AP4 (boring)

PROJECT: McDonough Ash Pond 3&4 Investigation and De-Waterin  
 PROJECT NO.: 1539180 / 1538098  
 LOCATION: Dam Crest - Ash Pond 4

DRILLING START: October 27, 2015 12:35  
 DRILLING END: October 27, 2015 13:20  
 COORDINATES: N: 1,394,266 E: 2,203,855

SHEET: 1 of 1  
 GS ELEV.: 847.0  
 TOC ELEV.: na  
 DATUM:

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 12/22/15 11:07  
 X:\CLIENTS\SOUTHERN COMPANY\1539180 MCDONOUGH ASH PONDS 3 AND 4 CLOSURE\300\_FIELD INFORMATION\INT\PLANT MCD AP3&4 BORINGS.GPJ

DEPTH (ft)	BORING METHOD	SOIL PROFILE			SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
		DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic hammer			
0			847.0							
0.3		(GP), GRAVEL, gravel fine grained, angular, sand fine to coarse grained, trace non plastic fines; Gravel road base	846.8	GP						
2.0			845.0	SP						
5		FILL, (SP), SAND, sand fine to coarse grained, trace gravel fine grained, angular, trace non plastic fines; dark gray-brown, trace organics; non-cohesive, compact, moist		SM						
6.0			841.0							
10		FILL, (SM), SILTY SAND, sand fine to medium grained, low plasticity to medium plasticity fines; light gray-brown, homogeneous; cohesive, firm to compact, moist								
		FILL, (SP-SM), SILTY SAND, sand fine to medium grained, trace coarse sand, low plasticity to medium plasticity fines; gray-brown with red-brown, homogeneous; non-cohesive, loose, moist, zones of stiff silt		SP-SM						
15										
20										
25										
28.4			818.6							
30.0		FILL, (SP), SILTY SAND, sand fine grained, some medium plasticity fines; light gray-brown; non-cohesive, loose, moist	817.0	SP						
35		(SM), SILTY SAND, sand fine to medium grained, low plasticity fines; dark gray-brown, mottled, RESIDUUM; non-cohesive, loose, moist		SM						
35.0			812.0							
40		(MH), SILT, high plasticity fines, sand fine grained; dark red-brown, RESIDUUM; cohesive, soft to firm, w ~ PL		MH						
43.0			804.0							
45		(SM), SILTY SAND, sand fine to medium grained, low plasticity fines; dark red-brown and gray, mottled, RESIDUUM, trace mica; micaceous, non-cohesive, loose, moist	802.0	SM						
45.0		Bottom of borehole at 45.0 ft. Backfilled with bentonite grout. Backfilled with bentonite grout								

DRILLING CO.: Premier Drilling  
 DRILLER: Scott Towe  
 DRILL RIG: CME 550

LOGGED: Patrick Callahan  
 CHECKED: Draft  
 REVIEWED: Draft



# RECORD OF BOREHOLE PZ-2

PROJECT: McDonough Ash Pond 3&4 Investigation and De-Watering  
 PROJECT NO.: 1539180 / 1538098  
 LOCATION: Dry Stack #1

SHEET: 1 of 2  
 GS ELEV.: 858.0  
 TOC ELEV.: na  
 DATUM:

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 12/22/15 11:07  
 X:\CLIENTS\SOUTHERN COMPANY\1539180\_MCDONOUGH ASH PONDS 3 AND 4 CLOSURE\300\_FIELD INFORMATION\GINT\PLANT MCD AP3&4 BORINGS.GPJ

DEPTH (ft)	BORING METHOD	SOIL PROFILE				SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic hammer			
0		0.0		858.0							
5			ASH, (CL-ML), silty CLAY, poorly graded, non plastic fines, sand fine grained; dark gray and black, homogeneous; non-cohesive, very loose, moist to wet, mostly fine-size particles / fly ash; stingers of medium sand, black bottom ash (38-58 ft-bgs)								
10											
15											
20											
25											
30	7-inch drag bit					CL-ML	DO S-1	0-0-0-1 (0)	1 24	0	
35											
40						DO S-2	1-1-1-1 (2)	12 24	2		
45											
50						DO S-3	0-0-0-0 (0)	24 24	0		
55											

Log continued on next page

DRILLING CO.: Premier Drilling  
 DRILLER: Scott Towe  
 DRILL RIG: CME 550

LOGGED: P. Callahan / J. Myers  
 CHECKED: Draft  
 REVIEWED: Draft



# RECORD OF BOREHOLE PZ-2

PROJECT: McDonough Ash Pond 3&4 Investigation and De-Waterin  
 PROJECT NO.: 1539180 / 1538098  
 LOCATION: Dry Stack #1

DRILLING START: October 29, 2015 08:35  
 DRILLING END: October 29, 2015 11:00  
 COORDINATES: N: 1,393,757 E: 2,203,537

SHEET: 2 of 2  
 GS ELEV.: 858.0  
 TOC ELEV.: na  
 DATUM:

DEPTH (ft)	BORING METHOD	SOIL PROFILE				SAMPLES			PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
		Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic hammer			
55		55.0		803.0							
60			ASH, (CL-ML), silty CLAY, poorly graded, non plastic fines, sand fine grained; dark gray and black, homogeneous; non-cohesive, very loose, moist to wet, mostly fine-size particles / fly ash; stingers of medium sand, black bottom ash (38-58 ft-bgs) (continued)								
65											
70											
75											
80											
85											
90		89.0		769.0							
90		90.0	FILL, (SM), SILTY SAND, sand fine to medium grained, trace coarse sand, high plasticity fines; dark brown and red-brown, trace organics; cohesive, soft to firm, moist	768.0	SM						
95			Bottom of borehole at 90.0 ft. Completed as well. Refer to diagram. Piezometer installed after SPT sampling								
100											
105											
110											

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 12/22/15 11:07  
 X:\CLIENTS\SOUTHERN COMPANY\1539180\_MCDONOUGH ASH PONDS 3 AND 4 CLOSURE\300\_FIELD INFORMATION\GINT\PLANT MCD AP3&4 BORINGS.GPJ

DRILLING CO.: Premier Drilling  
 DRILLER: Scott Towe  
 DRILL RIG: CME 550

LOGGED: P. Callahan / J. Myers  
 CHECKED: Draft  
 REVIEWED: Draft



# TEST BORING RECORD

*ELEV.	DEPTH FEET	DESCRIPTION	PENETRATION-BLOWS PER FOOT
845		FIRM TAN & GRAY MICACEOUS SILTY MEDIUM TO FINE SAND TO VERY STIFF RED BROWN MICACEOUS SANDY SILTY CLAY (FILL)	0
835			5
825			10
815			15
805	33		20
805		FIRM TO DENSE RED, TAN & GRAY MICACEOUS SILTY MEDIUM TO FINE SAND	30
795			40
785			50
775			60
765	77		70
765	80		80
			90
		100	

12-3-74

**REMARKS:**

LOCATION: STA 6+75  
 INSTALLED: 35' SOLID PVC (4") (GROUTED)  
 35' SOLID PVC (2")  
 50' SLOTTED PVC (2")

DRILLED BY WM  
 LOGGED BY MRT  
 CHECKED BY SAS

BORING NUMBER P-1A  
 DATE STARTED 11-15-76  
 DATE COMPLETED 11-17-76  
 JOB NUMBER SA-1401

\*ESTIMATED FROM SITE PLAN





# TEST BORING RECORD

*ELEV.	DEPTH FEET	DESCRIPTION	PENETRATION-BLOWS PER FOOT										
			0	5	10	15	20	30	40	60	80	100	
820	0	FIRM TAN AND GRAY MILACEOUS SILTY MEDIUM TO FINE SAND (FILL)											
810													
	14	AUGER BORING TO 49.5' NO SAMPLES TAKEN											
800													
790													
780													
770	49.5	BORING TERMINATED @ 49.5'											

12-3-76

**REMARKS:**

LOCATION: STA 6+75  
 INSTALLED: 40' SOLID PVC (2")  
 10' SLOTTED PVC (2")

DRILLED BY WS  
 LOGGED BY MRT  
 CHECKED BY SAS

BORING NUMBER P-2  
 DATE STARTED 11-22-76  
 DATE COMPLETED 11-22-76  
 JOB NUMBER SA-1401

\*Estimated from Site Plan

# TEST BORING RECORD

*ELEV.	DEPTH FEET	DESCRIPTION	PENETRATION-BLOWS PER FOOT
			0 5 10 15 20 30 40 60 80 100
845	0	FIRM TAN & GRAY MILACEOUS SILTY MEDIUM TO FINE SAND WITH GRAVEL AND VERY STIFF RED BROWN & TAN SANDY SILTY CLAY WITH GRAVEL (FILL)	
835			
825			
815			
805			
795			= 12-3-74
785			
775			
765	80		

**REMARKS:**

LOCATION: STA 16+50  
 INSTALLED: 90' SOLID PVC (4")  
                   (ROUTED)  
 93' SOLID PVC (2")  
 20' SLOTTED PVC (2")

DRILLED BY HC  
 LOGGED BY MRT  
 CHECKED BY SAS

BORING NUMBER P-4A  
 DATE STARTED 11-22-76  
 DATE COMPLETED 11-23-76  
 JOB NUMBER SA-1401

SHEET 1 OF 2

\* Estimated From Site Plan

846  
 88  
 758

# TEST BORING RECORD

* ELEV.	DEPTH FEET	DESCRIPTION	PENETRATION-BLOWS PER FOOT
765	80		0 5 10 15 20 30 40 60 80 100
755	88	DENSE TO VERY DENSE TAN & GRAY MICACEOUS SILTY MEDIUM TO FINE SAND WITH GRAVEL	
745	97	-----	
735	110	PARTIALLY WEATHERED ROCK SAMPLED AS VERY DENSE TAN & GRAY MICACEOUS SILTY MEDIUM TO FINE SAND WITH GRAVEL	
		BORING TERMINATED @ 110'	

**REMARKS:**

LOCATION: STA 16+50

\*Estimated From Site Plan

DRILLED BY HC  
 LOGGED BY MRT  
 CHECKED BY SAS

BORING NUMBER P-4A  
 DATE STARTED 11-22-76  
 DATE COMPLETED 11-23-76  
 JOB NUMBER SA-1401

# TEST BORING RECORD

* ELEV.	DEPTH FEET	DESCRIPTION	PENETRATION-BLOWS PER FOOT
			0 5 10 15 20 30 40 60 80 100
845	0	FIRM TAN & GRAY MICACEOUS SILTY MEDIUM TO FINE SAND WITH GRAVEL TO VERY STIFF TAN-BROWN MICACEOUS SANDY SILTY CLAY WITH GRAVEL (FILL)	
835			
825			
		= 12-3-74	
815	27	VERY STIFF TAN-BROWN AND GRAY MICACEOUS SANDY SILT	
805			
795	44	DENSE TAN-BROWN MICACEOUS SILTY MEDIUM TO FINE SAND WITH WEATHERED ROCK LAYERS	
785	58	VERY DENSE TAN-BROWN MICACEOUS SILTY MEDIUM TO FINE SAND	
775	67	PARTIALLY WEATHERED ROCK SAMPLED AS TAN-BROWN MICACEOUS SILTY MEDIUM TO FINE SAND.	
	70	BORING TERMINATED @ 70'	100%

**REMARKS:**

LOCATION: STA 25+00

INSTALLED: 30' SOLID PVC (4")  
 30' SOLID PVC (2")  
 40' SLOTTED PVC (2")

DRILLED BY HC  
 LOGGED BY MRT  
 CHECKED BY SAS

BORING NUMBER P-7A  
 DATE STARTED 11-17-76  
 DATE COMPLETED 11-18-76  
 JOB NUMBER SA-1401

\*Estimated From Site Plan



# TEST BORING RECORD

* ELEV.	DEPTH FEET	DESCRIPTION	PENETRATION-BLOWS PER FOOT									
			0	5	10	15	20	30	40	60	80	100
845	0	FIRM TAN-BROWN AND GRAY MICACEOUS SILTY MEDIUM TO FINE SAND WITH GRAVEL AND VERY STIFF RED-BROWN MICACEOUS SANDY SILTY CLAY WITH GRAVEL (FILL)										
835												
825												
815												
805												
795												
785												
775												
765	77											

= 12-3-74

**REMARKS:**

LOCATION: STA 33+00  
 INSTALLED: 80' SOLID PVC (4")  
                     (ROUTED)  
                     80' SOLID PVC (2")  
                     20' SLOTTED PVC (2")

DRILLED BY HC  
 LOGGED BY MRT  
 CHECKED BY SAS

BORING NUMBER P-10A  
 DATE STARTED 11-18-76  
 DATE COMPLETED 11-19-76  
 JOB NUMBER SA-1401

\* Estimated From Site Plan



# TEST BORING RECORD

*ELEV.	DEPTH FEET	DESCRIPTION	PENETRATION-BLOWS PER FOOT
			0    5    10   15   20   30   40   60   80   100
845	0	FIRM TAN & GRAY MILACEOUS SILTY MEDIUM TO FINE SAND WITH GRAVEL AND VERY STIFF RED BROWN & TAN SANDY SILTY CLAY WITH GRAVEL (FILL)	
835			
825			
815			
805			
795			= 12-3-74
785			
775			
765	80		

**REMARKS:**

LOCATION: STA 16+50  
 INSTALLED: 90' SOLID PVC (4")  
                   (GROUTED)  
 93' SOLID PVC (2")  
 20' SLOTTED PVC (2")

DRILLED BY HC  
 LOGGED BY MRT  
 CHECKED BY SAS

BORING NUMBER P-4A  
 DATE STARTED 11-22-76  
 DATE COMPLETED 11-23-76  
 JOB NUMBER SA-1401

SHEET 1 OF 2

\* Estimated From Site Plan

# TEST BORING RECORD

* ELEV.	DEPTH FEET	DESCRIPTION	PENETRATION-BLOWS PER FOOT									
			0	5	10	15	20	30	40	60	80	100
765	80											
755	88	DENSE TO VERY DENSE TAN & GRAY MICACEOUS SILTY MEDIUM TO FINE SAND WITH GRAVEL										
	97	-----										
745												
735	110	PARTIALLY WEATHERED ROCK SAMPLED AS VERY DENSE TAN & GRAY MICACEOUS SILTY MEDIUM TO FINE SAND WITH GRAVEL										
		BORING TERMINATED @ 110'										

REMARKS:  
 LOCATION: STA 16+50  
 \*Estimated from Site Plan

DRILLED BY HC  
 LOGGED BY MRT  
 CHECKED BY SAS

BORING NUMBER P-9A  
 DATE STARTED 11-22-76  
 DATE COMPLETED 11-23-76  
 JOB NUMBER SA-1401

# TEST BORING RECORD

*ELEV.	DEPTH FEET	DESCRIPTION	PENETRATION-BLOWS PER FOOT
			0 5 10 15 20 30 40 60 80 100
845	0	FIRM TAN & GRAY MICACEOUS SILTY MEDIUM TO FINE SAND WITH GRAVEL TO VERY STIFF TAN-BROWN MICACEOUS SANDY SILTY CLAY WITH GRAVEL (FILL)	12-3-74
835			
825			
815	27	VERY STIFF TAN-BROWN AND GRAY MICACEOUS SANDY SILT	
805			
795	44	DENSE TAN-BROWN MICACEOUS SILTY MEDIUM TO FINE SAND WITH WEATHERED ROCK LAYERS	
785	58	VERY DENSE TAN-BROWN MICACEOUS SILTY MEDIUM TO FINE SAND	
775	67	PARTIALLY WEATHERED ROCK SAMPLED AS TAN-BROWN MICACEOUS SILTY MEDIUM TO FINE SAND.	
775	70		BORING TERMINATED @ 70'

**REMARKS:**

LOCATION: STA 25+00

DRILLED BY HC

BORING NUMBER P-7A

INSTALLED: 30' SOLID PVC (4")

LOGGED BY MRT

DATE STARTED 11-17-76

30' SOLID PVC (2")

CHECKED BY SAS

DATE COMPLETED 11-18-76

40' SLOTTED PVC (2")

JOB NUMBER SA-1401

\*Estimated From Site Plan



# TEST BORING RECORD

* ELEV.	DEPTH FEET	DESCRIPTION	PENETRATION-BLOWS PER FOOT	
			0 5 10 15 20 30 40 60 80 100	
845	0	FIRM TAN-BROWN AND GRAY MICACEOUS SILTY MEDIUM TO FINE SAND WITH GRAVEL AND VERY STIFF RED-BROWN MICACEOUS SANDY SILTY CLAY WITH GRAVEL (FILL)		
835				
825				
815				
805				
795				
785				
775				
765	77			

12-3-74

**REMARKS:**

LOCATION: STA 33+00  
 INSTALLED: 80' SOLID PVC (4")  
                   80' SOLID PVC (2")  
                   20' SLOTTED PVC (2")

DRILLED BY HC  
 LOGGED BY MRT  
 CHECKED BY SAS

BORING NUMBER P-10A  
 DATE STARTED 11-18-76  
 DATE COMPLETED 11-19-76  
 JOB NUMBER SA-1401

\* Estimated From Site Plan



# TEST BORING RECORD

*ELEV.	DEPTH FEET	DESCRIPTION	PENETRATION-BLOWS PER FOOT									
			0	5	10	15	20	30	40	60	80	100
820	0	FIRM TAN AND GRAY MICACEOUS SILTY MEDIUM TO FINE SAND (FILL)										
810												
	14											
800		AUGER BORING TO 49.5'										
		NO SAMPLES TAKEN										
790												
780												
770	49.5	BORING TERMINATED @ 49.5'										

12-3-76



**REMARKS:**

LOCATION: STA 6+75  
 INSTALLED: 40' SOLID PVC (2")  
 10' SLOTTED PVC (2")

DRILLED BY WS  
 LOGGED BY MRT  
 CHECKED BY SAS

BORING NUMBER P-2  
 DATE STARTED 11-22-76  
 DATE COMPLETED 11-22-76  
 JOB NUMBER SA-1401

\*Estimated from Site Plan

# TEST BORING RECORD

* ELEV.	DEPTH FEET	DESCRIPTION	PENETRATION-BLOWS PER FOOT
			0 5 10 15 20 30 40 60 80 100
845		FIRM TAN & GRAY MICACEOUS SILTY MEDIUM TO FINE SAND TO VERY STIFF RED BROWN MICACEOUS SANDY SILTY CLAY (FILL)	
835			
825			
815			
	33	FIRM TO DENSE RED, TAN & GRAY MICACEOUS SILTY MEDIUM TO FINE SAND	12-3-76
805			
795			
785			
775			
765	77		
	80		

**REMARKS:**

LOCATION: STA 6+75

DRILLED BY WM

BORING NUMBER P-1A

INSTALLED: 35' SOLID PVC (4")  
(GROUTED)

LOGGED BY MRT

DATE STARTED 11-15-76

35' SOLID PVC (2")

CHECKED BY SAS

DATE COMPLETED 11-17-76

50' SLOTTED PVC (2")

JOB NUMBER SA-1401

SHEET 1 OF 2

\* ESTIMATED FROM SITE PLAN





# TEST BORING RECORD

* ELEV.	DEPTH FEET	DESCRIPTION	PENETRATION-BLOWS PER FOOT										
			0	5	10	15	20	30	40	60	80	100	
780	0	AUGER BORING TO 40' NO SAMPLES TAKEN	12-3-76										
770													
760													
750													
740	40		BORING TERMINATED @ 40'										

**REMARKS:**

LOCATION: STA 33+00

INSTALLED: 18' SOLID PVC (2")  
 23' SLOTTED PVC (2")

DRILLED BY H.C.  
 LOGGED BY MRT  
 CHECKED BY SAS

BORING NUMBER P-13  
 DATE STARTED 12-4-76  
 DATE COMPLETED 12-4-76  
 JOB NUMBER SA-1401

\*ESTIMATED FROM SITE PLAN

# TEST BORING RECORD

*ELEV.	DEPTH FEET	DESCRIPTION			PENETRATION-BLOWS PER FOOT														
					0	5	10	15	20	30	40	60	80	100					
780	0	AUGER BORING TO 40' NO SAMPLES TAKEN	=	12															
770																			
760																			
750																			
740	40		BORING TERMINATED @ 40'																

**REMARKS:**

LOCATION: STA 33+00

INSTALLED: 22' SOLID PVC (2")  
 20' SLOTTED PVC (2")

DRILLED BY HC  
 LOGGED BY MRT  
 CHECKED BY SAS

BORING NUMBER P-12  
 DATE STARTED 12-3-76  
 DATE COMPLETED 12-3-76  
 JOB NUMBER SA-1401

\*ESTIMATED FROM SITE PLAN

# TEST BORING RECORD

* ELEV.	DEPTH FEET	DESCRIPTION	PENETRATION-BLOWS PER FOOT									
			0	5	10	15	20	30	40	60	80	100
820	0	AUGER BORING TO 80' NO SAMPLES TAKEN										
810												
800												
790												
780			= 12-3-74									
770												
760												
750												
740	80		BORING TERMINATED @ 80'									

**REMARKS:**

LOCATION: STA 33+00

INSTALLED 63' SOLID PVC (2")  
 20' SLOTTED PVC (2")

DRILLED BY HC  
 LOGGED BY MRT  
 CHECKED BY SAS

BORING NUMBER P-11  
 DATE STARTED 12-2-76  
 DATE COMPLETED 12-2-76  
 JOB NUMBER SA-1401

\* ESTIMATED FROM SITE PLAN

# TEST BORING RECORD

* ELEV.	DEPTH FEET	DESCRIPTION	PENETRATION-BLOWS PER FOOT										
			0	5	10	15	20	30	40	50	60	80	100
845	0	AUGER BORING TO 75' NO SAMPLES TAKEN											
835													
825													
815													
805													
795													
785													
775													
765													
	75		BORING TERMINATED @ 75'										

= 12-3-74

**REMARKS:**

LOCATION: STA 32+50

INSTALLED 53' SOLID PVC (2")  
25' SLOTTED PPL (2")

DRILLED BY HC  
LOGGED BY MRT  
CHECKED BY SAS

BORING NUMBER P-10B  
DATE STARTED 12-1-76  
DATE COMPLETED 12-1-76  
JOB NUMBER SA-1401

\* Estimated From Site Plan

# TEST BORING RECORD

*ELEV.	DEPTH FEET	DESCRIPTION	PENETRATION-BLOWS PER FOOT																			
			0	5	10	15	20	30	40	60	80	100										
845	0	AUGER BORING TO 75' NO SAMPLES TAKEN																				
835																						
825																						
815																						
805																						
795																						
785																						
775																						
765	75		BORING TERMINATED @ 75'																			

**REMARKS:**

LOCATION: STA 33+00

INSTALLED: 60' SOLID PVC (2")  
 15' SLOTTED PVC (2")  
75'

DRILLED BY HC  
 LOGGED BY MRT  
 CHECKED BY SAS

BORING NUMBER P-10  
 DATE STARTED 11-19-76  
 DATE COMPLETED 11-19-76  
 JOB NUMBER SA-1401

\*Estimated From Site Plan



# TEST BORING RECORD

* ELEV.	DEPTH FEET	DESCRIPTION			PENETRATION-BLOWS PER FOOT										
					0	5	10	15	20	30	40	60	80	100	
815	0	AUGER BORING TO 40' NO SAMPLES TAKEN	=	12-3-76											
805															
795															
785															
775	40		BORING TERMINATED @ 40'												

**REMARKS:**

LOCATION: STA 25700  
 INSTALLED: 23' SOLID PVC (2")  
 20' SLOTTED PVC (2")

DRILLED BY HC  
 LOGGED BY MRT  
 CHECKED BY SAS

BORING NUMBER P-9  
 DATE STARTED 12-2-76  
 DATE COMPLETED 12-3-76  
 JOB NUMBER JA-1401

\*Estimated From Site Plan

# TEST BORING RECORD

* ELEV.	DEPTH FEET	DESCRIPTION			PENETRATION-BLOWS PER FOOT										
					0	5	10	15	20	30	40	60	80	100	
820	0	AUGER BORING TO 40' NO SAMPLES TAKEN	=	12-3-76											
810															
800															
790															
780	40	BORING TERMINATED @ 40'													

**REMARKS:**

LOCATION: STA 25+00  
 INSTALLED: 22' SOLID PVC (2")  
           20' SLOTTED PVC (2")

DRILLED BY W.S.  
 LOGGED BY MRT  
 CHECKED BY SAS

BORING NUMBER P-8  
 DATE STARTED 11-23-76  
 DATE COMPLETED 11-23-76  
 JOB NUMBER SA-1401

\* Estimated From Site Plan

# TEST BORING RECORD

*ELEV.	DEPTH FEET	DESCRIPTION	PENETRATION-BLOWS PER FOOT									
			0	5	10	15	20	30	40	60	80	100
845	0	AUGER BORING TO 20' NO SAMPLES TAKEN										
835												
825	20	BORING TERMINATED @ 20'										

12-3-74

**REMARKS:**

LOCATION: STA 25+00  
 INSTALLED: 10' SOLID PVC (3")  
 10' SLOTTED PVC (3")

DRILLED BY HC  
 LOGGED BY MRT  
 CHECKED BY SAS

BORING NUMBER P-7  
 DATE STARTED 11-17-76  
 DATE COMPLETED 11-17-76  
 JOB NUMBER SA-1401

\*Estimated From Site Plan

# TEST BORING RECORD

* ELEV.	DEPTH FEET	DESCRIPTION	PENETRATION-BLOWS PER FOOT																			
			0	5	10	15	20	30	40	60	80	100										
780	0	AUGER BORING TO 40' NO SAMPLES TAKEN	12-3-76																			
770																						
760																						
750																						
740	40		BORING TERMINATED @ 40'																			

**REMARKS:**

LOCATION: STA 16+50  
 INSTALLED: 20' SOLID PVC (2")  
           20' SLOTTED PVC (2")

DRILLED BY W/S  
 LOGGED BY MRT  
 CHECKED BY SAS

BORING NUMBER P-6  
 DATE STARTED 11-23-76  
 DATE COMPLETED 11-23-76  
 JOB NUMBER SA-1401

\* Estimated From Site Plan

# TEST BORING RECORD

*ELEV.	DEPTH FEET	DESCRIPTION	PENETRATION-BLOWS PER FOOT																		
			0	5	10	15	20	30	40	60	80	100									
820	0	AUGER BORING TO 100' NO SAMPLES TAKEN																			
800																					
780																					
760																					
740																					
720	100		BORING TERMINATED @ 100'																		

12-3-76

REMARKS: NOTE: SCALE 1" = 20'  
 LOCATION: STA 16+50  
 INSTALLED: 83' SOLID PVC (2")  
 20' SLOTTED PVC (2")

DRILLED BY HC  
 LOGGED BY MRT  
 CHECKED BY SAS

BORING NUMBER P-5  
 DATE STARTED 11-30-76  
 DATE COMPLETED 11-30-76  
 JOB NUMBER SA-1401

\*Estimated From Site Plan



# TEST BORING RECORD

* ELEV.	DEPTH FEET	DESCRIPTION	PENETRATION-BLOWS PER FOOT									
			0	5	10	15	20	30	40	60	80	100
845	0	AUGER BORING TO 85' NO SAMPLES TAKEN										
835												
825												
815												
805												
795												
785			=									
775												
765												

= 12-3-74

REMARKS: <sup>85</sup> BORING TERMINATED @ 85'

LOCATION: STA 16+50

INSTALLED: 65' SOLID PVC (2")  
 20' SLOTTED PVC (2")

DRILLED BY HC

LOGGED BY MRT

CHECKED BY SAS

BORING NUMBER P-4

DATE STARTED 11-23-76

DATE COMPLETED 11-23-76

JOB NUMBER SA-1401

\* Estimated From Site Plan







**[golder.com](http://golder.com)**