PLANT McDONOUGH-ATKINSON

CCR SURFACE IMPOUNDMENT

(CCR UNIT AP-2 and AP-3/4)

COBB COUNTY, GEORGIA

PART B SECTION 1 – HYDROGEOLOGICAL ASSESSMENT REPORT

FOR

Georgia Power

Revision 09 – February 2025

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Table of Contents

1.0 INTRODUCTION 1
1.1 AP 2 and AP-3/4 Pond Closure 1
2.0 BACKGROUND INFORMATION 2
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
3.0 SITE GEOLOGIC CONDITIONS 5
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 7
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
4.0 CONCEPTUAL SITE HYDROGEOLOGIC MODEL 9
4.1 Uppermost Groundwater Aquifer 9
4.2 Groundwater Flow 10
4.3 Conceptual Site Hydrogeologic Model Summary 12
5.0 THREE-DIMENSIONAL NUMERICAL GROUNDWATER MODEL 13
6.0 WELL NETWORK DESIGN 14
6.1 AP-1 Network 16
6.2 AP-2, and Combined Unit AP-3/4 Network 16
7.0 GROUNDWATER MONITORING STATUS 17
8.0 REFERENCES 17

Table of Contents (continued)

Tables

Table GW-1 Summary of Groundwater Elevations

Table GW-2 Groundwater Velocity Calculations – January 2024

Table GW-3 Summary of Aquifer Test Data

Table GW-4 Summary of Monitoring Well, Assessment Well and Piezometer Construction Data

Sheets

Sheet GW-1 Detection and Assessment Monitoring Well Location Map

Sheet GW-1a Monitoring Well, Piezometer, Soil Boring & CPT Location Map with Section Profiles

Sheet GW-2 Estimated Top of Rock Map

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

Sheet GW-3b Geologic Cross Section Schematic A-A’ and 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 & Lineaments Location Map

Sheet GW-7 Potentiometric Surface Map – January 29, 2024

Appendices

Appendix A Perimeter Barrier Wall Design Support – Drilling and Testing Summary Report

Appendix B Three-Dimensional Numerical Groundwater Modeling Report

Appendix C Drillers Bonds

Appendix D Boring Logs

Appendix E Certified Survey Report

Certification

This *Hydrogeologic Assessment Report* for Georgia Power Company's (Georgia Power) Plant McDonough-Atkinson (Plant McDonough) CCR surface impoundment (CCR Unit AP-2 and AP-3/4) was prepared by WSP USA Inc. (WSP).

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."

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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 AP-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 AP 2 and AP-3/4 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. In 2019, additional remnant ash removal was undertaken, and a closure certification report was submitted to GA EPD on March 30, 2020, and receipt acknowledged on October 14, 2020. AP-3 and adjacent AP-4 have been consolidated and are being 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. CCR was graded within the footprint of the impoundment to create a subgrade for the final cover system, and final capping and closure are underway. During closure, AP-3 and AP-4 are being dewatered as required to facilitate consolidation and closure in place. This process is expected to result in groundwater flow returning to its original, pre-construction flow direction to the south.

The *Closure Plan* (WSP, 2023a) was prepared in accordance with § 257, Subpart D and meets the requirements of § 257.102(b). Following 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 Advanced Engineering Measure (AEM) methods and addressed in the Closure Plan and Post-Closure Care Plan. 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.

To further enhance the in-place closure of AP-1, a subsurface perimeter barrier wall (barrier wall) is included in the Closure Plan as an Advanced Engineering Measure (AEM). The term AEM refers to engineering controls that are technologies or measures designed to enhance the protection of groundwater and closure effectiveness, and/or further minimize future maintenance of the unit. The proposed barrier wall will fully encircle the AP-1 footprint (as a laterally continuous feature); however, the target installation depth is under review. WSP performed a geotechnical and hydrogeological study during Spring 2023, which included five borings in the approximate

footprint of the proposed barrier wall. The investigation results are presented in Appendix A and relevant text, tables, and site-wide figures of this HAR applicable to both AP-1 and AP-2 and AP-3/4 were updated to incorporate the new information.

2.0 BACKGROUND INFORMATION

2.1 Site Description and Physiography

Plant McDonough is located in southeast Cobb County, Georgia and is owned and operated by the Georgia Power Company. The property occupies approximately 390 acres and is bounded on the southeast by the Chattahoochee River. Detailed site maps are included as Sheets GW-1 and GW-1a.

The Site is located within the Piedmont Physiographic Province of central Georgia, 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. Backfilling of the AP-2 footprint was completed at the end of 2023. 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. 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. CCR was graded within the footprint of the impoundment to create a subgrade for the final cover system, and final capping and closure are underway. During closure, AP-3 and AP-4 are being dewatered as required to facilitate consolidation and closure in place. This process is expected to result in groundwater flow returning to its original, pre-construction flow direction to the south.

Topographic relief near Plant McDonough ranges from less than 750 feet above North American Vertical Datum (feet NAVD88) near the tributaries and river to greater than 840 feet NAVD88 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. Streams to the north of the Chattahoochee River mainly have rectangular and trellis drainage styles indicating geologic control of the drainage. To the south of the Chattahoochee River, streams form a dendritic drainage pattern indicative the streams developed independently of the underlying geology. 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 (decomposed rock material retaining the relic foliation of the underlying unweathered bedrock). The overall depth of weathering in the Piedmont geologic province is variable (Miller 1990, LeGrand 2004), 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.

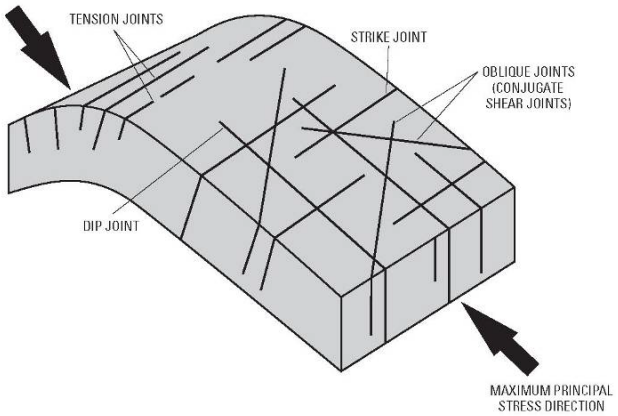
2.2.1 Regional Geology

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 updated geologic map of the Site area was published in 2024 and is incorporated on Sheet GW-4. The mapping illustrates that the Site is outside of the primary shearing zone of the Brevard Zone. The zone with the greatest number of fractures is to the south of the Site and beyond the Chattahoochee River, a hydraulic divide. 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 south of the Site and beyond the Chattahoochee River. 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 (± 30°) 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 (overburden), 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 potentiometric surface 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 potentiometric surface 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. As with typical Piedmont hydrogeology, the saprolitic material is generally more permeable than the overlying residual soil, and the underlying bedrock. 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 zone of enhanced permeability is referred to as the transitionally weathered zone, which is characterized by heterogeneously interlayered, freshly to completely weathered (saprolitic) rock.

Groundwater within the overburden, which is comprised of residual soils, saprolite, and transitionally weathered rock (TWR) or partially weathered rock (PWR), is generally unconfined and the surface is generally a subdued reflection of topography. The mantle of residual soil and weathered rock that covers the underlying fractured bedrock in most places provides an intergranular medium through which recharge and discharge of groundwater from the fractured bedrock commonly occurs. In areas where bedrock is relatively shallow and when water levels are seasonally depressed, the regional groundwater potentiometric surface 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, 1984).

3.0 SITE GEOLOGIC CONDITIONS

Site geologic conditions were evaluated through a detailed geologic mapping performed on site 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 the TWR/PWR zone, bedrock and the material that constitutes bedrock (e.g., minerology), considering the overall rock mass quality [e.g., rock quality designation (RQD)]. These data were used as the basis for showing the top of TWR/PWR on the cross-sections and a top of rock contour map, presented as Sheet GW-2, and geologic cross sections, presented as Sheets GW-3a through GW-3j.

3.1 Geologic Mapping Methodology

Geologic mapping was performed in 2016 and updated in 2024 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. Sheets GW-4 and GW-5 present interpretations of the structural and lithologic features encountered. 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

The Site residual soils are primarily clayey/sandy silt, sandy silt with clay, and silty sand (increasing with depth), which occur as a variably thick deposit transitioning to TWR/PWR then bedrock across most of the Site. The shallow lithology is illustrated on geologic cross sections presented as Sheets GW-3a through GW-3j, oriented per the ten profile lines depicted on Sheet GW-1a. 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 50 blows per six inches. This blow count criteria in combination with visual observations of samples, the depth of bedrock, and professional judgement were used for identifying the top of the TWR/PWR zone as shown on the cross-sections on Sheets GW-3a through GW-3j). 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 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/PWR varies 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 estimated 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 (Oli): 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 unsheared. New zircon dates for the Long Island Creek Gneiss indicate it is Ordovician in age.

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 tens 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. As shown on the updated 2024 geologic map on Sheet GW-4, the Site is located outside of the area of most intense shearing that is associated with the Brevard Zone. The zone with the greatest number of fractures is to the south of the Site and beyond the Chattahoochee River. 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 stereonets, 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 the 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^{o} 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 the 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)

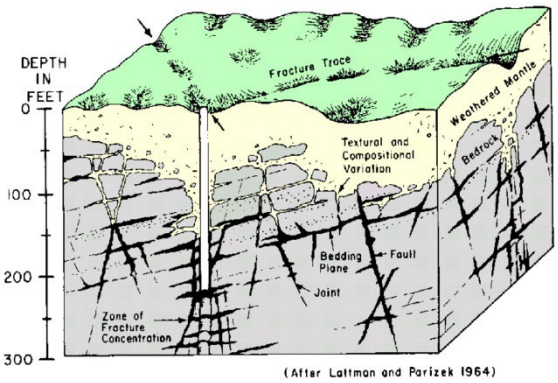
Locally, some of the joints contain clay infilling; however, most of the joints do not contain any infilling in surface exposures. The plane-surface morphology of each joint was noted in the field descriptions. Most of the joints are planar and smooth with little to no evidence of high fluid flow except 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 underlying 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. (Lattmon and Parizek, 1964)

Lineament analyses were conducted based on review of 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. Lineaments are linear topographic features expressed on the land surface that are believed to reflect the presence of an unspecified subsurface structure. Lineaments do not indicate the size or orientation of the subsurface structure. Lineaments may, or may not, be representative of fracturing in the underlying bedrock units and are not intended to be shown as contacts in the geology below the Site.

3.5.2 Discussion of Lineaments

A total of 296 lineaments were identified over an area of approximately five square miles including and surrounding the Site, with 20 lineaments identified within or crossing the Site's property boundary. The desktop lineament analysis evaluated topographic maps, low and high-altitude aerial photographs, and the DEM. Lineament analysis identified two major groups of orientations, and both are consistent with measured discontinuities in the bedrock (Sheet GW-6):

- L_1: N40° to 60°W – perpendicular to foliation strike
- L_2: N30° to 60°E – parallel to foliation strike

Lineament orientations appear to correlate with mapped regional and local tectonic fabrics suggesting that they may originate as bedrock fracture concentrations and may represent manifestations of subsurface fracture zones or possibly low-resistant stratigraphic layers or shear zones within the rock formations underlying the 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 Site appears to be characterized by two persistent lineament sets whose orientations are consistent with the structural stresses experienced in the area. It appears that L_1 is related in

orientation to the dip joints and dip direction of the northeast-trending foliation; L_2 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_1 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. Furthermore, the Site is located outside of the area of most intensive shearing associated with the Brevard Zone. The zone with the greatest number of fractures is to the south of the Site and beyond the Chattahoochee River. The Chattahoochee River is considered to be a hydraulic divide in the vicinity of the Site.

The orientation of these discontinuities forms a classic joint pattern that develops in rock formations in the Piedmont due to compressional stress (Heath, 1984; 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. The joints, fracture zones or low-resistance stratigraphic layers within the rock formations are potential flow paths for groundwater. Though lineaments may, or may not, be representative of fracturing in the underlying bedrock units, monitoring wells were installed adjacent to, or very near, the identified lineaments to evaluate their effect (if any) on groundwater flow during development of the detection monitoring well network.

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, and water level measurements in the piezometers enhance the understanding of site hydrogeology. Material types identified included residual soils, saprolitic soils, saprolitic rock (or PWR if blow counts were provided), TWR, and competent bedrock. Collectively, residual soils, saprolite, and PWR/TWR are referred to as overburden in this report. The well/piezometer boring logs and water level measurements indicate that the Site is underlain by a regional shallow groundwater aquifer that occurs within the overburden and/or upper bedrock depending on topographic location.

According to water level measurements recorded between August 2016 and January 2024 from wells and piezometers screened in the overburden and upper bedrock, the water table elevation ranges between approximately 837 feet NAVD88 at upgradient well DGWA-71 to approximately 742 feet NAVD88 at downgradient piezometer B-62. These data are summarized in Table GW-1. The depth to the water table varies from approximately -1.6 to 46.4 feet below ground surface (feet bgs) across the Site and is variable with lithology (Table GW-1). Depth to the water table ranged from approximately 2.5 to 42.6 feet bgs and 0.9 to 46.4 feet bgs in the Oli and OZbs formations, respectively. The geometric mean of the depth to the water table 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 January 29, 2024 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 estimated 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 semi-radial flow around the ponds historically, with the exception of the one upland high upgradient northwest of

AP-3/4. As a result of pond closure and localized dewatering activities, groundwater flow in the northeast portion of AP-3/4 is inward toward the ash pond and will remain to the south in post-closure. 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 January 2024 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 on site.

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.

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. 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 vertical through the uppermost aquifer. The vertical hydraulic gradient is dependent on topographic location (e.g., a downward vertical gradient is generally observed in topographically high areas and upwards near topographic lows).

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 the Site 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 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 deep bedrock at the Site are not well connected and the predominant groundwater flow occurs in the overburden and upper bedrock at the Site.

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).

January 2024 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, AP-3/4. As shown on Table GW-2, hydraulic gradients were calculated as follows; DGWA-53/DGWC-13 [0.028 feet/feet (ft/ft)], and B-26/DGWC-48 (0.026 ft/ft) for AP-2 and AP-3/4, and B-29/DGWC-68A (0.035 ft/ft), B-28/DGWC-37 (0.019 ft/ft), and B-50/DGWC-39 (0.024 ft/ft) for AP-1. Overall average hydraulic gradients for AP-1 and AP-2 and AP-3/4 derived using these horizontal gradients are 0.026 ft/ft and 0.027 ft/ft, respectively.

In October 2024, the site hydraulic conductivity was re-evaluated in the CCR monitoring network wells to incorporate additional hydraulic conductivity data recorded from additional monitoring wells. The field hydraulic conductivity data was re-analyzed as part of the update of the groundwater flow model (Appendix B). The hydraulic conductivity testing was conducted to characterize the residual soil, saprolite, partially weathered rock and upper bedrock for groundwater flow modeling and calculating groundwater flow velocities. These hydraulic conductivity data from each of the test methods are summarized in the Three-Dimensional Numerical Groundwater Modeling Report presented in Appendix B. The hydraulic conductivity data (slug test only) used for calculating site groundwater flow velocity in the uppermost aquifer are summarized on Table GW-3.

As a result of the additional data made available for the Site, the updated hydraulic conductivity values are somewhat lower than previously used to calculate site groundwater flow velocities. Based on slug test data, the geometric mean of the hydraulic conductivity for the overburden is 3.3×10^{-4} centimeters/second (cm/sec) (0.94 feet/day) and 1.5×10^{-4} cm/sec (0.44 feet/day) in the upper bedrock (Table GW-3). Using the overburden and upper bedrock hydraulic conductivity values, an estimated average hydraulic conductivity for the Site uppermost aquifer (overburden and upper bedrock) was calculated as 2.4×10^{-4} (cm/sec) (0.69 feet/day) (Table GW-3). This value is within the range of values expected for silty sand and weathered/fractured metamorphic rocks (Freeze and Cherry, 1979).

Plotting site gradation data 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 US EPA for a silty sand-type soil (US EPA, 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 estimated site hydraulic conductivity values from field hydraulic conductivity tests.

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

$$V = \frac{K * i}{n_e}$$

Where:

V = Groundwater flow velocity $\left(\frac{feet}{day}\right)$

K = Average hydraulic conductivity of the aquifer $\left(\frac{feet}{day}\right)$

i = Horizontal hydraulic gradient $\left(\frac{feet}{feet}\right)$

n_e = Effective porosity

Using this equation, groundwater flow velocities were calculated for AP-1 and AP-2, AP-3/4 using January 2024 groundwater elevation data. Table GW-2 presents the velocities calculated using groundwater elevation data from the January 2024 sampling event.

Calculated (horizontal) flow velocities range from approximately 33 feet per year (ft/yr) to 35 feet/year in January 2024 for AP-2, AP-3/4, while groundwater velocities in AP-1 ranged from 24 to 44 ft/yr. These estimated flow velocities are lower than past results and are also generally consistent with other published velocities for overburden-upper bedrock aquifers of the Piedmont (Heath, R.C., 1984).

4.3 Conceptual Site Hydrogeologic Model Summary

A regional, unconfined aquifer system is present at the Site, which consists of residual soils, saprolite, and TWR/PWR – 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 uppermost aquifer occurs within the overburden and upper bedrock at the Site. According to water levels measured from August 2016 to January 2024 from wells and piezometers screened in the overburden and upper bedrock, the depth to the water table varies from approximately -1.6 to 46.4 ft bgs across the Site and is variable with topography (Table GW-1). Calculated geometric means for depth to the water table 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 occurs within the overburden and upper bedrock. It is anticipated that there is minimal connectivity between the overburden and the deeper bedrock hydrogeologic unit.

2) 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/sec.

3) Bedrock north of the faulted intrusive contact is primarily characterized as Ordovician age Long Island Creek Gneiss (Oli), 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. As shown on Sheet GW-5, the Site is located outside of the area of most intense shearing that is associated with the Brevard 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.

4) Two lineament sets (i.e., L_1 and L_2) were identified onsite and the surrounding area, these orientations are consistent with the structural stresses experienced in this area.

5) The estimated top of rock surface and water table generally mimic site topography.

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 predicted post-closure conditions to current conditions, as of March 2024, presented in the groundwater model. Model input files were created using a combination of Environmental System Research Institute ArcMap 10.8.2 and the Environmental Simulations Inc. Groundwater Vistas 8 (GV) graphical user interface. A steady state groundwater flow model was developed using the USG-Transport version 1.8.0 model code (Panday, 2021), which is an enhanced version of the MODFLOW-USG (Panday, Langevin, Niswonger, Ibaraki, and Hughes, 2013) and MODFLOW (McDonald & Harbaugh, 1988) model codes. Model construction, calibration, and results are described in the Three-Dimensional Numerical Groundwater Modeling Report (Appendix B).

Development and calibration of the model was based on groundwater data collected in March 2024 and was validated against data collected in August 2016. 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. Simulated groundwater flow patterns are consistent with the conceptual model of groundwater flow for the Site.

Groundwater modeling results included in Appendix B of the HAR reflect closure scenarios for CCR Unit AP-3/4, including with and without the installation of a perimeter barrier wall at AP-1, and ultimately reflect long-term average post-closure groundwater levels below CCR at AP-3/4. The perimeter barrier wall proposed for Plant McDonough CCR Unit AP-1 as part of the advanced engineering methods is predicted to create a flow path

barrier for lateral flow at AP-1. Predictive groundwater modeling (Appendix B) indicates that the Site water levels may fluctuate locally as a result of the installation of the AP-1 barrier wall; however, water levels at Combined CCR Unit AP-3/4 are not expected to be affected.

Groundwater elevation data from March 2024 were used to calibrate the steady state flow model to accurately simulate recent pre-closure (baseline) conditions prior to completion of AP-3/4 closure activities (i.e., prior to consolidation, cover install, and AEM underdrain installation). The calibrated model was then used as the basis for steady-state post-closure modeling that simulates a long-term, average representation of hydraulic conditions with the consolidated CCR footprint, cover installed, AEM underdrain installed and operational, and barrier wall installed at AP-1 to the top of partially weathered rock. The post-closure model predicts that, as designed, there is no CCR below the potentiometric surface at AP-3/4 once steady state equilibrium is reached.

Because Georgia Power is in the process of closing AP-3/4, the current groundwater levels are lower than the pre-closure 2016 elevations and will continue to decrease over time as the system reaches equilibrium post-closure. Current groundwater levels in AP-3/4 exhibit decreasing trends and fall within the modeled time periods, pre-closure (baseline 2016 and March 2024) and post-closure, respectively. The decreasing (downward) trends align with steady state post-closure model predictions and exhibit progress toward the steady state post-closure endpoint predicted by the model. The general agreement between current (March 2024) and historical (August 2016) groundwater elevation data and the pre-closure model predictions indicates the calibrated steady state pre-closure model provides a good foundation for evaluating future hydraulic conditions during the post-closure period.

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, AP-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. Georgia Power follows the recommendations as stated in Chapter 2 of the Manual for Groundwater Monitoring (GA EPD, 1991) to establish well spacings based on site-specific conditions. 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/PWR 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 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). The significance of groundwater flow between the overburden and fractured bedrock is dependent on the degree of hydraulic connectivity between the units.

4) Preferential groundwater flow in bedrock is anticipated along lineaments and discontinuities. As indicated on cross-sections on Sheets GW-3a through GW-3j and on the lineament map on Sheet GW-6, several detection and assessment wells are located as either straddling or adjacent to these lineament features to monitor for impacts from the ash ponds.

5) Based on site-specific hydrogeologic characteristics, groundwater is expected to move laterally more than vertically within the uppermost aquifer, it is likely that there is limited amount of aquifer recharge occurring into deeper bedrock in and around the Site.

6) 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.

7) 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.

8) 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. 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 are provided in Appendix C and well logs

for each of the Site borings, monitoring wells and piezometers are provided in Appendix D. Certified well survey reports are included in Appendix E.

6.1 AP-1 Network

For the purpose of the HAR, AP-1 network information is presented for informational purposes only and should not be considered for permitting. The AP-1 detection monitoring well network consists of eleven groundwater monitoring wells (Table GW-4). Three 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 Oli 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. Eight monitoring wells are positioned downgradient of AP-1 (DGWC-37, DGWC-38, DGWC-39, DGWC-40, DGWC-67, DGWC-68A, DGWC-69, and DGWC-121). 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 January 2024. 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 detection monitoring wells have a total depth ranging from 21.2 to 56.3 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 uppermost aquifer. Well construction details are provided in Table GW-4.

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

AP-1 detection and assessment monitoring well networks are presented because data are relevant to the Site hydrogeology. The AP-2 and AP-3/4 monitoring network consists of a comprehensive set of groundwater monitoring wells (Table GW-4). The three 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, AP-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, AP-3/4 and hydraulically upgradient at the topographic high west of the engineered stream channel situated southwest of AP-2, AP-3/4.

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. Additional detection monitoring wells (DGWC-126, DGWC-127, DGWC-128) are planned for installation at three locations around AP-2, AP-3/4 to provide additional coverage in areas at the downgradient edge of the CCR unit (Sheet GW-1a). Monitoring wells DGWC-126 and DGWC-127 will be located near or adjacent to previously identified lineaments downgradient of Ash Pond 3/4. Existing piezometers B-16 and B-18 will be converted to detection monitoring wells (DGWC-16 and DGWC-18) along the southern side of AP-3/4 (Sheet GW-1a). The current groundwater elevations at the B-16 and B-18 locations are at the top to slightly below the top of the wells screens and are anticipated to decrease with ongoing dewatering activities, such that these converted wells may not produce sufficient water for analysis. Existing monitoring well DGWC-9 has been dry for two consecutive sampling events and is planned for replacement with a deeper well at a nearby location.

The AP-2 and AP-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 uppermost aquifer. Well construction details are provided in Table GW-4.

7.0 GROUNDWATER MONITORING STATUS

Groundwater monitoring has been initiated for AP-2 and AP-3/4 CCR Units to meet US EPA and GA EPD requirements and in accordance with the *Groundwater Monitoring Plan* (WSP, 2024b). 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 US EPA CCR Rules. Statistical evaluation of the groundwater monitoring data for AP-2 and AP-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 a *Draft Remedy Selection Report* has been submitted to GA EPD (WSP, 2023c). Monitoring results have been documented in Semi-Annual and Annual Groundwater Monitoring and Corrective Action Reports, prepared for AP-1, and AP-2, AP-3/4 (recent reports submitted to GA EPD, WSP, 2024c, 2024d). These reports have been submitted to GA EPD and posted to the Site's CCR compliance website.

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Tables

TABLE GW-1
SUMMARY OF GROUNDWATER ELEVATIONS
Georgia Power Company - Plant McDonough-Atkinson
CCR Unit AP-2 and AP-3/4
Cobb County, Georgia

Well ID	Top of Casing Elevation (feet NAVD 88)[1]	Groundwater Elevation (feet NAVD 88)																				
		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	1/18/2022	9/6/2022	1/31/2023	9/5/2023	1/29/2024
ASH POND 1 (AP-1) DETECTION MONITORING WELL NETWORK																						
DGWA-53	844.26	--	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	833.41	830.21	833.17	831.05	829.91
DGWA-70A	808.52	--	--	--	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	767.00	765.56	766.50	767.17	767.01
DGWA-71	863.84	--	--	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	835.49	834.48	834.26	832.52	830.73
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	752.81	752.23	753.16	752.22	752.79
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	751.38	750.93	751.50	750.85	750.96
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	753.11	752.24	753.48	752.34	752.77
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	761.83	760.17	762.10	761.21	760.97
DGWC-67	766.70	--	--	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	757.03	756.15	757.23	756.28	756.98
DGWC-68A	765.33	--	--	--	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	755.45	754.83	756.14	754.88	755.44
DGWC-69	763.75	--	--	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	758.17	757.45	758.53	757.68	758.15
DGWC-121	764.16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	754.49	755.88	754.93	755.59
ASH POND 1 (AP-1) ASSESSMENT MONITORING WELL NETWORK																							
B-62	760.08	--	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	745.58	743.73	745.57	744.20	744.17
B-100	777.95	--	--	--	--	--	--	--	--	--	--	--	--	742.31	742.78	749.14	744.87	744.70	744.44	743.66	745.05	743.98	743.88
B-105D	779.01	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	762.82	760.75	762.19	760.68	762.42	761.57	761.33
B-112D	765.58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	757.86	758.48	757.70	758.89	758.02	758.74

TABLE GW-1
SUMMARY OF GROUNDWATER ELEVATIONS
Georgia Power Company - Plant McDonough-Atkinson
CCR Unit AP-2 and AP-3/4
Cobb County, Georgia

Well ID	Top of Casing Elevation (feet NAVD 88)[1]	Groundwater Elevation (feet NAVD 88)																					
		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	1/18/2022	9/6/2022	1/31/2023	9/5/2023	1/29/2024
ASH POND 2 and ASH PONDS 3/4 (AP-2 and AP-3/4) DETECTION MONITORING WELL NETWORK																							
DGWA-53	844.26	--	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	833.41	830.21	833.17	831.05	829.91
DGWA-70A	808.52	--	--	--	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	767.00	765.56	766.50	767.17	767.01
DGWA-71	863.84	--	--	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	835.49	834.48	834.26	832.52	830.73
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	821.71	820.72	821.79	821.65	819.29
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	790.75	789.10	790.66	789.40	789.32
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	782.25	780.26	782.20	777.38	779.67
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	786.94	786.86	788.20	790.92	786.47
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	BTOP	795.82	798.86	791.35	Dry
DGWC-9A	TBD	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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	796.63	791.80	796.78	793.86	793.83
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	790.14	784.41	791.01	787.69	787.33
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	766.10	763.28	766.45	764.24	765.51
DGWC-13	794.10	760.19	760.30	760.39	761.49	--	768.46	760.44	759.55	760.10	760.69	759.94	761.06	760.55	761.87	760.77	759.96	760.25	759.56	760.03	759.88	760.08	759.56
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	771.32	770.85	772.78	772.43	771.64
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	783.82	783.46	783.36	784.64	782.92
DGWC-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	#REF!	#REF!	#REF!	795.53	792.85	791.85	790.16	789.93	789.49	789.39
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	802.91	800.32	800.02	799.09	798.51
DGWC-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	826.56	826.56	826.56	805.28	803.08	803.71	802.04	803.29	801.57	801.91
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	800.23	799.23	798.83	798.81	798.68
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	799.35	797.91	798.78	797.55	797.61
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	799.38	797.85	797.98	797.24	796.57
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	795.80	794.02	795.31	794.04	793.65
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	799.31	795.43	800.18	796.20	798.28
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	774.95	774.48	774.88	774.32	773.85
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	780.54	780.54	781.70	780.90	780.00
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	774.25	773.65	774.25	773.28	772.83
DGWC-126	TBD	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DGWC-127	TBD	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DGWC-128	TBD	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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CCR Unit AP-2 and AP-3/4
Cobb County, Georgia

Well ID	Top of Casing Elevation (feet NAVD 88)[1]	Groundwater Elevation (feet NAVD 88)																					
		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	1/18/2022	9/6/2022	1/31/2023	9/5/2023	1/29/2024
ASH POND 2 and ASH PONDS 3/4 (AP-2 and AP-3/4) ASSESSMENT MONITORING WELL NETWORK																							
B-56	823.59	--	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	795.91	793.37	796.24	793.23	793.16
B-62	760.08	--	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	745.58	743.73	745.57	744.20	744.17
B-63	777.10	--	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	748.95	746.63	748.67	747.47	747.77
B-66	815.90	--	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	796.40	799.00	794.45	799.50	796.75	797.02
B-77	776.86	--	--	--	--	--	--	--	--	--	--	745.23	748.36	746.42	748.68	750.96	748.96	747.48	748.13	745.99	748.44	747.11	747.77
B-82	810.07	--	--	--	--	--	--	--	--	--	--	797.42	801.17	790.70	794.12	796.22	796.22	793.97	798.12	792.13	799.75	795.53	794.94
B-83	776.98	--	--	--	--	--	--	--	--	--	--	744.01	748.23	744.88	745.99	747.35	747.35	746.58	746.75	745.44	747.04	746.03	745.83
B-88	820.07	--	--	--	--	--	--	--	--	--	--	--	788.60	787.50	786.77	782.04	782.04	783.58	783.78	782.33	782.56	781.31	780.72
B-92	785.08	--	--	--	--	--	--	--	--	--	--	--	781.20	779.78	780.32	780.40	777.95	779.36	780.13	779.00	780.11	777.13	779.21
B-93	789.07	--	--	--	--	--	--	--	--	--	--	--	784.21	781.35	782.55	782.67	779.89	780.57	782.04	779.87	782.19	778.86	780.67
B-97	786.29	--	--	--	--	--	--	--	--	--	--	--	--	780.26	781.29	780.99	781.03	779.84	781.36	779.27	781.48	780.88	781.40
B-98	789.67	--	--	--	--	--	--	--	--	--	--	--	--	780.52	782.01	782.15	782.39	780.15	782.45	779.46	783.16	777.85	782.14
B-100	777.95	--	--	--	--	--	--	--	--	--	--	--	--	742.31	742.78	749.14	744.87	744.70	744.44	743.66	745.05	743.98	743.88
B-101D	824.29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	793.26	793.84	793.97	792.29	794.78	786.09	787.14
B-102D	823.42	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	792.80	791.56	792.20	789.27	791.92	789.32	789.34
B-104D	787.90	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	781.64	780.44	780.77	780.82	781.88	781.03	780.80
B-106D	826.21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	790.54	787.01	786.33	785.96	786.82	787.25	785.24
B-107D	823.38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	801.98	800.95	800.67	799.55	799.95	798.90	798.73
B-108D	821.13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	801.03	800.27	799.68	798.40	798.70	797.68	797.36
B-111D	791.87	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	781.12	780.07	781.56	779.43	781.72	779.50	781.08
B-120D	836.42	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	801.72	801.34	801.03	801.14	801.27	800.33
B-122D	777.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	746.21	747.93	746.75	746.71
B-125D	821.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	798.30	797.50
PIEZOMETERS																							
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	801.27	800.94	801.05	801.19	800.29
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	783.74	782.06	783.45	777.14	779.77
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	24.66	784.50	784.72	782.92	783.38	781.29	781.13
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	803.92	799.68	802.02	800.08	798.62
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	822.26	816.07	823.35	820.42	822.21
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	826.72	824.89	826.78	831.44	825.75
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	786.64	784.54	786.24	785.49	784.98
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	788.92	786.02	789.01	787.04	787.07
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	763.85	763.12	764.06	763.45	Abandoned
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	770.93	769.93	770.80	770.09	769.80
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	787.64	786.10	787.20	786.55	786.08
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	753.29	752.64	753.60	752.70	753.16
B-52	822.89	--	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	797.23	793.02	793.47	792.80	791.61
B-54	785.46	--	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	779.74	779.07	779.77	776.53	778.55
B-55	825.12	--	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	799.41	797.89	801.63	798.00	797.70
B-57	789.04	--	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	770.19	769.63	770.22	770.46	769.09
B-58	788.17	--	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	768.75	768.27	768.81	768.88	767.25

TABLE GW-1
SUMMARY OF GROUNDWATER ELEVATIONS
Georgia Power Company - Plant McDonough-Atkinson
CCR Unit AP-2 and AP-3/4
Cobb County, Georgia

Well ID	Top of Casing Elevation (feet NAVD 88)[1]	Groundwater Elevation (feet NAVD 88)																				
		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	1/18/2022	9/6/2022	1/31/2023	9/5/2023	1/29/2024
PIEZOMETERS																						
B-59	788.00	--	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	780.60	779.44	780.51	775.08	778.56
B-60	782.13	--	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	751.29	750.08	751.28	750.98	750.63
B-61	782.09	--	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	763.24	762.50	765.41	763.33	761.90
B-64	785.83	--	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	780.03	779.03	779.97	776.01	778.82
B-65	821.95	--	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	801.53	804.03	809.90	807.43	800.93
B-68	758.68	--	--	755.45	--	--	--	--	--	--	754.84	754.81	756.20	754.72	755.19	755.09	755.14	754.70	755.12	754.58	755.68	754.61	755.11
B-72	758.46	--	--	--	--	--	--	--	--	--	--	--	--	755.04	754.83	755.35	755.35	754.96	755.33	754.86	755.63	754.86	755.16
B-73	759.21	--	--	--	--	--	--	--	--	--	--	--	--	754.72	755.26	755.12	755.21	754.71	755.29	754.48	756.06	754.58	755.37
B-74	759.06	--	--	--	--	--	--	--	--	--	--	--	--	754.90	754.68	754.59	755.39	754.90	755.31	754.61	755.71	754.82	Abandoned
B-76	760.53	--	--	--	--	--	--	--	--	--	743.20	746.62	745.42	745.11	750.04	746.06	745.71	746.10	744.63	746.19	745.16	744.94	
B-78	790.75	--	--	--	--	--	--	--	--	--	779.94	781.70	780.25	780.84	780.90	778.67	779.65	780.47	779.19	780.56	777.51	779.30	
B-79	788.66	--	--	--	--	--	--	--	--	--	781.71	782.74	781.84	782.14	782.21	780.49	781.58	781.97	781.01	781.92	778.65	780.01	
B-80	804.47	--	--	--	--	--	--	--	--	--	786.97	787.99	787.10	786.62	786.37	786.13	784.84	785.16	783.21	784.07	781.09	781.15	
B-81	820.56	--	--	--	--	--	--	--	--	--	788.80	789.17	788.63	787.86	782.41	782.41	784.31	784.29	782.91	783.05	782.57	781.58	
B-85	782.54	--	--	--	--	--	--	--	--	--	--	780.27	779.54	775.63	777.76	777.76	779.14	779.69	779.10	779.78	777.16	778.76	
B-86	784.29	--	--	--	--	--	--	--	--	--	--	783.38	782.34	777.24	781.22	781.22	782.10	782.65	781.56	782.57	779.45	780.79	
B-87	803.37	--	--	--	--	--	--	--	--	--	--	787.81	786.87	786.57	785.95	785.95	784.94	785.35	783.35	784.43	781.12	781.36	
B-89	822.36	--	--	--	--	--	--	--	--	--	--	800.58	799.35	799.26	800.36	822.36	796.56	795.86	797.69	801.06	798.44	796.10	
B-90	784.00	--	--	--	--	--	--	--	--	--	--	783.12	781.14	782.44	782.50	781.36	781.97	782.48	781.48	782.30	779.83	780.98	
B-91	782.98	--	--	--	--	--	--	--	--	--	--	780.08	779.29	779.60	779.67	778.00	779.18	779.58	778.93	779.40	777.87	778.66	
B-94	801.74	--	--	--	--	--	--	--	--	--	--	--	786.71	786.49	786.26	785.79	784.86	785.30	783.27	784.40	780.81	781.18	
B-95	784.00	--	--	--	--	--	--	--	--	--	--	--	781.58	781.89	781.92	781.45	781.90	782.15	781.30	782.15	780.25	780.87	
B-96	784.92	--	--	--	--	--	--	--	--	--	--	--	779.37	779.82	779.85	778.30	778.88	779.66	778.77	779.61	777.67	779.18	
B-99	782.39	--	--	--	--	--	--	--	--	--	--	--	778.57	778.97	778.99	779.06	778.63	779.44	778.27	779.37	777.86	779.23	
B-103D	795.96	--	--	--	--	--	--	--	--	--	--	--	--	--	--	783.50	782.28	783.34	782.74	783.57	782.46	782.25	
B-109D	850.73	--	--	--	--	--	--	--	--	--	--	--	--	--	--	812.13	811.87	811.95	811.56	811.83	811.84	810.08	
B-110D	764.61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	756.55	755.69	756.09	755.43	756.49	755.40	755.89	
B-113D	758.22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	756.21	756.79	756.18	757.2	756.25	756.21	
B-115D	789.17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	768.96	768.28	767.79	768.34	768.58	767.03	
B-116D	807.82	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	764.80	765.35	763.52	765.43	764.50	765.24	
B-117D	863.82	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	834.63	834.67	833.87	834.35	831.99	830.08	
B-118	807.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	756.15	756.6	755.79	756.73	755.74	756.07	
B-119D	807.15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	759.14	759.76	759.05	760.26	759.24	759.73	
B-123D	781.80	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	769.00	768.02	769.56	768.15	

Notes:

1. Elevation data recorded in feet referenced to the North American Vertical Datum 1988 (NAVD 88)
2. Survey data for monitoring wells and piezometers provided by Metro Engineering.
3. "--" Data were not recorded or well was not in place at the time of measurement.
4. Data presented for AP-1 are included for reference only as data are used to support the conceptual site model. These data should not be considered for permitting of AP-2 and AP-3/4.
5. Piezometers B-16 and B-18 were converted to detection monitoring wells (DGWC-16 and DGWC-18) for AP-2, AP-3/4 in December 2024.
6. Proposed well DGWC-9A is a replacement well for DGWC-9. Well DGWC-9 will be decommissioned and abandon upon completion of DGWC-9A.
7. DGWC-126, DGWC-127, DGWC-128 are proposed detection monitoring wells and will be installed in January 2025.
8. TBD - To be determined upon actual installation

TABLE GW-2
GROUNDWATER VELOCITY CALCULATIONS - JANUARY 2024
Georgia Power Company - Plant McDonough-Atkinson
CCR Unit AP-2 and AP-3/4
Cobb County, Georgia

Flow Paths	Groundwater Elevation (feet)	Δ h (feet)[1]	Δ l (feet)[2]	Hydraulic Gradient (Δ h/Δ l)[3]	Estimated Hydraulic Conductivity for Uppermost Aquifer (feet per day)[5]	Assumed Effective Porosity (n_e)[6]	Average Linear Groundwater Velocity	
							(feet per day)[4]	(feet per year)[4]
ASH POND 1 (AP-1)								
B-29/DGWC-68A	787.07 755.44	31.63	900	0.035	0.69	0.2	0.12	44
B-28/DGWC-37	784.98 752.79	32.19	1700	0.019	0.69	0.2	0.07	24
B-50/DGWC-39	786.08 752.77	33.31	1400	0.024	0.69	0.2	0.08	30
ASH POND 2 AND ASH PONDS 3/4 (AP-2 and AP-3/4)								
DGWA-53/DGWC-13	829.91 759.56	70.35	2550	0.028	0.69	0.2	0.10	35
B-26/DGWC-48	825.75 772.83	52.92	2000	0.026	0.69	0.2	0.09	33

Notes:
1. Δ h = Change in groundwater elevation
2. Δ l =Distance along flow path
3. I = Δ h / Δ l
4. Velocity = $(I * K)/n_e$
5. Hydraulic conductivity based on historic aquifer performance tests (updated October 2024)
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 bedrock was derived from Daniel and Dahlen (2002) and Dowd and Marshall (1995).

TABLE GW-3
SUMMARY OF AQUIFER TEST DATA
Georgia Power Company - Plant McDonough-Atkinson
CCR Unit AP-2 and AP-3/4
Cobb County, Georgia

Well/ Piezometer Identification	Test Date	Screened Lithology	Top of Screen Elevation (feet NAVD 88)	Bottom of Screen Elevation (feet NAVD 88)	Test Elevation (feet NAVD 88)	Saturated Aquifer Thickness (feet)	Aquifer Analysis Method	Well/ Piezometer Diameter (inches)	Aquifer Test Type	Hydraulic Conductivity (feet/day)	Geometric Mean (feet/day)	Hydraulic Conductivity (cm/sec)	Geometric Mean (cm/sec)
DGWC-19	11/2/2016	Saprolite	793.5	783.5	788.5	25	Bouwer-Rice	2/3.45	Falling	2.05	2.23	7.2E-04	7.9E-04
									Rising	2.43		8.6E-04	
DGWC-40/B-40	11/2/2016	Saprolite	751.6	741.6	746.6	23	Bouwer-Rice	2/3.45	Falling	9.68	8.69	3.4E-03	3.1E-03
									Rising	7.81		2.8E-03	
B-56	7/15/2021	Saprolite	786.4	776.4	781.4	17	Bouwer-Rice	2	Falling	0.559	0.62	2.0E-04	2.2E-04
									Rising	0.690		2.4E-04	
									Falling	0.585		2.1E-04	
									Rising	0.642		2.3E-04	
DGWC-68A	5/25/2017	Saprolite	745.7	735.7	740.7	20	Bouwer-Rice	2	Falling	1.27	1.21	4.5E-04	4.3E-04
									Rising	1.16		4.1E-04	
B-76	1/1/2019	Saprolite	732.4	722.4	727.4	35	Bouwer-Rice	2	Falling	1.35	0.97	4.8E-04	3.4E-04
									Rising	1.01		3.6E-04	
									Falling	0.955		3.4E-04	
									Rising	0.675		2.4E-04	
B-77	1/1/2019	Residual Soils	745.1	735.1	740.1	12	Bouwer-Rice	2	Falling	0.173	0.15	6.1E-05	5.3E-05
									Rising	0.138		4.9E-05	
									Falling	0.0935		3.3E-05	
									Rising	0.232		8.2E-05	
B-83	1/1/2019	Residual Soils/Saprolite	738.6	728.6	733.6	24	Bouwer-Rice	2	Falling	4.65	3.94	1.6E-03	1.4E-03
									Rising	3.34		1.2E-03	
DGWC-5	7/15/2021	Saprolite/PWR/ Upper Bedrock	768.9	758.9	763.9	20	Bouwer-Rice	2/3.45	Falling	2.90	3.25	1.0E-03	1.1E-03
									Rising	3.72		1.3E-03	
									Falling	2.96		1.0E-03	
									Rising	3.50		1.2E-03	
DGWC-9	11/2/2016	Saprolite/PWR	802.3	792.3	797.3	63	Bouwer-Rice	2/3.45	Rising	1.42	1.42	5.0E-04	5.0E-04
B-41	4/17/2013	Saprolite	743.0	733.0	738.0	45	Bouwer-Rice	2	Falling	1.76	1.76	6.2E-04	6.2E-04
B-50	7/14/2016	Saprolite	784.4	774.4	779.4	20	Bouwer-Rice	2	Falling	2.04	2.40	7.2E-04	8.5E-04
									Rising	1.81		6.4E-04	
	2024 re-test								Falling	2.98		1.1E-03	
									Rising	3.02		1.1E-03	
B-51	7/14/2016	Saprolite/PWR	708.3	698.3	703.3	60	Bouwer-Rice	2	Falling	1.62	1.90	5.7E-04	6.7E-04
									Rising	1.45		5.1E-04	
	2024 re-test								Falling	2.29		8.1E-04	
									Rising	2.44		8.6E-04	
B-52	6/21/2024	PWR	781.3	771.3	776.3	19	Bouwer-Rice	2	Falling	0.347	0.34	1.2E-04	1.2E-04
									Rising	0.325		1.1E-04	
B-60	6/20/2024	Saprolite/PWR	740.0	730.0	735.0	18	Bouwer-Rice	2	Falling	3.34	3.50	1.2E-03	1.2E-03
									Rising	3.66		1.3E-03	

TABLE GW-3
SUMMARY OF AQUIFER TEST DATA
Georgia Power Company - Plant McDonough-Atkinson
CCR Unit AP-2 and AP-3/4
Cobb County, Georgia

Well/ Piezometer Identification	Test Date	Screened Lithology	Top of Screen Elevation (feet NAVD 88)	Bottom of Screen Elevation (feet NAVD 88)	Test Elevation (feet NAVD 88)	Saturated Aquifer Thickness (feet)	Aquifer Analysis Method	Well/ Piezometer Diameter (inches)	Aquifer Test Type	Hydraulic Conductivity (feet/day)	Geometric Mean (feet/day)	Hydraulic Conductivity (cm/sec)	Geometric Mean (cm/sec)
B-63	1/18/2023	Saprolite/PWR	741.9	731.9	736.9	16	Bouwer-Rice	2	Falling	0.505	0.57	1.8E-04	2.0E-04
									Falling	0.612		2.2E-04	
									Rising	0.615		2.2E-04	
									Falling	0.592		2.1E-04	
									Rising	0.578		2.0E-04	
									Rising	0.522		1.8E-04	
									Rising	0.558		2.0E-04	
B-66	7/15/2021	Saprolite	768.3	758.3	763.3	18	Bouwer-Rice	2	Falling	0.141	0.091	5.0E-05	3.2E-05
									Rising	0.057		2.0E-05	
									Falling	0.081		2.9E-05	
									Rising	0.103		3.6E-05	
DGWC-69	5/30/2017	Saprolite/PWR	749.7	739.7	744.7	18	Bouwer-Rice	2	Falling	0.547	0.39	1.9E-04	1.4E-04
									Rising	0.279		9.8E-05	
DGWC-70A	5/30/2017	Saprolite/PWR	756.8	746.8	751.8	21	Bouwer-Rice	2	Falling	0.709	0.56	2.5E-04	2.0E-04
									Rising	0.437		1.5E-04	
B-78	1/1/2019	Saprolite/Upper Bedrock	767.8	758.3	763.0	24	Bouwer-Rice	2	Falling	1.79	2.36	6.3E-04	8.3E-04
									Rising	2.71		9.6E-04	
									Falling	2.18		7.7E-04	
									Rising	2.95		1.0E-03	
B-79	1/1/2019	Saprolite/PWR	760.9	751.4	756.2	41	Bouwer-Rice	2	Falling	0.831	0.80	2.9E-04	2.8E-04
									Rising	0.768		2.7E-04	
									Falling	0.765		2.7E-04	
									Rising	0.850		3.0E-04	
B-80	1/1/2019	Saprolite/PWR	781.9	772.4	777.2	49	Bouwer-Rice	2	Falling	0.527	0.52	1.9E-04	1.8E-04
									Rising	0.513		1.8E-04	
									Falling	0.465		1.6E-04	
									Rising	0.595		2.1E-04	
B-81	1/1/2019	Saprolite/PWR	778.5	768.5	773.5	40	Bouwer-Rice	2	Falling	0.203	0.14	7.2E-05	5.1E-05
									Rising	0.099		3.5E-05	
									Falling	0.106		3.7E-05	
									Rising	0.206		7.3E-05	
B-82	1/1/2019	Saprolite	773.1	763.1	768.1	54	Bouwer-Rice	2	Falling	0.414	0.23	1.5E-04	8.0E-05
									Rising	0.109		3.9E-05	
									Falling	0.191		6.8E-05	
									Rising	0.312		1.1E-04	
B-84	1/1/2019	Saprolite	737.4	727.4	732.5	26	Bouwer-Rice	2	Falling	0.306	0.19	1.1E-04	6.7E-05
									Rising	0.044		1.6E-05	
									Falling	0.131		4.6E-05	
									Rising	0.171		6.1E-05	

TABLE GW-3
SUMMARY OF AQUIFER TEST DATA
Georgia Power Company - Plant McDonough-Atkinson
CCR Unit AP-2 and AP-3/4
Cobb County, Georgia

Well/ Piezometer Identification	Test Date	Screened Lithology	Top of Screen Elevation (feet NAVD 88)	Bottom of Screen Elevation (feet NAVD 88)	Test Elevation (feet NAVD 88)	Saturated Aquifer Thickness (feet)	Aquifer Analysis Method	Well/ Piezometer Diameter (inches)	Aquifer Test Type	Hydraulic Conductivity (feet/day)	Geometric Mean (feet/day)	Hydraulic Conductivity (cm/sec)	Geometric Mean (cm/sec)
B-87	1/1/2019	Saprolite/PWR	768.6	758.6	763.6	49	Bouwer-Rice	2	Falling	0.340	0.25	1.2E-04	8.7E-05
									Rising	0.198		7.0E-05	
									Falling	0.135		4.8E-05	
									Rising	0.414		1.5E-04	
B-88	1/1/2019	Saprolite/PWR	754.8	744.8	749.8	45	Bouwer-Rice	2	Falling	2.36	3.09	8.3E-04	1.1E-03
									Rising	3.66		1.3E-03	
									Falling	2.64		9.3E-04	
									Rising	4.00		1.4E-03	
B-90	1/1/2019	Residual Soils/ Saprolite	760.8	750.8	755.8	38	Bouwer-Rice	2	Falling	0.816	0.53	2.9E-04	1.9E-04
									Rising	0.377		1.3E-04	
									Falling	0.468		1.7E-04	
									Rising	0.530		1.9E-04	
B-91	1/1/2019	Residual Soils/ Saprolite	758.5	748.5	753.5	32	Bouwer-Rice	2	Falling	3.60	1.38	1.3E-03	4.9E-04
									Rising	0.587		2.1E-04	
									Falling	0.604		2.1E-04	
									Rising	2.81		9.9E-04	
B-92	1/1/2019	Residual Soils/ Saprolite	770.7	760.7	765.7	24	Bouwer-Rice	2	Falling	4.76	2.61	1.7E-03	9.2E-04
									Rising	2.18		7.7E-04	
									Falling	2.31		8.1E-04	
									Rising	1.95		6.9E-04	
B-93	1/1/2019	Residual Soils/ Saprolite	770.3	760.3	765.3	23	Bouwer-Rice	2	Falling	0.567	0.51	2.0E-04	1.8E-04
									Rising	0.490		1.7E-04	
									Falling	0.434		1.5E-04	
									Rising	0.564		2.0E-04	
B-100	7/14/2021	Saprolite	740.5	730.5	735.5	13	Bouwer-Rice	2	Falling	4.51	4.30	1.6E-03	1.5E-03
									Falling	4.03		1.4E-03	
									Rising	4.37		1.5E-03	
DGWC-10	7/15/2021	Saprolite	785.8	775.8	780.8	19	Bouwer-Rice	2/3.45	Falling	2.02	2.04	7.1E-04	7.2E-04
									Rising	2.04		7.2E-04	
									Falling	1.91		6.7E-04	
									Rising	2.20		7.8E-04	
DGWC-13	11/2/2016	Saprolite/PWR	757.8	747.8	752.8	15	Bouwer-Rice	2/3.45	Falling	1.66	2.06	5.9E-04	7.3E-04
									Rising	2.57		9.1E-04	
DGWC-15	6/24/2024	PWR	764.7	754.7	759.7	25	Bouwer-Rice	2/3.45	Falling	0.342	0.35	1.2E-04	1.2E-04
									Rising	0.349		1.2E-04	
DGWC-21	6/19/2024	PWR/Upper Bedrock	754.9	744.9	749.9	49	Bouwer-Rice	2/3.45	Falling	2.07	1.78	7.3E-04	6.3E-04
									Rising	1.54		5.4E-04	
DGWC-48	7/13/2016	Saprolite/PWR/ Upper Bedrock	765.6	755.6	760.6	20	Bouwer-Rice	2	Falling	0.230	0.24	8.1E-05	8.6E-05
									Rising	0.256		9.0E-05	
DGWC-67	5/30/2017	Saprolite/PWR	720.5	710.5	715.5	47	Bouwer-Rice	2	Falling	0.604	0.72	2.1E-04	2.5E-04
									Rising	0.856		3.0E-04	

TABLE GW-3
SUMMARY OF AQUIFER TEST DATA
Georgia Power Company - Plant McDonough-Atkinson
CCR Unit AP-2 and AP-3/4
Cobb County, Georgia

Well/ Piezometer Identification	Test Date	Screened Lithology	Top of Screen Elevation (feet NAVD 88)	Bottom of Screen Elevation (feet NAVD 88)	Test Elevation (feet NAVD 88)	Saturated Aquifer Thickness (feet)	Aquifer Analysis Method	Well/ Piezometer Diameter (inches)	Aquifer Test Type	Hydraulic Conductivity (feet/day)	Geometric Mean (feet/day)	Hydraulic Conductivity (cm/sec)	Geometric Mean (cm/sec)
DGWC-71	5/30/2017	Saprolite/PWR	827.8	817.8	822.8	19	Bouwer-Rice	2	Falling	1.21	1.09	4.3E-04	3.9E-04
									Rising	0.992		3.5E-04	
B-85	1/1/2019	Saprolite/PWR Upper Bedrock	758.5	748.5	755.4	28	Bouwer-Rice	2	Rising	0.677	0.72	2.4E-04	2.5E-04
									Falling	0.587		2.1E-04	
									Rising	0.921		3.3E-04	
B-86	1/1/2019	Saprolite/Upper Bedrock	760.4	750.4	755.4	32	Bouwer-Rice	2	Falling	1.26	1.26	4.5E-04	4.4E-04
									Rising	1.52		5.4E-04	
									Falling	0.848		3.0E-04	
									Rising	1.53		5.4E-04	
DGWC-121	1/20/2023	PWR/Upper Bedrock	724.8	714.8	719.8	40	Bouwer-Rice	2	Rising	0.134	0.13	4.7E-05	4.7E-05
DGWC-14	11/2/2016	PWR/Upper Bedrock	765.8	755.8	760.8	18	Bouwer-Rice	2/3.45	Falling	3.93	3.75	1.4E-03	1.3E-03
									Rising	3.57		1.3E-03	
DGWC-22	6/19/2024	Upper Bedrock	764.0	754.0	759.0	36	Bouwer-Rice	2/3.45	Falling	2.83	3.52	1.0E-03	1.2E-03
									Rising	2.54		9.0E-04	
	7/14/2021					43			Falling	4.44		1.6E-03	
									Falling	4.72		1.7E-03	
									Rising	3.59		1.3E-03	
DGWC-23	6/19/2024	Upper Bedrock	765.8	755.8	760.8	30	Bouwer-Rice	2/3.45	Falling	0.165	0.15	5.8E-05	5.4E-05
									Rising	0.141		5.0E-05	
B-25	6/19/2024	Upper Bedrock	789.0	779.0	784.0	35	Bouwer-Rice	2	Rising	0.934	1.05	3.3E-04	3.7E-04
									Falling	1.18		4.2E-04	
B-26	11/2/2016	Upper Bedrock	811.7	801.7	806.7	35	Bouwer-Rice	2/3.45	Falling	0.020	0.02	7.1E-06	7.1E-06
B-27	11/2/2016	Upper Bedrock	822.9	812.9	817.9	25	Bouwer-Rice	2/3.45	Falling	5.24	4.36	1.9E-03	1.5E-03
									Rising	3.63		1.3E-03	
DGWC-47	7/13/2016	PWR/Upper Bedrock	776.0	766.0	771.0	100	Bouwer-Rice	2	Falling	0.073	0.18	2.6E-05	6.4E-05
									Rising	0.446		1.6E-04	
DGWA-53	7/14/2021	Upper Bedrock	823.8	813.8	818.8	25	Bouwer-Rice	2	Falling	0.028	0.02	9.9E-06	6.1E-06
									Rising	0.010		3.7E-06	
B-57	6/20/2024	Upper Bedrock	746.0	736.0	741.0	30	Bouwer-Rice	2	Falling	0.303	0.30	1.1E-04	1.1E-04
									Rising	0.307		1.1E-04	
B-62	6/21/2024	Upper Bedrock	730.7	720.7	725.7	22	Bouwer-Rice	2	Falling	1.44	1.55	5.1E-04	5.5E-04
									Rising	1.67		5.9E-04	
B-89	1/1/2019	Upper Bedrock	783.0	773.0	778.0	100	Bouwer-Rice	2	Falling	2.20	2.01	7.8E-04	7.1E-04
									Rising	1.98		7.0E-04	
									Falling	1.45		5.1E-04	
									Rising	2.57		9.1E-04	
B-101D	1/1/2021	PWR/Upper Bedrock	756.3	746.3	751.3	100	Bouwer-Rice	2	Falling	0.122	0.06	4.3E-05	2.1E-05
									Rising	0.030		1.1E-05	

TABLE GW-3
SUMMARY OF AQUIFER TEST DATA
Georgia Power Company - Plant McDonough-Atkinson
CCR Unit AP-2 and AP-3/4
Cobb County, Georgia

Well/ Piezometer Identification	Test Date	Screened Lithology	Top of Screen Elevation (feet NAVD 88)	Bottom of Screen Elevation (feet NAVD 88)	Test Elevation (feet NAVD 88)	Saturated Aquifer Thickness (feet)	Aquifer Analysis Method	Well/ Piezometer Diameter (inches)	Aquifer Test Type	Hydraulic Conductivity (feet/day)	Geometric Mean (feet/day)	Hydraulic Conductivity (cm/sec)	Geometric Mean (cm/sec)
B-102D	1/2/2021	Upper Bedrock	746.2	736.2	741.2	60	Bouwer-Rice	2	Falling	0.204	0.30	7.2E-05	1.0E-04
									Falling	0.248		8.8E-05	
									Falling	0.221		7.8E-05	
									Rising	0.682		2.4E-04	
B-104D	1/2/2021	Upper Bedrock	735.3	725.3	730.3	100	Bouwer-Rice	2	Falling	0.065	0.08	2.3E-05	2.8E-05
									Rising	0.098		3.5E-05	
									Falling	0.044		1.6E-05	
									Rising	0.132		4.7E-05	
B-105D	1/2/2021	Upper Bedrock	716.0	706.0	711.0	100	Bouwer-Rice	2	Falling	0.326	0.35	1.2E-04	1.2E-04
									Rising	0.380		1.3E-04	
									Falling	0.346		1.2E-04	
									Rising	0.361		1.3E-04	
B-106D	1/3/2021	Upper Bedrock	754.0	744.0	749.0	100	Bouwer-Rice	2	Falling	0.226	0.38	8.0E-05	1.4E-04
									Rising	0.260		9.2E-05	
									Falling	0.580		2.0E-04	
									Rising	0.636		2.2E-04	
B-107D	1/6/2021	Upper Bedrock	745.3	735.3	740.3	100	Bouwer-Rice	2	Falling	0.105	0.90	3.7E-05	3.2E-04
									Falling	0.350		1.2E-04	
									Rising	13.0		4.6E-03	
									Falling	2.32		8.2E-04	
									Rising	4.56		1.6E-03	
B-108D	1/7/2021	Upper Bedrock	749.3	739.3	744.3	100	Bouwer-Rice	2	Falling	0.073	0.33	2.6E-05	1.2E-04
									Rising	0.474		1.7E-04	
									Falling	0.426		1.5E-04	
									Rising	0.763		2.7E-04	
B-109D	1/7/2021	Upper Bedrock	758.4	748.4	753.4	100	Bouwer-Rice	2	Falling	0.074	0.06	2.6E-05	2.1E-05
									Rising	0.047		1.7E-05	
B-110D	7/15/2021	Upper Bedrock	711.6	701.6	706.6	56	Bouwer-Rice	2	Falling	0.054	0.02	1.9E-05	7.8E-06
									Rising	0.017		6.1E-06	
									Falling	0.046		1.6E-05	
									Rising	0.010		3.6E-06	
	7/5/2024								Falling	0.015		5.4E-06	
									Rising	0.017		5.9E-06	
B-111D	1/7/2021	Upper Bedrock	714.8	704.8	709.8	100	Bouwer-Rice	2	Falling	1.05	0.43	3.7E-04	1.5E-04
									Rising	0.336		1.2E-04	
									Falling	0.184		6.5E-05	
									Rising	0.510		1.8E-04	
									Falling	0.361		1.3E-04	
									Rising	0.559		2.0E-04	
B-112D	5/1/2021	Upper Bedrock	721.3	711.3	716.4	100	Bouwer-Rice	2	Falling	3.03	3.29	1.1E-03	1.2E-03
									Rising	3.58		1.3E-03	

TABLE GW-3
SUMMARY OF AQUIFER TEST DATA
Georgia Power Company - Plant McDonough-Atkinson
CCR Unit AP-2 and AP-3/4
Cobb County, Georgia

Well/ Piezometer Identification	Test Date	Screened Lithology	Top of Screen Elevation (feet NAVD 88)	Bottom of Screen Elevation (feet NAVD 88)	Test Elevation (feet NAVD 88)	Saturated Aquifer Thickness (feet)	Aquifer Analysis Method	Well/ Piezometer Diameter (inches)	Aquifer Test Type	Hydraulic Conductivity (feet/day)	Geometric Mean (feet/day)	Hydraulic Conductivity (cm/sec)	Geometric Mean (cm/sec)
B-116D	5/5/2021	Upper Bedrock	726.1	716.1	721.1	100	Bouwer-Rice	2	Falling	1.02	0.82	3.6E-04	2.9E-04
									Rising	0.662		2.3E-04	
B-117D	5/5/2021	Upper Bedrock	796.5	786.5	791.5	100	Bouwer-Rice	2	Falling	0.809	0.18	2.9E-04	6.4E-05
									Rising	0.181		6.4E-05	
B-118	7/14/2021	Upper Bedrock	740.1	730.1	735.2	100	Bouwer-Rice	2	Falling	2.75	2.26	9.7E-04	8.0E-04
									Rising	2.98		1.1E-03	
									Falling	2.57		9.1E-04	
									Rising	2.69		9.5E-04	
									Falling	1.14		4.0E-04	
									Rising	2.06		7.3E-04	
B-120D	5/5/2021	Upper Bedrock	775.0	765.0	770.0	100	Bouwer-Rice	2	Falling	38.7	23.24	1.4E-02	8.2E-03
									Rising	13.0		4.6E-03	
									Falling	25.8		9.1E-03	
									Rising	49.9		1.8E-02	
	6/24/2024								Falling	14.3		5.1E-03	
									Rising	17.0		6.0E-03	
B-103D	6/20/2024	Lower Bedrock	733.8	723.8	728.8	55.0	Bouwer-Rice	2	Falling	0.005	0.005	1.9E-06	1.9E-06
B-113D	7/15/2021	Lower Bedrock	684.4	674.4	679.4	83.5	Bouwer-Rice	2	Falling	0.029	0.453	1.0E-05	1.6E-04
						100			Falling	2.08		7.3E-04	
						100			Rising	0.310		1.1E-04	
						85.3			Rising	2.24		7.9E-04	
B-115D	5/4/2021	Lower Bedrock	717.2	707.2	712.2	100	Bouwer-Rice	2	Falling	0.193	0.152	6.8E-05	5.4E-05
									Rising	0.119		4.2E-05	
B-119D	7/14/2021	Lower Bedrock	709.8	699.8	704.8	60.61	Bouwer-Rice	2	Falling	0.067	0.077	2.4E-05	2.7E-05
						60.61			Rising	0.067		2.3E-05	
						110			Falling	0.193		6.8E-05	
						110			Rising	0.040		1.4E-05	
B-122D	1/19/2023	Lower Bedrock	707.5	697.5	702.50	55.63	Bouwer-Rice	2	Falling	0.127	0.122	4.5E-05	4.3E-05
									Rising	0.109		3.8E-05	
									Falling	0.134		4.7E-05	
									Rising	0.106		3.8E-05	
									Falling	0.138		4.9E-05	
B-123D	1/20/2023	Lower Bedrock	668.85	618.85	643.85	149.5	Bouwer-Rice	2	Rising	0.007	0.012	2.6E-06	4.3E-06
									Rising	0.020		7.0E-06	
B-125D	6/21/2024	Lower Bedrock	684.1	674.1	679.10	121.4	Bouwer-Rice	2	Falling	0.002	0.002	8.0E-07	6.6E-07
									Rising	0.002		5.5E-07	

TABLE GW-3
SUMMARY OF AQUIFER TEST DATA
Georgia Power Company - Plant McDonough-Atkinson
CCR Unit AP-2 and AP-3/4
Cobb County, Georgia

Well/ Piezometer Identification	Test Date	Screened Lithology	Top of Screen Elevation (feet NAVD 88)	Bottom of Screen Elevation (feet NAVD 88)	Test Elevation (feet NAVD 88)	Saturated Aquifer Thickness (feet)	Aquifer Analysis Method	Well/ Piezometer Diameter (inches)	Aquifer Test Type	Hydraulic Conductivity (feet/day)	Geometric Mean (feet/day)	Hydraulic Conductivity (cm/sec)	Geometric Mean (cm/sec)

Notes:
1. NAVD 88- North American Vertical Datum of 1988
2. cm/sec - centimeters per second, ft/day - feet/day
3. Data shown are for wells and piezometers in the CCR monitoring network. Only data from rising/falling test type (slug tests) were used to calculate the Site's estimated hydraulic conductivity for uppermost aquifer.
4. Overburden is the material overlying the upper bedrock, including residual soils, saprolite, transitionally weathered rock and partially weathered rock.
5. Upper Bedrock is the approximately upper 30 feet of bedrock that is fractured and conducts groundwater and appears to be connected hydraulically with the overburden.
6. Uppermost Aquifer is comprised of residual soils, saprolite, transitionally weathered rock, partially weathered rock, and upper bedrock.
7. Hydraulic conductivity data for lower bedrock wells are shown for comparison but are not used to calculate the Site estimated hydraulic conductivity value for the uppermost aquifer.
   It is anticipated that there is minimal connectivity between the overburden/upper bedrock hydrogeologic unit comprising the uppermost aquifer and the lower bedrock hydrogeologic unit.
8. 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.
9. 2/3.45 indicates 2-inch diameter PVC well screen and 3.45-inch diameter pre-packed well filter pack surrounding the PVC well screen.

The following historical tests were deemed invalid and were not used to calculate the Geometric mean in their respective Overburden and Upper Bedrock wells and piezometers. Drawdown data revealed a pattern more indicative of wellbore storage than the actual aquifer.

Well and Test	ft/day	cm/sec
B-84 - Rising	0.044	1.6E-05
B-107D - Falling	0.105	3.7E-05
B-107D - Rising	13.0	4.6E-03
B-107D - Rising	4.56	1.6E-03
B-117D - Falling	0.809	2.9E-04

Hydrogeologic Unit	Overburden	Overburden	Upper Bedrock	Upper Bedrock
Units	**ft/day**	**cm/sec**	**ft/day**	**cm/sec**
Geometric Mean per Hydrogeologic Unit	0.94	3.3E-04	0.44	1.5E-04
Median per Hydrogeologic Unit	0.91	3.2E-04	0.37	1.3E-04

Estimated Average Hydraulic Conductivity for Uppermost Aquifer (Overburden and Upper Bedrock): 0.69 ft/day (2.4E-04 cm/sec)

TABLE GW-4
SUMMARY OF MONITORING WELL, ASSESSMENT WELL AND PIEZOMETER CONSTRUCTION DATA
Georgia Power Company - Plant McDonough-Atkinson
CCR Unit AP-2 and AP-3/4
Cobb County, Georgia

Well-ID	Hydraulic Location	Screened Lithology	NAD 83 Northing	NAD 83 Easting	Top of Casing Elevation (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
ASH POND 1 (AP-1) DETECTION MONITORING WELL NETWORK											
DGWA-53	Upgradient	Upper Bedrock	1393472.8	2201668.8	844.26	841.37	28.9	823.8	813.8	10	9/24/2016
DGWA-70A	Upgradient	Saprolite/PWR	1390481.4	2200591.6	808.52	805.67	59.3	756.8	746.8	10	5/10/2017
DGWA-71	Upgradient	Saprolite/PWR	1393963.3	2201714.8	863.84	861.22	43.8	827.8	817.8	10	2/28/2017
DGWC-37	Downgradient	Saprolite/PWR	1390482.2	2200919.8	766.21	763.64	39.7	734.3	724.3	10	11/28/2012
DGWC-38	Downgradient	Residual Soils	1390362.7	2201148.6	757.43	754.67	25.0	740.0	730.0	10	11/29/2012
DGWC-39	Downgradient	Residual Soils/Saprolite	1390303.6	2201540.1	759.89	756.93	21.2	746.1	736.1	10	11/6/2012
DGWC-40	Downgradient	Saprolite	1390625.7	2201825.9	779.06	776.12	34.9	751.6	741.6	10	11/5/2012
DGWC-67	Downgradient	Saprolite/PWR	1390953.8	2200830.7	766.70	766.80	56.3	720.5	710.5	10	3/14/2017
DGWC-68A	Downgradient	Saprolite	1391301.2	2200734.9	765.33	765.06	29.8	745.7	735.7	10	4/20/2017
DGWC-69	Downgradient	Saprolite/PWR	1391585.0	2200657.1	763.75	763.99	24.3	749.7	739.7	10	3/16/2017
DGWC-121	Downgradient	PWR/Upper Bedrock	1390739.7	2200849.4	764.16	764.52	50.0	724.8	714.8	10	3/22/2022
ASH POND 1 (AP-1) ASSESSMENT MONITORING WELL NETWORK											
B-62	Downgradient	Upper Bedrock	1389828.1	2201811.2	760.08	760.40	39.9	730.7	720.7	10	10/4/2016
B-100	Downgradient	Saprolite	1390254.8	2202242.1	777.95	775.32	44.8	740.5	730.5	10	7/8/2020
B-105D	Downgradient	Upper Bedrock	1390634.5	2201831.9	779.01	776.03	70.0	716.0	706.0	10	10/19/2020
B-112D	Downgradient	Upper Bedrock	1391564.2	2200664.1	765.58	765.98	55.0	721.3	711.3	10	3/22/2021

TABLE GW-4
SUMMARY OF MONITORING WELL, ASSESSMENT WELL AND PIEZOMETER CONSTRUCTION DATA
Georgia Power Company - Plant McDonough-Atkinson
CCR Unit AP-2 and AP-3/4
Cobb County, Georgia

Well-ID	Hydraulic Location	Screened Lithology	NAD 83 Northing	NAD 83 Easting	Top of Casing Elevation (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
ASH POND 2 and ASH PONDS 3/4 (AP-2 and AP-3/4) DETECTION MONITORING WELL NETWORK											
DGWA-53	Upgradient	Upper Bedrock	1393472.8	2201668.8	844.26	841.37	28.9	823.8	813.8	10	9/24/2016
DGWA-70A	Upgradient	Saprolite/PWR	1390481.4	2200591.6	808.52	805.67	59.3	756.8	746.8	10	5/10/2017
DGWA-71	Upgradient	Saprolite/PWR	1393963.3	2201714.8	863.84	861.22	43.8	827.8	817.8	10	2/28/2017
DGWC-2	Downgradient	PWR/Upper Bedrock	1393958.0	2202119.5	850.88	848.17	49.0	809.5	799.5	10	10/2/2012
DGWC-4	Downgradient	Saprolite	1394171.5	2202662.4	814.85	812.06	45.0	777.4	767.4	10	10/3/2012
DGWC-5	Downgradient	Saprolite/PWR/Upper Bedrock	1394306.3	2202965.1	791.75	788.64	30.0	768.9	758.9	10	10/4/2012
DGWC-8	Downgradient	Saprolite/PWR	1394322.2	2203882.1	826.38	824.02	49.1	785.3	775.3	10	10/10/2012
DGWC-9	Downgradient	Saprolite/PWR	1394055.9	2204170.0	824.35	821.86	30.0	802.3	792.3	10	10/10/2012
DGWC-9A	Downgradient	PWR/Upper Bedrock	TBD	TBD	TBD	TBD	30.0	802.3	792.3	10	11/23/2024
DGWC-10	Downgradient	Saprolite	1393818.3	2204201.1	823.55	820.82	45.4	785.8	775.8	10	10/11/2012
DGWC-11	Downgradient	Saprolite/PWR	1393547.1	2204166.2	800.57	797.99	49.1	759.2	749.2	10	10/15/2012
DGWC-12	Downgradient	Residual Soils/Saprolite	1393149.4	2204128.3	773.86	771.10	25.1	756.4	746.4	10	10/15/2012
DGWC-13	Downgradient	Saprolite/PWR	1392881.1	2204084.6	794.10	791.20	43.8	757.8	747.8	10	11/29/2012
DGWC-14	Downgradient	PWR/Upper Bedrock	1392574.2	2204013.3	792.40	789.69	34.3	765.8	755.8	10	12/18/2012
DGWC-15	Downgradient	PWR	1392544.1	2203679.0	824.50	821.43	67.1	764.7	754.7	10	11/29/2012
DGWC-16	Downgradient	Saprolite	1392595.1	2203315.4	826.47	823.54	43.7	790.1	780.1	10	12/19/2012
DGWC-17	Downgradient	Saprolite	1392645.6	2203051.0	837.05	834.14	44.5	799.9	789.9	10	1/9/2013
DGWC-18	Downgradient	Residual Soils/Saprolite	1392521.0	2202875.5	826.56	823.89	32.6	801.5	791.5	10	1/10/2013
DGWC-19	Downgradient	Saprolite	1392342.6	2202601.0	825.46	822.87	39.8	793.5	783.5	10	3/12/2013
DGWC-20	Downgradient	Saprolite	1392164.5	2202315.6	822.14	819.66	39.7	790.6	780.6	10	3/5/2013
DGWC-21	Downgradient	PWR/Upper Bedrock	1392067.5	2202063.5	816.28	813.47	69.0	754.9	744.9	10	10/31/2012
DGWC-22	Downgradient	Upper Bedrock	1392126.3	2201791.9	816.59	813.69	60.0	764.0	754.0	10	10/25/2012
DGWC-23	Downgradient	Upper Bedrock	1392239.7	2201582.0	818.37	815.63	60.1	765.8	755.8	10	10/25/2012

TABLE GW-4
SUMMARY OF MONITORING WELL, ASSESSMENT WELL AND PIEZOMETER CONSTRUCTION DATA
Georgia Power Company - Plant McDonough-Atkinson
CCR Unit AP-2 and AP-3/4
Cobb County, Georgia

Well-ID	Hydraulic Location	Screened Lithology	NAD 83 Northing	NAD 83 Easting	Top of Casing Elevation (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
ASH POND 2 and ASH PONDS 3/4 (AP-2 and AP-3/4) DETECTION MONITORING WELL NETWORK											
DGWC-42	Downgradient	Saprolite	1391327.8	2201870.2	804.68	801.98	50.4	762.1	752.1	10	11/12/2012
DGWC-47	Downgradient	PWR/Upper Bedrock	1391553.8	2202610.5	797.45	794.35	28.8	776.0	766.0	10	6/23/2016
DGWC-48	Downgradient	Saprolite/PWR/Upper Bedrock	1391314.6	2202290.2	788.33	785.21	30.0	765.6	755.6	10	6/22/2016
DGWC-126	Downgradient	Saprolite	TBD	TBD	TBD	TBD	44.5	784.0	774.0	10	TBD
DGWC-127	Downgradient	Saprolite	TBD	TBD	TBD	TBD	52.0	775.0	765.0	10	TBD
DGWC-128	Downgradient	Saprolite	TBD	TBD	TBD	TBD	35.0	780.0	770.0	10	TBD
ASH POND 2 and ASH PONDS 3/4 (AP-2 and AP-3/4) ASSESSMENT MONITORING WELL NETWORK											
B-56	Downgradient	Saprolite	1393957.9	2204187.8	823.59	820.95	45.0	786.4	776.4	10	10/3/2016
B-62	Downgradient	Upper Bedrock	1389828.1	2201811.2	760.08	760.40	39.9	730.7	720.7	10	10/4/2016
B-63	Downgradient	Saprolite/PWR	1390999.1	2202978.1	777.10	777.37	46.0	741.9	731.9	10	10/6/2016
B-66	Downgradient	Saprolite	1393858.2	2204277.5	815.90	813.33	55.3	768.3	758.3	10	11/16/2016
B-77	Downgradient	Residual Soils	1390948.7	2202942.0	776.86	777.12	42.0	745.1	735.1	10	9/17/2019
B-82	Downgradient	Saprolite	1393750.0	2204258.1	810.07	807.55	45.0	773.1	763.1	10	9/21/2019
B-83	Downgradient	Residual Soils/Saprolite	1390735.5	2202695.6	776.98	777.17	48.6	738.6	728.6	10	9/30/2019
B-88	Downgradient	Saprolite/PWR	1394401.1	2203738.3	820.07	816.80	72.0	754.8	744.8	10	11/15/2019
B-92	Downgradient	Residual Soils/Saprolite	1394392.7	2203026.7	785.08	785.30	25.0	770.7	760.7	10	12/11/2019
B-93	Downgradient	Residual Soils/Saprolite	1394348.7	2202946.7	789.07	789.19	29.2	770.3	760.3	10	12/12/2019
B-97	Downgradient	Upper Bedrock	1394430.0	2203008.3	786.29	786.50	31.7	765.2	755.2	10	2/11/2020
B-98	Downgradient	Saprolite/Upper Bedrock	1394392.5	2202934.0	789.67	789.81	19.4	780.8	770.8	10	2/10/2020
B-100	Downgradient	Saprolite	1390254.8	2202242.1	777.95	775.32	44.8	740.5	730.5	10	7/8/2020
B-101D	Downgradient	PWR/Upper Bedrock	1394063.6	2204168.2	824.29	821.24	75.0	756.3	746.3	10	11/12/2020
B-102D	Downgradient	Upper Bedrock	1393828.4	2204200.4	823.42	820.64	85.0	746.2	736.2	10	11/10/2020
B-104D	Downgradient	Upper Bedrock	1391318.3	2202298.5	787.90	785.31	60.0	735.3	725.3	10	10/20/2020

TABLE GW-4
SUMMARY OF MONITORING WELL, ASSESSMENT WELL AND PIEZOMETER CONSTRUCTION DATA
Georgia Power Company - Plant McDonough-Atkinson
CCR Unit AP-2 and AP-3/4
Cobb County, Georgia

Well-ID	Hydraulic Location	Screened Lithology	NAD 83 Northing	NAD 83 Easting	Top of Casing Elevation (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
ASH POND 2 and ASH PONDS 3/4 (AP-2 and AP-3/4) ASSESSMENT MONITORING WELL NETWORK											
B-106D	Downgradient	Upper Bedrock	1394327.1	2203869.2	826.21	823.39	80.0	754.0	744.0	10	11/13/2020
B-107D	Downgradient	Upper Bedrock	1392334.5	2202596.4	823.38	820.44	85.8	745.3	735.3	10	10/28/2020
B-108D	Downgradient	Upper Bedrock	1392156.1	2202312.5	821.13	818.33	80.0	749.3	739.3	10	10/27/2020
B-111D	Downgradient	Upper Bedrock	1394303.6	2202956.4	791.84	788.99	85.0	714.8	704.8	10	11/3/2020
B-120D	Downgradient	Upper Bedrock	1394047.2	2202436.4	836.42	834.03	69.3	775.0	765.0	10	3/6/2021
B-122D	Downgradient	Lower Bedrock	1390992.8	2202975.4	777.03	777.32	79.8	707.5	697.5	10	3/24/2022
B-125D	Downgradient	Lower Bedrock	1394111.6	2202580.7	821.70	819.15	145.4	684.1	674.1	10	3/31/2023
PIEZOMETERS											
B-3	Downgradient	Saprolite/Upper Bedrock	1394045.1	2202411.5	837.78	834.86	37.0	808.2	798.2	10	10/3/2012
B-6	Downgradient	Saprolite/PWR	1394419.5	2203266.5	789.47	786.45	35.4	761.5	751.5	10	10/9/2012
B-7	Downgradient	Residual Soils	1394374.6	2203596.1	809.16	806.04	25.2	791.2	781.2	10	10/9/2012
B-24	Downgradient	Upper Bedrock	1392479.9	2201450.0	822.11	819.19	79.1	750.9	740.9	10	10/24/2012
B-25	Downgradient	Upper Bedrock	1392813.3	2201502.7	836.54	833.41	54.8	789.0	779.0	10	10/24/2012
B-26	Downgradient	Upper Bedrock	1393105.6	2201550.4	853.60	850.61	49.3	811.7	801.7	10	10/23/2012
B-28	Downgradient	PWR/Upper Bedrock	1391967.4	2201679.2	816.08	813.28	69.4	754.3	744.3	10	10/31/2012
B-29	Downgradient	Saprolite/PWR	1391890.0	2201422.0	816.43	813.47	54.4	769.4	759.4	10	1/11/2013
B-31	Downgradient	Upper Bedrock	1392034.3	2200928.5	797.47	794.84	45.1	760.1	750.1	10	1/22/2013
B-41	Downgradient	Saprolite	1390920.8	2201751.9	795.20	792.40	60.0	743.0	733.0	10	11/14/2012
B-50	Downgradient	Saprolite	1391657.1	2201841.0	809.67	809.20	35.2	784.4	774.4	10	6/24/2016
B-51	Downgradient	Saprolite/PWR	1390501.2	2200906.5	765.92	763.29	65.0	708.3	698.3	10	6/27/2016
B-52	Downgradient	PWR	1392308.3	2201314.8	822.89	820.18	50.0	781.3	771.3	10	9/28/2016
B-54	Downgradient	Saprolite/PWR/Upper Bedrock	1394423.5	2203140.7	785.46	782.54	34.2	758.7	748.7	10	9/26/2016
B-55	Downgradient	Saprolite	1394142.6	2204147.9	825.12	822.86	52.0	781.9	771.9	10	9/22/2016
B-57	Downgradient	Upper Bedrock	1391396.3	2202736.9	789.04	786.03	50.5	746.0	736.0	10	9/24/2016

TABLE GW-4
SUMMARY OF MONITORING WELL, ASSESSMENT WELL AND PIEZOMETER CONSTRUCTION DATA
Georgia Power Company - Plant McDonough-Atkinson
CCR Unit AP-2 and AP-3/4
Cobb County, Georgia

Well-ID	Hydraulic Location	Screened Lithology	NAD 83 Northing	NAD 83 Easting	Top of Casing Elevation (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
PIEZOMETERS											
B-58	Downgradient	Saprolite	1391125.7	2202426.5	788.17	785.20	45.0	750.7	740.7	10	9/23/2016
B-59	Downgradient	Saprolite/PWR/Upper Bedrock	1394349.1	2203001.1	788.00	785.41	30.3	765.2	755.2	10	9/23/2016
B-60	Downgradient	Saprolite/PWR	1391100.7	2202881.6	782.13	779.25	49.8	740.0	730.0	10	9/29/2016
B-61	Downgradient	Saprolite/PWR	1390957.8	2202505.8	782.09	778.95	51.9	737.5	727.5	10	9/29/2016
B-64	Downgradient	Saprolite	1394381.9	2203031.3	785.83	785.98	30.4	766.0	756.0	10	11/2/2016
B-65	Downgradient	Saprolite/PWR/Upper Bedrock	1394381.2	2204050.8	821.95	822.30	45.4	787.9	777.9	10	11/15/2016
B-68	Downgradient	Saprolite/PWR	1391298.2	2200714.2	758.68	759.05	18.0	751.1	741.1	10	3/16/2017
B-72	Downgradient	Saprolite	1391241.4	2200725.9	758.46	758.45	21.9	747.0	737.0	10	4/19/2017
B-73	Downgradient	Saprolite	1391351.8	2200699.4	759.21	759.16	15.8	753.8	743.8	10	4/19/2017
B-74	Downgradient	Saprolite	1391279.9	2200666.1	759.06	759.18	16.2	748.4	743.4	5	4/25/2017
B-76	Downgradient	Saprolite	1390717.4	2202756.9	760.53	760.87	38.5	732.4	722.4	10	9/18/2019
B-78	Downgradient	Saprolite/Upper Bedrock	1394328.2	2202958.2	790.75	787.79	30.0	767.8	758.3	10	9/22/2019
B-79	Downgradient	Saprolite/PWR	1394458.6	2203223.0	788.66	785.84	34.9	760.9	751.4	10	9/21/2019
B-80	Downgradient	Saprolite/PWR	1394372.6	2203533.9	804.47	801.73	30.0	781.9	772.4	10	9/20/2019
B-81	Downgradient	Saprolite/PWR	1394364.9	2203741.1	820.56	817.64	50.0	778.5	768.5	10	9/22/2019
B-84	Downgradient	Saprolite	1390411.9	2202241.9	776.34	776.52	49.1	737.4	727.4	10	10/1/2019
B-85	Downgradient	Saprolite/PWR/Upper Bedrock	1394433.4	2203134.5	782.54	782.71	34.5	758.5	748.5	10	11/18/2019
B-86	Downgradient	Saprolite/Upper Bedrock	1394480.0	2203206.6	784.29	784.52	34.1	760.4	750.4	10	11/18/2019
B-87	Downgradient	Saprolite/PWR	1394401.9	2203531.3	803.37	800.32	42.0	768.6	758.6	10	11/17/2019
B-89	Downgradient	Upper Bedrock	1394398.4	2204049.4	822.36	822.53	49.5	783.0	773.0	10	11/19/2019
B-90	Downgradient	Residual Soils/Saprolite	1394501.0	2203212.6	784.00	784.16	33.4	760.8	750.8	10	12/10/2019
B-91	Downgradient	Residual Soils/Saprolite	1394447.1	2203123.9	782.98	783.10	35.0	758.5	748.5	10	12/11/2019
B-94	Downgradient	Saprolite/PWR	1394402.0	2203513.7	801.74	799.12	45.2	764.5	754.5	10	1/23/2020
B-95	Downgradient	Saprolite	1394518.6	2203167.7	784.00	784.18	33.3	761.2	751.2	10	2/11/2020

TABLE GW-4
SUMMARY OF MONITORING WELL, ASSESSMENT WELL AND PIEZOMETER CONSTRUCTION DATA
Georgia Power Company - Plant McDonough-Atkinson
CCR Unit AP-2 and AP-3/4
Cobb County, Georgia

Well-ID	Hydraulic Location	Screened Lithology	NAD 83 Northing	NAD 83 Easting	Top of Casing Elevation (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
PIEZOMETERS											
B-96	Downgradient	Saprolite/PWR	1394478.7	2203099.3	784.92	785.19	33.1	762.1	752.1	10	2/10/2020
B-99	Downgradient	Fill	1394524.2	2203084.5	782.39	782.57	12.3	775.3	770.3	5	7/7/2020
B-103D	Downgradient	Lower Bedrock	1391543.5	2202614.4	795.96	793.77	70.0	733.8	723.8	10	10/15/2020
B-109D	Downgradient	Upper Bedrock	1393957.5	2202127.0	850.73	847.78	100.0	758.4	748.4	10	10/31/2020
B-110D	Downgradient	Upper Bedrock	1391294.4	2200736.0	764.61	764.55	65.0	711.6	701.6	10	11/17/2020
B-113D	Downgradient	Lower Bedrock	1391264.6	2200719.2	758.22	758.87	84.7	684.5	674.5	10	3/30/2021
B-115D	Downgradient	Lower Bedrock	1391265.3	2202580.7	789.17	786.43	79.5	717.2	707.2	10	3/20/2021
B-116D	Upgradient	Upper Bedrock	1390483.7	2200611.0	807.82	805.31	89.5	726.1	716.1	10	3/8/2021
B-117D	Upgradient	Upper Bedrock	1393963.8	2201727.3	863.82	861.23	75.0	796.5	786.5	10	3/17/2021
B-118	Upgradient	Upper Bedrock	1391219.3	2200449.7	807.70	804.99	75.2	740.1	730.1	10	3/9/2021
B-119D	Upgradient	Lower Bedrock	1391236.4	2200446.6	807.15	804.53	105.0	709.8	699.8	10	3/16/2021
B-123D	Downgradient	Lower Bedrock	1391234.4	2202608.4	781.80	778.85	160.0	668.9	618.9	50	4/4/2022

Notes:
1. Coordinate System: NAD 1983 State Plane Georgia West (U.S. feet)
2. bgs - Below Ground Surface; NAD 83 - North American Datum of 1983; NAVD 88 - North American Vertical Datum of 1988; PWR - Partially Weathered Rock
3. The 2020 Certified Well Survey has been incorporated into this construction summary. A copy of the Certified Well Survey Report is included as Appendix E of the HAR.
4. Ground surface elevations shown are the elevation of the survey nail.
5. cm/sec - centimeters per second
6. Kv/Kh - Kv: vertical hydraulic conductivity; Kh: horizontal hydraulic conductivity
5. Data presented for CCR Unit AP-1 are included for reference only. This data should not be considered for permitting of CCR Units AP-2 and 3/4.
6. Piezometer B-84 abandoned on 4/28/2022
7. Piezometers B-31 and B-74 were decommissioned and abandoned on 10/14/2023.
8. TBD - To be determined upon actual installation
9. Proposed well DGWC-9A is a replacement well for DGWC-9. Well DGWC-9 will be decommissioned and abandon upon completion of DGWC-9A.
10. Piezometers B-16 and B-18 were converted to detection monitoring wells (DGWC-16 and DGWC-18) for AP-2, AP-3/4 in December 2024.
11. DGWC-126, DGWC-127, DGWC-128 are proposed detection monitoring wells and will be installed in January 2025. The screen elevations shown are estimated.
12. No soil data were collected in well B-98. Screened Lithology based on adjacent boring B-97.

Figures



LEGEND

- EXISTING CONTOURS (SEE REFERENCE 2)
- PROPERTY BOUNDARY (SEE REFERENCE 1)
- APPROXIMATE PRE-CLOSURE CCR LIMITS
- POST CLOSURE CCR LIMITS
- FINAL COVER SYSTEM LIMITS
- PERMIT BOUNDARY
- FUTURE BARRIER WALL OPTION A
- FUTURE BARRIER WALL OPTION B
- DGWA-X — UPGRADIENT DETECTION MONITORING WELL (SEE REFERENCE 3)
- DGWC-X — AP-1 DETECTION MONITORING WELL (SEE REFERENCE 3)
- DGWC-X — AP-2, 3/4 DETECTION MONITORING WELL (SEE REFERENCE 3)
- B-XX — ASSESSMENT WELL (SEE REFERENCE 3, 4 AND 5)
- DGWC-X — PROPOSED DETECTION MONITORING WELL REPLACEMENT
- DGWC-X — PROPOSED DETECTION MONITORING WELL

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, AND CONTOUR ELEVATIONS 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 IS AUGUST 31, 2022, ON AP-2, 3/4 IS NOVEMBER 2, 2022. AERIAL IMAGERY DATE FOR AP-1, AP-2, AND AP-3/4 PROVIDED BY GEORGIA POWER, JANUARY 25, 2024; SURROUNDING AREAS SOURCED BY PLEXEARTH, DATED SEPTEMBER 28, 2023. 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.
3. SCS PLANT MCDONOUGH HYDROGEOLOGICAL INVESTIGATION (2012 TO 2020).
4. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020-2023.
5. WSP PLANT MCDONOUGH SUPPLEMENTAL INVESTIGATION (MAY 2023).
6. 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	RVW
1	2024-11-26	CLIENT & PROJECT NAME, JANUARY 2024 AERIAL, ADD PROPOSED WELLS	DLP	CRP	DAH	GLH
0	2024-02-05	FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION	DLP	CRP	DAH	GLH

CLIENT
GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

Georgia Power

PROJECT
HYDROGEOLOGIC ASSESSMENT REPORT (HAR)
PLANT MCDONOUGH-ATKINSON
CCR UNIT AP-2 AND AP-3/4

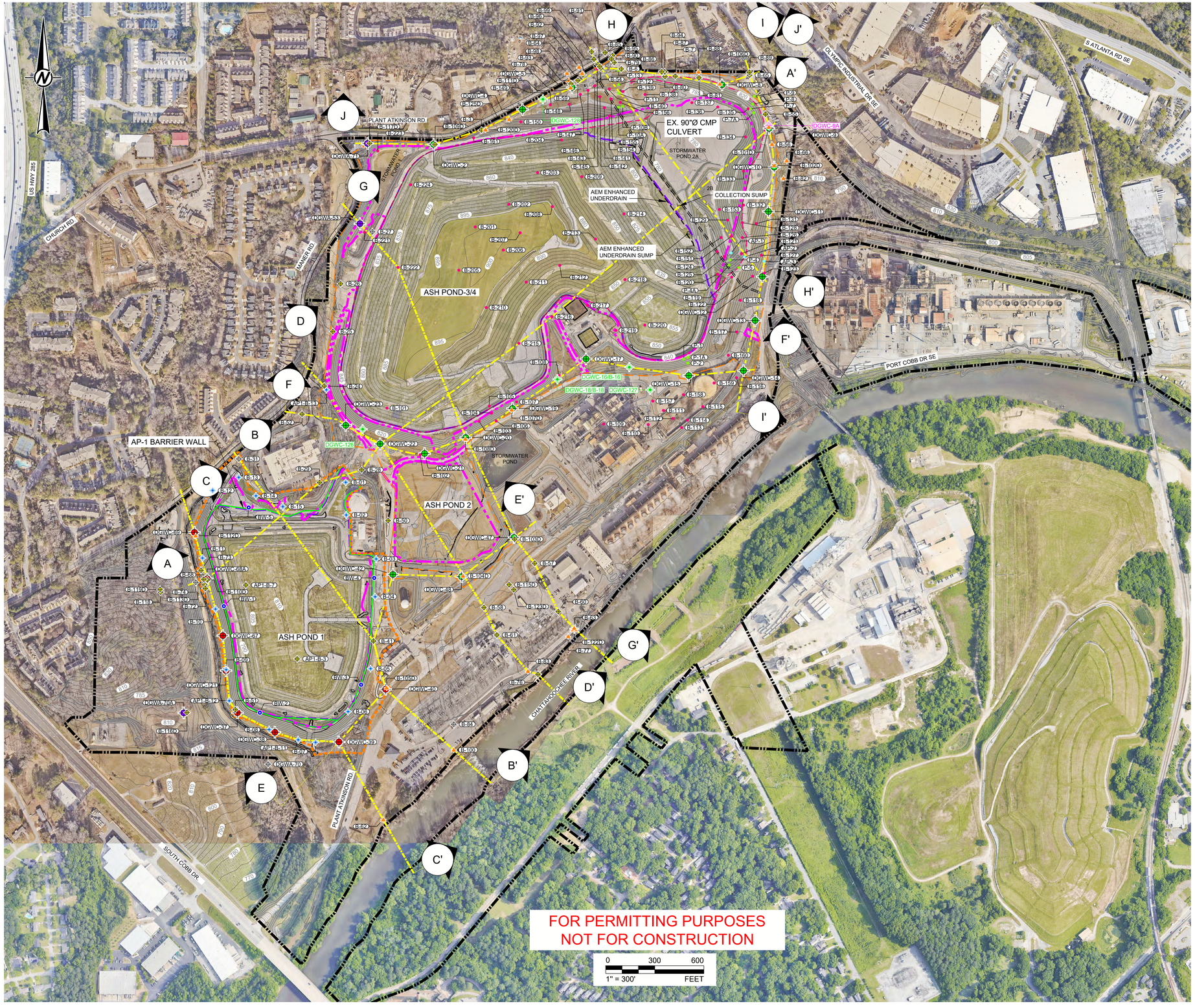
TITLE
DETECTION AND ASSESSMENT MONITORING WELL LOCATION MAP

CONSULTANT
wsp

YYYY-MM-DD	2024-11-26
DESIGNED	DLP
PREPARED	CRP
CHECKED	DAH
REVIEWED / APPROVED	GLH

PROJECT NO. US0037149.3190 (GL1777449)
REV. 1
SHEET GW-1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D
0 1 in



LEGEND

- EXISTING CONTOURS (SEE REFERENCE 2)
- PROPERTY BOUNDARY (SEE REFERENCE 1)
- APPROXIMATE PRE-CLOSURE CCR LIMITS
- POST CLOSURE CCR LIMITS
- FINAL COVER SYSTEM LIMITS
- PERMIT BOUNDARY
- FUTURE BARRIER WALL OPTION A
- FUTURE BARRIER WALL OPTION B
- CROSS-SECTION LINES
- DGWA-X — UPGRADIENT DETECTION MONITORING WELL (SEE REFERENCE 6)
- DGWC-X — AP-1 DETECTION MONITORING WELL (SEE REFERENCE 6)
- DGWC-X — AP-2, 3/4 DETECTION MONITORING WELL (SEE REFERENCE 6)
- B-XX — ASSESSMENT WELL (SEE REFERENCE 6, 8 AND 9)
- B-XX — PIEZOMETER (SEE REFERENCE 6, 8 AND 9)
- B-XX — GOLDER BORINGS (SEE REFERENCE 7)
- B-XX — ABANDONED PIEZOMETER OR MONITORING WELL
- BW-X — WSP BORINGS (SEE REFERENCE 10)
- 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)
- DGWC-X — PROPOSED DETECTION MONITORING WELL REPLACEMENT
- DGWC-X — PROPOSED DETECTION MONITORING WELL

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, AND CONTOUR ELEVATIONS 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 IS AUGUST 31, 2022, ON AP-2, 3/4 IS NOVEMBER 2, 2022. AERIAL IMAGERY DATE FOR AP-1, AP-2, AND AP-3/4 PROVIDED BY GEORGIA POWER, JANUARY 25, 2024; SURROUNDING AREAS SOURCED BY PLEXEARTH, DATED SEPTEMBER 28, 2023. 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.
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. GOLDER ASSOCIATES, PLANT MCDONOUGH SUPPLEMENTAL INVESTIGATION (2017-2023).
8. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020-2023.
9. WSP PLANT MCDONOUGH SUPPLEMENTAL INVESTIGATION (MAY 2023).
10. PERIMETER BARRIER WALL DESIGN INVESTIGATION (WSP 2023).
11. 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	RVW
6	2024/11/26	CLIENT & PROJECT NAME, JANUARY 2024 AERIAL, ADD PROPOSED WELLS	DLP	CRP	RNQ	RNQ
5	2023/10/04	AERIAL IMAGE MAY-SEP 2023; ADD BW BORINGS; B-31, B-74 & B-84 ABANDONED	DLP	CRP	RNQ	RNQ
4	2023/05/12	UPDATED TOPO & AERIAL, INCLUDE ADDITIONAL MONITORING WELLS	DLP	CRP	RNQ	GLH
3	2022/07/14	NOTE ADDED FOR AP1 DATA	LS	CRP	RPK	GLH
2	2022/02/15	REV. BARRIER WALL ALIGNMENT	DLP	RMS	RPK	GLH
1	2021/09/01	ADDED 2021 PIEZOMETERS / UPDATED CONTOURS	CG	AVR	RPK	GLH
0	2020/10/20	PROJECT TITLE CHANGE; ADDED CROSS SECTIONS F, G, H, I, J; UPDATED DATA	DLP	CCP	BAS	TIR / GLH
1	2020/03/06	UPDATED CCR LIMITS & AERIAL, REV NOTE 8	VPM	VPM	JRJ	TIR / GLH
0	2018/05/04	FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION	SEP	DJC	KNJ	RPK / GLH

CLIENT
GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

Georgia Power

PROJECT
HYDROGEOLOGIC ASSESSMENT REPORT (HAR)
PLANT MCDONOUGH-ATKINSON
CCR UNIT AP-2 AND AP-3/4

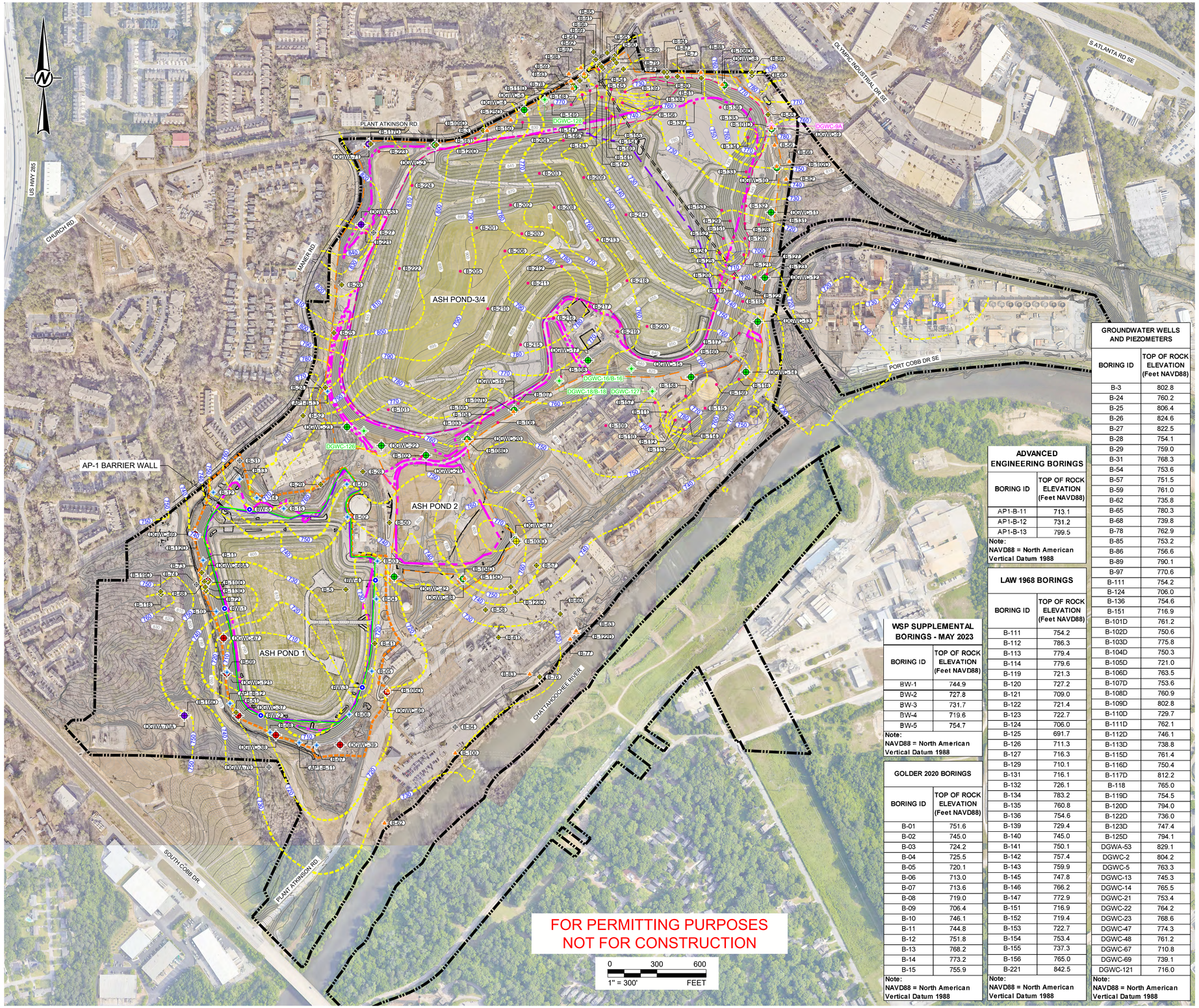
TITLE
MONITORING WELL, PIEZOMETER, SOIL BORING & CPT LOCATION MAP WITH SECTION PROFILES

CONSULTANT
wsp

YYYY-MM-DD	2024-11-26
DESIGNED	DLP
PREPARED	CRP
CHECKED	DAH
REVIEWED / APPROVED	GLH

PROJECT NO. US0037149.3190 (GL1777449)
REV. 8
SHEET GW-1a

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D
0 1 in



LEGEND

- EXISTING CONTOURS (SEE REFERENCE 2)
- PROPERTY BOUNDARY (SEE REFERENCE 1)
- APPROXIMATE PRE-CLOSURE CCR LIMITS
- POST CLOSURE CCR LIMITS
- FINAL COVER SYSTEM LIMITS
- PERMIT BOUNDARY
- FUTURE BARRIER WALL OPTION A
- FUTURE BARRIER WALL OPTION B
- ESTIMATED TOP OF ROCK SURFACE CONTOURS (NAVD88)
- DGWA-X — UPGRADIENT DETECTION MONITORING WELL (SEE REFERENCE 4)
- DGWC-X — AP-1 DETECTION MONITORING WELL (SEE REFERENCE 4)
- DGWC-X — AP-2, 3/4 DETECTION MONITORING WELL (SEE REFERENCE 4)
- B-XX — ASSESSMENT WELLS (SEE REFERENCE 4, 6 AND 7)
- B-XX — PIEZOMETER (SEE REFERENCE 4, 6 AND 7)
- B-XX — GOLDER BORINGS (SEE REFERENCE 5)
- B-XX — ABANDONED PIEZOMETER OR MONITORING WELL
- BW-X — WSP BORING (SEE REFERENCE 8)
- B-202 — LAW 1968 BORINGS (SEE REFERENCE 3)
- DGWC-X — PROPOSED DETECTION MONITORING WELL REPLACEMENT
- DGWC-X — PROPOSED DETECTION MONITORING WELL

NOTES

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

REFERENCES

1. APPROXIMATE PROPERTY BOUNDARY PROVIDED BY SOUTHERN COMPANY SERVICES (2017).
2. THE EXISTING TOPOGRAPHY, AND CONTOUR ELEVATIONS 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 IS AUGUST 31, 2022, ON AP-2, 3/4 IS NOVEMBER 2, 2022. AERIAL IMAGERY DATE FOR AP-1, AP-2, AND AP-3/4 PROVIDED BY GEORGIA POWER IS JANUARY 25, 2023, SURROUNDING AREAS SOURCED BY PLEXEARTH, DATED SEPTEMBER 28, 2023. 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.
3. LAW ENGINEERING GEOTECHNICAL INVESTIGATION REPORT (LAW, 1968).
4. SCS PLANT MCDONOUGH HYDROGEOLOGICAL INVESTIGATIONS (2012 TO 2020).
5. GOLDER ASSOCIATES, PLANT MCDONOUGH SUPPLEMENTAL INVESTIGATION (2017-2023).
6. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020 / 2023.
7. WSP PLANT MCDONOUGH SUPPLEMENTAL INVESTIGATION (MAY 2023).
8. PERIMETER BARRIER WALL DESIGN INVESTIGATION (WSP 2023).
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).

GROUNDWATER WELLS AND PIEZOMETERS

BORING ID	TOP OF ROCK ELEVATION (Feet NAVD88)
B-3	802.8
B-24	760.2
B-25	806.4
B-26	824.6
B-27	822.5
B-28	754.1
B-29	759.0
B-31	768.3
B-54	753.6
B-57	751.5
B-59	761.0
B-62	735.8
B-65	780.3
B-68	739.8
B-78	762.9
B-85	753.2
B-86	756.6
B-89	790.1
B-97	770.6
B-111	754.2
B-124	706.0
B-136	754.6
B-151	716.9
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	812.2
B-118	765.0
B-119D	754.5
B-120D	794.0
B-122D	736.0
B-123D	747.4
B-125D	794.1
DGWA-53	829.1
DGWC-2	804.2
DGWC-5	763.3
DGWC-13	745.3
DGWC-14	765.5
DGWC-21	753.4
DGWC-22	764.2
DGWC-23	768.6
DGWC-47	774.3
DGWC-48	761.2
DGWC-67	710.8
DGWC-69	739.1
DGWC-121	716.0

Note: NAVD88 = North American Vertical Datum 1988

ADVANCED ENGINEERING BORINGS

BORING ID	TOP OF ROCK ELEVATION (Feet NAVD88)
AP1-B-11	713.1
AP1-B-12	731.2
AP1-B-13	799.5

Note: NAVD88 = North American Vertical Datum 1988

LAW 1968 BORINGS

BORING ID	TOP OF ROCK ELEVATION (Feet NAVD88)
B-111	754.2
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-124	706.0
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-135	760.8
B-136	754.6
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-151	716.9
B-152	719.4
B-153	722.7
B-154	753.4
B-155	737.3
B-156	765.0
B-221	842.5

Note: NAVD88 = North American Vertical Datum 1988

WSP SUPPLEMENTAL BORINGS - MAY 2023

BORING ID	TOP OF ROCK ELEVATION (Feet NAVD88)
BW-1	744.9
BW-2	727.8
BW-3	731.7
BW-4	719.6
BW-5	754.7

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	719.0
B-09	706.4
B-10	746.1
B-11	744.8
B-12	751.8
B-13	768.2
B-14	773.2
B-15	755.9

Note: NAVD88 = North American Vertical Datum 1988

6	2024/11/26	CLIENT & PROJECT NAME, JAN 2024 AERIAL, TOP OF ROCK, PROP. WELLS	DLP	CRP	DAH	GLH
5	2023/12/06	UPDATE TOP OF ROCK SURFACE TO INCLUDE BORINGS COMPLETED SINCE 2021	DLP	CRP	DAH	GLH
4	2023/05/12	UPDATED TOPO & AERIAL, INCLUDE ADDITIONAL MONITORING WELLS	DLP	CRP	RNQ	GLH
3	2022/07/14	NOTE ADDED FOR AP1 DATA	DLP	CRP	RPK	GLH
2	2022/02/15	REV. BARRIER WALL ALIGNMENT	DLP	RMS	RPK	GLH
1	2021/09/01	ADDED 2021 PIEZOMETERS / UPDATE CONTOURS	BAS	CRP	RPK	GLH
0	2020/10/20	PROJECT TITLE CHANGE, UPDATED DATA	DLP	CCP	BAS	TIR / GLH
1	2020/03/06	DWG CHANGED FROM GW-4 TO GW-2; UPDATED CCR LIMITS & AERIAL	VPM	VPM	JRJ	TIR / GLH
0	2018/05/04	FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION	SEP	DJC	KNJ	RPK / GLH
REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW

CLIENT
GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

Georgia Power

PROJECT
HYDROGEOLOGIC ASSESSMENT REPORT (HAR)
PLANT MCDONOUGH-ATKINSON
CCR UNIT AP-2 AND AP-3/4

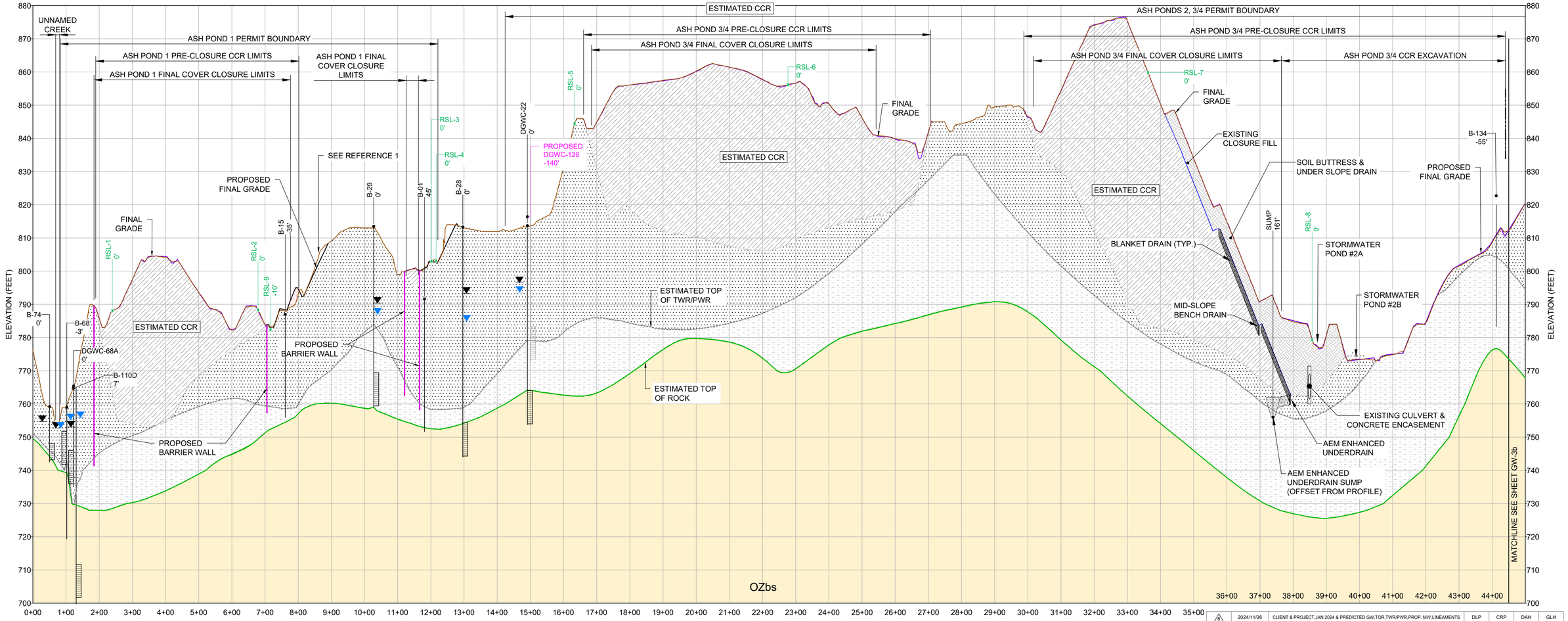
TITLE
ESTIMATED TOP OF ROCK MAP

CONSULTANT
wsp

YYYY-MM-DD	2024-11-26
DESIGNED	DLP
PREPARED	CRP
CHECKED	DAH
REVIEWED / APPROVED	GLH

PROJECT NO. US0037149.3190 (GL1777449)
REV. 8
SHEET GW-2

0 1in
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D



A - A'

0 150 300

1" = 150' FEET

10X VERTICALLY EXAGGERATED

LEGEND

- EXISTING GRADE (SEE REFERENCE 1)
- FINAL COVER SYSTEM
- PROPOSED FINAL GRADE
- ESTIMATED TOP OF TRANSITIONALLY WEATHERED ROCK / PARTIALLY WEATHERED ROCK SURFACE (TWR / PWR)
- ESTIMATED TOP OF ROCK SURFACE
- ESTIMATED PRE-CLOSURE BOTTOM OF CCR LIMITS
- PROPOSED BARRIER WALL
- ESTIMATED CCR TO REMAIN IN PLACE
- PROPOSED FILL
- EXISTING CLOSURE FILL
- RESIDUAL SOILS AND SAPROLITE
- TRANSITIONALLY WEATHERED ROCK / PARTIALLY WEATHERED ROCK (TWR / PWR)
- PHYLLONITE, BUTTON SCHIST, MYLONITE, AND MYLONITIC BIOTITE GNEISS (OZbs)
- BIOTITE GNEISS (LONG ISLAND CREEK GNEISS) (Oli)
- PROPOSED BORING ID — PROPOSED XX 12'
- PROPOSED DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT)
- APPROXIMATE GROUND SURFACE ELEVATION
- PROPOSED SCREEN INTERNAL
- ESTIMATED GROUNDWATER SURFACE (1/29/2024)
- PREDICTED POST-CLOSURE GROUNDWATER SURFACE (SEE NOTE 2)
- REMOTE SENSING LINEAMENT LOCATION (SEE NOTE 3) — RSL-5 -2'
- BORING ID — B-29 -144'
- DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT) (TYP)
- GROUND SURFACE ELEVATION
- SCREEN INTERNAL

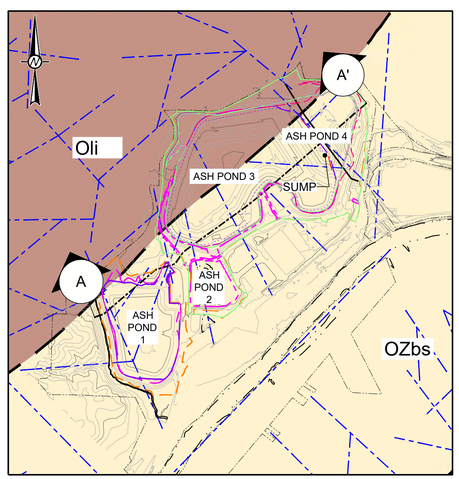
REFERENCES

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, ON THE AP-1 IS AUGUST 31, 2022, ON AP-2, 3/4 IS NOVEMBER 2, 2022. 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, INC. GEOLOGIC MAPPING, SEPTEMBER 6, 2024.
4. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED AND/OR RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020 / 2023.
5. THE ESTIMATED TOP OF TWR/PWR AND ROCK SURFACES SHOWN ON THE CROSS-SECTION ARE BASED ON THE TOP OF TWR/PWR AND ROCK ELEVATIONS SHOWN ON THE WELL/PIEZOMETER BORING LOGS, AND ON TOP OF TWR/PWR AND ROCK CONTOUR SURFACES PRODUCED FROM GRIDDING OF AVAILABLE DATA.

NOTES

1. DATA PRESENTED FOR CCR UNIT AP-1 IS INCLUDED FOR REFERENCE ONLY. THIS DATA SHOULD NOT BE CONSIDERED FOR PERMITTING OF CCR UNIT AP-2 AND AP-3/4.
2. THE PREDICTED POST-CLOSURE GROUNDWATER SURFACE IS REPRESENTATIVE OF LONG-TERM SUBSURFACE CONDITIONS EQUILIBRATED TO ENGINEERED CLOSURE ELEMENT.THE SIMULATED POST-CLOSURE WATER TABLE WAS GENERATED WITH A STEADY-STATE GROUNDWATER FLOW MODEL, USING THE MODFLOW USG-TRANSPORT CODE. STEADY-STATE CONDITIONS ASSUME LONG-TERM EQUILIBRIUM WITH SITE CLOSURE FEATURES, INCLUDING AN UNDERDRAIN SYSTEM BENEATH THE AP-3/4 BUTTRESS, A FULLY-ENCAPSULATING HYDRAULIC FLOW BARRIER WALL AROUND AP-1, AND LOW-PERMEABILITY COVERS OVER BOTH AP-3/4 AND AP-1.
3. COLOR GREEN SYMBOL INDICATES PRESENCE OF A LINEAMENT AS DETERMINED BY REMOTE SENSING / LINEAMENT ANALYSIS COMPLETED BY EXPERIENCED GOLDER/WSP PERSONNEL USING SHADED RELIEF MAPS GENERATED FROM DIGITAL ELEVATION DATA, AERIAL PHOTOGRAPHS, AND USGS TOPOGRAPHIC MAPS FROM 1954 AND 1997. (SEE SHEET GW-6).
4. THE OVERBURDEN IS COMPRISED OF RESIDUAL SOILS, SAPROLITE, AND TRANSITIONALLY WEATHERED ROCK (TWR) OR PARTIALLY WEATHERED ROCK (PWR).

FOR PERMITTING PURPOSES
NOT FOR CONSTRUCTION



KEY MAP

REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW
8	2024/11/26	CLIENT & PROJECT,JAN 2024 & PREDICTED GW,TOR,TWR/PWR,PROP, MW,LINEAMENTS	DLP	CRP	DAH	GLH
7	2023/12/06	UPDATE WATER LEVELS, & TOP OF ROCK SURFACE TO INCLUDE BORINGS SINCE 2021	DLP	CRP	DAH	GLH
6	2023/05/12	UPDATED TOPO & WATER LEVEL TO 09/2022	DLP	CRP	RNQ	GLH
5	2022/07/14	NOTE ADDED FOR AP1 DATA	DLP	CRP	RPK	GLH
4	2022/02/15	WATER LEVEL UPDATED TO 10/2021	DLP	RMS	RPK	GLH
3	2021/09/01	ADDED 2021 PIEZOMETERS / UPDATED CONTOURS	CG	AVR	DLP	RPK/GLH
2	2020/10/20	PROJECT TITLE CHANGE, UPDATED DATA	DLP	CCP	BAS	TIR / GLH
1	2020/03/06	DWG CHANGED FROM GW-5A TO GW-3A; UPDATED CCR LIMITS & AERIAL	VPM	VPM	JRJ	TIR / GLH
0	2018/05/04	FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION	SEP	DJC	KNJ	RPK / GLH

CLIENT
GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

Georgia Power

PROJECT
HYDROGEOLOGIC ASSESSMENT REPORT (HAR)
PLANT MCDONOUGH-ATKINSON
CCR UNIT AP-2 AND AP-3/4

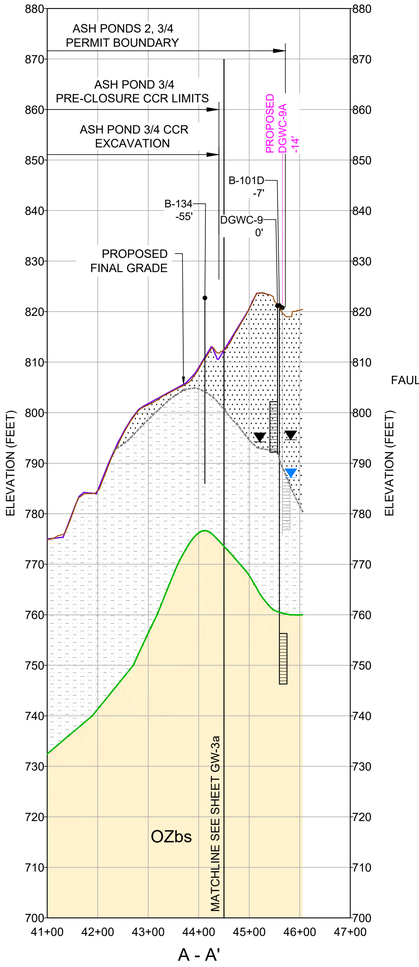
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GEOLOGIC CROSS-SECTION SCHEMATIC A-A'
SHEET 1

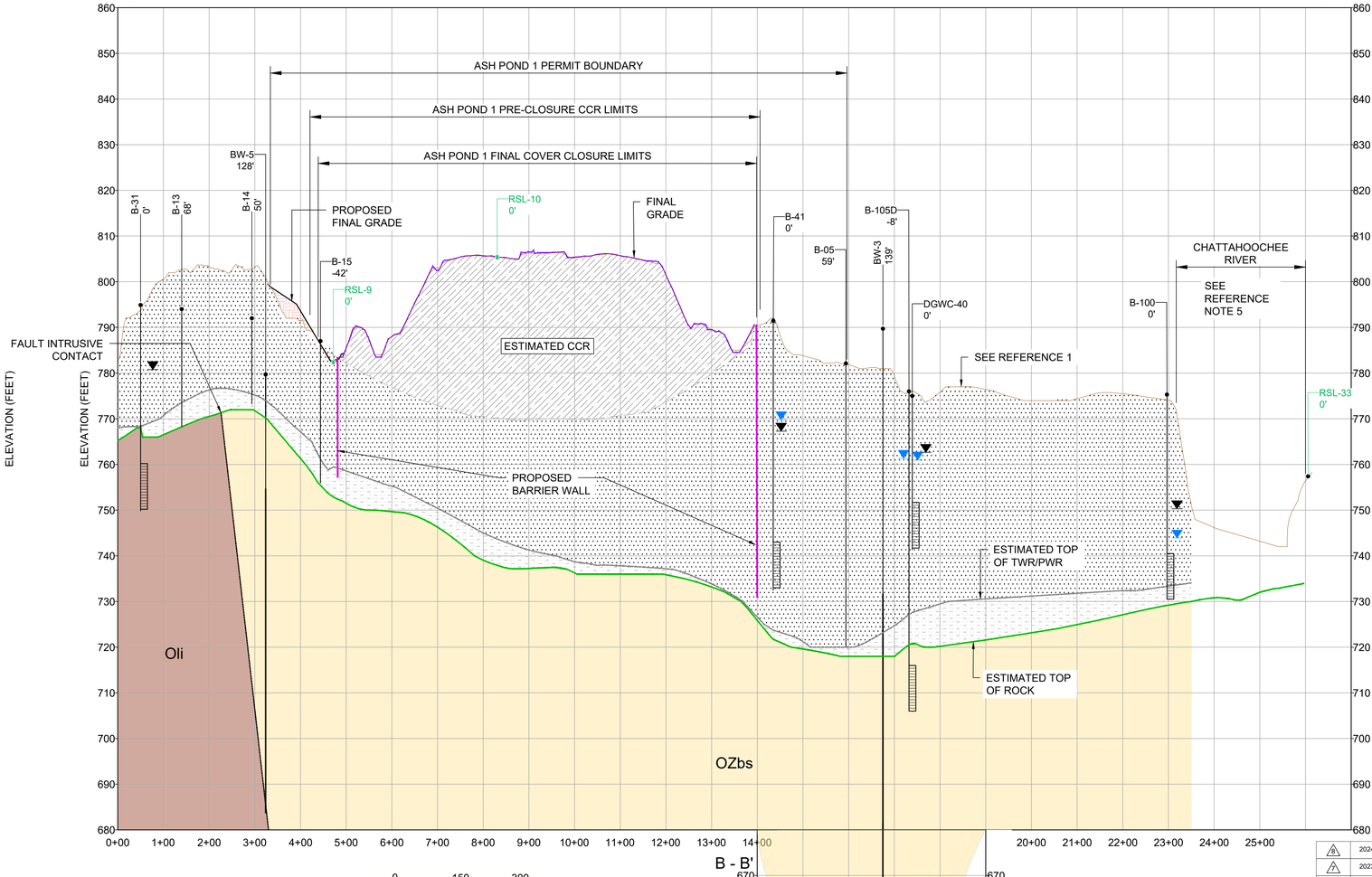
CONSULTANT
wsp

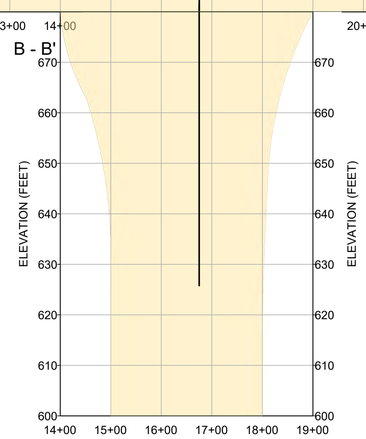
YYYY-MM-DD	2024-11-26
DESIGNED	DLP
PREPARED	CRP
CHECKED	DAH
REVIEWED / APPROVED	GLH

PROJECT NO. US0037149.3190 (GL1777449)
REV. 8
SHEET GW-3a

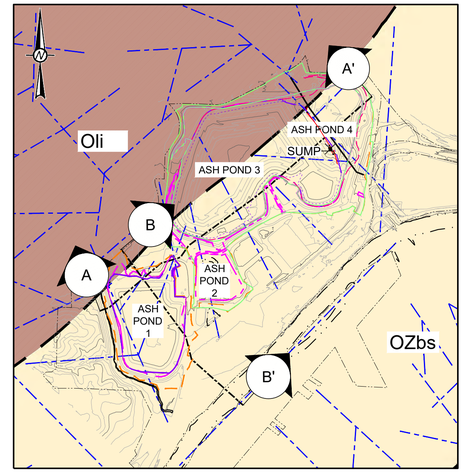
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D
0 1 in







0 150 300
1" = 150' FEET
10X VERTICALLY EXAGGERATED



KEY MAP

NOTES

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

LEGEND

- EXISTING GRADE (SEE REFERENCE 1)
- FINAL COVER SYSTEM
- PROPOSED FINAL GRADE
- ESTIMATED TOP OF TRANSITIONALLY WEATHERED ROCK / PARTIALLY WEATHERED ROCK SURFACE (TWR / PWR)
- ESTIMATED TOP OF ROCK SURFACE
- ESTIMATED PRE-CLOSURE BOTTOM OF CCR LIMITS
- PROPOSED BARRIER WALL
- ESTIMATED CCR TO REMAIN IN PLACE
- PROPOSED FILL
- EXISTING CLOSURE FILL
- RESIDUAL SOILS AND SAPROLITE
- TRANSITIONALLY WEATHERED ROCK / PARTIALLY WEATHERED ROCK (TWR / PWR)
- PHYLLONITE, BUTTON SCHIST, MYLONITE, AND MYLONITIC BIOTITE GNEISS (OZbs)
- BIOTITE GNEISS (LONG ISLAND CREEK GNEISS) (Oli)
- PROPOSED BORING ID
- PROPOSED DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT)
- APPROXIMATE GROUND SURFACE ELEVATION
- PROPOSED SCREEN INTERNAL
- ESTIMATED GROUNDWATER SURFACE (1/29/2024)
- PREDICTED POST-CLOSURE GROUNDWATER SURFACE (SEE NOTE 2)
- REMOTE SENSING LINEAMENT LOCATION (SEE NOTE 3)
- BORING ID
- DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT) (TYP)
- GROUND SURFACE ELEVATION
- SCREEN INTERNAL

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REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW
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A	2020/03/06	DWG CHANGED FROM GW-5B TO GW-3B; UPDATED CCR LIMITS & AERIAL	VPM	VPM	JRJ	TIR / GLH
B	2018/05/04	FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION	SEP	DJC	KNJ	RPK / GLH

CLIENT
GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

Georgia Power

PROJECT
HYDROGEOLOGIC ASSESSMENT REPORT (HAR)
PLANT MCDONOUGH-ATKINSON
CCR UNIT AP-2 AND AP-3/4

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

CONSULTANT
wsp

YYYY-MM-DD	2024-11-26
DESIGNED	DLP
PREPARED	CRP
CHECKED	DAH
REVIEWED / APPROVED	GLH

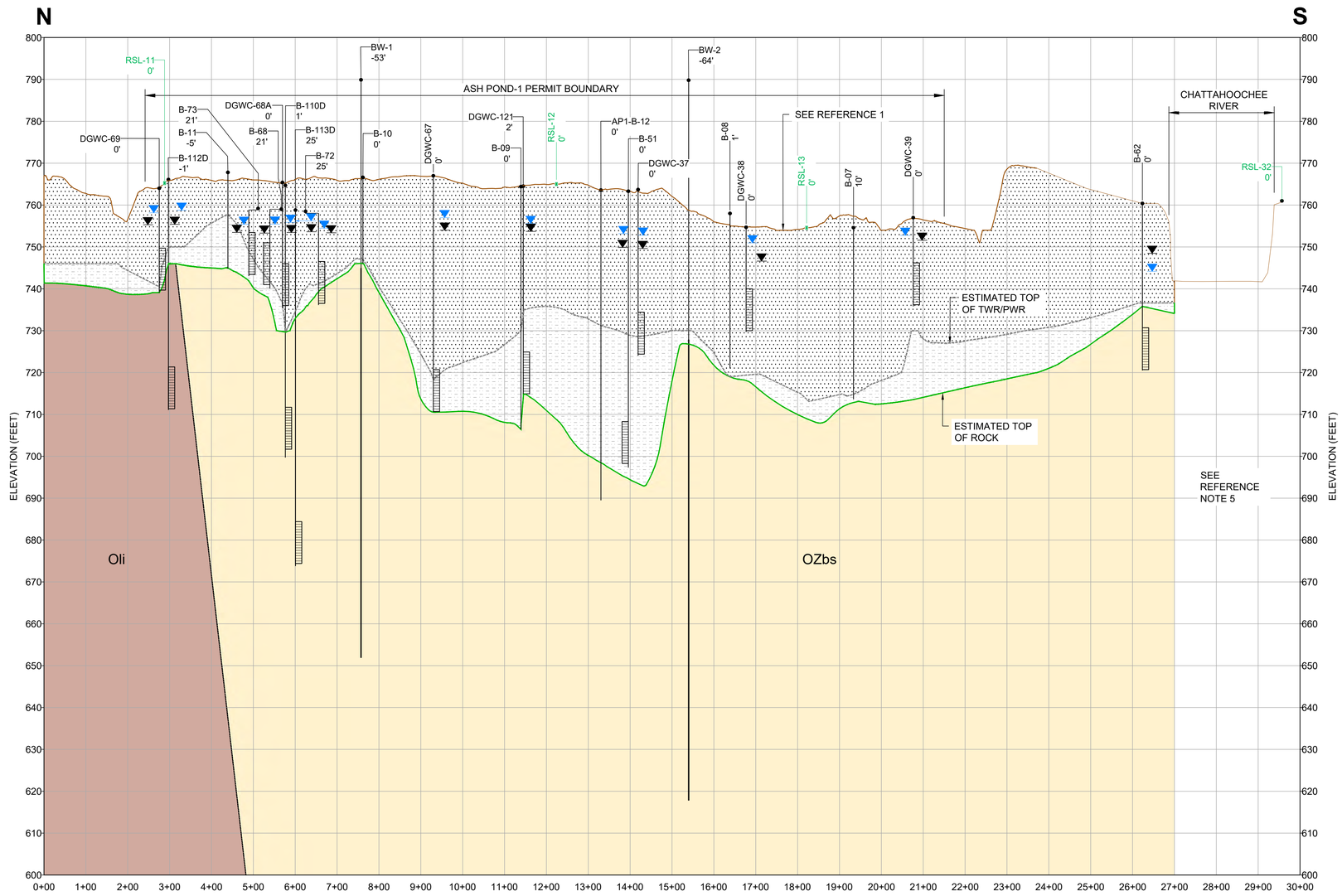
PROJECT NO.
US0037149.3190 (GL1777449)

REV.
8

SHEET
GW-3b

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

0 1 in

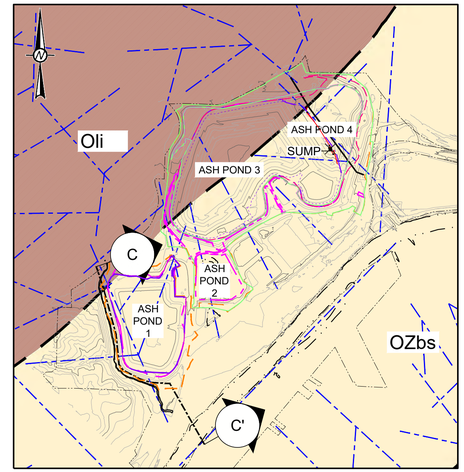


C - C'

0 150 300

1" = 150' FEET

10X VERTICALLY EXAGGERATED



KEY MAP

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FOR PERMITTING PURPOSES
NOT FOR CONSTRUCTION

LEGEND

- EXISTING GRADE (SEE REFERENCE 1)
- FINAL COVER SYSTEM
- PROPOSED FINAL GRADE
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- PROPOSED BARRIER WALL
- ESTIMATED CCR TO REMAIN IN PLACE
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- EXISTING CLOSURE FILL
- RESIDUAL SOILS AND SAPROLITE
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- PHYLLONITE, BUTTON SCHIST, MYLONITE, AND MYLONITIC BIOTITE GNEISS (OZbs)
- BIOTITE GNEISS (LONG ISLAND CREEK GNEISS) (Oli)
- ESTIMATED GROUNDWATER SURFACE (1/29/2024)
- PREDICTED POST-CLOSURE GROUNDWATER SURFACE (SEE NOTE 2)
- RSL-5 -2' — REMOTE SENSING LINEAMENT LOCATION (SEE NOTE 3)
- B-29 -144' — BORING ID; DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT) (TYP)
- GROUND SURFACE ELEVATION
- SCREEN INTERNAL

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CLIENT
GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

Georgia Power

PROJECT
HYDROGEOLOGIC ASSESSMENT REPORT (HAR)
PLANT MCDONOUGH-ATKINSON
CCR UNIT AP-2 AND AP-3/4

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

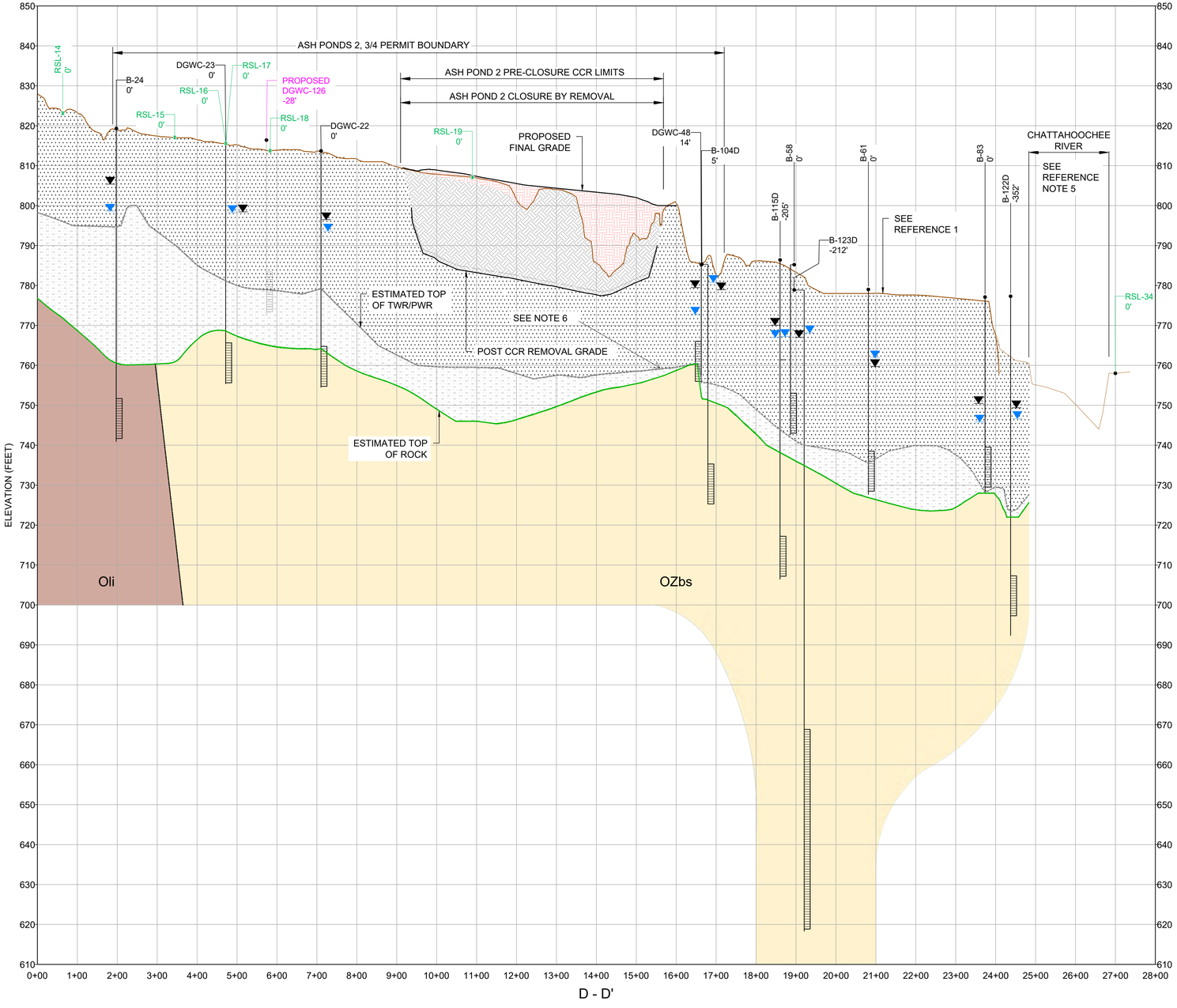
CONSULTANT
wsp

YYYY-MM-DD	2024-11-26
DESIGNED	DLP
PREPARED	CRP
CHECKED	DAH
REVIEWED / APPROVED	GLH

PROJECT NO. US0037149.3190 (GL1777449)
REV. 8
SHEET GW-3c

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

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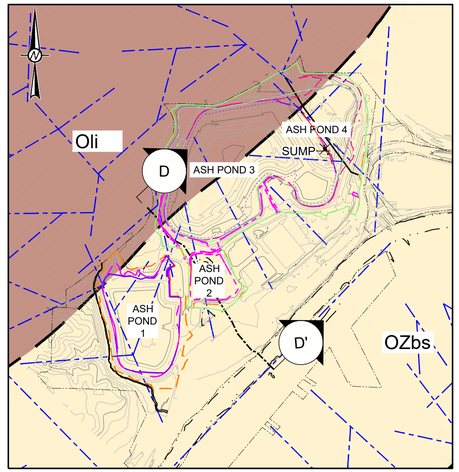


D - D'

0 150 300
1" = 150' FEET
10X VERTICALLY EXAGGERATED

LEGEND

- EXISTING GRADE (SEE REFERENCE 1)
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- GROUND SURFACE ELEVATION
- SCREEN INTERNAL
- PROPOSED XX 12' — PROPOSED BORING ID; PROPOSED DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT)
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- PROPOSED SCREEN INTERNAL



KEY MAP

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FOR PERMITTING PURPOSES
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CLIENT
GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

Georgia Power

PROJECT
HYDROGEOLOGIC ASSESSMENT REPORT (HAR)
PLANT MCDONOUGH-ATKINSON
CCR UNIT AP-2 AND AP-3/4

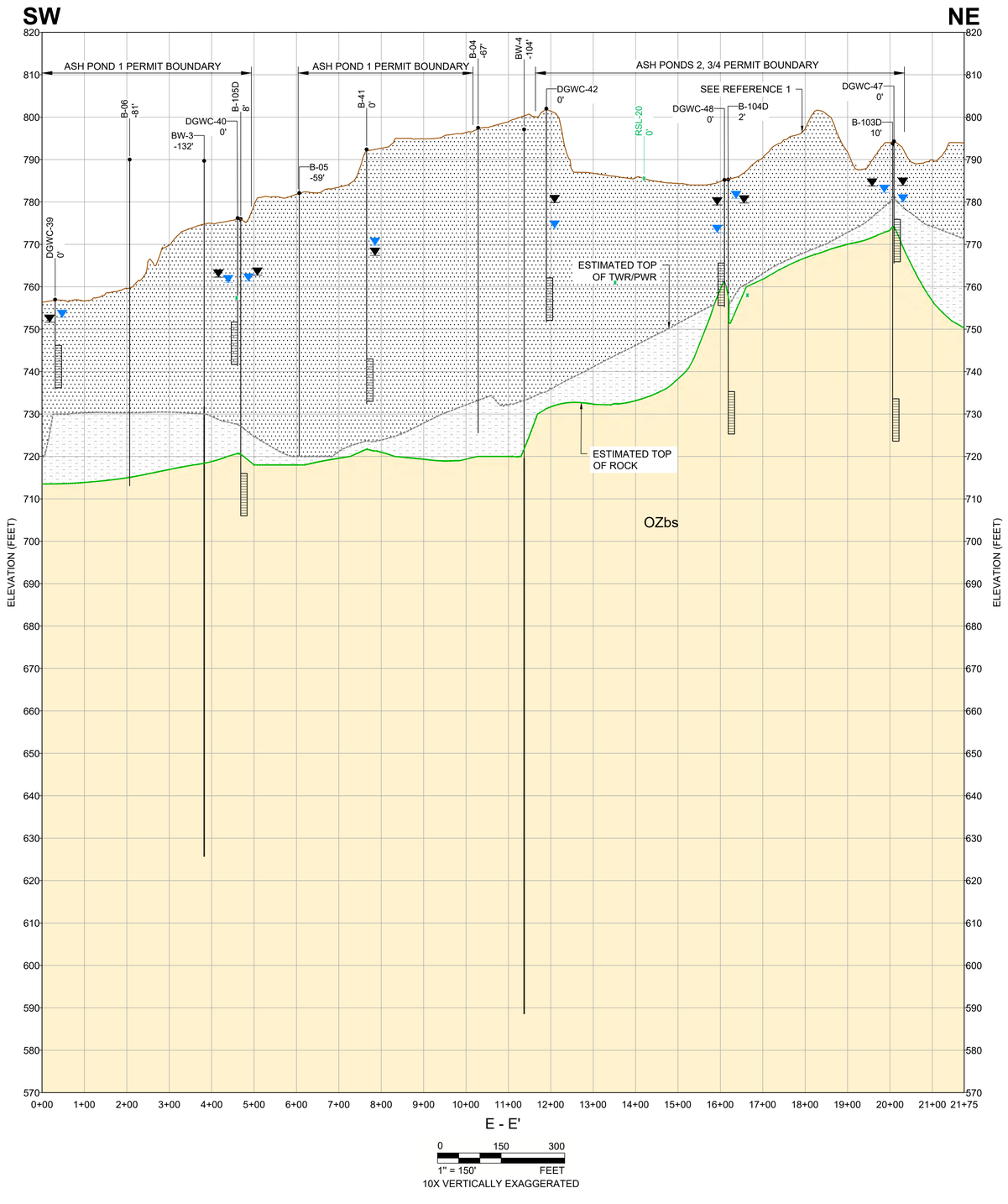
TITLE
GEOLOGIC CROSS-SECTION SCHEMATIC D-D'
SHEET 4

CONSULTANT
wsp

YYYY-MM-DD	2024-11-26
DESIGNED	DLP
PREPARED	CRP
CHECKED	DAH
REVIEWED / APPROVED	GLH

PROJECT NO. US0037149.3190 (GL1777449)
REV. 8
SHEET GW-3d

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D
0 1 in



E - E'

0 150 300

1" = 150' FEET

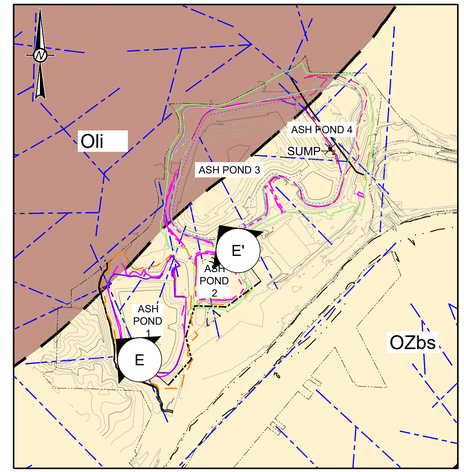
10X VERTICALLY EXAGGERATED

LEGEND

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PLANT MCDONOUGH-ATKINSON

Georgia Power

PROJECT
HYDROGEOLOGIC ASSESSMENT REPORT (HAR)
PLANT MCDONOUGH-ATKINSON
CCR UNIT AP-2 AND AP-3/4

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

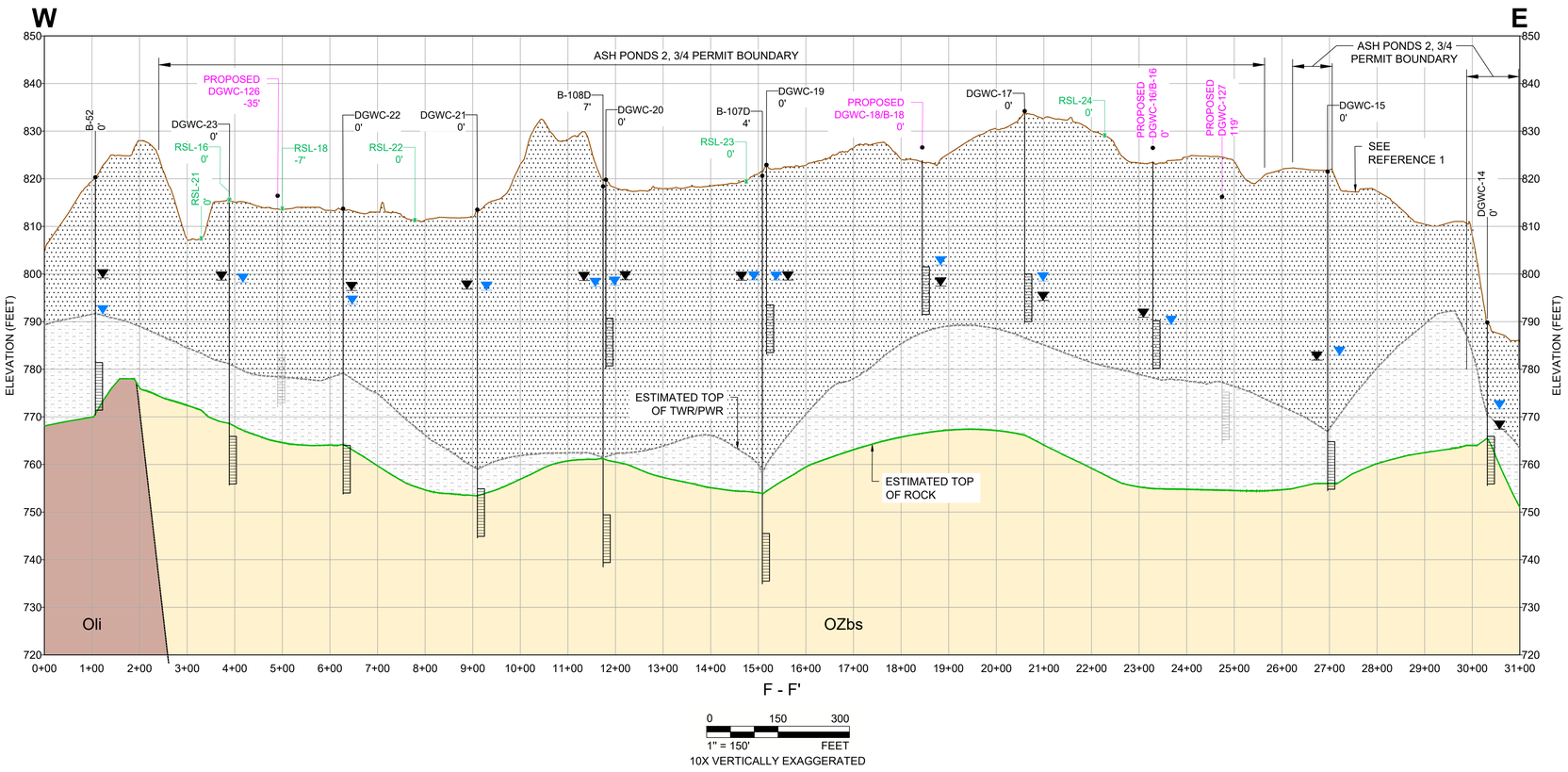
CONSULTANT

wsp

YYYY-MM-DD	2024-11-26
DESIGNED	DLP
PREPARED	CRP
CHECKED	DAH
REVIEWED / APPROVED	GLH

PROJECT NO. US0037149.3190 (GL1777449)
REV. 8
SHEET GW-3e

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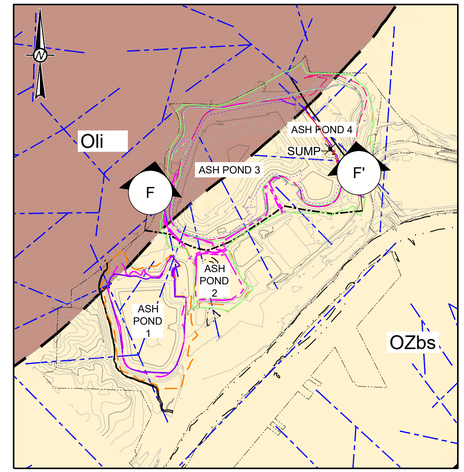


F - F'

0 150 300

1" = 150' FEET

10X VERTICALLY EXAGGERATED



KEY MAP

NOTES

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3. COLOR GREEN SYMBOL INDICATES PRESENCE OF A LINEAMENT AS DETERMINED BY REMOTE SENSING / LINEAMENT ANALYSIS COMPLETED BY EXPERIENCED GOLDER/WSP PERSONNEL USING SHADED RELIEF MAPS GENERATED FROM DIGITAL ELEVATION DATA, AERIAL PHOTOGRAPHS, AND USGS TOPOGRAPHIC MAPS FROM 1954 AND 1997.
4. THE OVERBURDEN IS COMPRISED OF RESIDUAL SOILS, SAPROLITE, AND TRANSITIONALLY WEATHERED ROCK (TWR) OR PARTIALLY WEATHERED ROCK (PWR).

FOR PERMITTING PURPOSES
NOT FOR CONSTRUCTION

LEGEND

- EXISTING GRADE (SEE REFERENCE 1)
- FINAL COVER SYSTEM
- PROPOSED FINAL GRADE
- ESTIMATED TOP OF TRANSITIONALLY WEATHERED ROCK / PARTIALLY WEATHERED ROCK SURFACE (TWR / PWR)
- ESTIMATED TOP OF ROCK SURFACE
- ESTIMATED PRE-CLOSURE BOTTOM OF CCR LIMITS
- PROPOSED BARRIER WALL
- ESTIMATED CCR TO REMAIN IN PLACE
- PROPOSED FILL
- EXISTING CLOSURE FILL
- RESIDUAL SOILS AND SAPROLITE
- TRANSITIONALLY WEATHERED ROCK / PARTIALLY WEATHERED ROCK (TWR / PWR)
- PHYLLONITE, BUTTON SCHIST, MYLONITE, AND MYLONITIC BIOTITE GNEISS (OZbs)
- BIOTITE GNEISS (LONG ISLAND CREEK GNEISS) (Oli)
- PROPOSED BORING ID
- PROPOSED DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT)
- APPROXIMATE GROUND SURFACE ELEVATION
- PROPOSED SCREEN INTERNAL
- ESTIMATED GROUNDWATER SURFACE (1/29/2024)
- PREDICTED POST-CLOSURE GROUNDWATER SURFACE (SEE NOTE 2)
- REMOTE SENSING LINEAMENT LOCATION (SEE NOTE 3)
- BORING ID
- DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT) (TYP)
- GROUND SURFACE ELEVATION
- SCREEN INTERNAL

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, ON THE AP-1 IS AUGUST 31, 2022, ON AP-2, 3/4 IS NOVEMBER 2, 2022. 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, INC. GEOLOGIC MAPPING, SEPTEMBER 6, 2024.
4. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED AND/OR RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020 / 2023.
5. THE ESTIMATED TOP OF TWR/PWR AND ROCK SURFACES SHOWN ON THE CROSS-SECTION ARE BASED ON THE TOP OF TWR/PWR AND ROCK ELEVATIONS SHOWN ON THE WELL/PIEZOMETER BORING LOGS, AND ON TOP OF TWR/PWR AND ROCK CONTOUR SURFACES PRODUCED FROM GRIDDING OF AVAILABLE DATA.

REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW
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0	2020/10/20	ADD CROSS-SECTIONS AND WELL DATA	DLP	CCP	BAS	TIR / GLH

CLIENT
GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

Georgia Power

PROJECT
HYDROGEOLOGIC ASSESSMENT REPORT (HAR)
PLANT MCDONOUGH-ATKINSON
CCR UNIT AP-2 AND AP-3/4

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

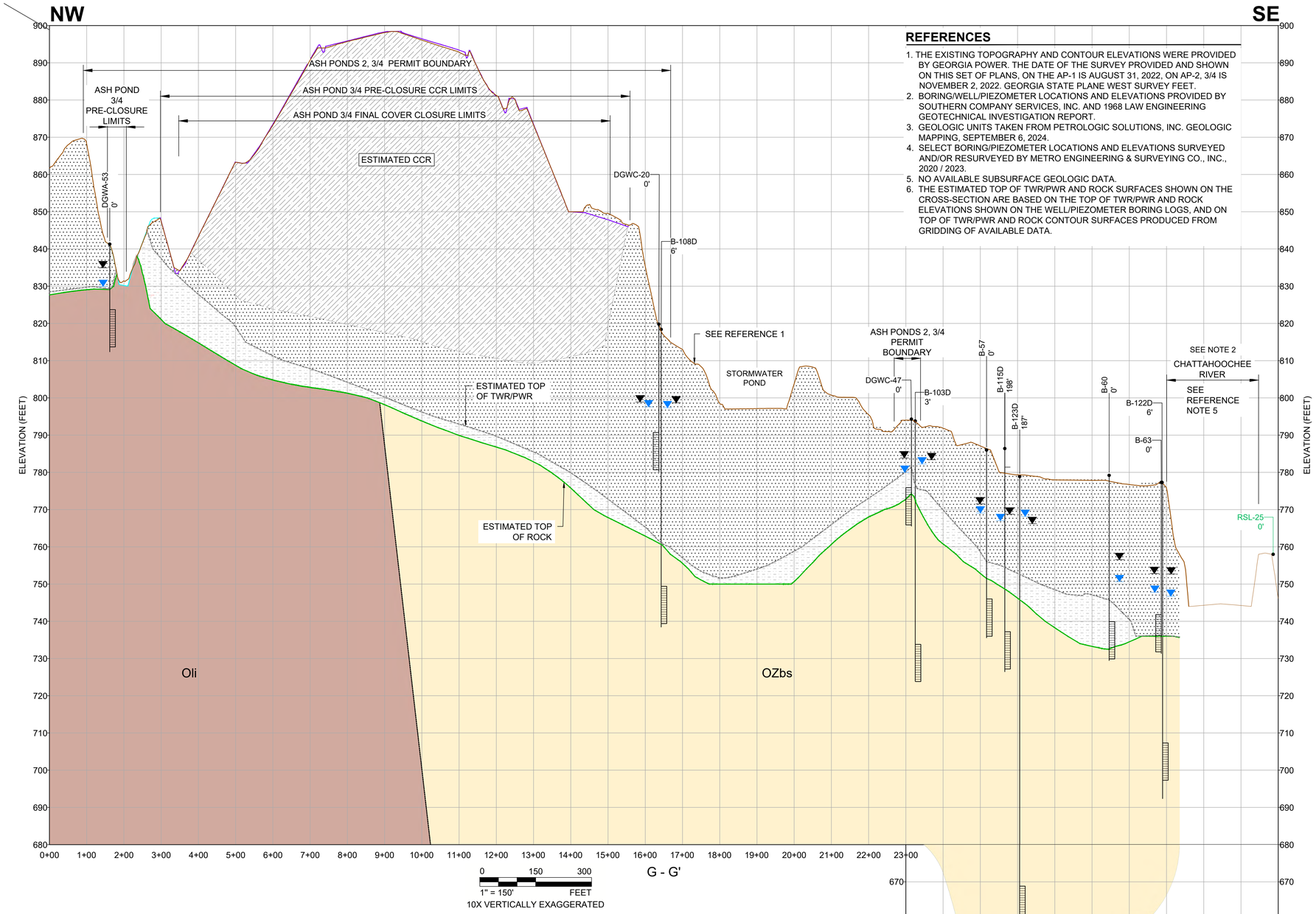
CONSULTANT

wsp

YYYY-MM-DD	2024-11-26
DESIGNED	DLP
PREPARED	CRP
CHECKED	DAH
REVIEWED / APPROVED	GLH

PROJECT NO. US0037149.3190 (GL1777449)
REV. 6
SHEET GW-3f

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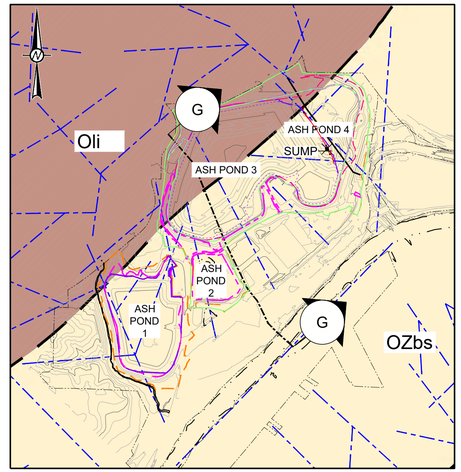


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4. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED AND/OR RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020 / 2023.
5. NO AVAILABLE SUBSURFACE GEOLOGIC DATA.
6. THE ESTIMATED TOP OF TWR/PWR AND ROCK SURFACES SHOWN ON THE CROSS-SECTION ARE BASED ON THE TOP OF TWR/PWR AND ROCK ELEVATIONS SHOWN ON THE WELL/PIEZOMETER BORING LOGS, AND ON TOP OF TWR/PWR AND ROCK CONTOUR SURFACES PRODUCED FROM GRIDDING OF AVAILABLE DATA.

LEGEND

- EXISTING GRADE (SEE REFERENCE 1)
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- ESTIMATED TOP OF ROCK SURFACE
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- PROPOSED BARRIER WALL
- ESTIMATED CCR TO REMAIN IN PLACE
- PROPOSED FILL
- EXISTING CLOSURE FILL
- RESIDUAL SOILS AND SAPROLITE
- TRANSITIONALLY WEATHERED ROCK / PARTIALLY WEATHERED ROCK (TWR / PWR)
- PHYLLONITE, BUTTON SCHIST, MYLONITE, AND MYLONITIC BIOTITE GNEISS (OZbs)
- BIOTITE GNEISS (LONG ISLAND CREEK GNEISS) (Oli)
- ESTIMATED GROUNDWATER SURFACE (1/29/2024)
- PREDICTED POST-CLOSURE GROUNDWATER SURFACE (SEE NOTE 2)
- B-29 — BORING ID
- -144' — DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT) (TYP)
- GROUND SURFACE ELEVATION
- SCREEN INTERNAL
- RSL-5 -2' — REMOTE SENSING LINEAMENT LOCATION (SEE NOTE 3)



KEY MAP

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NOT FOR CONSTRUCTION

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CLIENT
GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

Georgia Power

PROJECT
HYDROGEOLOGIC ASSESSMENT REPORT (HAR)
PLANT MCDONOUGH-ATKINSON
CCR UNIT AP-2 AND AP-3/4

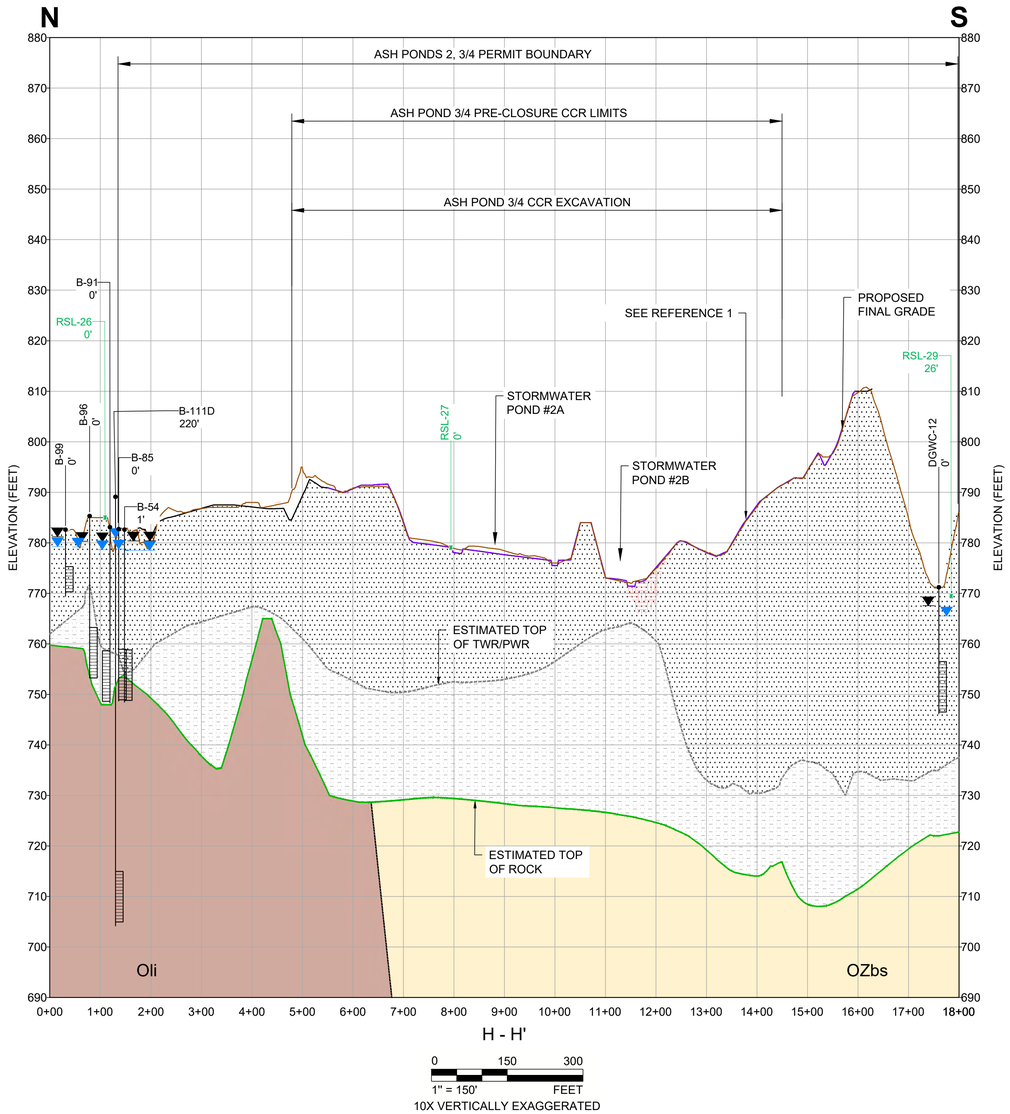
TITLE
GEOLOGIC CROSS-SECTION SCHEMATIC G-G'
SHEET 7

CONSULTANT
wsp

YYYY-MM-DD	2024-11-26
DESIGNED	DLP
PREPARED	CRP
CHECKED	DAH
REVIEWED / APPROVED	GLH

PROJECT NO. US0037149.3190 (GL1777449)
REV. 6
SHEET GW-3g

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D
0 1in



H - H'

0 150 300

1" = 150' FEET

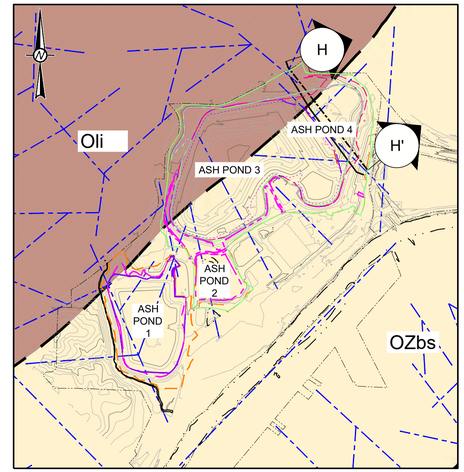
10X VERTICALLY EXAGGERATED

LEGEND

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- PROPOSED FINAL GRADE
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- B-29 -144' — BORING ID; DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT) (TYP)
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- SCREEN INTERNAL

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KEY MAP

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CLIENT
GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

Georgia Power

PROJECT
HYDROGEOLOGIC ASSESSMENT REPORT (HAR)
PLANT MCDONOUGH-ATKINSON
CCR UNIT AP-2 AND AP-3/4

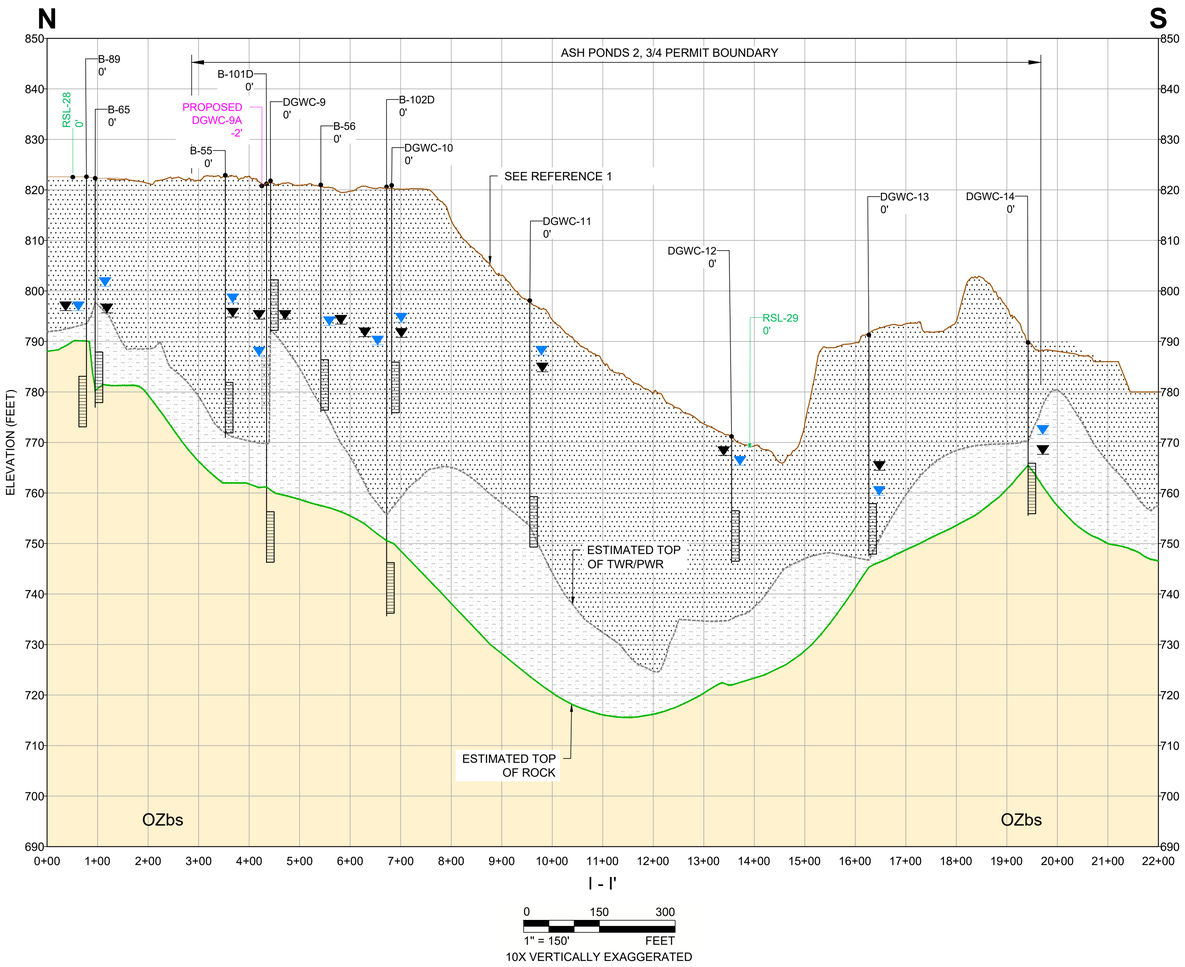
TITLE
GEOLOGIC CROSS-SECTION SCHEMATIC H-H'
SHEET 8

CONSULTANT
wsp

YYYY-MM-DD	2024-11-26
DESIGNED	DLP
PREPARED	CRP
CHECKED	DAH
REVIEWED / APPROVED	GLH

PROJECT NO. US0037149.3190 (GL1777449)
REV. 6
SHEET GW-3h

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I - I'

0 150 300

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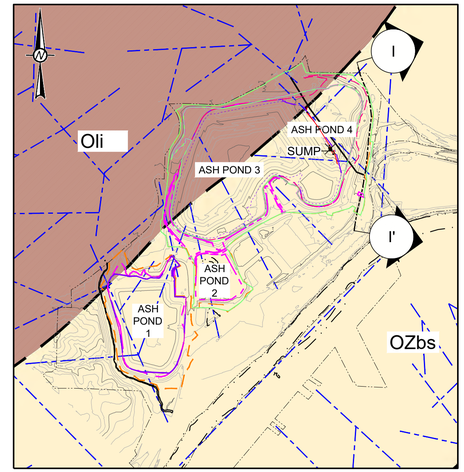
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LEGEND

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HYDROGEOLOGIC ASSESSMENT REPORT (HAR)
PLANT MCDONOUGH-ATKINSON
CCR UNIT AP-2 AND AP-3/4

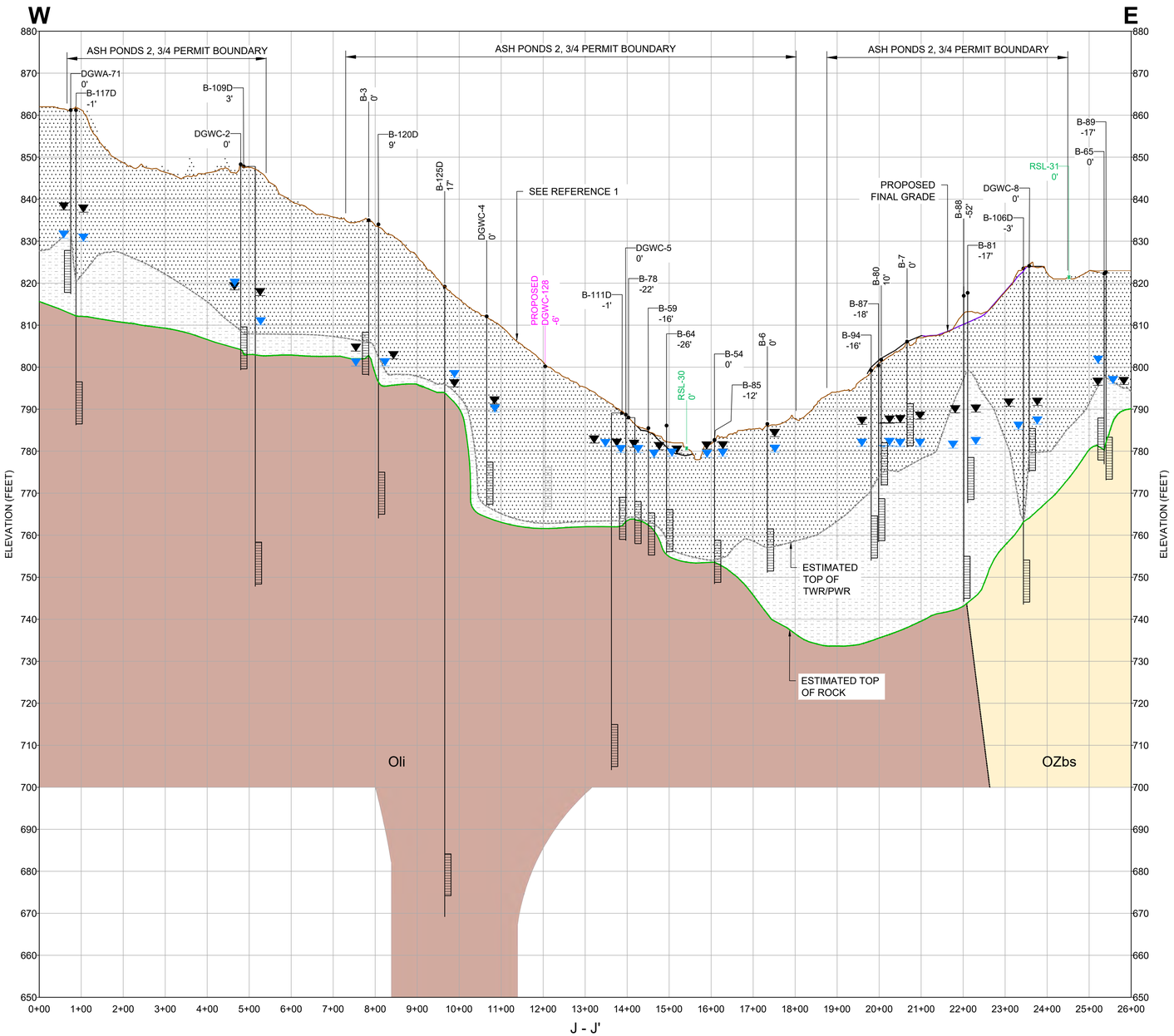
TITLE
GEOLOGIC CROSS-SECTION SCHEMATIC I-I'
SHEET 9

CONSULTANT
wsp

YYYY-MM-DD	2024-11-26
DESIGNED	DLP
PREPARED	CRP
CHECKED	DAH
REVIEWED / APPROVED	GLH

PROJECT NO. US0037149.3190 (GL1777449)
REV. 6
SHEET GW-3i

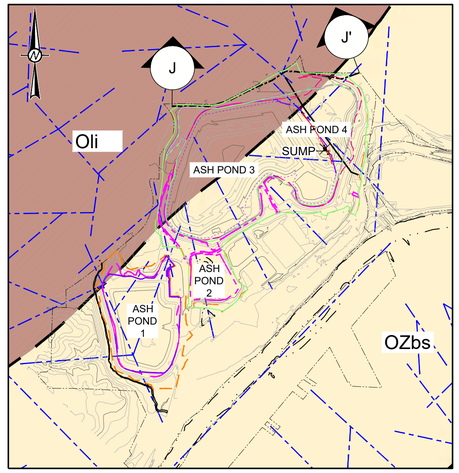
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D
0 1in



0 150 300
1" = 150' FEET
10X VERTICALLY EXAGGERATED

LEGEND

- EXISTING GRADE (SEE REFERENCE 1)
- FINAL COVER SYSTEM
- PROPOSED FINAL GRADE
- ESTIMATED TOP OF TRANSITIONALLY WEATHERED ROCK / PARTIALLY WEATHERED ROCK SURFACE (TWR / PWR)
- ESTIMATED TOP OF ROCK SURFACE
- ESTIMATED PRE-CLOSURE BOTTOM OF CCR LIMITS
- PROPOSED BARRIER WALL
- ESTIMATED CCR TO REMAIN IN PLACE
- PROPOSED FILL
- EXISTING CLOSURE FILL
- RESIDUAL SOILS AND SAPROLITE
- TRANSITIONALLY WEATHERED ROCK / PARTIALLY WEATHERED ROCK (TWR / PWR)
- PHYLLONITE, BUTTON SCHIST, MYLONITE, AND MYLONITIC BIOTITE GNEISS (OZbs)
- BIOTITE GNEISS (LONG ISLAND CREEK GNEISS) (Oli)
- ESTIMATED GROUNDWATER SURFACE (1/29/2024)
- PREDICTED POST-CLOSURE GROUNDWATER SURFACE (SEE NOTE 2)
- RSL-5 -2' — REMOTE SENSING LINEAMENT LOCATION (SEE NOTE 3)
- B-29 -144' — BORING ID; DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT) (TYP); GROUND SURFACE ELEVATION; SCREEN INTERNAL
- PROPOSED XX 12' — PROPOSED BORING ID; PROPOSED DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT); APPROXIMATE GROUND SURFACE ELEVATION; PROPOSED SCREEN INTERNAL



KEY MAP

NOTES

1. DATA PRESENTED FOR CCR UNIT AP-1 IS INCLUDED FOR REFERENCE ONLY. THIS DATA SHOULD NOT BE CONSIDERED FOR PERMITTING OF CCR UNIT AP-2 AND AP-3/4.
2. THE PREDICTED POST-CLOSURE GROUNDWATER SURFACE IS REPRESENTATIVE OF LONG-TERM SUBSURFACE CONDITIONS EQUILIBRATED TO ENGINEERED CLOSURE ELEMENT.THE SIMULATED POST-CLOSURE WATER TABLE WAS GENERATED WITH A STEADY-STATE GROUNDWATER FLOW MODEL, USING THE MODFLOW USG-TRANSPORT CODE. STEADY-STATE CONDITIONS ASSUME LONG-TERM EQUILIBRIUM WITH SITE CLOSURE FEATURES, INCLUDING AN UNDERDRAIN SYSTEM BENEATH THE AP-3/4 BUTTRESS, A FULLY-ENCAPSULATING HYDRAULIC FLOW BARRIER WALL AROUND AP-1, AND LOW-PERMEABILITY COVERS OVER BOTH AP-3/4 AND AP-1.
3. COLOR GREEN SYMBOL INDICATES PRESENCE OF A LINEAMENT AS DETERMINED BY REMOTE SENSING / LINEAMENT ANALYSIS COMPLETED BY EXPERIENCED GOLDER/WSP PERSONNEL USING SHADED RELIEF MAPS GENERATED FROM DIGITAL ELEVATION DATA, AERIAL PHOTOGRAPHS, AND USGS TOPOGRAPHIC MAPS FROM 1954 AND 1997.
4. THE OVERBURDEN IS COMPRISED OF RESIDUAL SOILS, SAPROLITE, AND TRANSITIONALLY WEATHERED ROCK (TWR) OR PARTIALLY WEATHERED ROCK (PWR).

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, ON THE AP-1 IS AUGUST 31, 2022, ON AP-2, 3/4 IS NOVEMBER 2, 2022. 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, INC. GEOLOGIC MAPPING, SEPTEMBER 6, 2024.
4. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED AND/OR RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020 / 2023.
5. THE ESTIMATED TOP OF TWR/PWR AND ROCK SURFACES SHOWN ON THE CROSS-SECTION ARE BASED ON THE TOP OF TWR/PWR AND ROCK ELEVATIONS SHOWN ON THE WELL/PIEZOMETER BORING LOGS, AND ON TOP OF TWR/PWR AND ROCK CONTOUR SURFACES PRODUCED FROM GRIDDING OF AVAILABLE DATA.

FOR PERMITTING PURPOSES
NOT FOR CONSTRUCTION

REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW
6	2024-11-26	GW JAN 2024 & PREDICTED LEVELS, TOR, TWR/PWR, PROP. MW, LINEAMENTS	DLP	CRP	DAH	GLH
5	2023/12/06	UPDATE WATER LEVELS, & TOP OF ROCK SURFACE TO INCLUDE BORINGS SINCE 2021	DLP	CRP	DAH	GLH
4	2023/05/12	UPDATED TOPO, WATER LEVEL TO 09/2022 & 03/2023, ADDITIONAL MONITORING WELL	DLP	CRP	RNQ	GLH
3	2022/07/14	NOTE ADDED FOR AP1 DATA	DLP	CRP	RPK	GLH
2	2022/02/15	WATER LEVELS UPDATE 10/2021	DLP	RMS	RKP	GHL
1	2021/09/01	ADDED 2021 PIEZOMETERS / UPDATED CONTOURS	CG	AVR	DLP	RPK/GLH
0	2020/10/20	ADD CROSS-SECTIONS AND WELL DATA	DLP	CCP	BAS	TIR / GLH

CLIENT
GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

Georgia Power

PROJECT
HYDROGEOLOGIC ASSESSMENT REPORT (HAR)
PLANT MCDONOUGH-ATKINSON
CCR UNIT AP-2 AND AP-3/4

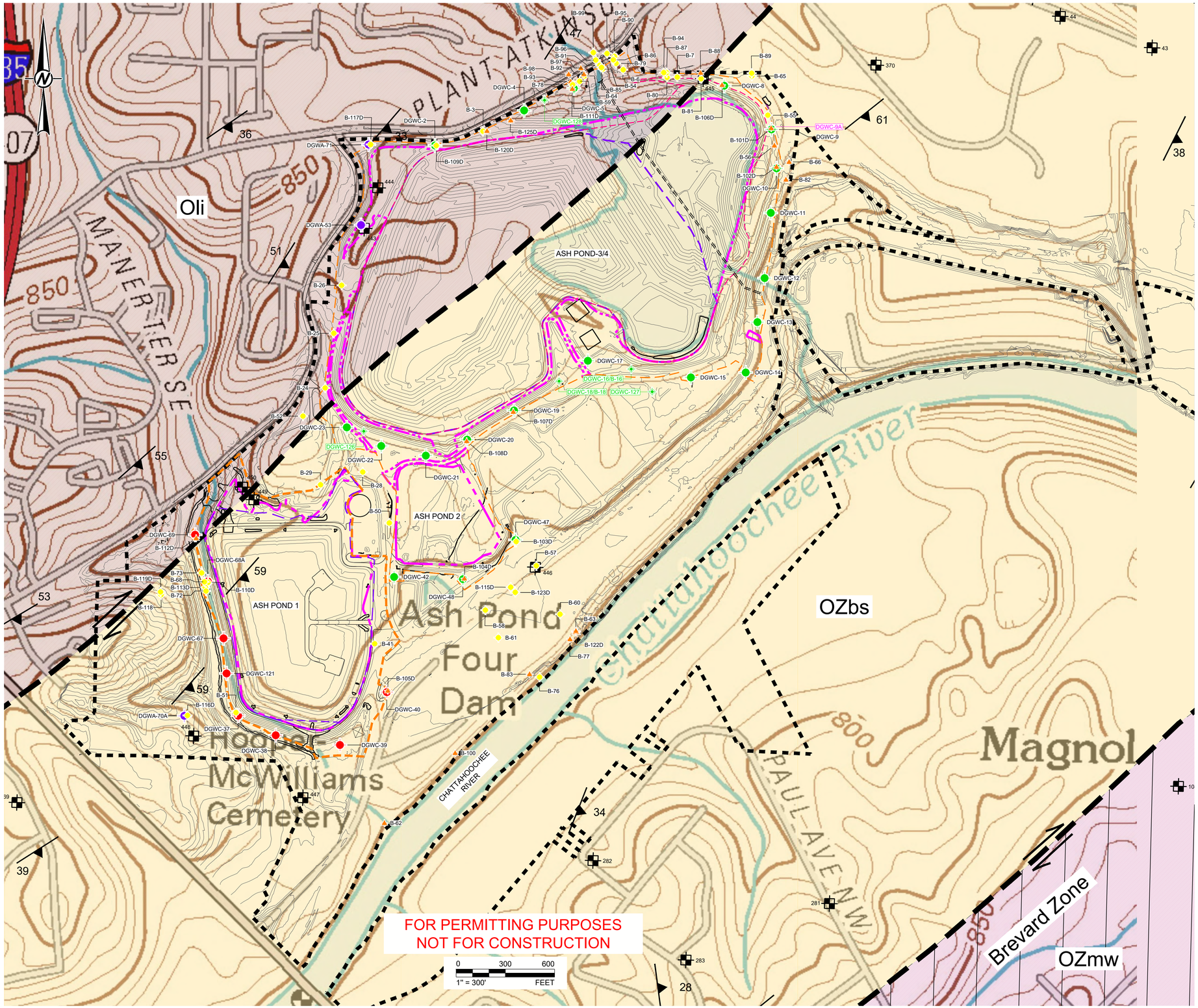
TITLE
GEOLOGIC CROSS-SECTION SCHEMATIC J-J'
SHEET 10

CONSULTANT
wsp

YYYY-MM-DD	2024-11-26
DESIGNED	DLP
PREPARED	CRP
CHECKED	DAH
REVIEWED / APPROVED	GLH

PROJECT NO. US0037149.3190 (GL1777449)
REV. 6
SHEET GW-3j

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D
0 1 in



LEGEND

- EXISTING CONTOURS (SEE REFERENCE 4)
- PROPERTY BOUNDARY (SEE REFERENCE 1)
- APPROXIMATE PRE-CLOSURE CCR LIMITS
- FINAL CLOSURE CCR LIMITS
- PERMIT BOUNDARY

GEOLOGIC LEGEND

- Oli - BIOTITE GNEISS (LONG ISLAND CREEK GNEISS)
- OZbs - PHYLLONITE, BUTTON SCHIST, MYLONITE, AND MYLONITIC BIOTITE GNEISS
- OZmw - BREVARD ZONE MYLONITE - WHITE
- INTERPRETED GEOLOGIC CONTACT
- FAULT (STRIKE / SLIP) - APPROXIMATE LOCATION
- STRIKE AND DIP OF FOLIATION
- GEOLOGIC MAP STATION
- BREVARD ZONE (AREA OF MOST INTENSE SHEARING)
- DGWA-X — UPGRADIENT DETECTION MONITORING WELL (SEE REFERENCE 5)
- DGWC-X — AP-1 DETECTION MONITORING WELL (SEE REFERENCE 5)
- DGWC-X — AP-2, 3/4 DETECTION MONITORING WELL (SEE REFERENCE 5)
- B-XX — ASSESSMENT WELL (SEE REFERENCE 5, 6 AND 7)
- B-XX — PIEZOMETER (SEE REFERENCE 5, 6 AND 7)
- DGWC-X — PROPOSED DETECTION MONITORING WELL REPLACEMENT
- DGWC-X — PROPOSED DETECTION MONITORING WELL

NOTE

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

REFERENCES

1. APPROXIMATE PROPERTY BOUNDARY PROVIDED BY SOUTHERN COMPANY SERVICES (2017).
2. THE BASE TOPOGRAPHY, AND CONTOUR ELEVATIONS PER USGS MAP.
3. GEOLOGIC MAPPING PERFORMED BY PETROLOGIC SOLUTIONS, INC., SEPTEMBER 6, 2024.
4. THE EXISTING TOPOGRAPHY, AND CONTOUR ELEVATIONS 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 IS AUGUST 31, 2022, ON AP-2, 3/4 IS NOVEMBER 2, 2022. THE TOPOGRAPHIC CONTOUR INTERVALS IS 5 FOOT.
5. SCS PLANT MCDONOUGH HYDROGEOLOGICAL INVESTIGATION (2012 TO 2020).
6. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020-2023.
7. WSP PLANT MCDONOUGH SUPPLEMENTAL INVESTIGATION (MAY 2023).
8. 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	RVW
7	2024/11/26	CLIENT & PROJECT NAME, UPDATED PER 2024 GEOLOGIC MAPPING, ADD WELLS	DLP	CRP	RNQ	RNQ
6	2023/12/06	UPDATE AERIAL IMAGE MAY-SEP 2023	DLP	CRP	RNQ	RNQ
5	2023/05/12	UPDATED TOPO & AERIAL	DLP	CRP	RNQ	GLH
4	2022/07/14	NOTE ADDED FOR AP1 DATA	DLP	CRP	RPK	GLH
3	2021/09/01	UPDATED FINAL CLOSURE CCR LIMITS, CONTOURS	BAS	CRP	RPK	GLH
2	2020/10/20	PROJECT TITLE CHANGE	DLP	CCP	BAS	TIR / GLH
1	2020/03/06	GEOLOGIC MAP CHANGED FROM GW-2 TO NOW GW-4	VPM	VPM	JRJ	TIR / GLH
0	2018/05/04	FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION	SEP	DJC	KNJ	RPK / GLH

CLIENT
GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

Georgia Power

PROJECT
HYDROGEOLOGIC ASSESSMENT REPORT (HAR)
PLANT MCDONOUGH-ATKINSON
CCR UNIT AP-2 AND AP-3/4

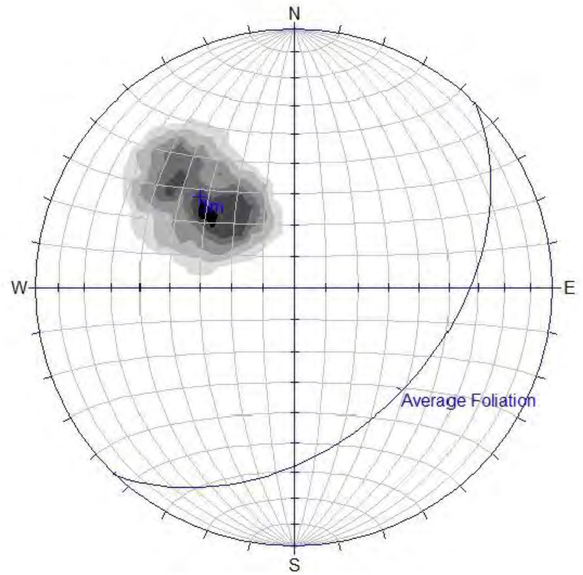
TITLE
GEOLOGIC MAP

CONSULTANT
wsp

YYYY-MM-DD	2024-11-26
DESIGNED	DLP
PREPARED	CRP
CHECKED	DAH
REVIEWED / APPROVED	GLH

PROJECT NO. US0037149.3190 (GL1777449)
REV. 7
SHEET GW-4

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D
0 1in

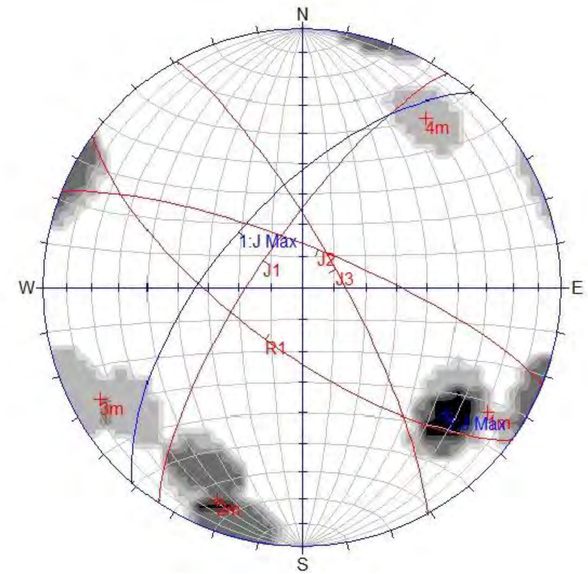


ORIENTATIONS

ID	STRIKE / DIP RIGHT
1 M	044 / 42

EQUAL AREA
LOWER HEMISPHERE
40 POLES
40 ENTRIES

PLANT McDONOUGH - FOLIATION



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

PLANT McDONOUGH - JOINTS

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	RVW
4	2024-11-26	CLIENT AND PROJECT NAME REVISION	DLP	CRP	RNQ	GLH
3	2022/07/14	NOTE ADDED FOR AP1 DATA	DLP	CRP	RNQ	GLH
2	2020/10/20	PROJECT TITLE CHANGE	DLP	CCP	BAS	TIR / GLH
1	2020/03/06	DISCONTINUITY DATA FROM GEOLOGIC MAPPING CHANGED FROM GW-3 TO GW-5	VPM	VPM	JRJ	TIR / GLH
0	2018/05/04	FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION	SEP	DJC	KNJ	RPK / GLH

FOR PERMITTING PURPOSES
NOT FOR CONSTRUCTION

CLIENT
GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

Georgia Power

PROJECT
HYDROGEOLOGIC ASSESSMENT REPORT (HAR)
PLANT MCDONOUGH-ATKINSON
CCR UNIT AP-2 AND AP-3/4

TITLE
DISCONTINUITY DATA FROM GEOLOGIC MAPPING

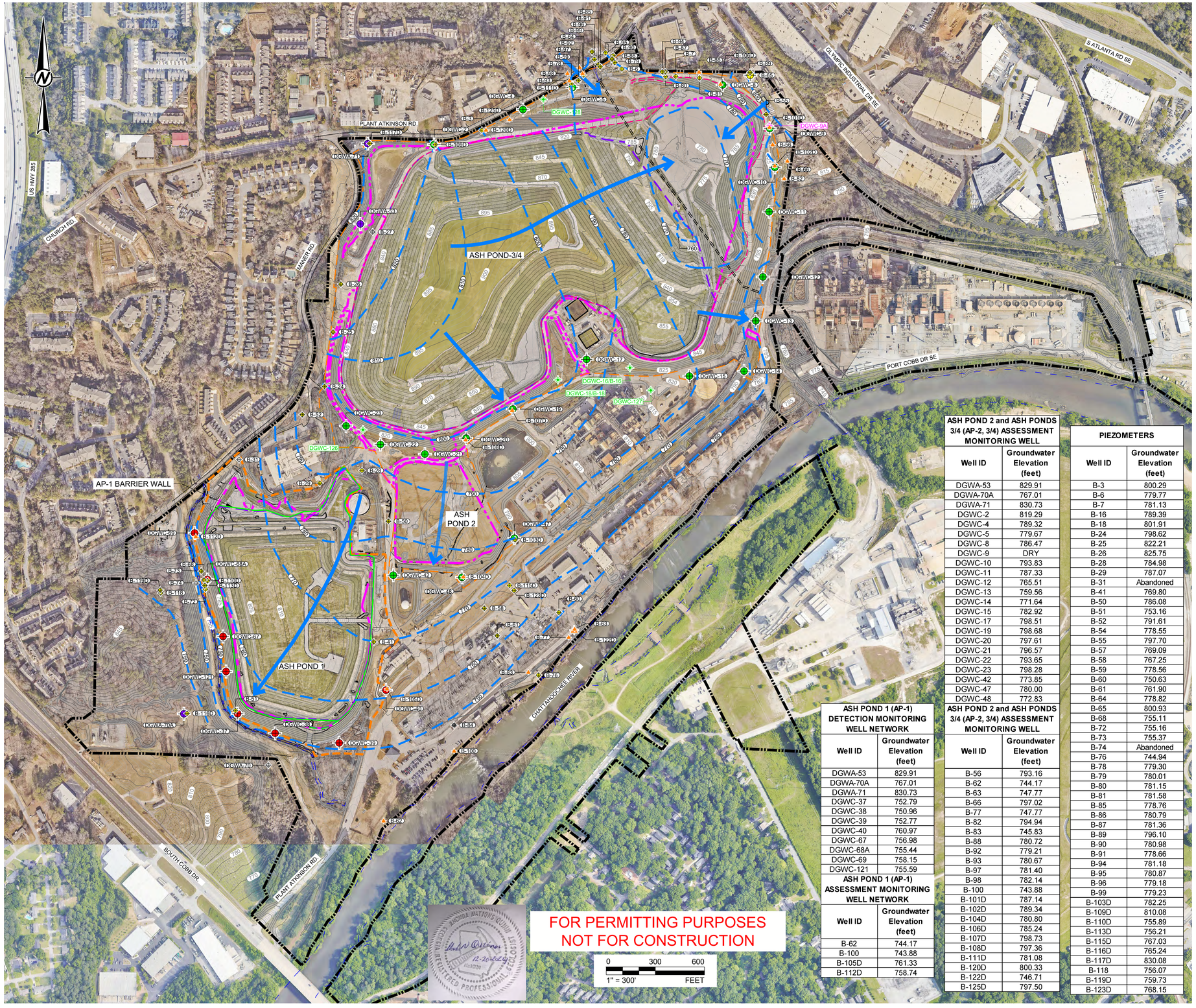
CONSULTANT
wsp

YYYY-MM-DD	2024-11-26
DESIGNED	DLP
PREPARED	CRP
CHECKED	DAH
REVIEWED / APPROVED	GLH

PROJECT NO. US0037149.3190 (GL1777449)
REV. 4
SHEET GW-5

0 1 in
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D


ASH POND-3/4
ASH POND 2
ASH POND 1
EX. 90"Ø CMP CULVERT
AP-1 BARRIER WALL
PLANT ATKINSON RD
US HWY 285
CHURCH RD
MANER RD
S ATLANTA RD SE
OLYMPIC INDUSTRIAL DR SE
PORT COBB DR SE
CHATTAHOOCHEE RIVER
SOUTH Cobb DR
DGWA-1
DGWA-2
DGWA-3
DGWA-4
DGWA-5
DGWA-6
DGWA-7
DGWC-1
DGWC-2
DGWC-3
DGWC-4
DGWC-5
DGWC-6
DGWC-6A
DGWC-7
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DGWC-16/B-16
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DGWC-18/B-18
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B-40



LEGEND

- EXISTING CONTOURS (SEE REFERENCE 2, & 3)
- PROPERTY BOUNDARY (SEE REFERENCE 1)
- APPROXIMATE PRE-CLOSURE CCR LIMITS
- POST CLOSURE CCR LIMITS
- FINAL COVER SYSTEM LIMITS
- PERMIT BOUNDARY
- FUTURE BARRIER WALL OPTION A
- FUTURE BARRIER WALL OPTION B
- SURFACE WATER STREAM / RIVER
- GROUNDWATER SURFACE CONTOURS (FEET NAVD88)
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- DGWA-X — UPGRADIENT DETECTION MONITORING WELL
- DGWC-X — AP-1 DETECTION MONITORING WELL
- DGWC-X — AP-2, 3/4 DETECTION MONITORING WELL
- B-XX — ASSESSMENT WELLS
- B-XX — PIEZOMETER
- B-XX — ABANDONED PIEZOMETER OR MONITORING WELL
- DGWC-X — PROPOSED DETECTION MONITORING WELL REPLACEMENT
- DGWC-X — PROPOSED DETECTION MONITORING WELL

NOTES

1. GROUNDWATER ELEVATIONS ARE BASED ON WATER LEVELS MEASURED ON JANUARY 29, 2024.
2. PIEZOMETERS B-31 AND B-74 WERE ABANDONED IN OCTOBER 2023.
3. 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, AND CONTOUR ELEVATIONS 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 IS AUGUST 31, 2022, ON AP-2, 3/4 IS NOVEMBER 2, 2022. AERIAL IMAGERY DATE FOR AP-1, AP-2, AND AP-3/4 PROVIDED BY GEORGIA POWER IS JANUARY 25, 2024, SURROUNDING AREAS SOURCED BY PLEXEARTH, DATED SEPTEMBER 28, 2023. 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.
3. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020 / 2023.
4. COORDINATES SYSTEM: NAD 1983 STATE PLANE GEORGIA WEST (U.S. FEET); ELEVATIONS DISPLAY IN FEET REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (FEET NAVD88).

ASH POND 2 and ASH PONDS 3/4 (AP-2, 3/4) ASSESSMENT MONITORING WELL

Well ID	Groundwater Elevation (feet)
DGWA-53	829.91
DGWA-70A	767.01
DGWA-71	830.73
DGWC-2	819.29
DGWC-4	789.32
DGWC-5	779.67
DGWC-8	786.47
DGWC-9	DRY
DGWC-10	793.83
DGWC-11	787.33
DGWC-12	765.51
DGWC-13	759.56
DGWC-14	771.64
DGWC-15	782.92
DGWC-17	798.51
DGWC-19	798.68
DGWC-20	797.61
DGWC-21	796.57
DGWC-22	793.65
DGWC-23	798.28
DGWC-42	773.85
DGWC-47	780.00
DGWC-48	772.83

PIEZOMETERS

Well ID	Groundwater Elevation (feet)
B-3	800.29
B-6	779.77
B-7	781.13
B-16	789.39
B-18	801.91
B-24	798.62
B-25	822.21
B-26	825.75
B-28	784.98
B-29	787.07
B-31	Abandoned
B-41	769.80
B-50	786.08
B-51	753.16
B-52	791.61
B-54	778.55
B-55	797.70
B-57	769.09
B-58	767.25
B-59	778.56
B-60	750.63
B-61	761.90
B-64	778.82
B-65	800.93
B-68	755.11
B-72	755.16
B-73	755.37
B-74	Abandoned
B-76	744.94
B-78	779.30
B-79	780.01
B-80	781.15
B-81	781.58
B-85	778.76
B-86	780.79
B-87	781.36
B-89	796.10
B-90	780.98
B-91	778.66
B-94	781.18
B-95	780.87
B-96	779.18
B-99	779.23
B-103D	782.25
B-109D	810.08
B-110D	755.89
B-113D	756.21
B-115D	767.03
B-116D	765.24
B-117D	830.08
B-118	756.07
B-119D	759.73
B-123D	768.15

ASH POND 1 (AP-1) DETECTION MONITORING WELL NETWORK

Well ID	Groundwater Elevation (feet)
DGWA-53	829.91
DGWA-70A	767.01
DGWA-71	830.73
DGWC-37	752.79
DGWC-38	750.96
DGWC-39	752.77
DGWC-40	760.97
DGWC-67	756.98
DGWC-68A	755.44
DGWC-69	758.15
DGWC-121	755.59

ASH POND 1 (AP-1) ASSESSMENT MONITORING WELL NETWORK

Well ID	Groundwater Elevation (feet)
B-62	744.17
B-100	743.88
B-105D	761.33
B-112D	758.74

ASH POND 2 and ASH PONDS 3/4 (AP-2, 3/4) ASSESSMENT MONITORING WELL

Well ID	Groundwater Elevation (feet)
B-56	793.16
B-62	744.17
B-63	747.77
B-66	797.02
B-77	747.77
B-82	794.94
B-83	745.83
B-88	780.72
B-92	779.21
B-93	780.67
B-97	781.40
B-98	782.14
B-100	743.88
B-101D	787.14
B-102D	789.34
B-104D	780.80
B-106D	785.24
B-107D	798.73
B-108D	797.36
B-111D	781.08
B-120D	800.33
B-122D	746.71
B-125D	797.50

REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW
8	2024/11/26	CLIENT & PROJECT,JAN 2024 AERIAL & GROUND WATER ELEV,PROP. WELLS	DLP	CRP	RNQ	RNQ
7	2023/12/06	UPDATED AERIAL 2023; WATER LEVEL 01/31/2023; B-31, B-74, B-84 ABAND.	DLP	CRP	RNQ	RNQ
6	2023/05/12	UPDATED TOPO, WATER LEVEL 09/2022 & 03/2023, ADDITIONAL MONITORING WELLS	DLP	CRP	RNQ	GLH
5	2022/07/14	NOTE ADDED FOR AP1 DATA	DLP	CRP	RPK	GLH
4	2022/01/07	UPDATED FOR OCTOBER 2021	SB	CRP	RPK	
3	2021/09/01	UPDATED FOR FEBRUARY 2021	DLP	CRP	RPK/GLH	
2	2020/10/20	UPDATED FOR AUGUST 2020	DLP	VPM	BAS	TIR / GLH
1	2020/03/06	UPDATED FOR AUGUST 2019	VPM	VPM	JRJ	TIR / GLH
0	2022/01/10	FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION	SEP	DJC	KNJ	RPK / GLH

CLIENT
GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

Georgia Power

PROJECT
HYDROGEOLOGIC ASSESSMENT REPORT (HAR)
PLANT MCDONOUGH-ATKINSON
CCR UNIT AP-2 AND AP-3/4

TITLE
POTENTIOMETRIC SURFACE MAP - JANUARY 29, 2024

CONSULTANT
wsp

YYYY-MM-DD	2024-11-26
DESIGNED	DLP
PREPARED	CRP
CHECKED	DAH
REVIEWED / APPROVED	GLH

PROJECT NO. US0037149.3190 (GL1777449)
REV. 8
SHEET GW-7

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D
0 1in

APPENDIX A

Perimeter Barrier Wall Design Support – Drilling and Testing Summary Report

TECHNICAL MEMORANDUM

DATE December 13, 2023 **Project No.** 31406440.006

TO Ms. Alex Wild, PE; Ms. Lauren Petty, PG – Georgia Power Company

CC Mr. Stephen Benda – GPC; Mr. Brian Goldsmith, Mr. Nortey Yeboah, Mr. Damon Woodson – SCS

FROM Gregory L. Hebeler, PE; David Hannam, PG **EMAIL gregory.hebeler@wsp.com**

PLANT MCDONOUGH AP-1 PERIMETER BARRIER WALL DESIGN SUPPLEMENTAL SUBSURFACE INVESTIGATION SUMMARY MEMO

Executive Summary

This memo serves to summarize findings from a geotechnical and hydrogeological study performed in spring 2023 under the direction of WSP USA Inc. (WSP) (formerly Golder Associates Inc.) to assist Georgia Power Company (Georgia Power) in the collection of supplemental field data to support the perimeter barrier wall design at Plant McDonough (Site) Ash Pond 1 (AP-1).

Numerous subsurface investigation efforts and reports have been completed at Plant McDonough to inform the understanding of subsurface conditions at AP-1. These geotechnical, geologic, and geophysical subsurface investigations generated data that provided the basis for characterizing ground conditions for the AP-1 perimeter barrier wall design. A recent (2023) drilling, testing, and sampling program was designed based on a review of the site conditions with the objective of providing additional data in selected areas along the proposed barrier wall alignment. WSP, who serve as engineering and permitting consultants for AP-1 were hired by Georgia Power to complete a scope of services aimed at generating additional data on the following conditions under the approximate footprint of the proposed barrier wall:

- Subsurface stratigraphy and hydrogeologic conditions surrounding AP-1.
  - Depth to bedrock and thickness of partially weathered rock (PWR)
  - Quantitative bedrock data, including fracture frequency, rock hardness, and hydraulic property characteristics of bedrock strata.

WSP contracted Premier Drilling LLC (Premier) and completed a five-hole supplemental drilling program including soil logging, rock core logging, geotechnical testing, hydrogeological testing, and geophysical logging in Spring 2023. The major findings of this field investigation are summarized below.

- The geologic units encountered in the program are consistent with the pre- 2023 investigation understanding from the conceptual site model and overall geologic and hydrogeologic understanding of the AP-1 site conditions based on previous investigations. See the site Hydrogeologic Assessment Report (WSP 2023) for relevant site summary conditions.
- The 2023 dataset serves to expand the 2017 Advanced Engineering Investigation dataset used in the original design of the perimeter barrier wall.

- Some variability between previously estimated top of PWR and top of rock was observed across the new investigation locations, reinforcing the previously understood trend that PWR and rock conditions and elevations can vary tens of feet locally across small distances onsite.
- Drillhole geotechnical logging data confirmed previous onsite data that fracture frequency and weathering generally decrease and core recovery increases below 30 ft from the top of rock.
- Geotechnical rock strength laboratory results were variable and indicate that the strength and hardness of the rock mass depend heavily on the degree of rock weathering at a given depth and location, but that UCS strengths up to nominally 20,000 psi were encountered in the tested samples.
- The 2023 investigations extended deeper into bedrock than most previous investigations and further reinforce that bedrock conditions can be grouped into two separate near surface characteristic zones. An upper highly fractured, weathered bedrock zone, approximately 30 ft thick, and with a hydraulic conductivity approximately an order of magnitude greater than the lower less fractured and less weathered bedrock zone.
- The previous hydraulic conductivity value used to represent the entire bedrock formation in groundwater modeling efforts was found to be a reasonable average of the upper and lower bedrock zones. The previous overall average bedrock k value is about a half order of magnitude higher than the hydraulic conductivity estimated for the lower bedrock zone and a half order of magnitude lower than the hydraulic conductivity estimated for the upper bedrock zone.

1.0 INTRODUCTION

WSP USA Inc. (WSP) (formerly Golder Associates Inc.) performed a geotechnical and hydrogeological study in spring 2023 to assist Georgia Power Company (Georgia Power) in the collection of supplemental field data to support the perimeter barrier wall design at Plant McDonough (Site) Ash Pond 1 (AP-1). The scope of services included soil drilling, rock coring, packer testing and downhole geophysics with the goal of generating additional data on the following under the approximate footprint of the proposed barrier wall.

- Depth to bedrock and partially weathered rock (PWR)
- Thickness of PWR
- Quantitative data on the fracture frequency, hardness, and flow characteristics of bedrock strata below the PWR

Drawing Sheet 1 of Appendix A shows a plan view summary of AP-1 and the historical subsurface investigations completed in and around the ash pond along with the locations of the borings drilled in 2023.

1.1 Site Description and Physiography

Plant McDonough is in southeast Cobb County, GA and is owned and operated by Georgia Power. The property occupies approximately 390 acres and is bounded on the southeast by the Chattahoochee River. The Site is located within the Piedmont Physiographic Province of central GA, characterized by gently rolling hills and narrow valleys with locally pronounced linear ridges. Overall, the property slopes gently south towards the Chattahoochee River. Topographic relief near Plant McDonough ranges from less than 750 feet North American Vertical Datum 1988 (ft NAVD88) near the tributaries and river to greater than 840 ft NAVD88 near the center of the property.

AP-1 is 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 western and southern portions of the unit that tie into higher natural ground in the northeast quadrant of the unit.

An unnamed creek originally flowed south through the footprint of the current AP-1 area. The creek was rerouted into an engineered stream channel that now flows parallel and adjacent to the western and southern boundary of AP-1.

1.2 Current Site Conditions and Pond Closure

AP-1 is an inactive surface impoundment at Plant McDonough currently undergoing closure per the plans presented in the Plant McDonough CCR Unit AP-1 Permit Application. The closure process includes placement of a permanent cover system designed to minimize infiltration and erosion and to meet or exceed the requirements of 257.102(d)(3)(ii); as of December 2023, closure construction is substantially complete.

2.0 GEOLOGIC AND HYDROGEOLOGIC SETTING

Multiple subsurface investigations and reports have been completed at AP-1. These investigations have generated data that provided the basis for characterizing ground conditions for the perimeter barrier wall design. Regional and site-specific geology and hydrogeology are discussed in detail in the main body of the Hydrogeologic Assessment Report (HAR) for AP-1 (WSP USA, 2023).

This report summarizes information pertinent to the scope, providing additional data for the AP-1 barrier wall design. For more detailed information on the geologic setting at Plant McDonough please see the HAR.

2.1 Residual Soil and Saprolite

Boring logs indicate that residual and saprolite soils, primarily clayey/sandy silt, sandy silt with clay, and silty sand (increasing with depth), occur as a variably thick deposit overlying partially weathered rock (PWR) and bedrock across most of the Site. These soils range in thickness from approximately 4 to 55 feet across the Site and were generally encountered at or near ground surface. Underlying the residuum and saprolite, is PWR, which is defined by Standard Penetration Test (SPT) blow counts that exceed 100 blows/twelve inches. The residual soils and saprolite are collectively referred to as overburden in this report and the groundwater models for the Site. The thickness of the overburden encountered in the borings is variable, ranging from a minimum of approximately 10 feet to as much as approximately 80 feet. Thickness of PWR varied from 0 feet to approximately 20 feet.

2.2 Lithologic Units

Based on the detailed geologic mapping carried out previously onsite, 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 unsheared (Figure 2.1).

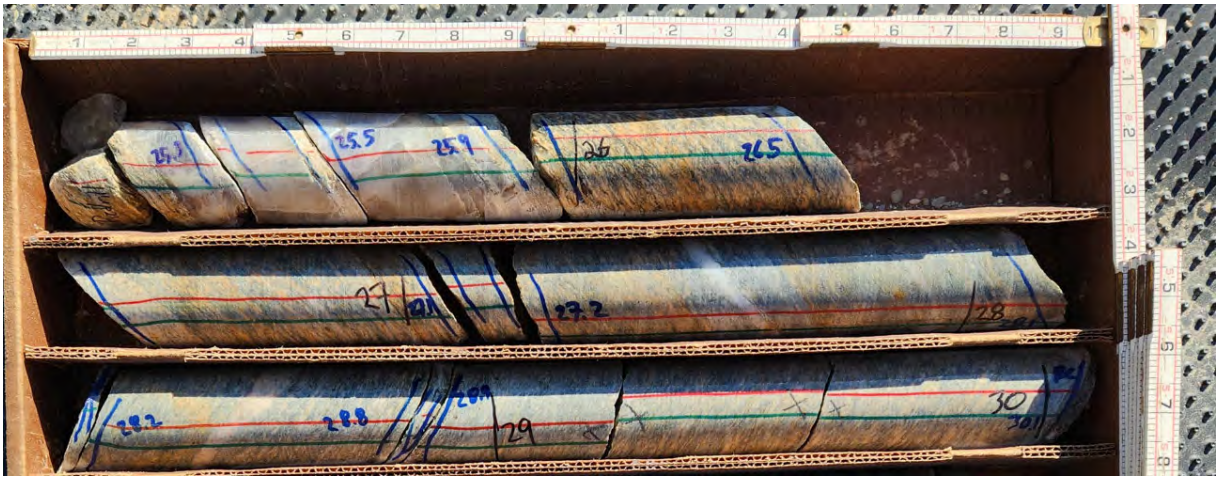


Figure 2.1: Rock Core Photo showing the Long Island Creek Gneiss formation from BW-5, 25 to 30 feet below Existing Ground Level

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 tens 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 (Figure 2.2).

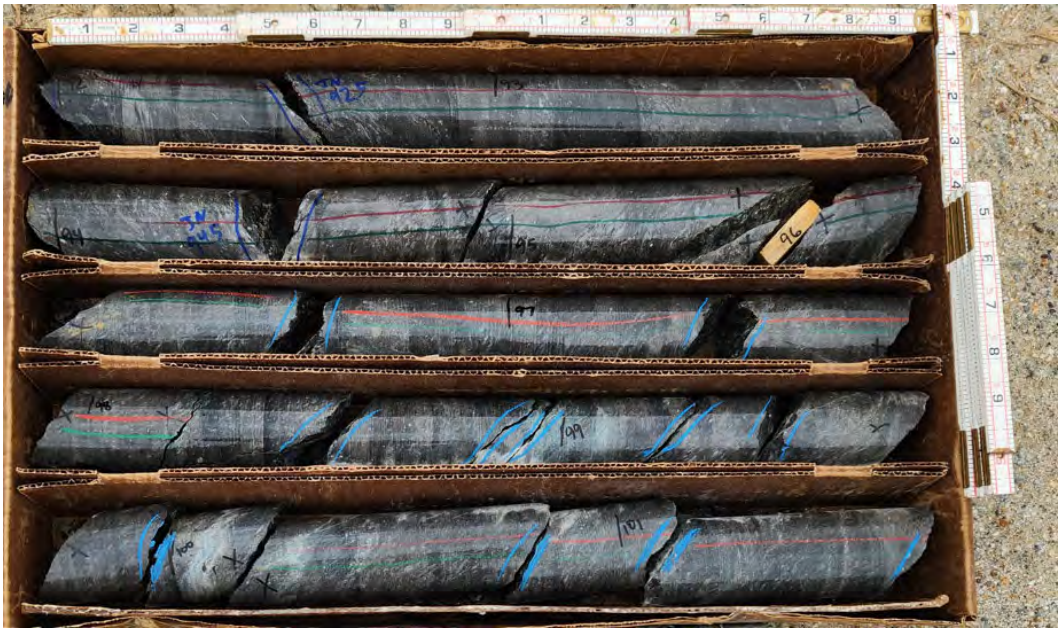


Figure 2.2: Rock Core Photo showing the Button Schist formation from BW-3, 92 to 101 feet below Existing Ground Level

3.0 2023 FIELD INVESTIGATION AND DATA COLLECTION

WSP provided geological, geotechnical, and hydrogeological consulting services to drill BW-1 to BW-5 at AP-1 at Georgia Power's Plant McDonough. The five drilling locations were spatially distributed along the alignment for the proposed location of a barrier wall for AP-1 and were field located by a WSP engineer or geologist. The project location and drillhole sites are shown on Drawing Sheet 1 of Appendix A.

The drilling was performed by Premier Drilling LLC (Premier). Premier used a Central Mining Equipment (CME) 550X truck-mounted drill rig for this project. Soil drilling was conducted using hollow stem augers (HSA) for BW-5 and mud rotary wash drilling with a tricone rock coring bit for the remaining four drillholes. Rock coring was conducted using double tube HQ size (63.5-mm nominal core diameter) wireline coring methods with a 10-ft double tube core barrel. All holes were drilled vertically and cored continuously from the bottom of the PVC casing to the full depth of the holes. Premier used standard diamond-impregnated drill bits.

Interval pressure testing using inflatable packers was performed in all five of the drillholes. Interval pressure testing was conducted in the PWR where possible (BW-1 and BW-5). After completion of the drilling program, WSP selected samples of rock for geotechnical testing. Geotechnical testing was completed at WSP's Atlanta material testing laboratory.

A summary of field investigation activities and associated data collection is presented below:

- Drilling of five vertical drillholes (between 71 feet [ft] and 131 ft in length) totaling 511 ft of total drilling.
- HSA were used to advance to top of rock in BW-5 where PVC casing was set to a depth of 25 ft. SPT samples were collected on 5 ft centers.
- Rotary wash drilling with a tricone rock bit was used to advance to top of rock to set PVC casing in the remaining 4 drillholes totaling 242.5 ft.
- Rotary core drilling methods were used for a total of 243.5 ft of rock coring with associated geological/ geotechnical core logging using WSP's standard technical procedure.
- WSP collected 18 rock core samples for geotechnical core testing including unconfined compressive strength testing, point load tests, and moisture content tests.
- WSP completed geophysical logging of four of the drillholes using caliper, gamma-logging, heat pulse flow meter (only BW-4), fluid temperature, conductivity and single-point resistance (SPR).
- Hydrogeological (packer) testing was carried out in all five of the drillholes with a total of 17 tests. Fifteen (15) of the tests were in bedrock and two of the tests were in the PWR.
- Metro Engineering & Surveying Company, Inc. (Metro) completed a survey of the drillhole locations.

Drillhole logs along with soil and core photography are provided in Appendices B and C. Geotechnical laboratory results are included as Appendix D. A summary of the geophysical testing equipment, methodologies, and results along with the geophysical logs are provided in Appendix E. Hydrogeological testing methodology, equipment, and results are summarized in Appendix F.

3.1 Drillhole Locations

WSP completed a final collar survey of the completed drillhole locations. Details of the drillholes, including collar survey coordinates and elevations, are provided in Table 3.1. Drilling started March 6, 2023 and finished March 23, 2022. The locations of the drillholes are shown in Sheet 1 of Appendix A.

Table 3.1: Summary of Drillhole Locations

Drillhole Name	Drilling Start Date	Drilling End Date	Northing (ft)	Easting (ft)	Ground Surface Elevation (ft)	Inclination / Azimuth	Corehole Depth (ft bgs)	Corehole Bottom El. (ft)
BW-1	3/8/2023	3/13/2023	1,391,134.51	2,200,836.22	789.91	-90 / --	93	696.9
BW-2	3/9/2023	3/23/2023	1,390,483.21	2,201,056.50	789.82	-90 / --	110	679.8
BW-3	3/16/2023	3/22/2023	1,390,653.98	2,201,675.12	789.67	-90 / --	106	683.7
BW-4	3/17/2023	3/27/2023	1,391,306.59	2,201,755.32	797.05	-90 / --	131	666.1
BW-5	3/6/2023	3/7/2023	1,391,737.84	2,200,988.01	779.66	-90 / --	71	708.7

Notes:
1. Coordinates are provided in Georgia State Plane, West Zone, NAD83(2011)
2. Elevations are provided in North American Vertical Datum 1988.
3. ft - feet
4. bgs – below ground surface

3.2 Overburden Drilling and Rock Coring

Details of the drilling, including the encountered depth of PWR and total drillhole depth, are shown in Table 3.2. A total of 511 ft was drilled in the five drillholes with 243.5 ft of rock coring.

Table 3.2: Drilling Summary

Drillhole	Bottom of Soil Depth (ft bgs)	Bottom of PWR Depth (ft bgs)	Total Depth (ft bgs)	Soil Thickness (ft)	PWR Thickness (ft)	Coring Length (ft)
BW-1	39.5	45.0	93.0	39.5	5.5	48.0
BW-2	60.5	62.0	110.0	60.5	1.5	48.0
BW-3	58.0	-	106.0	58.0	-	48.0
BW-4	77.5	-	131.0	77.5	-	53.5
BW-5	10.5	25.0	71.0	10.5	14.5	46.0

Notes:
1. ft – feet
2. bgs – below ground surface
3. "-" unit not present in drillhole

For BW-4 where utilities were a concern, the top 10 ft below the ground surface was hydro-vacuumed and the location was approved by a Kinder Morgan representative on March 16, 2023. Following completion of all drilling,

logging, and testing; drillholes were abandoned using a cement-bentonite grout via tremie-grouting techniques. Bentonite pellets were used to top off grouted drillholes after grout settled.

3.2.1 Soil Logging

Soil sampling and logging was performed by a geologist in general accordance with Soil Sampling Procedures that incorporate the provisions of American Society for Testing and Materials (ASTM) D2488, Standard Practice for Classifications of Soils for Engineering Purposes (Unified Soil Classification System) as well as ASTM D1586-11, Standard Test Method for Standard Penetration Test (SPT) and Split-Barrell Sampling of Soils.

SPT soil sampling was conducted using a 140- pound automatic hammer with a vertical drop of 30 inches to obtain a 2.0-foot (24-inch) long soil sample. Standard SPT sampling only collects an 18-in sample (three 6-inch intervals). For this project a 24-inch sample was collected for the additional sample volume availability. SPT samples were collected at 5.0-foot intervals from roughly ground surface to the top of rock. SPT blow counts were recorded for each six-inch interval, with the middle two intervals comprising the SPT N-value. No Shelby tube samples were collected. In addition, no soil samples were assigned geotechnical testing, at this time.

Soil samples were placed into glass jars at the drill site and labelled with drillhole name, drill date, sample depth, and SPT values. Additional samples volume was placed in sealed Ziploc bags. All soil samples were logged, photographed, and geotechnically sampled by WSP personnel. Split spoon samples were photographed with a photo board indicating the relevant soil information. A tape measure was included in each photo for scale and reference.

3.2.2 Rock Core Logging

Geological and geotechnical logging (in addition to defining and describing the lithological formations/units) was performed to provide a detailed description of the rock mass, including characteristics of structural discontinuities, to determine the rock quality. The rock mass classification systems, which can be assessed from the rock core descriptions, include the Rock Tunneling Quality Index (Q system), after Barton et al. (1974); and the Rock Mass Rating (RMR) system, after Bieniawski (1989).

Detailed geotechnical and discontinuity logging was performed on five holes for the total 243.5 ft of rock core. A summary of the units/formations encountered and their thicknesses in each drillhole can be found in Table 3.3.

The geotechnical core logging performed by a geologist with WSP included the following:

- Lithological and geological descriptions
- Core parameters: Total Core Recovery (TCR), Rock Quality Designation (RQD), fractures per ft, strength index, and weathering index
- Detailed description of structural discontinuities: Fracture type, dip with respect to core axis, shape, roughness, type, character, and thickness of coating/infilling
- Identification of zones of fault breccia/gouge, karst voids, and broken, or lost core (where noted by the driller)
- Core photography

Table 3.3: Formation Summary by Drillhole

Formations/Units	Drillhole ID				
	BW-1	BW-2	BW-3	BW-4	BW-5
	Depth (ft bgs)				
Top of PWR	39.5	60.5	-	-	10.5
Top of Long Island Creek Gneiss	-	-	-	-	25.0
Top of Button Schist	45.0	62.0	58.0	77.5	31.0
Base of Borehole	93.0	110.0	106.0	131.0	71.0
Formations/Units	**Elevation (ft)**				
Surface Elevation	789.9	789.8	789.7	797.1	779.7
Top of PWR	750.4	729.3	-	-	769.2
Top of Long Island Creek Gneiss	-	-	-	-	754.7
Top of Button Schist	744.9	727.8	731.7	719.6	748.7
Base of Borehole	696.9	679.8	683.7	666.1	708.7
Formations/Units	**Thickness (ft)**				
Soil	39.5	60.5	58.0	77.5	10.5
PWR	5.5	1.5	-	-	14.5
Long Island Creek Gneiss	-	-	-	-	6.0
Button Schist	48.0	48.0	48.0	53.5	40.0
Combined Bedrock	48.0	48.0	48.0	53.5	46.0

Notes:
1. ft - feet
2. ft bgs - feet below ground surface
3. "-" unit is not present in the drillhole.
4. Elevations are provided in North American Vertical Datum 1988
5. PWR – partially weathered rock

Rock core was placed into wax impregnated cardboard boxes at the drill site, with depth indicator blocks, or markings, placed at the end of each core interval. Each core box was labeled with the appropriate drillhole number and depth range. All rock core was logged, photographed, and geotechnically sampled by WSP personnel. Core was photographed with a photo board indicating the relevant core box information. A measuring tape and color scale were also included in each photo for scale and reference.

3.2.3 Geotechnical Sampling and Laboratory Testing of Rock Core Samples

WSP collected 18 rock core samples suitable for geotechnical laboratory testing. Geotechnical samples were brushed and washed clean to remove mud and drill cuttings before carefully packaging and delivery to the WSP laboratory in Norcross, GA. The testing included compressive strength and elastic moduli of rock (ASTM D7012 - Method C) and point load strength index of rock (ASTM 5731) A summary of the results of the geotechnical material properties testing is presented in Table 3.4. Geotechnical laboratory tests results are presented in Appendix D.

Table 3.4: Geotechnical Laboratory Testing Results Summary

Drillhole Name	Sample ID	Sample Depth (ft bgs)	Formation	Rock Type	Test Type	I_s Point Load Strength Index (psi)	UCS (psi)	Unit Weight (pcf)
BW-1	BW-1-2	46.0	Button	Schist	A	792	19,398	-
BW-2	BW-2-3	69.5	Button	Schist	A	115	2,819	-
BW-2	BW-2-4	70.5	Button	Schist	D	109	2,677	-
BW-2	BW-2-6	77.3-78.0	Button	Schist	D	240	5,872	-
BW-3	BW-3-7	59.4	Button	Schist	D	18	451	-
BW-3	BW-3-7	59.4	Button	Schist	A	181	4,423	-
BW-3	BW-3-8	60.3	Button	Schist	A	98	2,410	-
BW-3	BW-3-9	66.7	Button	Schist	A	9	220	-
BW-3	BW-3-10	67.0	Button	Schist	D	18	447	-
BW-3	BW-3-11	68.9	Button	Schist	A	83	2,026	-
BW-4	BW-4-12	78.0	Button	Schist	D	47	1,145	-
BW-4	BW-4-12	78.0	Button	Schist	A	293	7,181	-
BW-4	BW-4-13	79.5	Button	Schist	D	153	3,748	-
BW-4	BW-4-13	79.5	Button	Schist	A	939	23,004	-
BW-4	BW-4-14	89.2	Button	Schist	D	51	1,237	-
BW-4	BW-4-14	89.2	Button	Schist	A	799	19,585	-
BW-4	BW-4-15	89.8-90.7	Button	Schist	N/A	6,015	-	174
BW-5	BW-5-16	25.3	LIC	Gneiss	A	298	7,300	-
BW-5	BW-5-17	25.7	LIC	Gneiss	D	119	2,917	-
BW-5	BW-5-17	25.7	LIC	Gneiss	A	427	10,467	-
BW-5	BW-5-18	27.2-28.0	LIC	Gneiss	N/A	12,787	-	162

Notes:
1. ft bgs - feet below ground surface
2. UCS – unconfined compressive strength. UCS are values based on correlation with point load test except for samples BW-4-15 and BW-5-18 where a direct UCS test was conducted.
3. psi – pounds per square inch
4. pcf – pounds per cubic foot
5. D = Diametral / A = Axial
6. I_s Point Load Strength Index = Failure Load divided by the square of the equivalent dimension
7. N/A – not applicable
8. LIC – Long Island Creek

3.2.4 Geophysical Drillhole Logging

Following completion of geotechnical rock core logging, select drillholes (BW-1, BW-2, BW-3, and BW-4) were logged using caliper, gamma-logging, heat pulse flow meter (BW-4 only), fluid temperature, conductivity, and single-point resistance (SPR) geophysical logging. The logging was performed in the completed drillhole prior to drillhole abandonment. The geophysical logging allows WSP to assess rock condition in place. Figure 3.1 shows geophysical logging equipment being lowered down the drillhole. Figure 3.2 presents an extract of an example geophysical log. Geophysical logs are provided in a technical memorandum summarizing the geophysical drillhole logging equipment, procedure, and results which is provided in Appendix E.



Figure 3.1: Photo of Geophysical Testing at BW-2

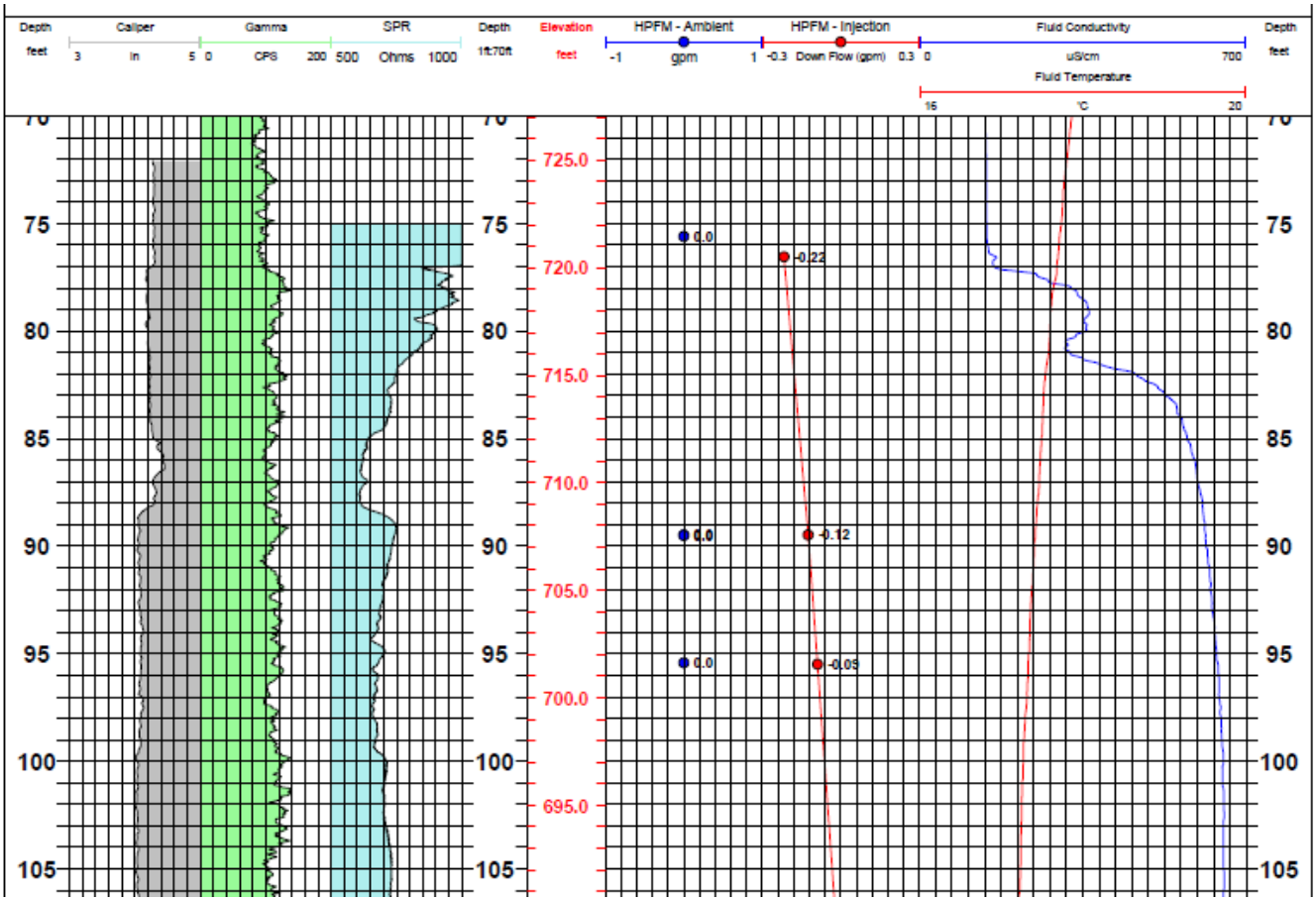


Figure 3.2: Extract of the Downhole Geophysical Log at BW-4

3.3 Hydrogeological Testing

Water pressure (packer) test data were collected and analyzed in all five of the drillholes for a total of 17 tests. Fifteen of the tests were in bedrock and two of the tests were in the PWR. The testing completed resulted in estimates of hydraulic conductivity (the horizontal component). On this site, most groundwater movement is expected to occur laterally (sub-horizontally). This is because of the direction of groundwater flow, and that the horizontal x- and y-direction (horizontal) permeabilities are higher than the z-direction (vertical) permeability. A Technical Memorandum was prepared summarizing the equipment, analyses, and results and is provided in Appendix F. Figures 3.3, and 3.4, show the hydrogeological testing setup at surface, a conventional single packer that was sent downhole, and an example wireline packer testing tool schematic.



Figure 3.3: Photo of Hydrogeological Testing Setup at Surface

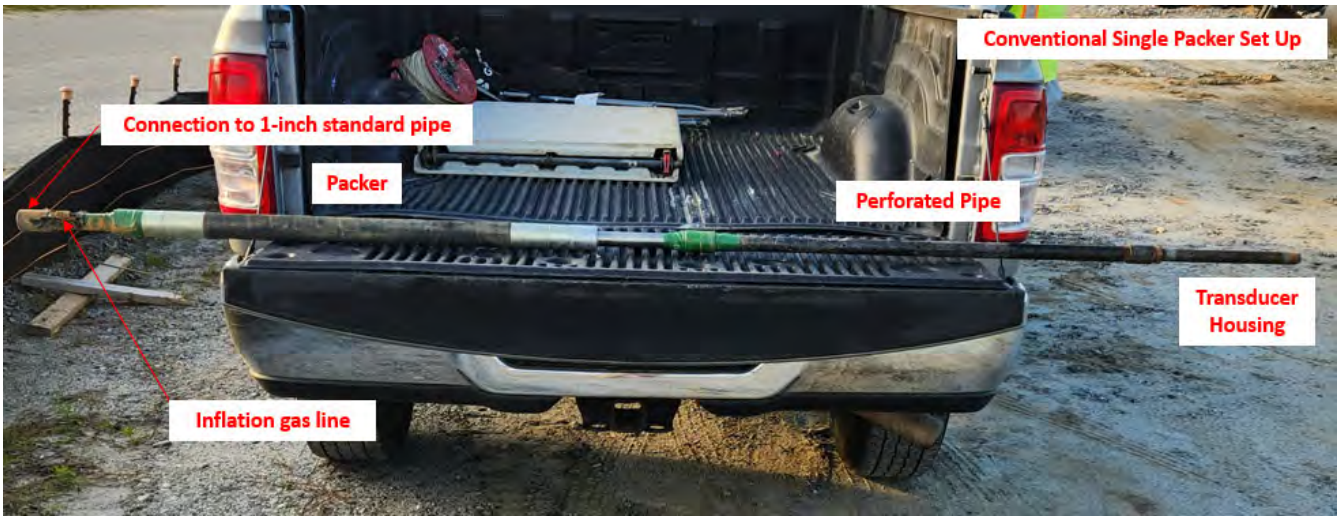


Figure 3.4: Photo of the Conventional Single Packer Setup

3.3.1 Hydrogeological Testing Summary

Seventeen hydrogeological (packer) tests were completed in five investigation drillholes (BW-1, BW-2, BW-3, BW-4, and BW-5) covering a cumulative drillhole length of 264 feet. Figure 3.6 presents an example Lugeon test curve for laminar flow and the interpreted hydraulic conductivity from the water pressure test record for BW-3's test from 62.7 to 106.0 ft bgs. The test results are summarized in Table 3.5. The estimated horizontal hydraulic conductivity values were primarily moderate (1×10^{-04} to 1×10^{-05} cm/s), with several in the 1×10^{-03} cm/s (high) range and several in the 1×10^{-07} cm/ s (low) range.

As transmissivity is independent of the length of the drillhole, a simplification of the results provided above in Table 3.5 was possible. In addition, transmissivities can be added or subtracted based on the features inferred to transmit groundwater. Note that transmissivity is related to hydraulic conductivity by T = kb, where T is transmissivity (m2/s), k is hydraulic conductivity (meters per second [m/s]), and b is the test interval or aquifer thickness (in meters). Table 3.6, below, summarizes the hydrogeological properties for different bedrock intervals within the five drillholes.

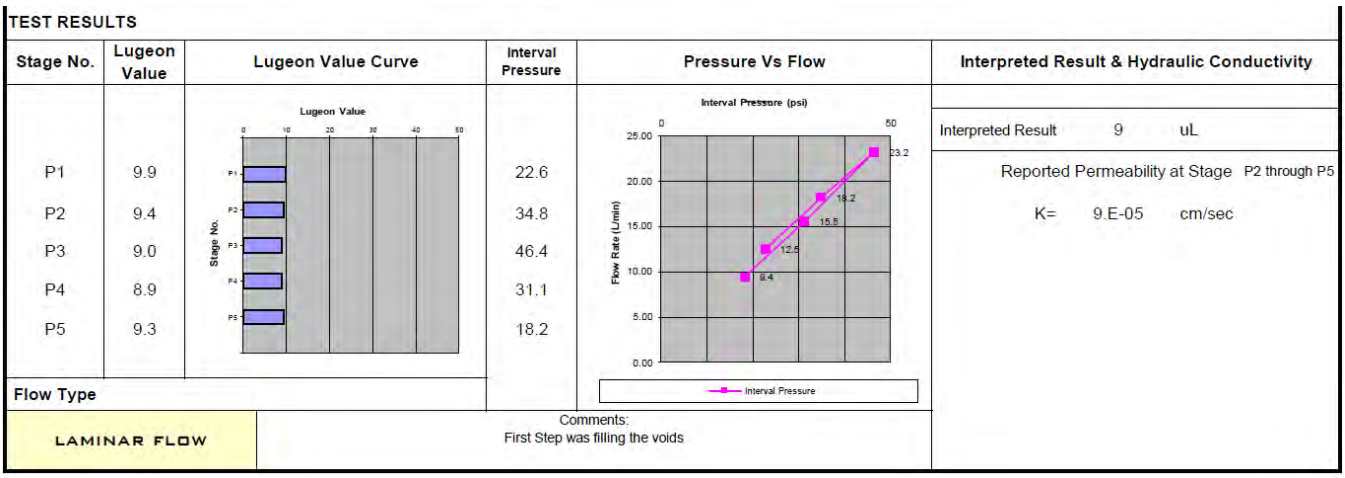


Figure 3.6: Lugeon Test Curve for Laminar Flow

Table 3.5: McDonough AP-1 Spring 2023 Hydrogeological Testing Results Summary by Packer Test

Borehole	Interval (ft BGS)	Interval Length (ft)	Soil/ Rock Layer	Test Sequence	Hydraulic Conductivity k (cm/s)	Transmissivity T (m^2/s)
BW-1	27.7-45.0	17.3	PWR	Lugeon	3.E-06	1.E-07
BW-1	46.0-67.0	21.0	Bedrock	Constant Rate Injection	2.E-03	1.E-04
BW-1	61.2-78.0	16.8	Bedrock	Lugeon	1.E-03	7.E-05
BW-1	76.2-93.0	16.8	Bedrock	Lugeon	2.E-05	1.E-06
BW-2	Open BH, 80.3-ft TD	45.5	Bedrock	Constant Rate Injection	7.E-05	1.E-05
BW-2	68.9-84.1	15.2	Bedrock	Lugeon	2.E-04	8.E-06
BW-2	78.1-95.0	16.9	Bedrock	Lugeon	1.E-04	6.E-06
BW-2	96.1-110.0	13.9	Bedrock	Lugeon	5.E-06	2.E-07
BW-3	62.7-106.0	43.3	Bedrock	Lugeon	9.E-05	1.E-05
BW-3	77.7-106.0	28.3	Bedrock	Lugeon	6.E-05	5.E-06
BW-3	87.6-106.0	18.4	Bedrock	Lugeon	5.E-05	3.E-06
BW-4	82.3-131.0	48.7	Bedrock	Lugeon	2.E-05	3.E-06
BW-4	91.2-116.0	24.8	Bedrock	Lugeon	2.E-05	1.E-06
BW-4	113.1-131.0	17.9	Bedrock	Lugeon	1.E-05	5.E-07
BW-5	Open BH, 25.0-ft TD	16.7	PWR	Slug Withdrawal	1.E-04	5.E-06
BW-5	26.2-71.0	44.8	Bedrock	Lugeon	1.E-05	1.E-06
BW-5	54.1-71.0	16.9	Bedrock	Lugeon	2.E-05	1.E-06

Notes:
1. PWR - partially weathered rock
2. ft BGS - ft below ground surface
3. ft – feet
4. cm/s - centimeters per second
5. m^2/s - square meters per second
6. Open borehole intervals tested from approximately the static water level to the total depth of the borehole at the time of testing before drilling was resumed.
7. BH – drillhole
8. TD - total depth

Table 5.6: McDonough AP-1 Hydrogeological Bedrock Properties by Interval

Drillhole	Interval (ft bgs)	Interval Length (ft)	Soil/ Rock Layer	Transmissivity T (m^2/s)	Hydraulic Conductivity k (cm/s)
BW-1	46.0-67.0	21.0	Bedrock	1.E-04	2.E-03
BW-1	61.2-78.0	16.8	Bedrock	7.E-05	1.E-03
BW-1	76.2-93.0	16.8	Bedrock	1.E-06	2.E-05
BW-2	62.0-80.3	18.3	Bedrock	1.E-05	7.E-05
BW-2	68.9-84.1	15.2	Bedrock	8.E-06	2.E-04
BW-2	78.1-95.0	16.9	Bedrock	6.E-06	1.E-04
BW-2	96.1-110.0	13.9	Bedrock	2.E-07	5.E-06
BW-3	62.7-77.7	15.0	Bedrock	7.E-06	1.E-04
BW-3	77.7-87.6	9.9	Bedrock	3.E-06	9.E-05
BW-3	87.6-106.0	18.4	Bedrock	3.E-06	5.E-05
BW-4	82.3-113.1	30.8	Bedrock	3.E-06	3.E-05
BW-4	91.2-116.0	24.8	Bedrock	1.E-06	2.E-05
BW-4	113.1-131.0	17.9	Bedrock	5.E-07	1.E-05
BW-5	26.2-54.1	27.9	Bedrock	3.E-07	3.E-06
BW-5	54.1-71.0	16.9	Bedrock	1.E-06	2.E-05

Notes:
1. ft - feet
2. cm/s - centimeters per second
3. m^2/s - square meters per second
4. PWR - partially weathered rock

4.0 DATA EVALUATION

4.1 Geotechnical Evaluation

4.1.1 Rock Core Properties Evaluation

Previous investigation results indicated that rock quality increased with depth below top of rock. Table 4.1 compares rock core properties with depth below top of rock in approximately 10 ft intervals across the following categories: average fractures per foot, average recovery, average RQD, and weathering. At approximately 30 ft below top of rock, the quality of rock generally becomes more consistent with weathering noted to be fresh to slightly weathered, nearly full recovery, and reduced fracture frequency at more than 30 feet into rock at the drilled locations. RQD generally increased with depth, with the majority of RQD values more than 30 ft below top of rock above 50%. This indicates that the weathering horizon below top of rock is variable, but some simple correlations can be drawn showing that rock quality increases (weathering index decreases) with depth below top of rock. In addition, approximately 30 ft below top of rock is an inflection point where the rock is of relatively high quality below that point to the depths investigated. Figure 4.1 shows the differences in fracture frequency, weathering and RQD in the shallow and deeper (>30 ft) bedrock.

Table 4.1: McDonough AP-1 Rock Core Properties

Drillhole	Interval (ft)	Depth (ft bgs)	Average Fractures per Foot	Average Recovery (%)	Average RQD (%)	Weathering Index
BW-1	0.0-10.0	45.0-55.0	8	35	15	W2-W3
	10.0-20.0	55.0-65.0	-	-	-	-
	20.0-30.0	65.0-75.0	6	59	40	W1-W3
	30.0-40.0	75.0-85.0	3	96	69	W1
	40.0-48.0	85.0-93.0	1	100	80	W1
BW-2	0.0-10.0	62.0-72.0	17	64	5	W3-W4
	10.0-20.0	72.0-82.0	14	49	11	W2-W3
	20.0-30.0	82.0-92.0	17	60	33	W1-W3
	30.0-40.0	92.0-102.0	2	97	73	W1-W2
	40.0-48.0	102.0-110.0	4	96	50	W2
BW-3	0.0-10.0	58.0-68.0	16	37	17	W4
	10.0-20.0	68.0-78.0	20	30	53	W4
	20.0-30.0	78.0-88.0	11	72	83	W1-W4
	30.0-40.0	88.0-98.0	1	99	85	W1
	40.0-48.0	98.0-106.0	2	100	87	W1
BW-4	0.0-10.5	77.5-88.0	17	33	6	W4
	10.5-20.5	88.0-98.0	7	58	18	W2-W4
	20.5-30.5	98.0-108.0	5	88	56	W1-W3
	30.5-40.5	108.0-118.0	1	72	54	W1
	40.5-50.5	118.0-128.0	17	72	58	W1
	50.5-53.0	128.0-131.0	0	100	100	W1
BW-5	0.0-10.0	25.0-35.0	6	88	38	W2
	10.0-20.0	35.0-45.0	5	92	27	W1-W2
	20.0-30.0	45.0-55.0	12	80	7	W1-W2
	30.0-40.0	55.0-65.0	6	100	38	W1
	40.0-46.0	65.0-71.0	4	90	75	W1

Notes:
1. ft – feet
2. bgs – below ground surface
3. % - percent
4. "-" No data available at BW-1 due to driller error from 46.5 to 67.0 feet.
5. Averages taken from each run that was partially or fully within the interval.
6. Weathering Indices: W1 (Fresh), W2 (Slightly Weathered), W3 (Moderately Weathered), W4 (Highly Weathered)



Figure 4.1: Example Photos of Upper and Lower Bedrock Zones in Core Photos of BW-3

The above core photos of BW-3 show the decrease in fracture frequency and weathering, and an increase in RQD with depth. The top photograph shows 58 feet to 83 feet, and the lower photograph is 102 feet to 106 feet. Top of rock / base of PWR is approximately 58 ft-bgs.

4.1.2 Geotechnical Rock Strength Laboratory Data Evaluation

Point load tests were variable with UCS correlations varying across two orders of magnitude from 220 pounds per square inch (psi) to 23,004 psi. The UCS strengths appear to correlate to the degree of weathering of the samples tested and show scatter in the index strength results. Portions of all rock core holes tested show high correlated UCS strengths indicating the parent rocks at the site are strong and hard when fresh or slightly weathered (>10,000 psi, and up to 20,000 psi) and showing local variability down to low strengths when highly weathered. These results indicate that consistent hard zones exist in the site bedrock that would provide resistance to mechanical disturbance.

The unit weights of both UCS samples were within the range of typically observed values for rock core samples. Although the two samples were different enough to suggest that weathering of core samples affects the unit weight of the rock and results could be variable. The moisture content results were both 0.1% which is typical for samples that have been allowed to dry before testing.

4.2 Hydrogeological Data Evaluation

The goals of the hydrogeological testing and analyses were:

- To verify and augment the previously collected bedrock hydraulic conductivities dataset
- Collect hydraulic conductivity data in the PWR where practical and sufficient PWR thickness was encountered
- To evaluate hydraulic conductivity conditions with depth below the top of rock

Only two tests were able to be performed in the PWR due to drilling limitations and a lack of meaningful PWR thickness observed in BW-2, BW-3, and BW-4. One test zone exhibited moderate hydraulic conductivity (1×10^{-04} cm/s) and the other exhibited low hydraulic conductivity (3×10^{-06} cm/s) with the average hydraulic conductivity being moderate (5×10^{-05} cm/s) but noted to be across a very limited dataset (2 tests).

The amount of Long Island Creek Gneiss encountered in the five drillholes was limited to approximately six feet at the top of BW-5. Therefore, the bedrock was examined as one unit consisting of both the Long Island Creek Gneiss and the Button Schist. The bedrock packer testing results yielded a range of hydraulic conductivity results between relatively low (5×10^{-06} cm/s) to high (1×10^{-03} cm/s) across the tested intervals. The geometric mean of all 2023 packer test results was considered relatively moderate (5×10^{-05} cm/s). A simple statistical analysis of the hydraulic properties of the PWR and bedrock is summarized, below, in Table 4.2. The standard deviations for the datasets are similar to an order of magnitude large than the geometric mean values indicating datasets with variability.

Table 4.2: McDonough AP-1 Hydrogeological Properties by Unit

Unit	Statistic	Transmissivity (m^2/s)	Hydraulic Conductivity (cm/s)	Standard Deviation
Partially Weathered Rock (PWR)	Minimum	1.E-07	3.E-06	5.E-05
	Geometric Mean	**9.E-07**	**2.E-05**	
	Maximum	5.E-06	1.E-04	
Bedrock	Minimum	2.E-07	5.E-06	5.E-04
	Geometric Mean	**4.E-06**	**5.E-05**	
	Maximum	1.E-04	2.E-03	

Notes:
1. cm/s - centimeters per second
2. m^2/s - square meters per second

4.2.1 Assessment of Variation in the Bedrock Hydrogeological Properties Data

Based on our review of the hydrogeologic datasets, the test results were grouped into two datasets as a function of depth below top of rock. One dataset represents the upper 30 ft of bedrock and was observed to generally be highly fractured and moderately to highly weathered. The second dataset represents rock from approximately 30 ft below top of rock to the total depth of the drillholes. The deeper rock interval is slightly weathered to fresh, core recoveries were high, and fracture frequency was observed to be relatively lower than the upper bedrock zone. Table 4.3 shows the two datasets and compares the geometric means of the hydraulic conductivity values for each.

Table 4.3: McDonough AP-1 Hydraulic Conductivities Compared to Depth Below Top of Rock

Depth Below Top of Rock (ft)	Statistic	Geometric Mean Hydraulic Conductivity, K (cm/s)	Number of Tests	Standard Deviation
0.0-30.0	Minimum	3.E-06	10	6.E-04
	Geometric Mean	1.E-04		
	Maximum	2.E-03		
30.0-TD	Minimum	5.E-06	6	7.E-06
	Geometric Mean	2.E-05		
	Maximum	5.E-05		

Notes:

1. ft - feet
2. cm/s - centimeters per second
3. TD - total depth
4. One of the packer tests (BW-4_91.2-116.0) was included in both data sets as significant portions of the test were in each zone.

The geometric mean of the hydraulic conductivity values for the upper 30 ft of bedrock is an order of magnitude higher than the geometric mean for the lower bedrock zone (from 30 ft below top of rock to the base of the drillhole). Based on these results, it may be appropriate to model the bedrock in two zones (shallow bedrock and

deep bedrock) for modelling and design purposes with the shallow bedrock having increased permeability, higher weathering, and higher fracture frequency.

The lower bedrock zone showed more consistent results; the standard deviation is two orders of magnitude less than the standard deviation for the upper bedrock zone. Results at depths greater than 30 ft below top of rock trend towards relatively consistent properties (more uniform) with some variability in the hydrogeologic properties with depth following local weathering and fracture infilling observations. The upper bedrock generally has higher hydraulic conductivities except where local infilling or other features serve to inhibit flow.

Hydraulic conductivity values are expected to vary spatially due to localized variations in subsurface materials, weathering horizons, and geomorphology, including former river channels, variable bedrock weathering, varying thicknesses of PWR, proximity to historic faulting, etc. Table 4.4 presents the spatial variation of the hydraulic conductivities around AP-.

Table 4.4: McDonough AP-1 Hydraulic Conductivities in each Drillhole

Drillhole	Group of Packer Tests	Geometric Mean Hydraulic Conductivity, K (cm/s)	Number of Tests
BW-1	All Tests in Borehole	4.E-04	3
	0 to 30 ft below TOR	1.E-03	2
	30 ft below TOR to Total Depth	2.E-05	1
BW-2	All Tests in Borehole	5.E-05	4
	0 to 30 ft below TOR	1.E-04	3
	30 ft below TOR to Total Depth	5.E-06	1
BW-3	All Tests in Borehole	9.E-05	3
	0 to 30 ft below TOR	1.E-04	2
	30 ft below TOR to Total Depth	5.E-05	1
BW-4	All Tests in Borehole	2.E-05	3
	0 to 30 ft below TOR	2.E-05	2
	30 ft below TOR to Total Depth	1.E-05	2
BW-5	All Tests in Borehole	9.E-06	2
	0 to 30 ft below TOR	3.E-06	1
	30 ft below TOR to Total Depth	2.E-05	1

Notes:
1. ft - feet
2. cm/s - centimeters per second
3. PWR packer tests are not included
4. Results use a geometric mean if two or more tests available. If only one test available, the singular hydraulic conductivity is reported.

4.2.2 Identification of Bedrock Features

Analysis of the geophysical logs, geological/geotechnical core logs and packer test results were compared to identify zones or discrete features that exhibit elevated hydraulic conductivity. Appendix G shows the geophysical logs plotted with the hydrogeological testing data alongside. These logs allow for the comparison of geophysical results with the hydrogeological results side by side and against depth in the drillhole. Figure 4.1 presents BW-4's log with the hydrogeological data plotted alongside the geophysical results with the remaining logs provided in

Appendix G. Table 4.4 below compares the estimated hydraulic conductivity per interval to the material tested, weathering, and average fracture frequency in that zone. Table 4.5 presents potentially water-bearing features from the geophysical or geological/geotechnical logs and cross-references those features to the associated packer test result.

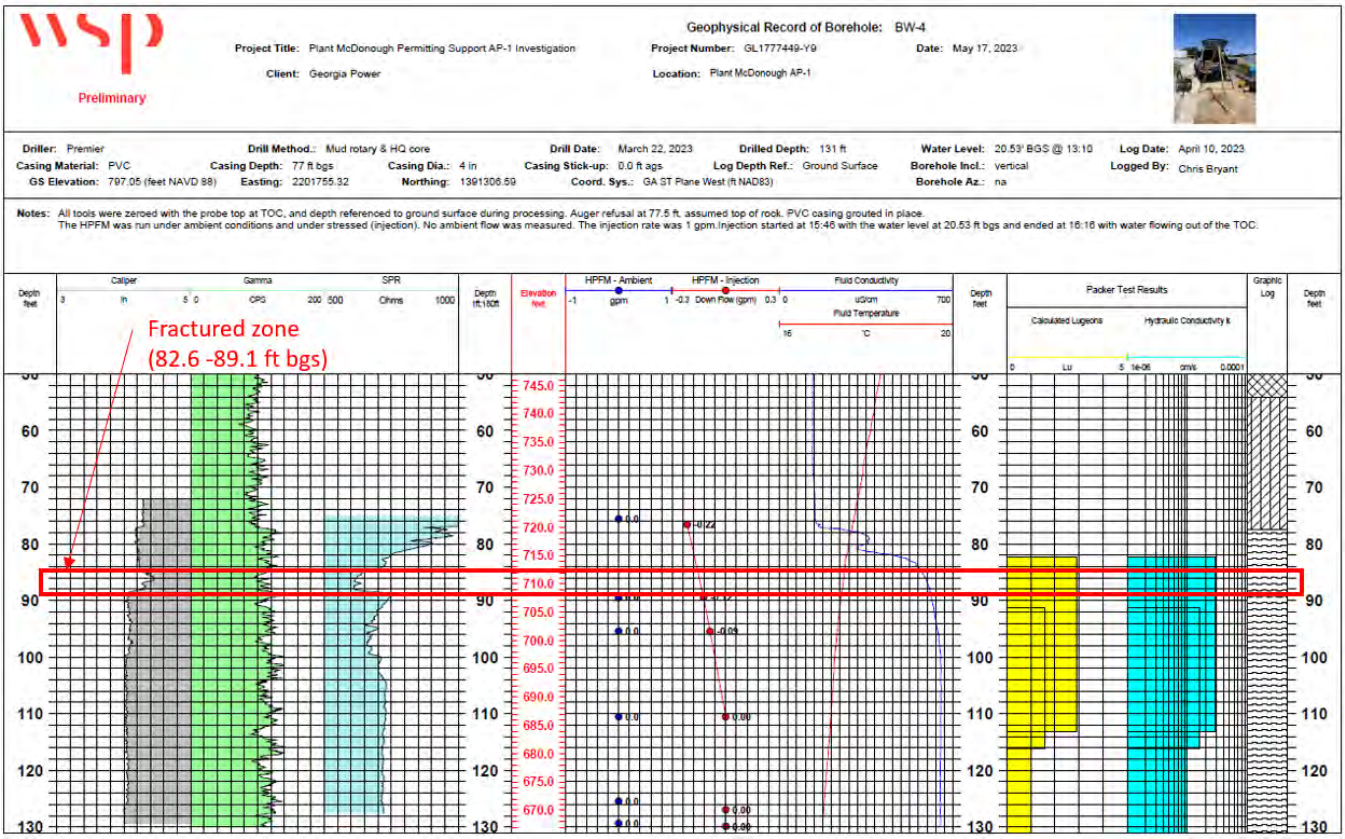


Figure 4.2: BW-4 Geophysical and Hydrogeological Log with a Fracture Zone Identified

Table 4.5: Comparison of Estimated Hydraulic Conductivity to Geotechnical Drillhole Logs

Bore-hole ID	Estimated Hydraulic Conductivity per Interval		Material	Average Fracture Frequency (Fractures/ft)	Weathering
	Interval (ft bgs)	K (cm/s)			
BW-1	27.7-45.0	3.E-06	PWR (39.5-45.0)	NA	NA
	46.0-67.0	2.E-03	Bedrock	8	W2
	61.2-78.0	1.E-03	Bedrock	5	W2
	76.2-93.0	2.E-05	Bedrock	2	W1
BW-2	62.0-80.3	7.E-05	Bedrock	16	W2 to W4
	68.9-84.1	2.E-04	Bedrock	13	W2 to W4
	78.1-95.0	1.E-04	Bedrock	14	W2 to W3
	96.1-110.0	5.E-06	Bedrock	3	W1
BW-3	62.7-77.7	1.E-04	Bedrock	19	W4
	77.7-87.6	9.E-05	Bedrock	12	W2 to W4
	87.6-106.0	5.E-05	Bedrock	1	W1 to W2
BW-4	82.3-113.1	3.E-05	Bedrock	8	W1 to W4
	91.2-116.0	2.E-05	Bedrock	4	W1 to W3
	113.1-131.0	1.E-05	Bedrock	10	W1
BW-5	10.5-25.0	1.E-04	PWR (10.5-25.0)	NA	NA
	26.2-54.1	3.E-06	Bedrock	8	W2
	54.1-71.0	2.E-05	Bedrock	5	W2

Notes:
1. ft - feet
2. bgs - below ground surface
3. cm/s - centimeters per second
4. Broken core zones and lost core zones due to highly fractured rock are assumed to have 2 fractures per inch or a maximum of 24 fractures per foot.
5. K - hydraulic conductivity
6. PWR - partially weathered rock
7. NA - not applicable
8. Weathering Codes: W1 (Fresh), W2 (Slightly Weathered), W3 (Moderately Weathered), W4 (Highly Weathered)
9. PWR (XX.X-XX.X) - depths that PWR has been identified within the test zone

Table 4.6: Summary of Main Bedrock Features from 2023 Investigations

Bore Hole ID	Features Identified in Geological/Geotechnical Drillhole Logs and Geophysical Logs			Estimated Hydraulic Conductivity per Interval	
	Feature Depth (ft bgs)	Log Type	Feature	Intervals (ft bgs)	K (cm/s)
BW-1	39.5-45.0	Geo	PWR present from 39.5 to 45.0 ft bgs	27.7-45.0	3.E-06
	43.5	Caliper	Fracture at base of casing	27.7-45.0	3.E-06
	52.0	Caliper	Fracture	46.0-67.0	2.E-03
	71.6	Geo	0.8 ft lost core zone	61.2-78.0	1.E-03
	83.2	Geo	Multiple fractures with FeOx staining	76.2-93.0	2.E-05
BW-2	62.0-67.9	Geo	5.9 ft lost core zone	62.0-80.3	7.E-05
	71.0	Caliper	Fracture	62.0-80.3	7.E-05
				68.9-84.1	2.E-04
	73.8-76.4	Geo	2.6 ft lost core zone	62.0-80.3	7.E-05
				68.9-84.1	2.E-04
	78.0	Caliper	Fracture	62.0-80.3	7.E-05
				68.9-84.1	2.E-04
	81.3-87.8	Geo	6.5 ft lost core zone	68.9-84.1	2.E-04
				78.1-95.0	1.E-04
	88.5	Gamma, SPR, Caliper, and Geo	Flow zone in lost core zone (89.2-90.0)	78.1-95.0	1.E-04
	102.5	Geo	Multiple fractures with FeOx staining	96.1-110.0	5.E-06
BW-3	65.3	Geo, Caliper, and FTC	Fracture within a broken and lost core zone (61.0-66.0)	62.7-77.7	1.E-04
	70.5	Geo, Caliper, and FTC	Fracture	62.7-77.7	1.E-04
	70.0-82.0	Geo	Highly fractured zone denoted by broken and lost core zone (70.0-82.0)	62.7-77.7	1.E-04
				77.7-87.6	9.E-05
	91.2-91.4	Geo	Broken core zone	87.6-106.0	5.E-05
BW-4	82.6-89.1	Geo	Highly fractured zone denoted by broken and lost core	82.3-113.1	3.E-05
	98.0-99.2	Geo	Highly fractured zone denoted by broken and lost core	82.3-113.1	3.E-05
				91.2-116.0	2.E-05
	119.2-126.0	Geo	Highly fractured zone denoted by lost core	113.1-131.0	1.E-05
BW-5	10.5-25.0	Geo	PWR present from 10.5 to 25.0 ft bgs	10.5-25.0	1.E-04
	46.9	Geo	High angle joint with FeOx staining	26.2-54.1	3.E-06
	60.0	Geo	Fracture with FeOx staining and alteration	54.1-71.0	2.E-05

Notes:
1. Some fractures are within two packer test intervals could contribute to the estimated hydraulic conductivity in both tests.
2. ft - feet
3. bgs - below ground surface
4. cm/s - centimeters per second
5. Broken core zones and lost core zones are assumed to indicate highly fractured zones.
6. K - hydraulic conductivity (values listed are from packer testing of the test zone feature is present within)
7. PWR - partially weathered rock
8. NA - not applicable
9. Geo – Geotechnical/Geological logs

4.2.2.1 BW-1

The test from 27.7-45.0 ft bgs comprised a mixture of PWR and overburden. Continuous PWR was encountered from 39.5-45.0 ft bgs with intermittent PWR and Sandy Clayey Silt interbedded from 27.7-39.5 ft bgs. The fracture frequency and weathering decrease with depth. The geophysical logs indicate a water bearing fracture at 52 ft bgs that coincides with the loss of drilling fluid. At 71.2-72.0 ft bgs a 0.8 foot highly fractured rock zone (indicated by lost core) was observed. The hydraulic conductivities for intervals 46.0-67.0 and 61.2-78.0 ft bgs are 2×10^{-03} cm/s and 1×10^{-03} cm/s. The test interval 76.2-93.0 ft bgs exhibited a hydraulic conductivity value of 2×10^{-05} cm/s which may originate from the iron oxide (FeOx) stained fractures at approximately 83.2 ft bgs.

4.2.2.2 BW-2

There was limited PWR in BW-2 (1.5 ft) and it was not tested. In the bedrock, fracture frequency was above 10 fractures per foot (fractures/ft) for the upper 33 ft of the drillhole and decreased to 3 fractures/ft in the lower 15 ft of the drillhole. Similarly, the weathering ranged from slightly weathered to highly weathered in the upper 33 ft of the drillhole, while the lower 15 ft of the drillhole was fresh rock. The hydraulic conductivity ranges from 7×10^{-05} to 2×10^{-04} cm/s in the upper 33 feet to 5×10^{-06} cm/s below 33-35 ft below top of rock.

The features inferred to be contributing the most flow within BW-2 are likely the highly fractured zones 81.3-87.8 and 89.2-90.0 ft bgs, with some flow coming from fractures and fractured zones at 62.0-67.9, 71.0, 73.8-76.4, and 78.0 ft bgs. Below 90.0 ft bgs, the rock exhibits higher resistivity, higher gamma counts, and is harder. This generally coincides with a rock demonstrating less fracturing, less weathering and increased RQDs with depth. The lower interval exhibits relatively low hydraulic conductivity but there are weathered fractures in the core that exhibit signs of water movement, notably at 102.5 ft bgs.

4.2.2.3 BW-3

In BW-3, there was no PWR observed. The fracture frequency and weathering of the bedrock decreased with depth, from 19 to 1 fractures/ft, and highly weathered to slightly weathered. The hydraulic conductivity also decreased with depth as noted below.

- Test 1 - 1×10^{-04} (~5 to ~20 ft below top of rock)
- Test 2 - 9×10^{-05} (~20 to ~30 ft below top of rock)
- Test 3 - 5×10^{-05} (~30 to ~48 ft below top of rock)

Inferred transmissive zones within the intervals for Tests 1 and 2 in BW-3 are fracture zones at 61.0- 66.0 and 70.0- 82.0 ft bgs. The gamma, SPR, and caliper geophysical logs show corresponding inflections at 82 ft depth. The formation below 82 ft bgs exhibits higher resistivity, higher gamma counts, and is harder. FTC logs indicate possible flow in this interval inferred to originate from a small broken core zone from 91.2 to 91.4 ft bgs.

4.2.2.4 BW-4

In BW-4 there was no PWR observed. The fracture frequency in BW-4 remained similar throughout the drillhole ranging from 4 to 10 fractures/ft on average in the text zones. Weathering was variable in the upper 35 ft ranging from fresh to highly weathered. The lower 15-18 ft of the drillhole was fresh. The gamma, SPR, and caliper geophysical logs show an inflection at 99.5 ft depth (~22 ft below top of rock) where the formation below becomes more resistive, higher gamma counts, and harder. This coincides with an increase in the RQD and rock strength and a decrease in weathering.

Estimated hydraulic conductivities were similar throughout the drillhole with estimated results all having hydraulic conductivities ranging from 1 x 10^{-05} to 3 x 10^{-05} cm/s. Three highly fractured zones (82.6- 89.1, 98.0-99.2, and 119.2- 126.0 ft bgs) are noted in the geotechnical logs by broken core or lost core and are likely the primary contributors to the flow within BW-4.

4.2.2.5 BW-5

BW-5 had the thickest interval of PWR compared to each drillhole tested, with 15 ft of PWR (10.5- 25 ft bgs). The PWR was tested in an open drillhole with a slug withdrawal test with the water level at 8.32 ft bgs. Therefore, it was primarily the PWR being tested. The PWR had an estimated hydraulic conductivity of 1 x 10^{-04} cm/s. Fracture frequency and weathering in BW-5's bedrock was similar throughout, with average fractures per foot ranging from 5 to 8 per interval and slightly weathered. Below the PWR, the hydraulic conductivity values were lower, with the interval from 26.2- 54.1 ft bgs exhibiting a hydraulic conductivity of 3 x 10^{-06} and the interval from 54.1- 71.0 ft bgs exhibiting a hydraulic conductivity of 2 x 10^{-05}. There was no geophysical logging of BW-5. However, the rock core exhibited multiple areas with iron oxide-stained fractures and weathered rock zones that indicate groundwater movement through the rock.

5.0 COMPARISON OF 2023 FIELD INVESTIGATION DATA TO PREVIOUS DATA SETS

5.1 Elevations and Thicknesses of Units

The encountered depths, equivalent elevations, and actual thicknesses of geologic units encountered were compared to expected values correlated from drillhole logs, top of rock maps, and geologic cross sections from the Hydrogeologic Assessment Report (HAR) (WSP, 2023). Differences in elevations and thicknesses were both above and below expectations indicating variable site geology. Table 5.1 summarizes the expected, actual, and differences between the two for soil thickness, PWR elevations and thickness, along with top of rock elevation.

Table 5.1: Expected versus Actual Elevations and Thickness of Units

	Overburden			PWR						Top of Rock		
	Thickness (ft)			Elevation			Thickness			Elevation (ft)		
Bore hole ID	Expec.	Actual	Δ	Expec.	Actual	Δ. (ft)	Expec.	Actual	Δ. (ft)	Expected	Actual	Δ
BW-1	43.0	39.5	**3.5**	747.0	750.4	**3.4**	14.0	5.5	**8.5**	733.0	744.9	**11.9**
BW-2	71.0	60.5	**10.5**	-	729.3	-	-	1.5	**1.5**	719.0	727.8	**8.8**
BW-3	65.0	58.0	**7.0**	-	-	-	-	-	-	717.0	731.7	**14.7**
BW-4	60.0	77.5	**-17.5**	-	-	-	-	-	-	730.0	719.6	**-10.4**
BW-5	10.0	10.5	**-0.5**	775.0	769.2	**-5.8**	15.0	14.5	**0.5**	760.0	764.9	**4.9**

Notes:
1. Elevations are referenced to the 1988 National Vertical Datum.
2. ft – feet
3. Epec. – Expected
4. Δ – Change/difference
5. PWR - partially weathered rock
6. "-" PWR was not expected or present in drillhole.
7. For BW-2: GW-3c, 05-04-2018, Geologic Cross Section Schematic C-C', shows PWR below expected top of rock, so no PWR was expected. However, PWR was found at an elevation comparable to nearby Drillhole AP1-B-12. Using this expected elevation of 731.0 ft, the PWR elevation difference would be -1.7 ft.
8. Top of rock elevations based on GW-2, 05-04-2018, Estimated Top of Rock Map, Hydrogeologic Assessment Report (HAR) by WSP.

9. PWR elevations estimated from GW-3b and GW-3c, 05-04-2018, Geologic Cross Section Schematic B-B' and C-C', Hydrogeologic Assessment Report (HAR) by WSP.
10. Negative thickness differences mean there was less of a material than expected while positive thickness differences indicate there was more of a material than expected.
11. Negative elevation differences mean the unit was encountered lower than expected while positive elevation differences indicate the unit was encountered above where it was expected.

Some variability between previously estimated top of PWR and top of rock was observed across the new investigations, reinforcing the previously understood trend that PWR, rock conditions, and elevations can vary tens of feet locally across small distances onsite.

5.2 Geotechnical Properties

5.2.1 Comparison to Previous Investigations

In 2017, an investigation around AP-1 was performed including soil drilling, rock coring, geological logging, geophysical logging, and hydrogeological testing. The core logs from 2017 (contained in the HAR) contained similar information as the 2023 investigation and a comparison was made between the results of the two studies to evaluate if updates are warranted to update numerical groundwater model results. Table 5.2 shows fracture frequency, recovery, RQD, and weathering in relation to depth below top of rock in approximately 10 ft intervals for both the 2017 and 2023 drillholes.

The data is similar between the two investigations, with weathering ranging from moderately to highly weathered and becoming fresher with depth, core recovery and RQD generally increasing with depth, and fractures per foot decreasing with depth. Like the 2023 data, approximately 30 ft below top of rock is the point where the rock core from the 2017 investigation improves.

Table 5.2: 2017 versus 2023 Geotechnical Core Logs Data Comparison

Drillhole		Interval (ft)	Depth (ft bgs)	Average Fractures per Foot	Average Recovery (%)	Average RQD (%)	Weathering Index
2023	BW-1	0.0-10.0	45.0-55.0	8	35	15	W2-W3
		10.0-20.0	55.0-65.0	-	-	-	-
		20.0-30.0	65.0-75.0	6	59	40	W1-W3
		30.0-40.0	75.0-85.0	3	96	69	W1
		40.0-48.0	85.0-93.0	1	100	80	W1
	BW-2	0.0-10.0	62.0-72.0	17	64	5	W3-W4
		10.0-20.0	72.0-82.0	14	49	11	W2-W3
		20.0-30.0	82.0-92.0	17	60	33	W1-W3
		30.0-40.0	92.0-102.0	2	97	73	W1-W2
		40.0-48.0	102.0-110.0	4	96	50	W2
	BW-3	0.0-10.0	58.0-68.0	16	37	17	W4
		10.0-20.0	68.0-78.0	20	30	53	W4
		20.0-30.0	78.0-88.0	11	72	83	W1-W4
		30.0-40.0	88.0-98.0	1	99	85	W1
		40.0-48.0	98.0-106.0	2	100	87	W1
	BW-4	0.0-10.5	77.5-88.0	17	33	6	W4
		10.5-20.5	88.0-98.0	7	58	18	W2-W4
		20.5-30.5	98.0-108.0	5	88	56	W1-W3
		30.5-40.5	108.0-118.0	1	72	54	W1
		40.5-50.5	118.0-128.0	17	72	58	W1
		50.5-53.0	128.0-131.0	0	100	100	W1
	BW-5	0.0-10.0	25.0-35.0	6	88	38	W2
		10.0-20.0	35.0-45.0	5	92	27	W1-W2
		20.0-30.0	45.0-55.0	12	80	7	W1-W2
		30.0-40.0	55.0-65.0	6	100	38	W1
		40.0-46.0	65.0-71.0	4	90	75	W1
2017	AP1-B-11	0.0-10.0	41.0-51.0	11	71	15	W3-W4
		10.0-20.0	51.0-61.0	16	82	30	W3-W4
		20.0-30.0	61.0-71.0	11	95	51	W3
		30.0-39.0	71.0-80.0	3	95	61	W3
	AP1-B-12	0.0-10.0	32.1-42.1	19	44	3	W4
		10.0-20.0	42.1-52.1	16	47	12	W2-W4
		20.0-30.0	52.1-62.1	7	81	27	W2
		30.0-40.0	62.1-72.1	4	97	55	W1-W2
		40.0-42.0	72.1-74.1	3	98	72	W1
	AP1-B-13	0.0-10.0	17.0-27.0	19	41	23	W4 to W5
		10.0-20.0	27.0-37.0	2	82	57	W2 to W4
		20.0-30.0	37.0-47.0	17	79	23	W2 to W3
		30.0-40.0	47.0-57.0	8	99	33	W2 to W3
		40.0-48.0	57.0-65.0	5	95	48	W2

Notes:
1. ft – feet
2. bgs – below ground surface
3. % - percent
4. "-" No data available at BW-1 due to driller error from 46.5 to 67.0 feet.
5. Averages taken from each run that was partially or fully within the interval.
6. Weathering Indices: W1 (Fresh), W2 (Slightly Weathered), W3 (Moderately Weathered), W4 (Highly Weathered), W5 (Completely Weathered).

5.3 Hydrogeological Properties

5.3.1 Comparison to Existing Hydrogeological Data

A comparison of data collected in the three drillholes and ten tests in 2017 and the five drillholes and 15 (bedrock) tests in 2023 was performed. Table 5.3 displays all the packer testing data by interval for each investigation.

Table 7.3: 2017 and 2023 Packer Test Data by Interval

	Drillhole	Interval	Interval Length (ft)	Soil/ Rock Layer	Hydraulic Conductivity, K (cm/s)
2023 Data	BW-1	27.7-45.0	17.3	PWR	3.E-06
	BW-1	46.0-67.0	21.0	Bedrock	2.E-03
	BW-1	61.2-78.0	16.8	Bedrock	1.E-03
	BW-1	76.2-93.0	16.8	Bedrock	2.E-05
	BW-2	62.0-80.3	18.3	Bedrock	7.E-05
	BW-2	68.9-84.1	15.2	Bedrock	2.E-04
	BW-2	78.1-95.0	16.9	Bedrock	1.E-04
	BW-2	96.1-110.0	13.9	Bedrock	5.E-06
	BW-3	62.7-77.7	15.0	Bedrock	1.E-04
	BW-3	77.7-87.6	9.9	Bedrock	9.E-05
	BW-3	87.6-106.0	18.4	Bedrock	5.E-05
	BW-4	82.3-113.1	30.8	Bedrock	3.E-05
	BW-4	91.2-116.0	24.8	Bedrock	2.E-05
	BW-4	113.1-131.0	17.9	Bedrock	1.E-05
	BW-5	10.5-25.0	14.5	PWR	1.E-04
	BW-5	26.2-54.1	27.9	Bedrock	3.E-06
	BW-5	54.1-71.0	16.9	Bedrock	2.E-05
2017 Data	AP1-B-11	48.0-58.0	10.0	Bedrock	1.E-03
	AP1-B-11	53.0-63.0	10.0	Bedrock	1.E-03
	AP1-B-11	63.0-81.0	18.0	Bedrock	8.E-04
	AP1-B-12	35.0-45.0	10.0	Bedrock	3.E-04
	AP1-B-12	39.0-49.0	10.0	Bedrock	7.E-04
	AP1-B-12	48.5-58.5	10.0	Bedrock	7.E-04
	AP1-B-12	57.6-71.0	13.4	Bedrock	5.E-04
	AP1-B-13	22.0-32.0	10.0	Bedrock	2.E-03
	AP1-B-13	32.0-42.0	10.0	Bedrock	9.E-04
	AP1-B-13	40.0-65.0	25.0	Bedrock	9.E-05

Notes:
1. PWR - partially weathered rock
2. ft - feet
3. cm/s - centimeters per second
4. For the 2017 data, used the hydraulic conductivities estimated using HydroBench.

Similar to the 2023 investigation data, the lowest hydraulic conductivities in 2017 were at the base of the drillhole. One difference between the two investigations is the 2023 drillholes were taken slightly deeper, averaging 49 ft into rock in 2023 compared to 42 ft in 2017. This allowed the 2023 investigation packer tests to have a test interval greater than 30 feet below the top of rock (i.e., completely within the below 30 ft interval estimated to be less fractured and weathered). A summary comparison between the 2017 and 2023 field investigation data is shown in Table 5.4. For the 2023, the data was parsed into two bedrock zones (0-30 ft below top of rock and 30 ft below top of rock to total depth).

Table 5.4: 2017 and 2023 Geometric Means of Hydraulic Conductivities

Data Sets	Group of Packer Tests	Geometric Mean Hydraulic Conductivity, K (cm/s)	Number of Tests
2017 Data	All 2017 Tests	6.E-04	10
2023 Data	All 2023 Tests	5.E-05	15
	0 to 30 ft below TOR	1.E-04	10
	30.0 ft below TOR to TD	2.E-05	6
Combined 2017 and 2023 Data	All Bedrock Tests	1.E-04	25
	2017 Tests and 2023 Upper Bedrock Tests	2.E-04	20
	2023 Lower Bedrock Tests and Deepest 2017 Tests	4.E-05	9

Notes:
1. cm/s - centimeters per second
2. For the 2017 data, used the hydraulic conductivities estimated using HydroBench
3. TOR - top of rock
4. 2023 Upper Bedrock Tests are the tests covering 0 to 30 ft below top of rock
5. 2023 Lower Bedrock Tests are the tests covering 30 ft below top of rock to the bottom of the drillhole
6. Deepest 2017 Tests refers to the deepest test in each of the three drillholes. These tests are included in both data sets because they span the dividing line of 30 ft below top of rock
7. TD – total depth

The 2023 packer test results indicated that there is spatial variability in hydrogeologic conditions across the site within the same units as would be expected for the geologic conditions as the site. The 2017 data set does not have the same amount of variability when the geometric means of the tests in each drillhole are calculated. The 2017 data by drillhole is all within a half order of magnitude while the 2023 varies across almost 3 orders of magnitude.

The three drillholes completed in 2017 and their locations compared to the drillholes completed in 2023 can be seen on Drawing Sheet 1. AP1-B-11 is located to the south of AP-1 in between BW-2 and BW-3 and has a higher hydraulic conductivity by approximately a half order of magnitude and a full order of magnitude, respectively. AP1-B-12 is within 300 ft of BW-2, and they have approximately an order of magnitude difference in conductivities. AP1-B-13 is about 800 feet northeast of BW-5 and has an approximately 1.5 orders of magnitude larger geometric mean of hydraulic conductivity.

When the 2023 data from 0-30 ft below top of rock is compared to the 2017 data (which is predominantly 0-30 ft rock data), there is only about a half order of magnitude difference between the geometric mean values of the datasets. This supports that the bedrock layer may not act as a homogenous unit and may be more accurately characterized as an upper moderately to highly fractured and weathered bedrock zone and a lower bedrock zone that is less fractured and only slightly weathered.

In summary, there is spatial variability of hydraulic conductivity across the Site, and it appears the testing the upper bedrock zone yields more variability than the testing in the lower portions of the drillhole. Table 5.5 compares the geometric means of all tests completed in each drillhole.

Table 5.5: 2017 and 2023 Spatial Variability of Hydraulic Conductivity

Data Sets	Drillhole	Group of Packer Tests	Geometric Mean Hydraulic Conductivity, K (cm/s)	Number of Tests
2017 Data	AP1-B-11	All Tests in Borehole	9.E-04	3
		Upper Bedrock Zone: Tests above 30 ft below TOR	1.E-03	2
		Straddling Upper and Lower bedrock zones	8.E-04	1
	AP1-B12	All Tests in Borehole	5.E-04	4
		Upper Bedrock Zone: Tests above 30 ft below TOR	5.E-04	3
		Straddling Upper and Lower bedrock zones	5.E-04	1
	AP1-B13	All Tests in Borehole	5.E-04	3
		Upper Bedrock Zone: Tests above 30 ft below TOR	1.E-03	2
		Straddling Upper and Lower bedrock zones	9.E-05	1
2023 Data	BW-1	All Tests in Borehole	4.E-04	3
		Upper Bedrock Zone: 0 to 30 ft below TOR	1.E-03	2
		Lower Bedrock Zone: 30 ft below TOR to Total Depth	2.E-05	1
	BW-2	All Tests in Borehole	5.E-05	4
		Upper Bedrock Zone: 0 to 30 ft below TOR	1.E-04	3
		Lower Bedrock Zone: 30 ft below TOR to Total Depth	5.E-06	1
	BW-3	All Tests in Borehole	9.E-05	3
		Upper Bedrock Zone: 0 to 30 ft below TOR	1.E-04	2
		Lower Bedrock Zone: 30 ft below TOR to Total Depth	5.E-05	1
	BW-4	All Tests in Borehole	2.E-05	3
		Upper Bedrock Zone: 0 to 30 ft below TOR	2.E-05	2
		Lower Bedrock Zone: 30 ft below TOR to Total Depth	1.E-05	2
	BW-5	All Tests in Borehole	9.E-06	2
		Upper Bedrock Zone: 0 to 30 ft below TOR	3.E-06	1
		Lower Bedrock Zone: 30 ft below TOR to Total Depth	2.E-05	1

Notes:
1. cm/s - centimeters per second
2. For the 2017 data, used the hydraulic conductivities estimated using HydroBench
3. PWR packer tests are not included
4. Used a geometric mean if there were two or more tests available. If only one test available, re-stated that hydraulic conductivity.
5. The lowest test in each of the 2017 drillholes tests above and below 30 ft below top of rock
6. TOR – top of rock

5.4 Conceptual Site Hydrogeologic Model Summary

As presented in the HAR, a regional, unconfined aquifer system is present at the Site. Groundwater flow occurs in the overburden, PWR and bedrock, as is typical in Piedmont geology. The degree of groundwater flow between the overburden and PWR and bedrock is dependent on the degree of hydraulic connectivity between the units. The bedrock may be characterized as an upper moderately to highly fractured and weathered bedrock zone and a lower bedrock zone that is less fractured and less weathered.

Other attributes of the site-specific hydrogeologic model include:

- The Site is directly underlain by a variably thick blanket of overburden and PWR (approximately 10 to 80-feet thick). The overburden model layer consists of residuum and saprolite and is underlain by the PWR model layer. Based on field hydraulic conductivity tests, the overburden is estimated to have an average horizontal hydraulic conductivity of around 10^{-4} cm/sec. Part of the test data used to derive the hydraulic conductivity value in this unit is from site slug tests. In the slug tests, the screened interval often extended through the residuum and saprolite and into the PWR and upper bedrock. Previous hydraulic conductivity values specifically for the PWR was not available prior to this investigation.
- Bedrock north of the faulted intrusive contact is characterized as Long Island Creek Gneiss (Ozli), 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.
- Hydraulic conductivity in the upper weathered bedrock zone is considered slightly higher but more variable than the lower, less weathered bedrock zone.
- Two lineament sets (i.e., L1 and L2) were identified onsite that orientations are consistent with the structural stresses experienced in this area.
- The top of rock surface and water table generally mimic site topography.
- The uppermost aquifer occurs within the overburden, PWR, and upper bedrock at the Site. According to water levels measured from August 2016 to January 2023 from wells and piezometers screened in the overburden, PWR, and upper bedrock, the depth to saturation varies from approximately 1.2 to 46.4 feet below ground surface (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 foliated, with fracture occurrence generally decreasing with depth.
- The potentiometric surface for the uppermost aquifer indicates groundwater flows generally west south-west across AP-1.
- Across the Site, vertical gradients are expected to occur downward in topographically highs and upwards near topographic lows.

6.0 REFERENCES

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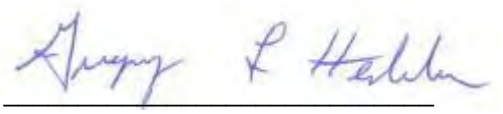
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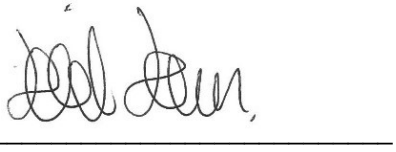
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WSP USA Inc.



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Technical Fellow, Geotechnical Engineering



David Hannam, PG
Lead Consultant, Geologist

APPENDICES

APPENDIX A
Drawing Sheets

APPENDIX B
Drillhole Logs

APPENDIX C
Photologs

APPENDIX D
Geotechnical Laboratory Results

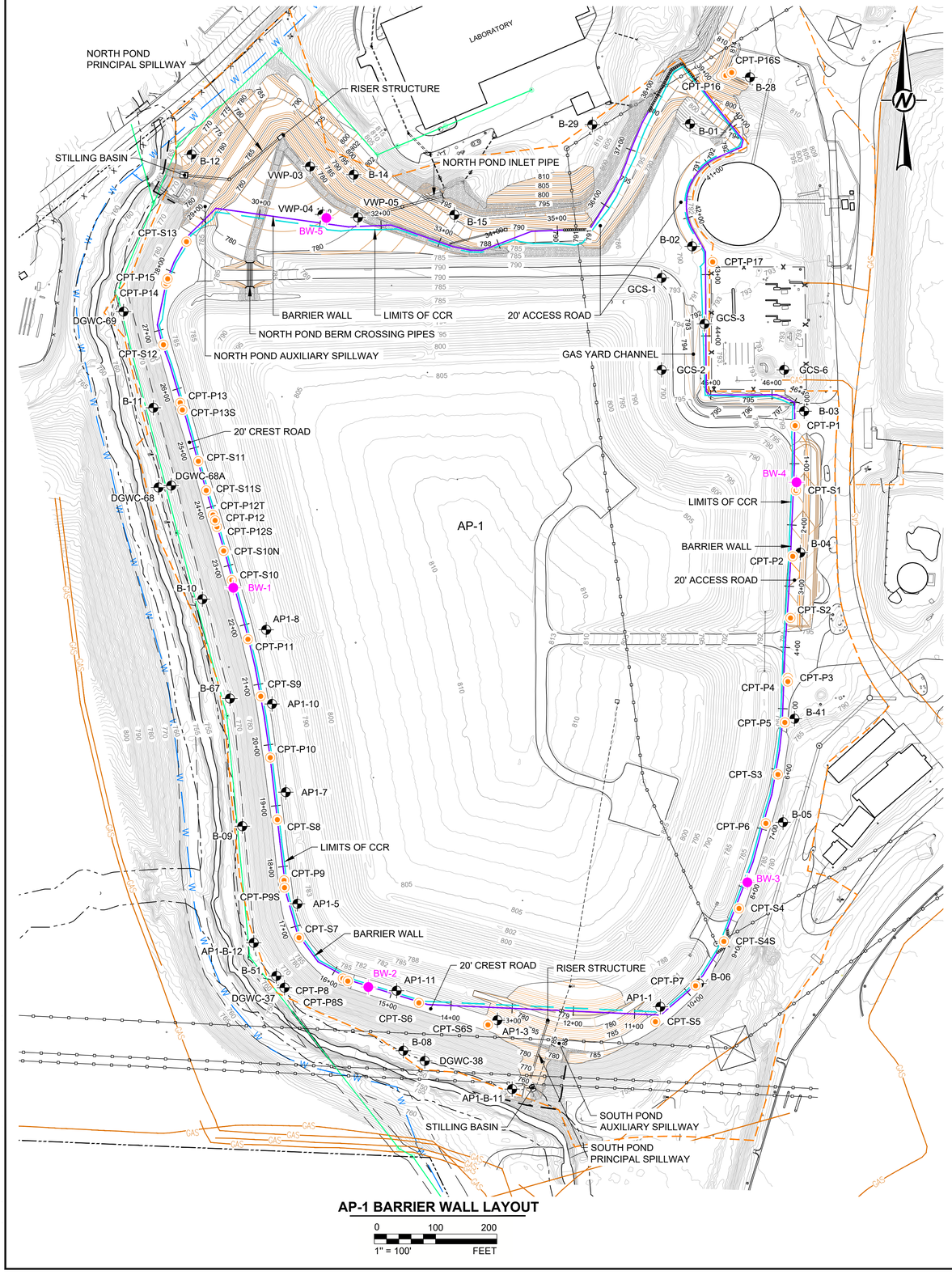
APPENDIX E
Geophysical Investigation Technical Memorandum

APPENDIX F
Hydrogeological Investigation Technical Memorandum

APPENDIX G
Geophysical and Hydrogeological Drillhole Logs

APPENDIX A

Drawing Sheets



AP-1 BARRIER WALL LAYOUT

0 100 200
1" = 100' FEET

NOTES

1. EXISTING TOPOGRAPHIC CONTOUR INTERVAL = 1 FOOT.

2. COORDINATE SYSTEM IS GEORGIA STATE PLANE COORDINATES. UNITS ARE US SURVEY FEET.

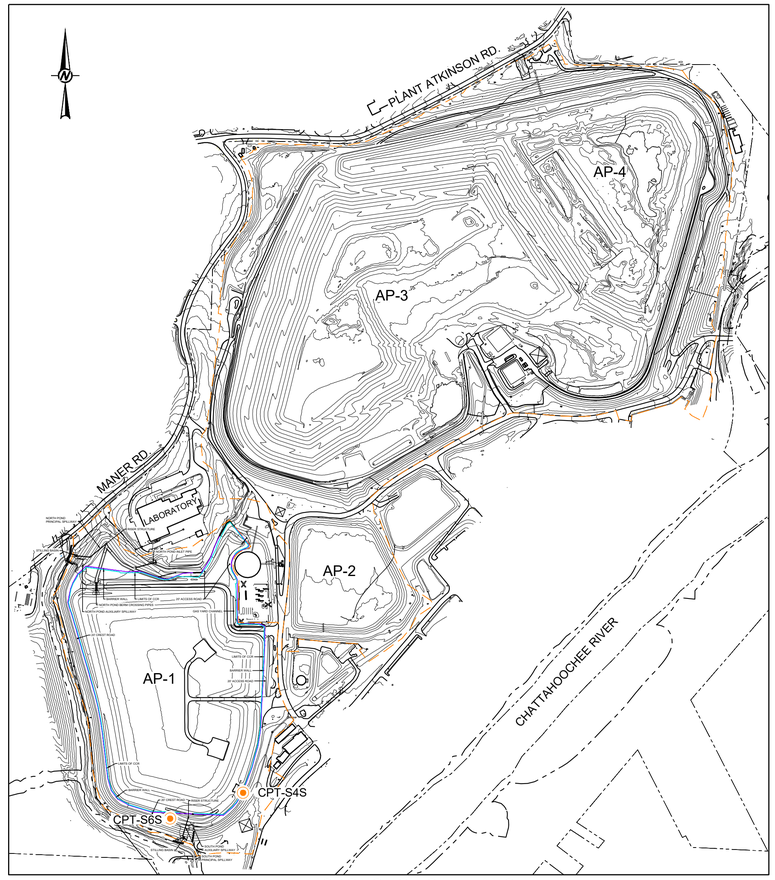
LEGEND

- 780 — EXISTING CONTOURS
- PROPERTY BOUNDARY (SEE REFERENCE 1)
- PROPOSED PERMIT BOUNDARY
- EXISTING LIMITS OF CCR
- PROPOSED LIMITS OF CCR
- EXISTING SANITARY SEWER LINE
- W — EXISTING WATER LINE (AS NOTED)
- GAS — EXISTING GAS LINE
- EXISTING OVERHEAD ELECTRIC LINE
- PROPOSED BARRIER WALL ALIGNMENT
- EXISTING STORMWATER LINE
- x — x — EXISTING FENCE
- 780 / 779 — PROPOSED CONTOURS
- HISTORICAL DRILLING/WELL LOCATION
- HISTORICAL CONE PENETRATION TESTING (CPT)
- BW-1 — 2023 DRILLING INVESTIGATION

REFERENCES

1. APPROXIMATE PROPERTY BOUNDARY PROVIDED BY SOUTHERN COMPANY SERVICES (12/2020).

2. 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 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 03-18-2018.



PLANT MCDONOUGH SITE LAYOUT

0 400 800
1" = 400' FEET

CLIENT
SOUTHERN COMPANY SERVICES

PROJECT
PLANT MCDONOUGH - ATKINSON
CCR UNIT AP-1
BARRIER WALL DESIGN INVESTIGATION 2023

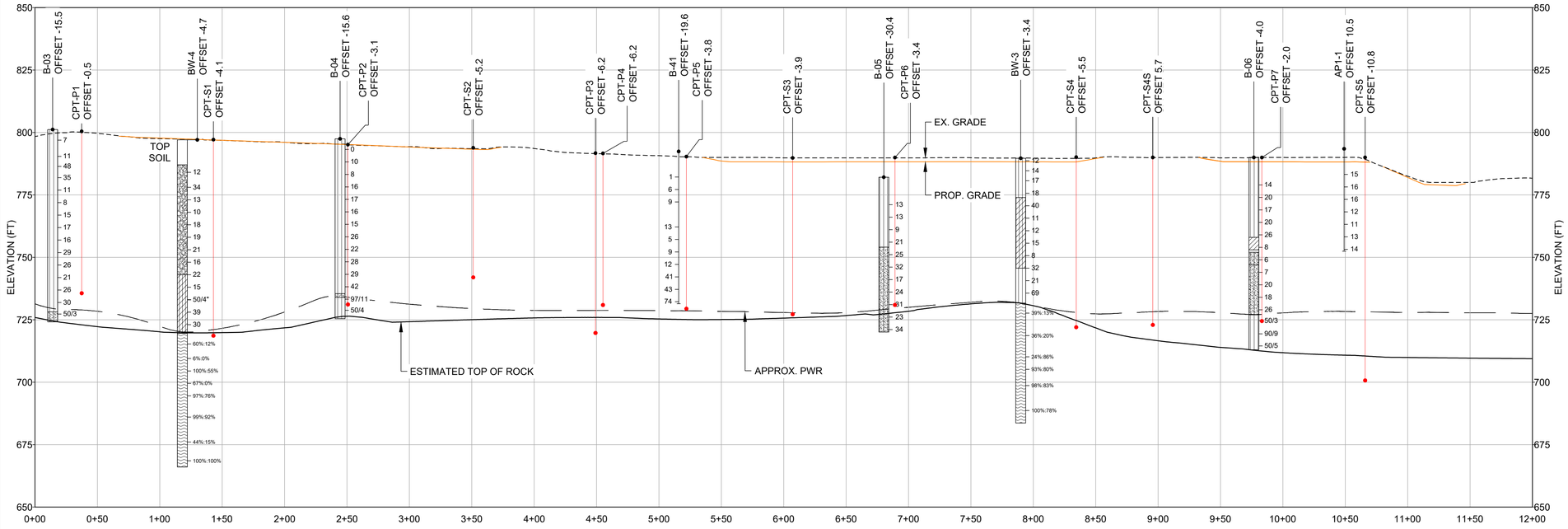
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HISTORICAL BOREHOLE, CPT AND 2023 INVESTIGATION LOCATIONS PLAN

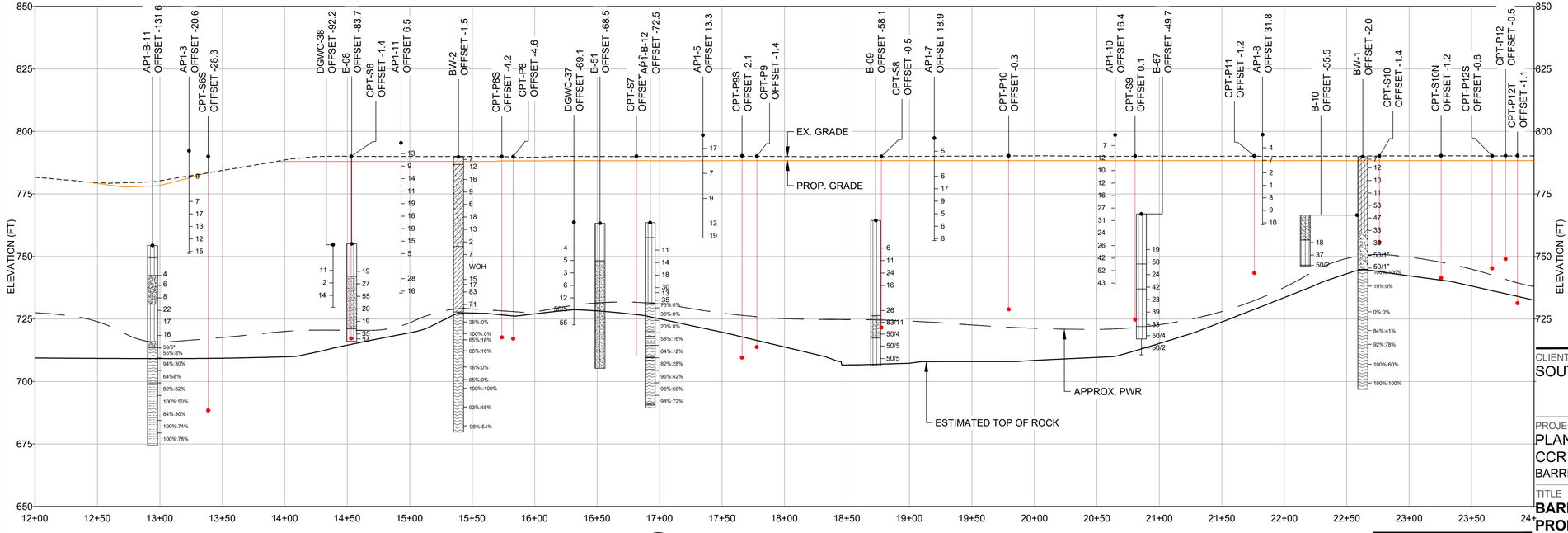
CONSULTANT

YYYY-MM-DD	2023-12-05
DESIGNED	DAH
PREPARED	CRP
CHECKED	LS
REVIEWED / APPROVED	GLH

PROJECT NO.	PROJECT ID	REV.	SHEET
1777449-Y9.03	MCD15017	0	01

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





1 / 2|1 BARRIER WALL - PROFILE

0 50 100

1" = 50' FEET

2X VERTICAL EXAGGERATION

LEGEND

- TOP SOIL
- SILTY CLAY (CL)
- SILT-CLAYEY SILT (ML)
- SILTY GRAVEL (GM)
- SILTY SAND (SM)
- SAND (SP)
- CL-ML
- HIGH PLASTICITY CLAY (CH)
- CLAYEY SAND (SC)
- GRAVELLY SAND (SP-SM)
- SILTY GRAVEL (GM)
- SCHIST
- GNEISS

CPT-P08S OFFSET -4.2
- OFFSET DISTANCE & DIRECTION LEFT (-) OR RIGHT
- CONE PENETRATION TEST NUMBER
- CPT TERMINATION

B-06 OFFSET -4.0
- OFFSET DISTANCE & DIRECTION LEFT (-) OR RIGHT
- BORING NUMBER
- STANDARD PENETRATION TEST (SPT) BLOW COUNTS "N" VALUE
- USCS SOIL CLASSIFICATION
- CORE RECOVERY %: ROCK QUALITY DESIGNATION %

NOTES

1. PARTIALLY WEATHERED ROCK (PWR) IS DEFINED AS MATERIAL WITH A STANDARD PENETRATION TEST (SPT) N VALUE GREATER THAN 100. TOP OF ROCK (TOR) IS DEFINED AS THE DEPTH WHEN AUGER DRILLING REACHED REFUSAL WHERE APPLICABLE.
2. PWR AND TOR SURFACES ARE INTERPOLATED FROM AVAILABLE BORINGS.
3. THE ELEVATION OF THE UPPER SURFACE OF PWR AND TOR IS LIKELY TO VARY SIGNIFICANTLY OVER SHORT HORIZONTAL DISTANCES.
4. SPT "N" VALUE - BLOWS PER FOOT IN ACCORDANCE WITH ASTM D1586

CLIENT
SOUTHERN COMPANY SERVICES

Southern Company
Georgia Power

PROJECT
PLANT MCDONOUGH - ATKINSON
CCR UNIT AP-1
BARRIER WALL DESIGN INVESTIGATION 2023

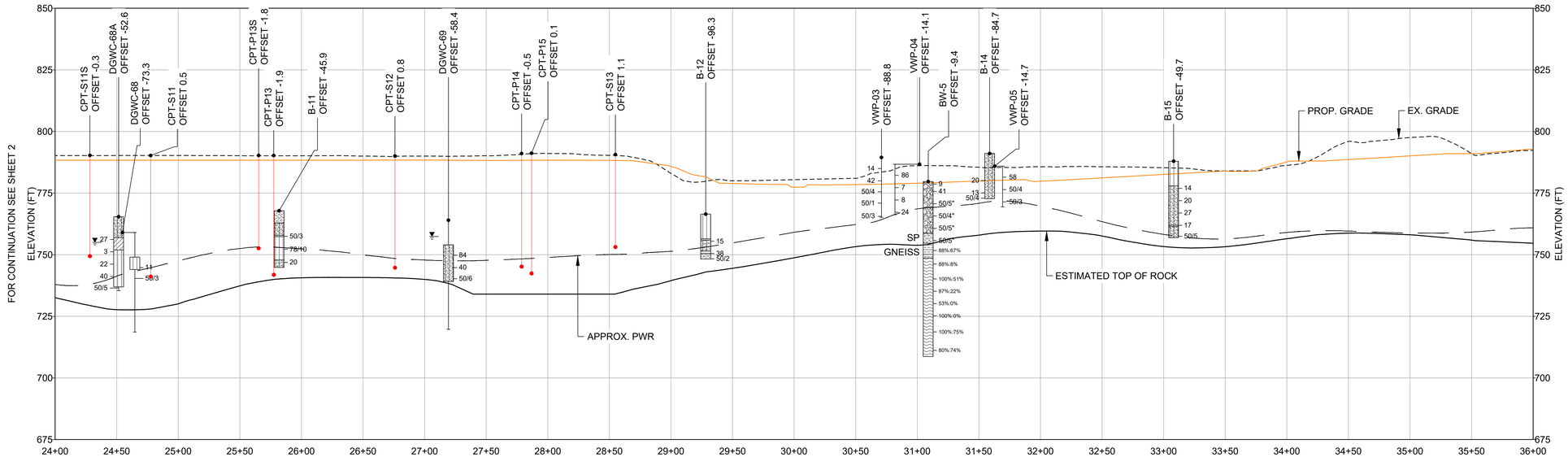
TITLE
BARRIER WALL DESIGN INVESTIGATION 2023
PROFILE (1 OF 2)

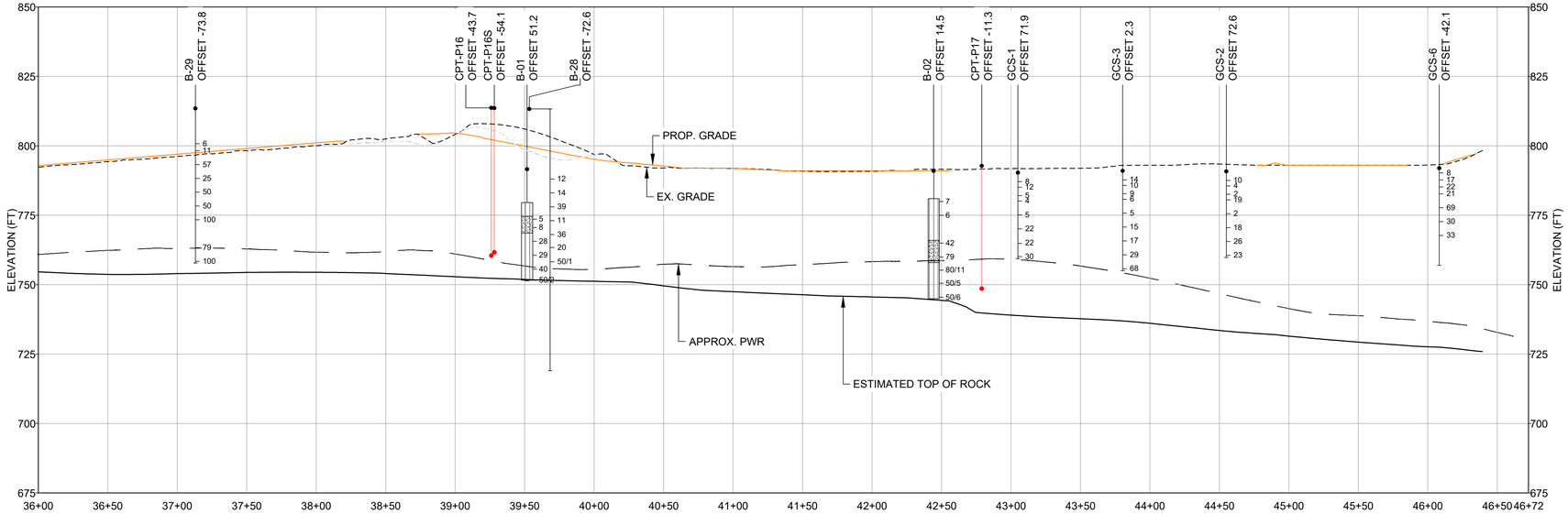
CONSULTANT
wsp

YYYY-MM-DD	2023-12-05
DESIGNED	DAH
PREPARED	CRP
CHECKED	LS
REVIEWED / APPROVED	GLH

PROJECT NO.	PROJECT ID	REV.	SHEET
1777449-Y9.03	MCD15017	0	02

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D
0 1 in





1 / 3 1 BARRIER WALL - PROFILE

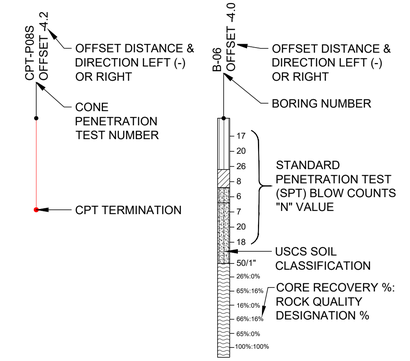
0 50 100

1" = 50' FEET

2X VERTICAL EXAGGERATION

LEGEND

- TOP SOIL
- SILTY CLAY (CL)
- SILT-CLAYEY SILT (ML)
- SILTY GRAVEL (GM)
- SILTY SAND (SM)
- SAND (SP)
- CL-ML
- HIGH PLASTICITY CLAY (CH)
- CLAYEY SAND (SC)
- GRAVELLY SAND (SP-SM)
- SILTY GRAVEL (GM)
- SCHIST
- GNEISS



NOTES

1. PARTIALLY WEATHERED ROCK (PWR) IS DEFINED AS MATERIAL WITH A STANDARD PENETRATION TEST (SPT) N VALUE GREATER THAN 100. TOP OF ROCK (TOR) IS DEFINED AS THE DEPTH WHEN AUGER DRILLING REACHED REFUSAL WHERE APPLICABLE.

2. PWR AND TOR SURFACES ARE INTERPOLATED FROM AVAILABLE BORINGS.

3. THE ELEVATION OF THE UPPER SURFACE OF PWR AND TOR IS LIKELY TO VARY SIGNIFICANTLY OVER SHORT HORIZONTAL DISTANCES.

4. SPT "N" VALUE - BLOWS PER FOOT IN ACCORDANCE WITH ASTM D1586

CLIENT
SOUTHERN COMPANY SERVICES

Southern Company

Georgia Power

PROJECT
PLANT MCDONOUGH - ATKINSON
CCR UNIT AP-1
BARRIER WALL DESIGN INVESTIGATION 2023

TITLE
BARRIER WALL DESIGN INVESTIGATION 2023
PROFILE (2 OF 2)

CONSULTANT

wsp

YYYY-MM-DD	2023-12-05
DESIGNED	DAH
PREPARED	CRP
CHECKED	LS
REVIEWED / APPROVED	GLH

PROJECT NO.	PROJECT ID	REV.	SHEET
1777449-Y9.03	MCD15017	0	03

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

0 1 in

APPENDIX B

Drillhole Logs

RECORD OF BOREHOLE BW-1

SHEET 1 of 1

PROJECT: Plant McDonough AP1-Drilling
PROJECT NUMBER: GL1777449-Y9
DRILLED DEPTH: 45.00 ft
DRILL RIG: CME 550X
DATE STARTED: 3/8/23
DATE COMPLETED: 3/13/23
NORTHING: 1,391,134.51
EASTING: 2,200,836.22
GS ELEVATION: 789.91 ft
TOC ELEVATION:
DEPTH W.L.:
ELEVATION W.L.:
DATE W.L.:
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC / ATT	DIAGRAM and NOTES MONITORING WELL/ PIEZOMETER	WELL CONSTRUCTION DETAILS
0		0.00 - 30.50 FILL: (CH-ML) Sandy clayey SILT and CLAY; red orange; cohesive, moderately plastic, w~PL, firm to hard.	CL-ML			1	SS	5 -4 -3 -4/24"	7	1.33 / 2.00		
5	785					2	SS	3 -4 -6 -6/24"	10	1.42 / 2.00		
10	780					3	SS	3 -6 -6 -9/24"	12	1.25 / 2.00		
15	775					4	SS	6 -7 -4 -5/24"	11	1.92 / 2.00		
20	770					5	SS	6 -27 -26 -45/24"	53	1.50 / 2.00		
25	765					6	SS	11 -7 -40 -35/24"	47	1.58 / 2.00		
30	760				759.41	7	SS	7 -17 -16 -14/24"	33	1.75 / 2.00		
		30.50 - 45.00 (ML) Sandy, clayey SILT, fine to coarse schist gravel; tan brown; cohesive, w~PL, very stiff to hard.	ML		30.50							
35	755					8	SS	18 -19 -14 -25/24"	33	1.75 / 2.00		
40	750					9	SS	12 -50 -50/1"/13"	50/1"	1.08 / 2.00		
45	745				744.91	10	SS	13 -50/3"/9"	50/3"	0.75 / 0.75		
		45.00: Auger refusal, assumed top of rock. PVC casing grouted in place. Rock core follow on. Boring completed at 45.00 ft										
50	740											

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Premier Drilling
DRILLER: Larry Carter

INSPECTOR: Connor Mikilitus
CHECKED BY: DAH
DATE: 5/8/23

RECORD OF DRILLHOLE BW-1

SHEET 2 of 3

PROJECT: Plant McDonough AP1-Drilling
PROJECT NUMBER: GL1777449-Y9
LOCATION: Smyrna, Georgia

DRILLING METHOD: Mud Rotary/HQ
DRILLING DATE: 3/8/2023
DRILL RIG: CME 550X

DATUM: NAD 83
AZIMUTH: N/A
COORDINATES: N: 1,391,134.5 E: 2,200,836.2

ELEVATION: 789.91
INCLINATION: -90

ROCK TYPE: PL-Planar, CU-Curved, UN-Undulating, ST-Stepped, IR-Irregular; K-Slickensided, PO-Polished, SM-Smooth, RO-Rough, VR-Very Rough; JN-Joint, BD-Bedding, FLT-Fault, BC-Broken Core, FOLO-Foliation; VNO-Vein, CONO-Contact (Open), CON-Contact(Closed), -- -Clean, SO-Staining only; SA-Slightly Altered, CC-Completely Coated, PC-Partially Coated, IN-Infilled, M-Silt; Br-Broken Rock, Ca-Calcite, CL-Clay, Sa-Sand, NA-Not Applicable

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG	ELEV. / DEPTH (ft)	RUN NO.	CORE RECOVERY	INTERVAL NO.	Jn	RQD %	FRACTURES PER FOOT	DISCONTINUITY DATA: DEPTH (COUNT), TYPE, SHAPE, ROUGHNESS, INFILL CHARACTER, INFILL TYPE, INFILL THICKNESS (mm), AND DIP wrt CORE AXIS	GRAPHIC LOG	JCR	Jr	Ja	WEATHERING INDEX (I, II, III, IV, V, VI)	ROCK STRENGTH INDEX (R4, R3, R2, R1)	POINT LOAD (Axial, Diametral, UCS) / STRENGTH TESTING (psi)	NOTES WATER LEVELS INSTRUMENTATION
40																		
45	(45.0-46.5) Moderately weathered (W3), foliated, medium dark gray (N4), fine to coarse grained, non-porous to faintly porous, weak (R2), Muscovite Biotite Schist [Button Schist]		744.9 45.0	1	1.5/1.5	1	6	100	6	(45.2) (54) FOLO, RO, SO, FeOx, -, 22 (45.3) (69) FOLO, RO, PC, MnOx, < 2mm, 20, IR		3 3	1 3					(45-46.5) Drilling from 13:30 to 13:41 (46.5) Quartzite core jammed in rock core. No returns 46.5 to 67.0 ft bgs. Fracture frequency assumed 46.5 to 67.0 ft.
			743.4 46.5						6	(45.5) () JN, IR, RO, SO, FeOx, -, 21 (45.6) () JN, IR, RO, SO, FeOx, -, 47 (45.8) () JN, IR, RO, SO, FeOx, -, 48		22 22 22	3 3 3	1 1 3				(46.5-57.0) Drilling from 13:51 to 14:12
	(46.5-57.0) Slightly weathered (W2), foliated, medium dark gray (N4), fine to coarse grained, non-porous to faintly porous, medium strong (R3), Muscovite Biotite Schist [Button Schist]								7	(46.2) () JN, IR, RO, PC, MnOx, -, 43 (46.7) () BC, -, -, -, -, -, -		22 20	3 3	1 1				
									13	(46.85) () FOLO, IR, RO, PC, Musc, < 2mm, 55 (47.1) () JN, IR, RO, CN, -, -, 43		22 22	3 3	1 3				
50									LC	(47.3) () FOLO, IR, RO, CN, -, -, 82 (47.7) () FOLO, IR, RO, CN, -, -, 58 (48.2) () JN, IR, RO, PC, Musc, < 2mm, 32		20	3					
				2	2.0/10.5	2	20	0	LC									
									LC									(48.5-57.0) Core Loss (53.0) Lost water.
									LC									
55									LC									
									LC									
			732.9						LC									
	(57.0-67.0) Lost Core, rock properties assumed Same as above (SAA)		57.0						LC									(57.0-67.0) Drilling from 14:17 to 14:36
									LC									
60									LC									
									LC									
									LC									
				3	0.0/10.0	3	20	0	LC									
									LC									
									LC									
65									LC									
									LC									
			722.9						LC									
	(67.0-72.0) Slightly weathered (W2), foliated, medium dark gray (N4), fine to coarse grained, non-porous to faintly porous, weak (R2), Muscovite Biotite Schist [Button Schist]		67.0						7	(67.5) () FOLO, IR, RO, SO, FeOx, -, 53 (67.6) () JN, IR, RO, SO, FeOx, -, 23		22 22	3 3	1 1				(67.0-72.0) Drilling from 11:07 to 11:23
									2	(67.9) () FOLO, IR, RO, PC, Musc, < 2mm, 58 (68.1) () FOLO, IR, RO, PC, Musc, < 2mm, 55		20 20	3 3	3 3				
				4	4.2/5.0	4	4	41	4	(68.3) () FOLO, IR, SM, PC, Musc, < 2mm, 55 (69.1) () FOLO, IR, RO, PC, Musc, < 2mm, 52		16 20 20 22	2 3 3 3	3 3 3 1				
70									4	(69.4) () FOLO, IR, RO, PC, Musc, < 2mm, 57 (69.8) () FOLO, IR, RO, SO, FeOx, -, 58		20 22	3 3	3 1				
									24	(70) () JN, IR, RO, PC, Musc, < 2mm (70.1) () FOLO, IR, RO, CN, -, -, 50		20	3	3				
			717.9															(72.0-78.0) Drilling from 11:41 to 11:47
	(72.0-78.0) Same as above, Fresh (W1) and medium strong (R3) [Button Schist]		72.0						2	(70.9) () FOLO, IR, RO, PC, Musc, < 2mm, 72 (72.6) () JN, IR, RO, CN, -, -, 32		22	3	1				
									2	(72.9) () FOLO, IR, RO, CN, -, -, 65 (73.15) () FOLO, IR, SM, CN, -, -, 63		22 20	3 2	1 1				
										(73.8) () FOLO, IR, VR, CN, -, -, 66		25	3	1				
									2	(74.4) () FOLO, IR, SM, SO, FeOx, -, 56		20	2	1				
75				5	5.5/6.0	5	4	78	1	(74.9) () JN, IR, SM, SO, FeOx, -, 47		20	2	1				
									1	(75.8) () FOLO, IR, RO, CN, -, -, 53		22	3	1				
									1	(76.4) () JN, IR, RO, CN, -, -, 47		22	3	1				
									11	(77.1) () FOLO, IR, RO, CN, -, -, 62		22	3	1				
			711.9															
	(78.0-88.0) SAA, Fresh (W1) and medium strong (R3) [Button Schist]		78.0						1	(78.15) () FOLO, IR, RO, PC, Musc, < 2mm, 68		20	3	3				
				6	10.0/10.0	6	6	60	2									
80	Log continued on next page									(79.75) () FOLO, IR, RO, CC, Musc, >		6	1	3				

SCALE: 1 in = 5 ft
DRILLING CONTRACTOR: Premier Drilling
DRILLER: L. Carter

LOGGED: RJF/CFM
CHECKED: DLP
REVIEWED: DAH

WEATHERING INDEX
I-Fresh
II-Slightly Weathered
III-Moderately Weathered
IV-Highly Weathered
V-Completely Weathered
IV-Residual Soil

UCS (psi)
R1 - 150
R2 - 725
R3 - 3500
R4 - 7500
R5 - 15,000
R6 - 35,000

wsp

RECORD OF DRILLHOLE BW-1

SHEET 3 of 3

PROJECT: Plant McDonough AP1-Drilling
PROJECT NUMBER: GL1777449-Y9
LOCATION: Smyrna, Georgia

DRILLING METHOD: Mud Rotary/HQ
DRILLING DATE: 3/8/2023
DRILL RIG: CME 550X

DATUM: NAD 83
AZIMUTH: N/A
COORDINATES: N: 1,391,134.5 E: 2,200,836.2

ELEVATION: 789.91
INCLINATION: -90

ROCK TYPE

PL-Planar, CU-Curved, UN-Undulating, ST-Stepped, IR-Irregular
K-Slickensided, PO-Polished, SM-Smooth, RO-Rough, VR-Very Rough
JN-Joint, BD-Bedding, FLT-Fault, BC-Broken Core, FOLO-Foliation
VNO-Vein, CONO-Contact (Open), CON-Contact(Closed), -- -Clean, SO-Staining only
SA-Slightly Altered, CC-Completely Coated, PC-Partially Coated, IN-Infilled, M-Silt
Br-Broken Rock, Ca-Calcite, CL-Clay, Sa-Sand, NA-Not Applicable

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG	ELEV. / DEPTH (ft)	RUN NO.	CORE RECOVERY	INTERVAL NO.	Jn	RQD %	FRACTURES PER FOOT	DISCONTINUITY DATA: DEPTH (COUNT), TYPE, SHAPE, ROUGHNESS, INFILL CHARACTER, INFILL TYPE, INFILL THICKNESS (mm), AND DIP wrt CORE AXIS	GRAPHIC LOG	JCR	Jr	Ja	WEATHERING INDEX I II III IV V VI	ROCK STRENGTH INDEX R4 R3 R2 R1	POINT LOAD: Axial, Diametral, UCS / STRENGTH TESTING (psi)	NOTES: WATER LEVELS, INSTRUMENTATION
80	(78.0-88.0) SAA, Fresh (W1) and medium strong (R3) [Button Schist] *(Continued)*								3	(79.9) () FOLO, IR, SM, PC, Chl, < 2mm, 58		16	3	3				
										(80.3) () FOLO, IR, RO, PC, Epi, < 2mm, 65		16	3	3				
									5	(80.5) () FOLO, IR, RO, PC, Epi, < 2mm, 55		22	3	1				
										(80.8) () JN, IR, RO, CN, -, -, 82		12	1	3				
									2	(81.1) () FOLO, PL, SM, PC, Epi, < 2mm, 60		16	1.5	3				
										(81.2) () FOLO, PL, RO, PC, Epi, < 2mm, 60		20	3	3				
				6	10.0 / 10.0	6	6	60	3	(81.5) () JN, IR, RO, PC, Epi, < 2mm, 30		20	3	3				
										(81.6) () JN, IR, RO, PC, Epi, < 2mm, 25		12	1	3				
										(81.7) () FOLO, IR, RO, PC, Epi, < 2mm, 59		22	3	1				
85									1	(82.2) () FOLO, PL, SM, PC, Epi, < 2mm, 53		22	3	1				
										(82.6) () FOLO, IR, RO, SO, FeOx, -, 60		20	3	3				
									2	(82.8) () JN, IR, RO, SO, FeOx, -, 5		22	3	1				
										(83.1) () FOLO, IR, RO, SO, FeOx, -, 59		22	3	1				
									1	(83.2) () FOLO, IR, RO, PC, FeOx, < 2mm, 54		16	1	1				
										(83.8) () FOLO, IR, RO, SO, FeOx, -, 60		16	2	1				
										(84.9) () FOLO, IR, RO, SO, FeOx, -, 50		20	2	1				
									2	(85.2) () FOLO, PL, SM, SO, FeOx, -, 50		20	2	1				
			701.9							(85.6) () FOLO, IR, SM, PC, FeOx, < 2mm, 54		22	3	1				(88.0-93.0) Drilling from 14:11 to 14:17
	(88.0-93.0) SAA [Button Schist]		88.0							(86.5) () FOLO, IR, SM, SO, FeOx, -, 54		22	3	1				
									0	(87.3) () FOLO, IR, SM, CN, -, -, 55								
										(87.75) () FOLO, IR, RO, SO, FeOx, -, 68								
90									0	(88) () FOLO, IR, RO, CN, -, -, 68								
				7	5.0 / 5.0	7	2	100		(90.1) () FOLO, IR, RO, CN, -, -, 65		22	3	1				
									2	(90.8) () FOLO, IR, RO, CN, -, -, 60		22	3	1				
									0									
									1	(92.15) () FOLO, IR, RO, CN, -, -, 60		22	3	1				
	Downhole geophysics performed. Then grout to 42', 3/8" bentonite chips bentonite chips 42'-58'. Then grouted to surface. END DRILLHOLE AT 93 ft. BGS.																	
95																		
100																		
105																		
110																		
115																		
120																		

SCALE: 1 in = 5 ft
DRILLING CONTRACTOR: Premier Drilling
DRILLER: L. Carter

LOGGED: RJF/CFM
CHECKED: DLP
REVIEWED: DAH

WEATHERING INDEX
I-Fresh
II-Slightly Weathered
III-Moderately Weathered
IV-Highly Weathered
V-Completely Weathered
IV-Residual Soil

UCS (psi)
R1 - 150
R2 - 725
R3 - 3500
R4 - 7500
R5 - 15,000
R6 - 35,000

wsp

RECORD OF BOREHOLE BW-2

SHEET 1 of 2

PROJECT: Plant McDonough AP1-Drilling
PROJECT NUMBER: GL1777449-Y9
DRILLED DEPTH: 62.00 ft
DRILL RIG: CME 550X
DATE STARTED: 3/9/23
DATE COMPLETED: 3/23/23
NORTHING: 1,390,483.21
EASTING: 2,201,056.50
GS ELEVATION: 789.82 ft
TOC ELEVATION:
DEPTH W.L.:
ELEVATION W.L.:
DATE W.L.:
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC / ATT	DIAGRAM and NOTES MONITORING WELL/ PIEZOMETER	WELL CONSTRUCTION DETAILS
0		0.00 - 3.00 FILL: (CL) Sandy silty CLAY, micaceous; red mottled orange; cohesive, moderately plastic, w~PL, soft.	CL		786.82	1	SS	5 -4 -3 -4/24"	7	1.50 / 2.00		
		3.00 - 35.80 FILL: (GW-GC) Sandy silty CLAY and muscovite GRAVEL, micaceous, trace red, high plasticity clay; light brown, tan; cohesive, moist, firm to soft.			3.00	2	SS	5 -5 -7 -8/24"	12	1.50 / 2.00		
5	785											
						3	SS	4 -7 -9 -13/24"	16	1.60 / 2.00		
10	780											
						4	SS	3 -3 -6 -7/24"	9	2.00 / 2.00		
15	775											
			GW-GC			5	SS	2 -2 -4 -6/24"	6	2.00 / 2.00		
20	770											
						6	SS	6 -9 -9 -12/24"	18	1.30 / 2.00		
25	765											
						7	SS	4 -6 -7 -8/24"	13	1.50 / 2.00		
30	760											
						8	SS	3 -1 -1 -1/24"	2	0.90 / 2.00		
35	755				754.02							
		35.80 - 46.00 (CL) SILTY CLAY, trace organics; brown, dark gray; cohesive, w~PL, soft to very soft.			35.80							
40	750		CL			9	SS	WOH -3 -4 -6/24"	7	1.20 / 2.00		
45	745					10	SS	N/A/24"	WOH	1.80 / 2.00		
					743.82							
		46.00 - 62.00 (CL) Sandy SILTY CLAY, fine sand; light gray, dark gray, white, tan, mottled; cohesive, w~PL, firm to hard.	CL		46.00							
50	740					11	SS	5 -6 -9 -15/24"	15			

Log continued on next page

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Premier Drilling
DRILLER: Larry Carter

INSPECTOR: Connor Mikilitus
CHECKED BY: DAH
DATE: 5/8/23

RECORD OF BOREHOLE BW-2

PROJECT: Plant McDonough AP1-Drilling
PROJECT NUMBER: GL1777449-Y9
DRILLED DEPTH: 62.00 ft
DRILL RIG: CME 550X
DATE STARTED: 3/9/23
DATE COMPLETED: 3/23/23
NORTHING: 1,390,483.21
EASTING: 2,201,056.50
GS ELEVATION: 789.82 ft
TOC ELEVATION:
DEPTH W.L.:
ELEVATION W.L.:
DATE W.L.:
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC / ATT	DIAGRAM and NOTES MONITORING WELL/ PIEZOMETER	WELL CONSTRUCTION DETAILS
50		46.00 - 62.00 (CL) Sandy SILTY CLAY, fine sand; light gray, dark gray, white, tan, mottled; cohesive, w~PL, firm to hard. *(Continued)*	CL			11	SS	5 -6 -9 -15/24"	15	1.80 / 2.00		
						12	SS	5 -7 -10 -14/24"	17	1.80 / 2.00		
55	735					13	SS	21 -48 -35 -36/24"	83	0.00 / 2.00		
60	730					14	SS	16 -27 -44 -50/3"/21"	71	1.30 / 2.00		
					727.82							
		62.00: Auger refusal, assumed top of rock. PVC casing grouted in place. Rock core follow on. Boring completed at 62.00 ft										
65	725											
70	720											
75	715											
80	710											
85	705											
90	700											
95	695											
100	690											

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Premier Drilling
DRILLER: Larry Carter
INSPECTOR: Connor Mikilitus
CHECKED BY: DAH
DATE: 5/8/23

RECORD OF DRILLHOLE BW-2

SHEET 2 of 3

PROJECT: Plant McDonough AP1-Drilling
PROJECT NUMBER: GL1777449-Y9
LOCATION: Smyrna, Georgia

DRILLING METHOD: Mud Rotary/HQ
DRILLING DATE: 3/9/2023
DRILL RIG: CME 550X

DATUM: NAD 83
AZIMUTH: N/A
COORDINATES: N: 1,390,483.2 E: 2,201,056.5

ELEVATION: 789.82
INCLINATION: -90

ROCK TYPE

PL-Planar CU-Curved UN-Undulating ST-Stepped IR-Irregular
K-Slickensided PO-Polished SM-Smooth RO-Rough VR-Very Rough
JN-Joint BD-Bedding FLT-Fault BC-Broken Core FOLO-Foliation
VNO-Vein CONO-Contact (Open) CON-Contact(Closed) -- -Clean SO-Staining only
SA-Slightly Altered CC-Completely Coated PC-Partially Coated IN-Infilled M-Silt
Br-Broken Rock Ca-Calcite CL-Clay Sa-Sand NA-Not Applicable

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG	ELEV. / DEPTH (ft)	RUN NO.	CORE RECOVERY	INTERVAL NO.	Jn	RQD %	FRACTURES PER FOOT	DISCONTINUITY DATA: DEPTH (COUNT), TYPE, SHAPE, ROUGHNESS, INFILL CHARACTER, INFILL TYPE, INFILL THICKNESS (mm), AND DIP wrt CORE AXIS	GRAPHIC LOG	JCR	Jr	Ja	WEATHERING INDEX I II III IV V VI	ROCK STRENGTH INDEX R4 R3 R2 R1	POINT LOAD ● Axial ■ Diametral ▲ UCS / STRENGTH TESTING (psi)	NOTES WATER LEVELS INSTRUMENTATION
40																		
45																		
50																		
55																		
60																		
			727.8															
	(62.0-70.0) Highly weathered (W4), foliated, (10YR 2/2) yellowish brown, fine to medium grained, non-porous to faintly porous, very weak (R1), Biotite Schist, [Button Schist]		62.0	1	2.1/8.0	1	4	0	24								
									24									
									24									
65									24									
									24									
									24									
									4	(68.1) () JN, IR, RO, SA, M Sa, < 2mm 6		20	3	2				
									9	(69.3) () JN, IR, VR, CN, -, -, 35		25	3	1				
			719.8							(69.5) () JN, IR, SM, SA, M Sa, < 2mm 37		20	3	2				(70.0-75.0) Drilling from 10:20 to 10:29
70	(70.0-75.0) Moderately weathered (W3), foliated, (10YR 2/2) yellowish brown, fine to medium grained, non-porous to faintly porous, medium strong (R3), Biotite Schist, [Button Schist]		70.0	2	1.3/1.3	2	6	0	3	(69.6) () JN, IR, SM, SO, MnOx, -, 33		20	2	1				
										(69.8) () JN, IR, VR, CC, M Sa, 5mm, 37		6	1	6				
									5	(70.3) () JN, IR, RO, SO, MnOx, -, 46		22	3	1				
										(70.7) () FOLO, IR, SM, SO, MnOx, -, 53		20	2	1				
										(70.9) () JN, PL, RO, SO, MnOx, -, 41		20	1.5	1				
										(71.1) () FOLO, IR, RO, SO, MnOx, -, 50		22	3	1				
										(71.2) () JN, PL, RO, SO, MnOx, -, 10		20	1.5	1				
	(71.8-72.0) Same as above, Extremely weak (R0)								2	(71.8) () FOLO, IR, SM, SA, M Sa, < 2mm, 53		16	2	2				
				3	2.4/3.7	3	4	16		(72) () FOLO, IR, RO, SA, M Sa, < 2mm 64		20	3	2				
									9	(72.2) () FOLO, PL, SM, SO, FeOx, -, 55		16	1	1				
										(72.5) () JN, PL, RO, SO, FeOx, -, 8		20	1.5	1				
										(72.7) () JN, ST, RO, SA, M Sa, < 2mm 28		20	3	2				
									24	(73.4) () FOLO, IR, RO, SA, MnOx, -, 56		22	3	1				
75			714.8															
	(75.0-80.0) Slightly weathered (W2), foliated, medium dark gray (N4), fine to medium grained, non-porous to faintly porous, medium strong (R3), Biotite Schist. [Button Schist]		75.0						24									
									18	(76.4) () FOLO, IR, RO, CN, -, -, 55		22	3	1				
										(76.6) () FOLO, IR, RO, SO, MnOx, -, 61		22	3	1				
	(76.4-77.0) SAA, Weak (R2)			4	3.3/5.0	4	4	16	0									
										(78) () FOLO, IR, RO, SO, FeOx, -, 74		22	3	1				
									10	(78.4) () FOLO, PL, RO, SO, FeOx, -, 61		20	1.5	1				
										(78.7) () FOLO, PL, SM, PC, Chalco, < 1mm, 52		12	1	2				
									4	(79.1) () FOLO, IR, RO, SO, FeOx, -, 53		22	3	1				
			709.8							(79.5) () JN, PL, RO, CN, -, -, 19		20	1.5	1				(80.0-88.0) Drilling from 08:02 to 08:19
80	Log continued on next page																	

SCALE: 1 in = 5 ft
DRILLING CONTRACTOR: Premier Drilling
DRILLER: L. Carter

LOGGED: RJF/CFM
CHECKED: DLP
REVIEWED: DAH

WEATHERING INDEX
I-Fresh
II-Slightly Weathered
III-Moderately Weathered
IV-Highly Weathered
V-Completely Weathered
IV-Residual Soil

UCS (psi)
R1 - 150
R2 - 725
R3 - 3500
R4 - 7500
R5 - 15,000
R6 - 35,000

wsp

RECORD OF DRILLHOLE BW-2

SHEET 3 of 3

PROJECT: Plant McDonough AP1-Drilling
PROJECT NUMBER: GL1777449-Y9
LOCATION: Smyrna, Georgia

DRILLING METHOD: Mud Rotary/HQ
DRILLING DATE: 3/9/2023
DRILL RIG: CME 550X

DATUM: NAD 83
AZIMUTH: N/A
COORDINATES: N: 1,390,483.2 E: 2,201,056.5

ELEVATION: 789.82
INCLINATION: -90

ROCK TYPE

PL-Planar CU-Curved UN-Undulating ST-Stepped IR-Irregular
K-Slickensided PO-Polished SM-Smooth RO-Rough VR-Very Rough
JN-Joint BD-Bedding FLT-Fault BC-Broken Core FOLO-Foliation
VNO-Vein CONO-Contact (Open) CON-Contact(Closed) -- -Clean SO-Staining only
SA-Slightly Altered CC-Completely Coated PC-Partially Coated IN-Infilled M-Silt
Br-Broken Rock Ca-Calcite CL-Clay Sa-Sand NA-Not Applicable

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG	ELEV. / DEPTH (ft)	RUN NO.	CORE RECOVERY	INTERVAL NO.	Jn	RQD %	FRACTURES PER FOOT	DISCONTINUITY DATA: DEPTH (COUNT), TYPE, SHAPE, ROUGHNESS, INFILL CHARACTER, INFILL TYPE, INFILL THICKNESS (mm), AND DIP wrt CORE AXIS	GRAPHIC LOG	JCR	Jr	Ja	WEATHERING INDEX I II III IV V VI	ROCK STRENGTH INDEX R4 R3 R2 R1	POINT LOAD ● Axial ■ Diametral ▲ UCS / STRENGTH TESTING (psi)	NOTES WATER LEVELS INSTRUMENTATION
80	(80.0-110.0) Moderately weathered (W3), foliated, yellowish brown (10YR 2/2), fine to medium grained, non-porous to faintly porous, weak (R2), Biotite Schist. [Button Schist]		80.0							(79.6) () FOLO, PL, SM, CN, -, -, 58 (79.9) () FOLO, IR, RO, SO, FeOx, -, 61		16 22	1 3	1 1				
				5	1.3/8.0	5	20	0	24 24 24 24 24 24 24 20									
85																		(88.0-90.0) Drilling from 08:32 to 08:36
				6	1.3/2.0	6	3	0	5 20	(88.1) () FOLO, IR, VR, SO, FeOx, -, 75 (88.2) () FOLO, IR, RO, SO, FeOx, -, 68 (88.4) () FOLO, IR, RO, SO, FeOx, -, 72 (88.6) () FOLO, IR, RO, SO, FeOx, -, 57 (88.7) () FOLO, IR, RO, SA, FeOx, < 2mm, 68 (89) () JN, IR, RO, SO, FeOx, -, 49		25 22 22 22 20 22	3 3 3 3 3 3	1 1 1 1 2 1				
90	(90.0-95.0) SAA								1 0	(90.8) () FOLO, IR, RO, SA, Chl, < 2mm, 58		20	3	2				(90.0-95.0) Drilling from 08:42 to 08:51
				7	5.0/5.0	7	2	100	1 0 1	(94.6) () JN, IR, VR, SA, Chl, < 2mm, 39		22	3	2				
95	(95.0-105.0) SAA, Fresh (W1) to slightly weathered (W2)								7 4 2 2 3 3 1 18	(95.2) () FOLO, IR, RO, SO, FeOx, -, 62 (95.4) () FOLO, IR, RO, SO, FeOx, -, 54 (95.7) () FOLO, PL, SM, SO, FeOx, -, 56 (95.8) () FOLO, PL, RO, SO, FeOx, -, 53 (95.9) () FOLO, IR, RO, SO, FeOx, -, 52 (96) () FOLO, IR, RO, SO, FeOx, -, 61 (96.1) () FOLO, IR, RO, SO, FeOx, -, 52 (96.2) () FOLO, IR, RO, SO, FeOx, -, 51 (96.7) () FOLO, IR, RO, SA, Chl, -, 53 (96.8) () FOLO, IR, RO, SA, Chl, -, 53 (97.7) () FOLO, IR, RO, PC, Chl, < 1mm, 56 (98.2) () FOLO, IR, RO, SA, FeOx + Py, 1mm, 64 (98.3) () JN, IR, RO, SO, MnOx, -, 36 (98.4) () JN, IR, RO, SA, M Sa, < 2mm, 48 (99.2) () FOLO, IR, RO, SA, FeOx + Py, 1mm, 63 (99.3) () FOLO, IR, RO, SO, FeOx, -, 64 (99.7) () FOLO, IR, RO, SO, FeOx, -, 57 (100.1) () JN, IR, RO, SA, FeOx + Py, 1mm, 44 (100.6) () FOLO, IR, RO, SA, FeOx + Py, 1mm, 55 (100.8) () FOLO, IR, RO, SA, FeOx + Py, 1mm, 59 (101.1) () FOLO, IR, RO, SA, FeOx, 1mm, 59 (101.5) () JN, IR, RO, SA, Chl, 1mm, 46 (102.2) () FOLO, IR, RO, SO, FeOx, -, 62 (102.5) () JN, IR, RO, SA, FeOx, 1mm, 62		22 22 16 20 22 22 22 22 20 20 20 20 22 20 20 20 20 20 20 22 22 20 20 20 22 20 20 20	3 3 1 1.5 3 3 3 3 3 3 4 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	1 1 1 1 1 1 1 1 2 2 2 2 1 2 2 2 2 2 2 1 1 2 2 2 1 2 2				
100	(102.1-102.9) SAA, Slightly weathered (W2) to moderately weathered (W3), weak (R2).			8	9.3/10.0	8	4	45										
105	(105.0-110.0) SAA, Fresh (W1) to slightly weathered (W2).			9	4.9/5.0	9	6	54	1 3 2 2 2	(102.6) () FOLO, IR, RO, SA, FeOx, 1mm, 59 (102.8) () JN, IR, RO, SA, Chl, < 1mm, 48 (102.9) () FOLO, IR, RO, SA, Chl, 1mm, 54 (105.8) () FOLO, IR, RO, SA, Py, < 1mm, 78 (106.3) () FOLO, IR, RO, SA, Chl, < 1mm, 57 (106.6) () FOLO, IR, RO, SA, Py, < 1mm, 79 (106.8) () FOLO, IR, RO, SA, Chl + FeOx, < 1mm, 59 (107.5) () FOLO, PL, RO, SA, Chl + Py, < 1mm, 61 (107.7) () FOLO, IR, RO, SA, Py + FeOx, < 1mm, 54 (108.3) () FOLO, IR, RO, SA, Py + Chl, < 1mm, 52 (109.2) () FOLO, PL, SM, SA, Chl, < 1mm, 53 (109.7) () FOLO, IR, RO, SA, Chl, < 1mm, 58		20 20 20 20 20 20 20 12 20	3 3 3 3 3 3 3 1 3	2 2 2 2 2 2 2 2 2				
110	Downhole geophysics performed. Then grout to 56' ft bgs, 3/8" bentonite chips to surface. END DRILLHOLE AT 110 ft. BGS.																	
115																		
120																		

SCALE: 1 in = 5 ft
DRILLING CONTRACTOR: Premier Drilling
DRILLER: L. Carter

LOGGED: RJF/CFM
CHECKED: DLP
REVIEWED: DAH

WEATHERING INDEX
I-Fresh
II-Slightly Weathered
III-Moderately Weathered
IV-Highly Weathered
V-Completely Weathered
IV-Residual Soil

UCS (psi)
R1 - 150
R2 - 725
R3 - 3500
R4 - 7500
R5 - 15,000
R6 - 35,000

wsp

RECORD OF BOREHOLE BW-3

SHEET 1 of 2

PROJECT: Plant McDonough AP1-Drilling
PROJECT NUMBER: GL1777449-Y9
DRILLED DEPTH: 58.00 ft
DRILL RIG: CME 550X
DATE STARTED: 3/16/23
DATE COMPLETED: 3/22/23
NORTHING: 1,390,653.98
EASTING: 2,201,675.12
GS ELEVATION: 789.67 ft
TOC ELEVATION:
DEPTH W.L.:
ELEVATION W.L.:
DATE W.L.:
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC / ATT
0		0.00 - 15.70 FILL: (ML) CLAYEY SILT, some fine to coarse sand, some fine to coarse muscovite gravel; light brown to red orange; cohesive, w~PL, firm to stiff.	ML			1	SS	11 -6 -6 -7/24"	12	1.50 / 2.00
5	785					2	SS	4 -6 -8 -9/24"	14	1.50 / 2.00
10	780					3	SS	5 -6 -11 -12/24"	17	1.50 / 2.00
15	775				773.97	4	SS	6 -7 -11 -13/24"	18	1.60 / 2.00
		15.70 - 44.00 FILL: (CL-ML) Micaceous SILT and CLAY, some fine to coarse muscovite gravel; red, gray, brown; cohesive, w~PL, very soft to firm.	CL-ML		15.70	5	SS	11 -19 -21 -22/24"	40	1.50 / 2.00
20	770					6	SS	3 -6 -5 -7/24"	11	1.30 / 2.00
25	765					7	SS	2 -3 -9 -6/24"	12	1.60 / 2.00
30	760					8	SS	4 -5 -10 -13/24"	15	1.30 / 2.00
35	755					9	SS	3 -3 -5 -10/24"	8	1.50 / 2.00
40	750				745.67	10	SS	13 -16 -16 -22/24"	32	1.60 / 2.00
45	745	44.00 - 58.00 (ML) Sandy SILT, fine sand, some fine to coarse muscovite gravel; gray tan, orange; cohesive, w~PL, stiff to hard.	ML		44.00	11	SS	6 -7 -14 -14/24"	21	
50	740	Log continued on next page								

DIAGRAM and NOTES MONITORING WELL/ PIEZOMETER

WELL CONSTRUCTION DETAILS

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Premier Drilling
DRILLER: Larry Carter

INSPECTOR: Connor Mikilitus
CHECKED BY: DAH
DATE: 5/8/23

RECORD OF BOREHOLE BW-3

PROJECT: Plant McDonough AP1-Drilling
PROJECT NUMBER: GL1777449-Y9
DRILLED DEPTH: 58.00 ft
DRILL RIG: CME 550X
DATE STARTED: 3/16/23
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NORTHING: 1,390,653.98
EASTING: 2,201,675.12
GS ELEVATION: 789.67 ft
TOC ELEVATION:
DEPTH W.L.:
ELEVATION W.L.:
DATE W.L.:
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC / ATT	DIAGRAM and NOTES MONITORING WELL/ PIEZOMETER	WELL CONSTRUCTION DETAILS
50		44.00 - 58.00 (ML) Sandy SILT, fine sand, some fine to coarse muscovite gravel; gray tan, orange; cohesive, w~PL, stiff to hard. *(Continued)*	ML			11	SS	6 -7 -14 -14/24"	21	1.40 2.00		
55	735					12	SS	11 -26 -43 -38/24"	69	1.50 2.00		
					731.67							
60	730	58.00: Auger refusal, assumed top of rock. PVC casing grouted in place. Rock core follow on. Boring completed at 58.00 ft										
65	725											
70	720											
75	715											
80	710											
85	705											
90	700											
95	695											
100	690											

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Premier Drilling
DRILLER: Larry Carter
INSPECTOR: Connor Mikilitus
CHECKED BY: DAH
DATE: 5/8/23

RECORD OF DRILLHOLE BW-3

SHEET 1 of 2

PROJECT: Plant McDonough AP1-Drilling
PROJECT NUMBER: GL1777449-Y9
LOCATION: Smyrna, Georgia

DRILLING METHOD: Mud Rotary/HQ
DRILLING DATE: 3/16/2023
DRILL RIG: CME 550X

DATUM: NAD 83
AZIMUTH: N/A
COORDINATES: N: 1,390,654.0 E: 2,201,675.1

ELEVATION: 789.67
INCLINATION: -90

ROCK TYPE: PL-Planar, CU-Curved, UN-Undulating, ST-Stepped, IR-Irregular; K-Slickensided, PO-Polished, SM-Smooth, RO-Rough, VR-Very Rough; JN-Joint, BD-Bedding, FLT-Fault, BG-Broken Core, FOLO-Foliation; VNO-Vein, CONO-Contact (Open), CON-Contact(Closed), -- -Clean, SO-Staining only; SA-Slightly Altered, CC-Completely Coated, PC-Partially Coated, IN-Infilled, M-Silt; Br-Broken Rock, Ca-Calcite, CL-Clay, Sa-Sand, NA-Not Applicable

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG	ELEV. / DEPTH (ft)	RUN NO.	CORE RECOVERY	INTERVAL NO.	Jn	RQD %	FRACTURES PER FOOT	DISCONTINUITY DATA: DEPTH (COUNT), TYPE, SHAPE, ROUGHNESS, INFILL CHARACTER, INFILL TYPE, INFILL THICKNESS (mm), AND DIP wrt CORE AXIS	GRAPHIC LOG	JCR	Jr	Ja	WEATHERING INDEX (I II III IV V VI)	ROCK STRENGTH INDEX (R4 R3 R2 R1)	POINT LOAD (Axial / Diametral / UCS) STRENGTH TESTING (psi)	NOTES WATER LEVELS INSTRUMENTATION
40																		
45																		
50																		
55																		
60	(58.0-66.0) Highly weathered (W4), foliated, grayish purple (5P 4/2), fine to coarse grained, very weak (R1), Muscovite Biotite Schist [Button Schist]		731.7 / 58.0	1	3.1 / 8.0	1	12	13	7 12 9 24 24 24 24 24	(58.4) () JN, IR, VR, SO, FeOx, -, 42 (58.8) () JN, IR, RO, SO, MnOx, -, 33 (58.95) () FOLO, IR, RO, SO, MnOx, - (59.3) () BD, IR, RO, SA, FeOx stained crytsals, -, 85 (59.5) () FOLO, IR, RO, PC, M Sa, < 2mm, 59 (59.7) () FOLO, IR, RO, PC, M Sa, < 2mm, 55 (59.95) () JN, IR, RO, SO, FeOx, -, 85 (60.5) () JN, IR, RO, SO, MnOx, -, 47 (60.95) () FOLO, IR, VR, SO, FeOx, -, 70		25 22 22 20 20 20 22 22 25	3 3 3 3 1 1 3 1 3	1 1 1 2 3 3 1 1 1	I II III IV V VI	R4 R3 R2 R1		
65	(66.0-76.0) Highly weathered (W4), foliated, grayish purple (5P 4/2), fine to coarse grained, very weak (R1), Muscovite Biotite Schist [Button Schist]		723.7 / 66.0	2	3.6 / 10.0	2	12	20	4 6 2 4 24 24 24 24 24 24	(66.3) () FOLO, IR, RO, SO, FeOx, -, 50 (67.6) () JN, IR, RO, PC, Musc, < 2mm, 35 (67.8) () FOLO, IR, RO, PC, Musc, < 2mm, 51 (68.1) () JN, IR, SM, SO, MnOx, -, 33 (68.7) () FOLO, IR, RO, SO, FeOx, -, 60 (69.1) () JN, IR, SM, SO, MnOx, -, 48 (69.6) () FOLO, IR, SM, PC, MnOx, < 2mm, 60		22 16 16 20 22 20 16	3 3 3 2 3 2 2	1 3 3 1 1 1 1				(66.0-76.0) Drilling from 09:03 to 09:27
70																		
75	(76.0-83.0) Highly weathered (W4), foliated, grayish purple (5P 4/2), fine to coarse grained, very weak (R1), Biotite Schist [Button Schist]		713.7 / 76.0	3	1.7 / 7.0	3	12	86	24 24 24 24 24									
80	Log continued on next page																	

SCALE: 1 in = 5 ft
DRILLING CONTRACTOR: Premier Drilling
DRILLER: L. Carter

LOGGED: RJF/CFM
CHECKED: DLP
REVIEWED: DAH

WEATHERING INDEX
I-Fresh
II-Slightly Weathered
III-Moderately Weathered
IV-Highly Weathered
V-Completely Weathered
IV-Residual Soil

UCS (psi)
R1 - 150
R2 - 725
R3 - 3500
R4 - 7500
R5 - 15,000
R6 - 35,000

wsp

RECORD OF DRILLHOLE BW-3

SHEET 2 of 2

PROJECT: Plant McDonough AP1-Drilling
PROJECT NUMBER: GL1777449-Y9
LOCATION: Smyrna, Georgia

DRILLING METHOD: Mud Rotary/HQ
DRILLING DATE: 3/16/2023
DRILL RIG: CME 550X

DATUM: NAD 83
AZIMUTH: N/A
COORDINATES: N: 1,390,654.0 E: 2,201,675.1

ELEVATION: 789.67
INCLINATION: -90

ROCK TYPE

PL-Planar CU-Curved UN-Undulating ST-Stepped IR-Irregular
K-Slickensided PO-Polished SM-Smooth RO-Rough VR-Very Rough
JN-Joint BD-Bedding FLT-Fault BC-Broken Core FOLO-Foliation
VNO-Vein CONO-Contact (Open) CON-Contact(Closed) -- -Clean SO-Staining only
SA-Slightly Altered CC-Completely Coated PC-Partially Coated IN-Infilled M-Silt
Br-Broken Rock Ca-Calcite CL-Clay Sa-Sand NA-Not Applicable

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG	ELEV. / DEPTH (ft)	RUN NO.	CORE RECOVERY	INTERVAL NO.	Jn	RQD %	FRACTURES PER FOOT	DISCONTINUITY DATA: DEPTH (COUNT), TYPE, SHAPE, ROUGHNESS, INFILL CHARACTER, INFILL TYPE, INFILL THICKNESS (mm), AND DIP wrt CORE AXIS	GRAPHIC LOG	JCR	Jr	Ja	WEATHERING INDEX I II III IV V VI	ROCK STRENGTH INDEX R4 R3 R2 R1	POINT LOAD ● Axial ■ Diametral ▲ UCS / STRENGTH TESTING (psi)	NOTES WATER LEVELS INSTRUMENTATION
80	(76.0-83.0) Highly weathered (W4), foliated, grayish purple (5P 4/2), fine to coarse grained, very weak (R1), Biotite Schist [Button Schist] *(Continued)*			3	1.7 / 7.0	3	12	86	24									
									22	(81.95) () FOLO, IR, SM, CC, Musc 2mm, 74		6	2	4				
									5	(82.2) () FOLO, IR, RO, CC, Musc 2mm, 55		6	2	4				
			706.7															
	(83.0-96.0) Slightly weathered (W2), foliated, medium dark gray (N4), fine to coarse grained, medium strong (R3), Muscovite Biotite Schist [Button Schist]		83.0						1	(83) () FOLO, IR, RO, PC, Musc, < 2mm, 58		20	3	3				
				4	2.8 / 3.0	4	2	80		(83.7) () JN, IR, SM, SO, FeOx, -, 40		20	2	1				
85									2	(84.1) () FOLO, IR, SM, SO, FeOx, -, 60		20	2	1				
										(84.8) () FOLO, IR, RO, SO, FeOx, -, 50		22	3	1				
									0									
	(86.0-96.0) Same as above, Fresh (W1)								1									
										(87) () JN, IR, RO, SO, FeOx, -, 43		22	3	1				
									2	(87.6) () FOLO, IR, RO, -, -, -, 63		22	3	1				
										(87.7) () FOLO, IR, RO, -, -, -, 51		22	3	1				
									1	(88.1) () FOLO, IR, RO, -, -, -, 55		22	3	1				
									0									
90									1	(90.2) () JN, IR, SM, SO, FeOx, -, 38		20	2	1				
				5	9.8 / 10.0	5	6	83	2	(91.2) () JN, IR, SM, PC, M Sa, < 2mm, 48		16	2	2				
										(91.9) () JN, IR, SM, CN, -, -, 22		20	2	1				
									1	(92.5) () FOLO, IR, RO, SA, Py, 1mm, 51		20	3	2				
									0									
									1	(94.5) () FOLO, IR, RO, SA, Py, 1mm, 62		20	3	2				
95									0									
			693.7															
	(96.0-106.0) Fresh (W1), foliated, medium dark gray (N4), fine to coarse grained, medium strong (R3), Muscovite Biotite Schist [Button Schist]		96.0						1	(96.5) () FOLO, IR, SM, CN, -, -, 60		20	2	1				
									1	(97.5) () FOLO, IR, RO, CN, -, -, 55		22	2	1				
									3	(98.5) () JN, IR, RO, CN, -, -, 49		22	2	1				
										(98.8) () JN, IR, RO, CN, -, -, 49		22	2	1				
										(98.9) () FOLO, IR, SM, CN, -, -, 55		20	2	1				
									3	(99.2) () BD, IR, RO, IN, soft clay, 10-15 mm, 81		0	1	15				
100										(99.5) () FOLO, IR, RO, CN, -, -, 52		22	3	1				
									1	(99.9) () FOLO, IR, RO, CN, -, -, 63		22	3	1				
				6	10.0 / 10.0	6	3	87		(100.8) () FOLO, IR, RO, CN, -, -, 65		22	3	1				
									2	(101.1) () FOLO, IR, VR, CN, -, -, 56		25	3	1				
										(101.6) () FOLO, IR, RO, PC, Py, -, 56		22	3	2				
									0									
									0									
									2	(104.4) () JN, IR, SM, SO, Py, -, 45		20	3	1				
105										(104.7) () FOLO, IR, SM, PC, M Sa, < 2mm, 54		16	2	3				
									2	(105.2) () FOLO, IR, SM, CN, -, -, 62		20	3	1				
										(105.8) () FOLO, IR, SM, CN, -, -, 58		20	3	1				
	Downhole geophysics performed. Then grout to 55' bgs, 3/8" bentonite chips to surface. END DRILLHOLE AT 106 ft. BGS.																	
110																		
115																		
120																		

SCALE: 1 in = 5 ft
DRILLING CONTRACTOR: Premier Drilling
DRILLER: L. Carter

LOGGED: RJF/CFM
CHECKED: DLP
REVIEWED: DAH

WEATHERING INDEX
I-Fresh
II-Slightly Weathered
III-Moderately Weathered
IV-Highly Weathered
V-Completely Weathered
IV-Residual Soil

UCS (psi)
R1 - 150
R2 - 725
R3 - 3500
R4 - 7500
R5 - 15,000
R6 - 35,000

wsp

RECORD OF BOREHOLE BW-4

SHEET 1 of 2

PROJECT: Plant McDonough AP1-Drilling
PROJECT NUMBER: GL1777449-Y9
DRILLED DEPTH: 77.50 ft
DRILL RIG: CME 550X
DATE STARTED: 3/17/23
DATE COMPLETED: 3/27/23
NORTHING: 1,391,306.59
EASTING: 2,201,755.32
GS ELEVATION: 797.05 ft
TOC ELEVATION:
DEPTH W.L.:
ELEVATION W.L.:
DATE W.L.:
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC / ATT	DIAGRAM and NOTES MONITORING WELL/ PIEZOMETER	WELL CONSTRUCTION DETAILS
0	795	0.00 - 10.00 FILL: Air knife for utility clearance (Topsoil)										
5	790											
10	785				787.05 10.00							
		10.00 - 54.00 FILL: (SP-SM) Micaceous fine SAND and SILT, some clay; gray, light orangish brown; cohesive, moist, firm to stiff.				1	SS	4 -5 -7/18"	12	1.20 / 2.00		
15	780											
20	775					2	SS	7 -13 -21 -28/24"	34	1.30 / 2.00		
25	770					3	SS	4 -5 -8 -12/24"	13	1.30 / 2.00		
30	765		SP-SM			4	SS	5 -5 -5 -7/24"	10	1.40 / 2.00		
35	760					5	SS	6 -9 -9 -9/24"	18	1.60 / 2.00		
40	755					6	SS	4 -8 -11 -14/24"	19	1.50 / 2.00		
45	750					7	SS	6 -7 -14 -17/24"	21	1.60 / 2.00		
50		Log continued on next page				8	SS	4 -6 -10 -12/24"	16			

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Premier Drilling
DRILLER: Larry Carter

INSPECTOR: Connor Mikilitus
CHECKED BY: DAH
DATE: 5/8/23

RECORD OF BOREHOLE BW-4

PROJECT: Plant McDonough AP1-Drilling
PROJECT NUMBER: GL1777449-Y9
DRILLED DEPTH: 77.50 ft
DRILL RIG: CME 550X
DATE STARTED: 3/17/23
DATE COMPLETED: 3/27/23
NORTHING: 1,391,306.59
EASTING: 2,201,755.32
GS ELEVATION: 797.05 ft
TOC ELEVATION:
DEPTH W.L.:
ELEVATION W.L.:
DATE W.L.:
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC / ATT	DIAGRAM and NOTES MONITORING WELL/ PIEZOMETER	WELL CONSTRUCTION DETAILS
50		10.00 - 54.00 FILL: (SP-SM) Micaceous fine SAND and SILT, some clay; gray, light orangish brown; cohesive, moist, firm to stiff. *(Continued)*	SP-SM		743.05	8	SS	4 -6 -10 -12/24"	16	1.60 / 2.00		
55	745					9	SS	6 -9 -13 -17/24"	22	1.70 / 2.00		
60	740	54.00 - 77.50 (CL-ML) CLAY and SILT, some fine to coarse muscovite gravel; brown to dark gray; cohesive, w~PL, stiff to hard.	CL-ML		54.00	10	SS	4 -6 -9 -13/24"	15	2.00 / 2.00		
65	735					11	SS	12 -21 -37 -50/4"/22"	58	1.60 / 2.00		
70	730					12	SS	19 -19 -20 -24/24"	39	1.50 / 2.00		
75	725					13	SS	18 -16 -14 -18/24"	30	1.00 / 2.00		
80	720	77.50: Auger refusal, assumed top of rock. PVC casing grouted in place. Rock core follow on. Boring completed at 77.50 ft			719.55							
85	715											
90	710											
95	705											
100	700											

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Premier Drilling
DRILLER: Larry Carter
INSPECTOR: Connor Mikilitus
CHECKED BY: DAH
DATE: 5/8/23

RECORD OF DRILLHOLE BW-4

SHEET 1 of 3

PROJECT: Plant McDonough AP1-Drilling
PROJECT NUMBER: GL1777449-Y9
LOCATION: Smyrna, Georgia

DRILLING METHOD: Mud Rotary/HQ
DRILLING DATE: 3/17/2023
DRILL RIG: CME 550X

DATUM: NAD 83
AZIMUTH: N/A
COORDINATES: N: 1,391,306.6 E: 2,201,755.3

ELEVATION: 797.05
INCLINATION: -90

ROCK TYPE

PL-Planar K-Slickensided JN-Joint VNO-Vein SA-Slightly Altered Br-Broken Rock
CU-Curved PO-Polished BD-Bedding CONO-Contact (Open) CC-Completely Coated Ca-Calcite
UN-Undulating SM-Smooth FLT-Fault CON-Contact(Closed) PC-Partially Coated CL-Clay
ST-Stepped RO-Rough BC-Broken Core - - -Clean IN-Infilled Sa-Sand
IR-Irregular VR-Very Rough FOLO-Foliation SO-Staining only M-Silt NA-Not Applicable

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG	ELEV. / DEPTH (ft)	RUN NO.	CORE RECOVERY	INTERVAL NO.	Jn	RQD %	FRACTURES PER FOOT	DISCONTINUITY DATA: DEPTH (COUNT), TYPE, SHAPE, ROUGHNESS, INFILL CHARACTER, INFILL TYPE, INFILL THICKNESS (mm), AND DIP wrt CORE AXIS	GRAPHIC LOG	JCR	Jr	Ja	WEATHERING INDEX I II III IV V VI	ROCK STRENGTH INDEX R4 R3 R2 R1	POINT LOAD ● Axial ■ Diametral ▲ UCS / STRENGTH TESTING (psi)	NOTES WATER LEVELS INSTRUMENTATION
40																		
45																		
50																		
55																		
60																		
65																		
70																		
75																		
	(77.5-89.3) Highly weathered (W4), foliated, dark gray (5YR 4/1), fine to medium grained, very weak (R1), Muscovite Biotite Schist [Button Schist]		719.6 77.5	1	5.1/8.5	1	6	12	6 6 7	(78) () JN, IR, SM, CN, -, -, 41 (78.1) () JN, IR, RO, SO, FeOx, -, 38 (78.4) () JN, IR, RO, SA, Py, < 1mm, 24 (78.6) () JN, IR, RO, SO, FeOx, -, 30 (78.8) () JN, IR, SM, CN, -, -, 40 (79.9) () JN, IR, RO, SO, FeOx, -, 45 (79.2) () FOLO, IR, RO, SA, Py, < 1mm		20 22 20 22 20	2 3 3 3 2	1 1 2 1 1				(80.0-86.0) Drilling from 15:09 to 15:34
80	Log continued on next page																	

SCALE: 1 in = 5 ft
DRILLING CONTRACTOR: Premier Drilling
DRILLER: L. Carter

LOGGED: RJF/CFM
CHECKED: DLP
REVIEWED: DAH

WEATHERING INDEX
I-Fresh
II-Slightly Weathered
III-Moderately Weathered
IV-Highly Weathered
V-Completely Weathered
IV-Residual Soil

UCS (psi)
R1 - 150
R2 - 725
R3 - 3500
R4 - 7500
R5 - 15,000
R6 - 35,000

wsp

RECORD OF DRILLHOLE BW-4

SHEET 2 of 3

PROJECT: Plant McDonough AP1-Drilling
PROJECT NUMBER: GL1777449-Y9
LOCATION: Smyrna, Georgia

DRILLING METHOD: Mud Rotary/HQ
DRILLING DATE: 3/17/2023
DRILL RIG: CME 550X

DATUM: NAD 83
AZIMUTH: N/A
COORDINATES: N: 1,391,306.6 E: 2,201,755.3

ELEVATION: 797.05
INCLINATION: -90

ROCK TYPE
PL-Planar CU-Curved UN-Undulating ST-Stepped IR-Irregular
K-Slickensided PO-Polished SM-Smooth RO-Rough VR-Very Rough
JN-Joint BD-Bedding FLT-Fault BC-Broken Core FOLO-Foliation
VNO-Vein CONO-Contact (Open) CON-Contact(Closed) -- -Clean SO-Staining only
SA-Slightly Altered CC-Completely Coated PC-Partially Coated IN-Infilled M-Silt
Br-Broken Rock Ca-Calcite CL-Clay Sa-Sand NA-Not Applicable

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG	ELEV. / DEPTH (ft)	RUN NO.	CORE RECOVERY	INTERVAL NO.	Jn	RQD %	FRACTURES PER FOOT	DISCONTINUITY DATA: DEPTH (COUNT), TYPE, SHAPE, ROUGHNESS, INFILL CHARACTER, INFILL TYPE, INFILL THICKNESS (mm), AND DIP wrt CORE AXIS	GRAPHIC LOG	JCR	Jr	Ja	WEATHERING INDEX I II III IV V VI	ROCK STRENGTH INDEX R4 R3 R2 R1	POINT LOAD ● Axial ■ Diametral ▲ UCS / STRENGTH TESTING (psi)	NOTES WATER LEVELS INSTRUMENTATION
80	(77.5-89.3) Highly weathered (W4), foliated, dark gray (5YR 4/1), fine to medium grained, very weak (R1), Muscovite Biotite Schist [Button Schist] *(Continued)*			1	5.1 / 8.5	1	6	12	10	(79.3) () FOLO, ST, RO, SA, Py, < 1mm, 59		22	3	1				
										(79.4) () FOLO, IR, RO, SA, Py, < 1mm, 62		20	3	2				
									24	(80.1) () JN, IR, SM, SO, FeOx, -, 46		20	3	2				
										(80.4) () JN, IR, SM, SA, Py, < 1mm, 46		20	2	1				
									14	(80.7) () FOLO, IR, SM, SO, MnOx, -, 59		16	2	2				
										(81.4) () FOLO, IR, RO, SO, FeOx, -, 60		20	2	1				
										(81.6) () BD, IR, RO, CN, -, -, 88		20	2	1				
										(81.8) () FOLO, IR, RO, SO, FeOx, -, 53		22	3	1				
									24	(81.9) () JN, IR, RO, SO, FeOx, -, 17		22	3	1				
									24			22	3	1				
85									24									
	(86.0-89.1) Lost core, assumed rock properties the same as above (SAA)			2	0.2 / 3.1	2	20	0	24									
									24									
									24									
	(89.1-89.3) SAA		707.8															
	(89.3-96.0) Slightly weathered (W2), foliated, grayish purple (5P 4/2), fine to medium crystalline, medium strong (R3), Muscovite Biotite Schist [Button Schist]		89.3						9	(89.6) () FOLO, IR, RO, SO, FeOx, -, 57		22	3	1				
90									1	(90.6) () FOLO, PL, VR, SO, FeOx, -, 61		22	1.5	1				
									3	(91.1) () FOLO, PL, RO, SO, FeOx, -, 65		20	1.5	1				
										(91.6) () FOLO, IR, RO, SO, FeOx, -, 66		22	3	1				
										(91.7) () BD, IR, RO, CN, -, -, 89		22	3	1				
				3	6.9 / 6.9	3	3	55	4	(92.5) () FOLO, IR, RO, SO, FeOx, -, 60		22	3	1				
										(92.6) () FOLO, IR, RO, SA, Py, -, 68		20	3	2				
										(93) () JN, CU, RO, SO, FeOx, -, 38		22	3	1				
									2	(93.1) () JN, CU, RO, SO, FeOx, -, 34		22	3	1				
										(93.6) () FOLO, IR, RO, CN, -, -, 56		22	3	1				
										(93.8) () FOLO, IR, RO, SO, FeOx, -, 59		22	3	1				
									5	(94.1) () FOLO, IR, RO, SA, Py, 1mm, 58		22	3	1				
95										(94.3) () FOLO, IR, RO, SA, Py, 1mm, 59		20	3	2				
										(94.4) () FOLO, IR, RO, SO, FeOx, -, 60		20	3	2				
									6	(94.5) () FOLO, IR, RO, SO, FeOx, -, 54		22	3	1				
										(94.9) () FOLO, IR, RO, SA, Py, < 1mm, 58		22	3	1				
			701.1															
	(96.0-99.0) Moderately weathered (W3), foliated, grayish blue (5PB 5/2), fine to medium grained, weak (R2), Muscovite Biotite Schist [Button Schist]		96.0						6	(95.1) () FOLO, IR, RO, SA, Py, < 1mm, 58		20	3	2				
										(95.5) () JN, IR, RO, SO, FeOx, -, 16		20	3	2				
										(96.1) () FOLO, IR, RO, SO, FeOx, -, 71		22	3	1				
				4	2.0 / 3.0	4	12	0	14	(96.2) () FOLO, IR, RO, SA, Py, 1mm, 52		22	3	1				
										(96.3) () JN, PL, RO, SO, FeOx, -, 7		20	3	2				
										(96.5) () JN, PL, RO, SO, FeOx, -, 64		22	3	1				
									24	(96.9) () FOLO, IR, SM, CN, -, -, 50		22	3	1				
										(97.3) () FOLO, IR, RO, SO, FeOx, -, 84		20	2	1				
			698.1							(97.4) () BD, IR, RO, CN, -, -, 39		22	3	1				
	(98.0-99.0) Lost core, assumed SAA		99.0							(97.7) () JN, IR, RO, CN, -, -, 68		22	3	1				
	(99.0-106.0) Slightly weathered (W2), foliated, grayish blue (5PB 5/2), fine to medium grained, medium strong (R3), Muscovite Biotite Schist [Button Schist]								10	(99.4) () FOLO, PL, RO, SO, FeOx, -, 63		22	3	1				
100												22	3	1				
									3	(100.2) () JN, IR, RO, SO, FeOx, -, 40		20	1.5	1				
										(100.4) () JN, IR, RO, SO, FeOx, -, 46		22	3	1				
										(100.7) () FOLO, IR, RO, CN, FeOx, -, 82		22	3	1				
									4	(101.1) () JN, IR, RO, SO, FeOx, -, 82		22	3	1				
										(101.15) () JN, PL, SM, SO, FeOx, -, 46		22	3	1				
										(101.2) () FOLO, IR, RO, SO, FeOx, -, 68		22	3	1				
				5	6.8 / 7.0	5	6	76	1	(101.65) () JN, IR, RO, SO, FeOx, -, 68		16	1	1				
										(102.7) () JN, IR, RO, SO, FeOx, -, 18		22	3	1				
												22	3	1				
									1	(103.5) () FOLO, IR, RO, SO, FeOx, -, 69		22	3	1				
										(104) () JN, IR, RO, SO, FeOx, -, 30		22	3	1				
									2	(104.5) () BD, IR, RO, CN, -, -, 87		22	3	1				
105									1	(105.3) () JN, IR, RO, CN, -, -, 36		22	3	1				
			691.1															
	(106.0-131.0) Fresh (W1), foliated, grayish blue green (5BG 5/2), fine grained, medium strong (R3), Muscovite Biotite Chlorite Garnet, Pyrite Schist [Button Schist]		106.0						0									
									0									
									3	(108.3) () FOLO, IR, RO, SO, FeOx, -, 61		22	3	1				
										(108.4) () BD, IR, RO, PC, brown ML, 61 mm, 76		20	3	3				
									0	(108.8) () FOLO, IR, RO, SA, Py, < 1mm, 63		20	3	2				
110									0									
				6	9.9 / 10.0	6	6	92	0									
									1									
										(112.7) () JN, PL, VR, CN, -, -, 39		22	1.5	1				
									3	(113.2) () JN, PL, RO, CN, -, -, 36		20	1.5	1				
										(113.6) () FOLO, IR, RO, SO, FeOx, -, 76		22	3	1				
										(113.8) () JN, IR, RO, SO, FeOx, -, 76		22	3	1				
									0									
115									2									(116.0-126.0) Drilling from 09:16 to 09:48
	(116.0-126.0) SAA [Button Schist]								1	(116.5) () JN, IR, RO, SO, FeOx, -, 48		22	3	1				
									2	(117.4) () FOLO, IR, RO, SO, FeOx, -, 57		22	3	1				
										(117.7) () FOLO, IR, RO, SO, FeOx, -, 60		22	3	1				
				7	4.4 / 10.0	7	4	15	9	(118.2) () FOLO, IR, RO, SO, FeOx, -, 74		22	3	1				
									18	(119.2) () FOLO, IR, RO, SO, FeOx, -, 69		22	3	1				
120																		

Log continued on next page

SCALE: 1 in = 5 ft
DRILLING CONTRACTOR: Premier Drilling
DRILLER: L. Carter

LOGGED: RJF/CFM
CHECKED: DLP
REVIEWED: DAH

WEATHERING INDEX
I-Fresh
II-Slightly Weathered
III-Moderately Weathered
IV-Highly Weathered
V-Completely Weathered
IV-Residual Soil

UCS (psi)
R1 - 150
R2 - 725
R3 - 3500
R4 - 7500
R5 - 15,000
R6 - 35,000

wsp

RECORD OF DRILLHOLE BW-4

SHEET 3 of 3

PROJECT: Plant McDonough AP1-Drilling
PROJECT NUMBER: GL1777449-Y9
LOCATION: Smyrna, Georgia

DRILLING METHOD: Mud Rotary/HQ
DRILLING DATE: 3/17/2023
DRILL RIG: CME 550X

DATUM: NAD 83
AZIMUTH: N/A
COORDINATES: N: 1,391,306.6 E: 2,201,755.3

ELEVATION: 797.05
INCLINATION: -90

ROCK TYPE

PL-Planar CU-Curved UN-Undulating ST-Stepped IR-Irregular
K-Slickensided PO-Polished SM-Smooth RO-Rough VR-Very Rough
JN-Joint BD-Bedding FLT-Fault BC-Broken Core FOLO-Foliation
VNO-Vein CONO-Contact (Open) CON-Contact(Closed) -- -Clean SO-Staining only
SA-Slightly Altered CC-Completely Coated PC-Partially Coated IN-Infilled M-Silt
Br-Broken Rock Ca-Calcite CL-Clay Sa-Sand NA-Not Applicable

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG	ELEV. / DEPTH (ft)	RUN NO.	CORE RECOVERY	INTERVAL NO.	Jn	RQD %	FRACTURES PER FOOT	DISCONTINUITY DATA: DEPTH (COUNT), TYPE, SHAPE, ROUGHNESS, INFILL CHARACTER, INFILL TYPE, INFILL THICKNESS (mm), AND DIP wrt CORE AXIS	GRAPHIC LOG	JCR	Jr	Ja	WEATHERING INDEX: I II III IV V VI	ROCK STRENGTH INDEX: R4 R3 R2 R1	POINT LOAD: Axial / Diametral / UCS; STRENGTH TESTING (psi)	NOTES WATER LEVELS INSTRUMENTATION
120	(106.0-131.0) Fresh (W1), foliated, grayish blue green (5BG 5/2), fine grained, medium strong (R3), Muscovite Biotite Chlorite Garnet, Pyrite Schist [Button Schist] *(Continued)*			7	4.4 / 10.0	7	4	15	24									
									24									
									24									
									24									
125									24									
									24									
	(126.0-131.0) SAA [Button Schist]								0									
									0									
				8	5.0 / 5.0	8	.5	100	0									
130									0									
									0									
	Downhole geophysics performed. Then grout to surface. END DRILLHOLE AT 131 ft. BGS.																	
135																		
140																		
145																		
150																		
155																		
160																		

SCALE: 1 in = 5 ft
DRILLING CONTRACTOR: Premier Drilling
DRILLER: L. Carter

LOGGED: RJF/CFM
CHECKED: DLP
REVIEWED: DAH

WEATHERING INDEX
I-Fresh
II-Slightly Weathered
III-Moderately Weathered
IV-Highly Weathered
V-Completely Weathered
IV-Residual Soil

UCS (psi)
R1 - 150
R2 - 725
R3 - 3500
R4 - 7500
R5 - 15,000
R6 - 35,000

wsp

RECORD OF BOREHOLE BW-5

SHEET 1 of 1

PROJECT: Plant McDonough AP1-Drilling
PROJECT NUMBER: GL1777449-Y9
DRILLED DEPTH: 25.00 ft

DRILL RIG: CME 550X
DATE STARTED: 3/6/23
DATE COMPLETED: 3/7/23

NORTHING: 1,391,737.84
EASTING: 2,200,988.01
GS ELEVATION: 779.66 ft
TOC ELEVATION:

DEPTH W.L.:
ELEVATION W.L.:
DATE W.L.:
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC / ATT	DIAGRAM and NOTES MONITORING WELL/ PIEZOMETER	WELL CONSTRUCTION DETAILS
0		0.00 - 21.00 (SP-SM) Fine Sandy SILT; light brown, gray to tan orange; cohesive, moist, very stiff to hard.	SP-SM			1	SS	3 -3 -6 -7/24"	9	2.00 / 2.00		
						2	SS	5 -20 -21 -23/24"	41	1.75 / 2.00		
5	775					3	SS	20 -32 -41 -50/5"/24"	73	2.00 / 2.00		
10	770					4	SS	7 -39 -50/4"/16"	50/4"	1.00 / 2.00		
15	765					5	SS	9 -21 -50/5"/17"	50/5"	1.50 / 2.00		
20	760				758.66							
		21.00 - 25.00 (SP-SM) Silty fine SAND; dark gray, light brown; moist, very dense.	SP-SM		21.00	6	SS	50/5"/5"	50/5"	0.42 / 0.42		
25	755				754.66							
		25.00: Auger refusal, assumed top of rock. PVC casing grouted in place. Rock core follow on. Boring completed at 25.00 ft										
30	750											
35	745											
40	740											
45	735											
50	730											

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Premier Drilling
DRILLER: Larry Carter

INSPECTOR: Connor Mikilitus
CHECKED BY: DAH
DATE: 5/8/23

RECORD OF DRILLHOLE BW-5

SHEET 1 of 2

PROJECT: Plant McDonough AP1-Drilling
PROJECT NUMBER: GL1777449-Y9
LOCATION: Smyrna, Georgia

DRILLING METHOD: HSA/HQ
DRILLING DATE: 3/6/2023
DRILL RIG: CME 550X

DATUM: NAD 83
AZIMUTH: N/A
COORDINATES: N: 1,391,737.8 E: 2,200,988.0

ELEVATION: 779.66
INCLINATION: -90

ROCK TYPE: PL-Planar, CU-Curved, UN-Undulating, ST-Stepped, IR-Irregular; K-Slickensided, PO-Polished, SM-Smooth, RO-Rough, VR-Very Rough; JN-Joint, BD-Bedding, FLT-Fault, BC-Broken Core, FOLO-Foliation; VNO-Vein, CONO-Contact (Open), CON-Contact(Closed), --Clean, SO-Staining only; SA-Slightly Altered, CC-Completely Coated, PC-Partially Coated, IN-Infilled, M-Silt; Br-Broken Rock, Ca-Calcite, CL-Clay, Sa-Sand, NA-Not Applicable

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG	ELEV. / DEPTH (ft)	RUN NO.	CORE RECOVERY	INTERVAL NO.	Jn	RQD %	FRACTURES PER FOOT	DISCONTINUITY DATA: DEPTH (COUNT), TYPE, SHAPE, ROUGHNESS, INFILL CHARACTER, INFILL TYPE, INFILL THICKNESS (mm), AND DIP wrt CORE AXIS	GRAPHIC LOG	JCR	Jr	Ja	WEATHERING INDEX (I, II, III, IV, V, VI)	ROCK STRENGTH INDEX (R4, R3, R2, R1)	POINT LOAD (Axial, Diametral, UCS) / STRENGTH TESTING (psi)	NOTES WATER LEVELS INSTRUMENTATION
0																		
5																		
10																		
15																		
20																		
25	(25.0-31.0) Slightly weathered, foliated, medium dark gray (N5) to pale yellowish orange (10YR 8/6) banding, medium grained, medium strong (R3), banded Gneiss. [Long Island Creek Gneiss]		754.6 25.0	1	5.3/6.0	1	4	67	3 1 2 4 0 22	(25.3) () FOLO, IR, RO, -, -, -, 61 (25.5) () FOLO, PL, RO, SO, FeOx, -, 66 (25.9) () FOLO, IR, RO, SO, FeOx, -, 58 (26.5) () FOLO, PL, SM, SO, FeOx, -, 60 (27.1) () FOLO, IR, RO, SO, FeOx, -, 66 (27.2) () FOLO, IR, RO, SO, FeOx, -, 72 (28.1) () FOLO, IR, SM, SO, FeOx, -, 64 (28.2) () FOLO, PL, SM, SO, FeOx, -, 68 (28.8) () FOLO, PL, SM, SO, FeOx, -, 59 (28.9) () FOLO, PL, SM, SO, FeOx, -, 59 (30.1) () FOLO, PL, RO, SO, FeOx, -, 60		22 3 1 20 1.5 1 22 3 1 16 1 1 22 3 1 22 3 1 20 2 1 16 1 1 16 1 1 16 1 1 20 1.5 1			(25.0-31.0) Drilling from 09:56 to 10:15
30	(31.0-71.0) Slightly weathered (W2), foliated, dark gray (N3) to blue (5PB 3/2), fine to medium grained, medium strong (R3) to strong (R4), Muscovite Biotite Schist [Button Schist]		748.6 31.0	2	4.4/5.0	2	6	8	4 13 6 7 18	(31.2) () FOLO, IR, RO, SO, FeOx, -, 62 (31.5) () FOLO, IR, SM, SO, FeOx, -, 68 (31.6) () FOLO, PL, SM, SO, FeOx, -, 64 (31.7) () FOLO, PL, SM, SO, FeOx, -, 62 (32.1) () FOLO, PL, SM, SO, FeOx, -, 56 (32.2) () FOLO, PL, SM, SO, FeOx, -, 61 (32.3) () FOLO, IR, SM, SO, FeOx, -, 56 (32.4) () JN, IR, VR, SO, FeOx, -, 15 (32.5) () FOLO, PL, RO, SO, FeOx, -, 62 (32.55) () FOLO, PL, SM, CC, Musc, -, 1mm, 50 (33.2) () FOLO, ST, RO, PC, Musc, -, 1mm, 67 (33.6) () JN, IR, SM, SO, FeOx, -, 45 (33.7) () FOLO, IR, SM, SO, FeOx, -, 74 (33.75) () FOLO, PL, SM, SO, FeOx, -		22 3 1 20 2 1 16 1 1 16 1 1 16 1 1 16 1 1 20 2 1 25 3 1 20 1.5 1 12 1 3 20 3 3 20 2 1 20 2 3			(31.0-36.0) Drilling from 10:25 to 10:36
35	(36.0-43.0) Same as above, change in minerology, Muscovite Biotite Garnet Schist [Button Schist]			3	7.0/7.0	3	4	51	3 2 4 0	(34.1) () FOLO, PL, SM, CN, -, -, 68 (34.15) () FOLO, PL, SM, CN, -, -, 53 (34.25) () JN, PL, SM, CN, -, -, 48 (34.4) () FOLO, PL, SM, CN, -, -, 55 (34.5) () FOLO, PL, SM, CN, -, -, 58 (34.6) () FOLO, IR, SM, CN, -, -, 66 (34.7) () FOLO, IR, SM, CN, -, -, 66 (34.8) () FOLO, IR, SM, CN, -, -, 60 (35.1) () FOLO, IR, SM, CN, -, -, 61 (35.15) () FOLO, IR, SM, CN, -, -, 52 (35.3) () FOLO, PL, RO, CN, -, -, 60 (36.25) () FOLO, IR, RO, SO, FeOx, - (36.45) () FOLO, IR, RO, SO, FeOx, 60		16 1 1 16 1 1 16 1 1 16 1 1 16 1 1 20 2 2 20 2 2 20 2 2 20 2 2 60			(36.0-43.0) Drilling from 10:51 to 11:06
40																		

Log continued on next page

SCALE: 1 in = 5 ft
DRILLING CONTRACTOR: Premier Drilling
DRILLER: L. Carter

LOGGED: RJF/CFM
CHECKED: DLP
REVIEWED: DAH

WEATHERING INDEX
I-Fresh
II-Slightly Weathered
III-Moderately Weathered
IV-Highly Weathered
V-Completely Weathered
IV-Residual Soil

UCS (psi)
R1 - 150
R2 - 725
R3 - 3500
R4 - 7500
R5 - 15,000
R6 - 35,000

wsp

RECORD OF DRILLHOLE BW-5

SHEET 2 of 2

PROJECT: Plant McDonough AP1-Drilling
PROJECT NUMBER: GL1777449-Y9
LOCATION: Smyrna, Georgia

DRILLING METHOD: HSA/HQ
DRILLING DATE: 3/6/2023
DRILL RIG: CME 550X

DATUM: NAD 83
AZIMUTH: N/A
COORDINATES: N: 1,391,737.8 E: 2,200,988.0

ELEVATION: 779.66
INCLINATION: -90

ROCK TYPE

PL-Planar CU-Curved UN-Undulating ST-Stepped IR-Irregular
K-Slickensided PO-Polished SM-Smooth RO-Rough VR-Very Rough
JN-Joint BD-Bedding FLT-Fault BC-Broken Core FOLO-Foliation
VNO-Vein CONO-Contact (Open) CON-Contact(Closed) -- -Clean SO-Staining only
SA-Slightly Altered CC-Completely Coated PC-Partially Coated IN-Infilled M-Silt
Br-Broken Rock Ca-Calcite CL-Clay Sa-Sand NA-Not Applicable

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG	ELEV. / DEPTH (ft)	RUN NO.	CORE RECOVERY	INTERVAL NO.	Jn	RQD %	FRACTURES PER FOOT	DISCONTINUITY DATA: DEPTH (COUNT), TYPE, SHAPE, ROUGHNESS, INFILL CHARACTER, INFILL TYPE, INFILL THICKNESS (mm), AND DIP wt CORE AXIS	GRAPHIC LOG	JCR	Jr	Ja	WEATHERING INDEX I II III IV V VI	ROCK STRENGTH INDEX R4 R3 R2 R1	POINT LOAD ● Axial ■ Diametral ▲ UCS / STRENGTH TESTING (psi)	NOTES WATER LEVELS INSTRUMENTATION
40	(31.0-71.0) Slightly weathered (W2), foliated, dark gray (N3) to blue (5PB 3/2), fine to medium grained, medium strong (R3) to strong (R4), Muscovite Biotite Schist [Button Schist] *(Continued)*			3	7.0/7.0	3	4	51	3	(36.7) () FOLO, IR, RO, SO, FeOx, -, 58		20	2	2				
										(37.2) () FOLO, PL, SM, SO, FeOx, -, 56		22	3	1				
										(37.7) () FOLO, IR, RO, SO, FeOx, -, 56		22	3	1				
										(38.15) () FOLO, IR, RO, CN, -, -, 56		22	3	1				
									2	(38.5) () FOLO, IR, RO, SO, FeOx, -, 54		22	3	1				
										(38.6) () JN, IR, VR, SO, FeOx, -, 27		22	3	1				
										(38.9) () JN, IR, RO, SO, FeOx, -, 50		20	1.5	1				
									4	(40.6) () FOLO, PL, SM, CN, -, -, 58		22	3	1				
										(40.7) () FOLO, IR, SM, CN, -, -, 63		22	3	1				
										(40.8) () FOLO, IR, SM, SO, FeOx, -, 50		22	3	1				
	(43.0-46.0) SAA, traces of pyrite and chlorite [Button Schist]									(40.9) () FOLO, PL, RO, SO, FeOx, -, 66		22	3	1				
									12	(41.1) () FOLO, IR, RO, CN, -, -, 64		25	3	1				
										(41.2) () FOLO, IR, RO, CN, -, -, 61		22	3	1				
				4	2.6/3.0	4	6	22		(42) () JN, IR, RO, PC, FeOx, < 1mm, 44		16	1	1				
									3	(42.1) () FOLO, IR, RO, CN, -, -, 61		20	2	1				
										(42.2) () FOLO, IR, RO, CN, -, -, 63		20	2	1				
45										(42.3) () JN, IR, RO, SO, FeOx, -, 48		20	2	1				
										(42.6) () FOLO, IR, RO, CN, -, -, 64		20	1.5	1				
									3	(44.1) () FOLO, PL, RO, SO, FeOx, -, 59		22	3	1				
										(44.6) () FOLO, PL, RO, SO, FeOx, -, 55		20	2	1				(46.0-53.0) Drilling from 11:35 to 11:53
	(46.0-53.0) SAA, with fractures every 1-2 inches. [Button Schist]									(44.9) () FOLO, PL, RO, SO, FeOx, -, 56		20	3	2				
									7	(45.4) () FOLO, PL, RO, SO, FeOx, -, 77		22	3	1				
										(45.5) () FOLO, PL, RO, SO, FeOx, -, 74		22	3	1				
										(45.6) () FOLO, UN, SM, PC, Musc, < 1mm, 77		22	3	1				
									6	(45.7) () FOLO, IR, RO, SO, FeOx, -, 61		22	3	1				
										(45.8) () JN, IR, RO, PC, Musc, < 1mm, 61		22	3	1				
										(46.1) () FOLO, IR, SM, SO, FeOx, -, 78		20	1.5	1				
									8	(46.15) () FOLO, IR, RO, SO, FeOx, -, 66		20	1.5	1				
										(46.25) () FOLO, IR, RO, SO, FeOx, 66		20	1.5	1				
				5	3.7/7.0	5	4	0	18	(46.5) () FOLO, IR, RO, SO, FeOx, -, 80		20	1.5	1				
										(46.7) () FOLO, IR, RO, SO, FeOx, -, 68		20	1.5	1				
50										(46.8) () FOLO, IR, RO, SO, FeOx, -, 61		20	1.5	1				
									24	(46.9) () JN, IR, VR, SO, FeOx, -, 26		16	2	3				
										(47.1) () FOLO, IR, RO, SO, FeOx, -, 63		22	3	1				
										(47.3) () FOLO, IR, RO, SO, FeOx, -, 61		20	3	3				
									24	(47.4) () FOLO, PL, RO, CN, -, -, 60		20	2	1				
										(47.5) () FOLO, IR, RO, CN, -, -, 67		22	3	1				
										(47.6) () FOLO, IR, RO, CN, -, -, 66		22	3	1				
									24	(47.9) () FOLO, PL, SM, CN, -, -, 66		22	3	1				
										(48.1) () FOLO, IR, RO, CN, -, -, 60		22	3	1				
										(48.3) () FOLO, IR, RO, CN, -, -, 60		22	3	1				
	(53.0-71.0) SAA, garnets present and healed fractures. Iron oxide staining in rock mass along healed and open fracture.									(48.4) () FOLO, PL, RO, PC, Sa, < 1mm, 60		22	3	1				
									6	(48.6) () FOLO, IR, RO, Infil, Musc, 3mm, 59		25	3	1				
										(48.8) () BD, IR, RO, CN, -, -, 67		22	3	1				
				6	3.0/3.0	6	9	0	3	(49) () FOLO, PL, RO, SO, FeOx, -, 63		22	3	1				
										(49.1) () FOLO, IR, RO, PC, Sa, 1mm, 58		20	1.5	1				
55										(49.2) () JN, IR, RO, PC, Sa, 1mm, 4		22	3	1				
									3	(49.3) () JN, IR, RO, PC, Sa, 1mm, 4		22	3	1				
										(49.4) () FOLO, IR, RO, SO, FeOx, -, 74		16	1	1				
										(49.5) () FOLO, IR, RO, CN, -, -, 73		22	3	1				
									24	(53) () JN, ST, RO, SO, FeOx, -, 18		22	3	1				
										(53.2) () FOLO, IR, RO, SO, FeOx, -, 51		22	3	1				
										(53.5) () FOLO, PL, RO, SO, FeOx, -, 61		16	1.5	3				
									24	(53.6) () JN, IR, RO, SO, FeOx, -, 15		6	1	6				
										(53.7) () FOLO, IR, RO, SO, FeOx, -, 61		22	3	1				
										(53.9) () JN, UN, RO, SO, FeOx, -, 16		20	1.5	1				
									3	(54.4) () FOLO, PL, RO, SO, FeOx, -, 56		16	3	3				
										(54.7) () FOLO, PL, RO, SO, FeOx, -, 57		16	3	3				
										(54.9) () FOLO, PL, RO, SO, FeOx, -, 57		16	3	3				
									2	(55.3) () FOLO, PL, RO, SO, FeOx, -, 59		16	3	3				
										(55.7) () FOLO, IR, SM, SO, FeOx, -, 57		22	3	1				
60										(55.9) () FOLO, IR, RO, SO, FeOx, -, 54		22	3	1				
										(57) () FOLO, IR, RO, SO, FeOx, -, 68		22	3	1				
									3	(57.4) () FOLO, IR, RO, SO, FeOx, -, 61		22	3	1				
										(57.8) () FOLO, UN, RO, SO, FeOx, -, 64		22	3	1				
										(58.5) () JN, IR, RO, SO, FeOx, -, 43		20	1.5	1				
				7	10.0/10.0	7	4	75		(58.7) () JN, IR, RO, SO, FeOx, -, 34		22	3	1				
									2	(58.9) () FOLO, IR, RO, SO, FeOx, -, 54		22	3	1				
										(59.8) () JN, ST, RO, SO, FeOx, -, 35		22	3	1				
										(60) () FOLO, IR, RO, PC, FeOx + Sa, 1mm, 62		22	3	1				
									1	(60.2) () FOLO, PL, SM, SO, FeOx, -, 51		20	1.5	1				
										(60.4) () FOLO, PL, RO, SO, FeOx, -, 52		20	1.5	1				
										(60.6) () JN, IR, RO, SO, FeOx, -, 49		20	1.5	1				
									0	(60.7) () FOLO, CU, RO, SO, FeOx, -, 67		20	1.5	1				
										(61.5) () FOLO, PL, RO, CC, Cl, < 1mm, 54		20	2	1				
									2	(61.7) () FOLO, IR, RO, SO, FeOx, -, 75		22	3	1				
										(62) () FOLO, PL, RO, CC, ML, < 1mm, 55		22	3	1				
65									8	(64) () FOLO, PL, RO, CC, Sa, < 1mm, 52		22	3	1				
										(64.5) () FOLO, PL, RO, CN, -, -, 53		22	3	1				
										(65.4) () FOLO, PL, RO, CN, -, -, 51		22	3	1				
									5	(65.5) () FOLO, PL, RO, SO, FeOx, -, 54		22	3	1				
										(65.6) () FOLO, PL, RO, SO, FeOx, -, 53		22	3	1				
										(66.2) () FOLO, IR, RO, SO, FeOx, -, 54		22	3	1				
									6	(66.3) () JN, IR, RO, SO, FeOx, -, 3		20	3	1				
										(66.4) () FOLO, IR, RO, SO, FeOx, -, 52		16	1	1				
										(66.5) () FOLO, PL, RO, SO, FeOx, -, 54		20	1.5	1				
				8	4.0/5.0	8	9	74	1	(67.1) () FOLO, IR, RO, SO, FeOx, -, 51		22	3	1				
										(67.3) () FOLO, IR, RO, CN, -, -, 64		22	3	1				
										(67.4) () FOLO, IE, RO, CN, -, -, 61		12	1	4				
									0	(67.6) () JN, PL, RO, SO, FeOx, -, 15		22	3	1				
										(67.7) () FOLO, IR, RO, SO, FeOx, -, 60		12	1	3				
70									2	(68.2) () FOLO, IR, RO, SO, FeOx, -, 63		12	1	3				
										(70.7) () FOLO, IR, RO, SO, FeOx, -, 63		20	1.5	1				
	Grouted to surface. END DRILLHOLE AT 71 ft. BGS.									(71.2) () FOLO, IR, RO, SO, FeOx, -, 51		20	1.5	1				
												20	1.5	1				
												20	1.5	1				
												22	3	1				
												22	3	1				
												22	3	1				
												20	1.5	1				
												22	3	1				
												22	3	1				
												22	3	1				
75												20	1.5	1				
												22	3	1				
												22	3	1				
												22	3	1				
												22	3	1				
80																		

SCALE: 1 in = 5 ft
DRILLING CONTRACTOR: Premier Drilling
DRILLER: L. Carter

LOGGED: RJF/CFM
CHECKED: DLP
REVIEWED: DAH

WEATHERING INDEX
I-Fresh
II-Slightly Weathered
III-Moderately Weathered
IV-Highly Weathered
V-Completely Weathered
IV-Residual Soil

UCS (psi)
R1 - 150
R2 - 725
R3 - 3500
R4 - 7500
R5 - 15,000
R6 - 35,000

wsp

APPENDIX C

Photologs

Borehole BW-1

PHOTO 1:

Split Spoon 1:
(1.0’ to 3.0’)



PHOTO 2:

Split Spoon 2:
(4.5’ to 6.5’)

Photo Not Available

Borehole BW-1

PHOTO 3:

Split Spoon 3:
(9.5’ to 11.5’)

Photo Not Available

PHOTO 4:

Split Spoon 4:
(14.5’ to 16.5’)



Borehole BW-1

PHOTO 5:

Split Spoon 5:
(19.5’ to 21.5’)



PHOTO 6:

Split Spoon 6:
(24.5’ to 26.5’)



Borehole BW-1



PHOTO 7:

Split Spoon 7:
(29.5’ to 31.5’)



PHOTO 8:

Split Spoon 8:
(34.5’ to 36.5’)

Borehole BW-1

PHOTO 9:

Split Spoon 9:
(39.5’ to 41.5’)



PHOTO 10:

Split Spoon 10:
(44.5’ to 46.5’)



Borehole BW-1

PHOTO 11:

Core Box 1:
(45.0’ to 73.15’)



PHOTO 12:

Core Box 2:
(73.15’ to 83.4’)



Borehole BW-1

PHOTO 13:

Core Box 3:
(83.4’ to 93.0’)



Borehole BW-2

PHOTO 1:

Split Spoon 1:
(1.0’ to 3.0’)

Photo Not Available

PHOTO 2:

Split Spoon 2:
(4.0’ to 6.0’)



Borehole BW-2

PHOTO 3:

Split Spoon 3:
(9.0’ to 11.0’)



PHOTO 4:

Split Spoon 4:
(14.0’ to 16.0’)



Borehole BW-2



PHOTO 5:

Split Spoon 5:
(19.0’ to 21.0’)



PHOTO 6:

Split Spoon 6:
(24.0’ to 26.0’)

Borehole BW-2



PHOTO 7:

Split Spoon 7:
(29.0' to 31.0')



PHOTO 8:

Split Spoon 8:
(34.0' to 36.0')

Borehole BW-2



PHOTO 9:

Split Spoon 9:
(39.0’ to 41.0’)



PHOTO 10:

Split Spoon 10:
(44.0’ to 46.0’)

Borehole BW-2



PHOTO 11:

Split Spoon 11
(49.0’ to 51.0’)

PHOTO 12:

Split Spoon 12:
(51.0’ to 53.0’)

Photo Not Available

Borehole BW-2

PHOTO 13:

Split Spoon 13:
(54.0’ to 56.0’)



PHOTO 14:

Split Spoon 14:
(59.0’ to 61.0’)



Borehole BW-2



PHOTO 15:

Core Box 1:
(62.0’ to 80.3’)



PHOTO 16:

Core Box 2:
(80.3’ to 97.4’)

Borehole BW-2

PHOTO 17:

Core Box 3:
(97.4’ to 107.7’)



PHOTO 18:

Core Box 4:
(107.7’ to 110.0’)



Borehole BW-3

PHOTO 1:

Split Spoon 1:
(1.0’ to 3.0’)



PHOTO 2:

Split Spoon 2:
(4.0’ to 6.0’)



Borehole BW-3



PHOTO 3:

Split Spoon 3:
(9.0' to 11.0')



PHOTO 4:

Split Spoon 4:
(14.0' to 16.0')

Borehole BW-3

PHOTO 5:

Split Spoon 5:
(19.0’ to 21.0’)



PHOTO 6:

Split Spoon 6:
(24.0’ to 26.0’)



Borehole BW-3

PHOTO 7:

Split Spoon 7:
(29.0’ to 31.0’)

Photo Not Available

PHOTO 8:

Split Spoon 8:
(34.0’ to 36.0’)



Borehole BW-3

PHOTO 9:

Split Spoon 9:
(39.0’ to 41.0’)

Photo Not Available

PHOTO 10:

Split Spoon 10:
(44.0’ to 46.0’)



Borehole BW-3

PHOTO 11:

Split Spoon 11
(49.0’ to 51.0’)



PHOTO 12:

Split Spoon 12:
(54.0’ to 56.0’)



Borehole BW-3

PHOTO 13:

Core Box 1:
(58.0’ to 83.0’)



PHOTO 14:

Core Box 2:
(83.0’ to 92.0’)



Borehole BW-3

PHOTO 15:

Core Box 3:
(92.0’ to 101.7’)



PHOTO 16:

Core Box 4:
(101.7’ to 106.0’)



Borehole BW-4

PHOTO 1:

Split Spoon 1:
(13.0’ to 15.0’)

Photo Not Available

PHOTO 2:

Split Spoon 2:
(19.0’ to 21.0’)



Borehole BW-4

PHOTO 3:

Split Spoon 3:
(24.0’ to 26.0’)



PHOTO 4:

Split Spoon 4:
(29.0’ to 31.0’)



Borehole BW-4



PHOTO 5:

Split Spoon 5:
(34.0’ to 36.0’)



PHOTO 6:

Split Spoon 6:
(39.0’ to 41.0’)

Borehole BW-4



PHOTO 7:

Split Spoon 7:
(44.0’ to 46.0’)



PHOTO 8:

Split Spoon 8:
(49.0’ to 51.0’)

Borehole BW-4

PHOTO 9:

Split Spoon 9:
(54.0’ to 56.0’)



PHOTO 10:

Split Spoon 10
(59.0’ to 61.0’)



Borehole BW-4

PHOTO 11:

Split Spoon 11:
(64.0’ to 66.0’)



PHOTO 12:

Split Spoon 12:
(69.0’ to 71.0’)

Photo Not Available

Borehole BW-4

PHOTO 13:

Split Spoon 13:
(74.0’ to 76.0’)



PHOTO 14:

Core Box 1:
(77.5’ to 93.5’)



Borehole BW-4

PHOTO 15:

Core Box 2:
(93.5’ to 103.8’)



PHOTO 16:

Core Box 3:
(103.8’ to 113.1’)



Borehole BW-4

PHOTO 17:

Core Box 4:
(113.1’ to 127.7’)



PHOTO 18:

Core Box 5:
(127.7’ to 131.0’)



Borehole BW-5

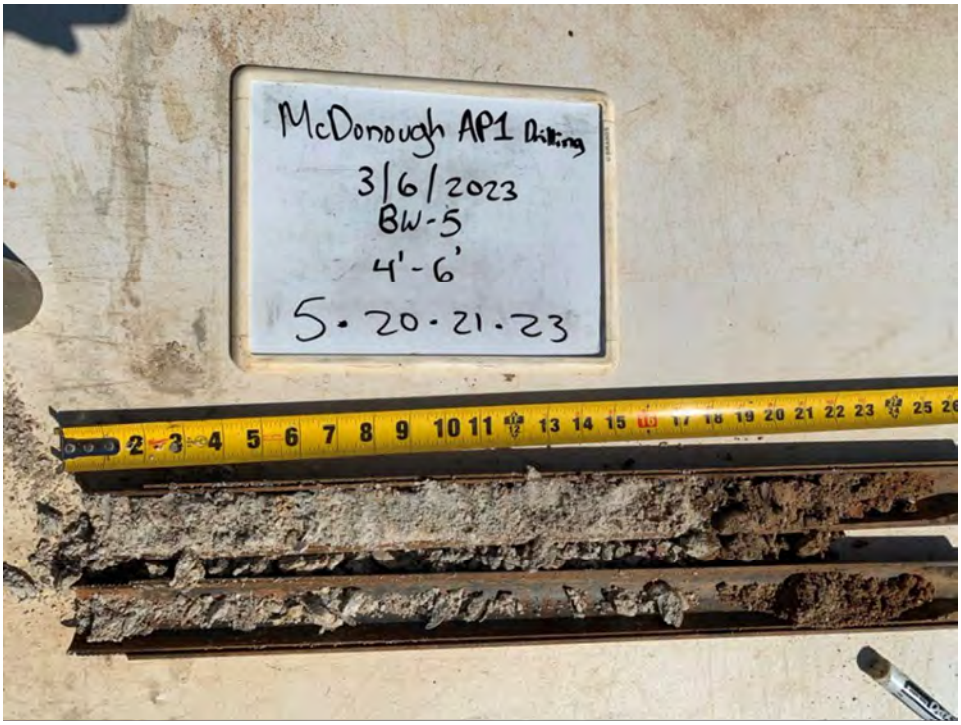
PHOTO 1:

Split Spoon 1:
(0.0’ to 2.0’)



PHOTO 2:

Split Spoon 2:
(4.0’ to 6.0’)



Borehole BW-5

PHOTO 3:

Split Spoon 3:
(9.0’ to 11.0’)



PHOTO 4:

Split Spoon 4:
(14.0’ to 16.0’)



Borehole BW-5

PHOTO 5:

Split Spoon 5:
(19.0’ to 21.0’)



PHOTO 6:

Split Spoon 6:
(24.0’ to 26.0’)



Borehole BW-5

PHOTO 7:

Core Box 1:
(25.0’ to 34.5’)



PHOTO 8:

Core Box 2:
(34.5’ to 45.5’)



Borehole BW-5

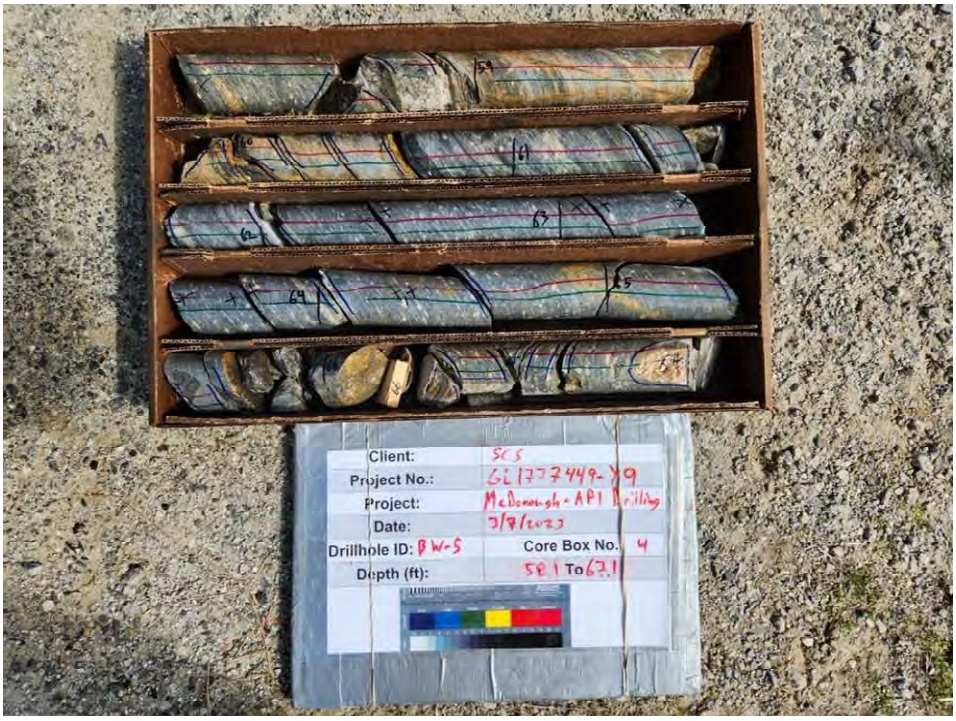
PHOTO 9:

Core Box 3:
(45.5’ to 58.1’)



PHOTO 10:

Core Box 4:
(58.1’ to 67.1’)



Borehole BW-5

PHOTO 11:

Core Box 5:
(67.1' to 71.0')



APPENDIX D

Geotechnical Laboratory Results

SCS/STATE CCR PERMITTING SER. Y9/GA
SUMMARY OF POINT LOAD TESTING
ASTM D5731

SAMPLE IDENTIFICATION	TEST TYPE[1]	D PLATEN SEPARATION (in)	W Diameter (in)	D_e^2 (in^2)	P FORCE AT FAILURE (lbf)	I_s POINT LOAD STRENGTH INDEX[2] (psi)	$I_{s(50)}$ (psi)	UCS BASED ON CORRELATION WITH POINT LOAD INDEX (psi)	Valid Test (Yes/No)	COMMENTS
BW-1, S-1, 45.2'	-	-	-	-	-	-	-	-	-	Not Testable
BW-1, S-2, 46'	A	0.94	2.40	2.89	2287.5	791.7	741.1	19,398	Yes	
BW-2, S-3, 69.5'	A	1.85	2.38	5.61	645.6	115.1	125.0	2,819	Yes	
BW-2, S-4, 70.5'	D	2.38	-	5.67	620.0	109.3	119.1	2,677	Yes	
BW-2, S-4, 70.5'	A	1.93	2.38	5.85	876.5	149.8	164.4	3,671	No	Broke on existing fracture, not thru points
BW-2, S-5, 72'	A	1.81	2.38	5.49	1026.2	186.8	202.1	4,578	No	Did not break thru points
BW-2, S-6, 77.3 - 78'	D	2.38	0.00	5.67	1359.7	239.7	261.1	5,872	Yes	
BW-2, S-6, 77.3 - 78'	A	-	-	-	-	-	-	-	-	Could not obtain specimen due to existing fractures
BW-3, S-7 59.4'	D	2.36	-	5.58	102.6	18.4	20.0	451	Yes	
BW-3, S-7, 59.4'	A	1.02	2.36	3.08	555.9	180.5	171.4	4,423	Yes	
BW-3, S-8, 60.3'	A	1.10	2.32	3.26	320.7	98.4	94.6	2,410	Yes	
BW-3, S-9, 66.7'	A	1.93	2.32	5.71	51.3	9.0	9.8	220	Yes	
BW-3, S-10, 67'	D	2.32	-	5.40	98.3	18.2	19.6	447	Yes	
BW-3, S-10, 67'	A	2.20	2.32	6.52	252.3	38.7	43.5	948	No	Did not break thru points
BW-3, S-11, 68.9'	A	1.22	2.36	3.67	303.6	82.7	81.7	2,026	Yes	
BW-4, S-12, 78'	D	2.38	-	5.67	265.1	46.7	50.9	1,145	Yes	
BW-4, S-12, 78'	A	1.50	2.38	4.54	1329.8	293.1	303.7	7,181	Yes	
BW-4, S-13, 79.5'	D	2.38	-	5.67	868.0	153.0	166.7	3,748	Yes	
BW-4, S-13, 79.5'	A	1.26	2.38	3.82	3587.4	938.9	935.9	23,004	Yes	
BW-4, S-14, 89.2'	D	2.38	-	5.67	286.5	50.5	55.0	1,237	Yes	
BW-4, S-14, 89.2'	A	1.83	2.38	5.55	3035.8	546.8	592.9	13,396	No	Did not break thru points
BW-4, S-14, 89.2'	A	1.22	2.38	3.70	2958.8	799.4	791.2	19,585	Yes	
BW-5, S-16, 25.3'	A	1.97	2.38	5.97	1778.7	297.9	328.4	7,300	Yes	
BW-5, S-17, 25.7'	D	2.38	-	5.67	675.6	119.1	129.7	2,917	Yes	
BW-5, D-17, 25.7'	A	1.12	2.38	3.40	1453.8	427.2	414.9	10,467	Yes	

Notes:

1. D = Diametral / A = Axial.
2. I_s = Point Load Strength Index = P/D_e^2

Tech	DA
Date	5/6/23
Check	DA
Review	
Approve	

SCS/STATE CCR PERMITTING SER. Y-9/GA
SUMMARY OF ROCK CORE DATA

Sample Identification		Sample Depth (ft)	Sample Type	Unit Weight (pcf)	ASTM D7012 - Method C		
Boring No.	Sample No.				L/D Ratio	Load at Failure (lbf)	Uniaxial Compressive Strength (psi)
BW-2	S-6	77.3 - 78'	Could not Test for UCS				
BW-4	S-15	89.8 - 90.7'	Core	174.3	2.10	26,690	6,015
BW-5	S-18	27.2 - 28.0'	Core	162.2	1.99	57,440	12,787

Sample Identification		Sample Depth (ft)	Sample Type	Unit Weight (pcf)	ASTM D7012 - Method C		
Boring No.	Sample No.				L/D Ratio	Load at Failure (lbf)	Uniaxial Compressive Strength (psi)

Tech	DA
Date	5/11/23
Check	
Review	
Approve	

UNIAXIAL COMPRESSIVE STRENGTH OF INTACT ROCK CORE SPECIMENS

ASTM D7012 - Method C

PROJECT NAME	SCS/STATE CCR PERMITTING SER. Y-9/GA
PROJECT NUMBER	GL1777449-Y9
SAMPLE ID	BW-4, S-15
SAMPLE DEPTH	89.8 - 90.7'

Length (in)	4.985	
	5.015	
	5.035	**Average**
	4.960	4.999
Diameter (in)	2.376	
	2.377	
	2.378	**Average**
	2.377	2.377
Weight (g)	1015.76	**L/D Ratio**
		2.103

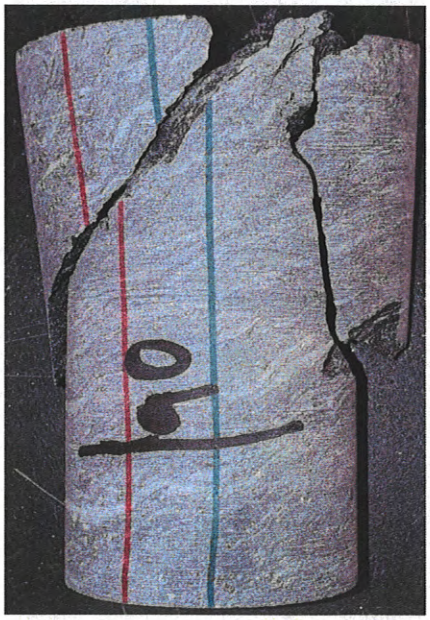
Load at Failure (lbs)

26,690

Uniaxial Compressive Strength (psi)

6,015

Photo of Break



Moisture Content	
Wet Weight + Tare (g)	1004.96
Dry Weight + Tare (g)	1004.05
Tare Weight (g)	8.33
Weight of Water (g)	0.91
Dry Weight (g)	995.72
Moisture Content (%)	0.1

Area (in^2)

4.438

Volume (in^3)

22.182

Dry Density (pcf)

174.3

Remarks

-

Description

-

-	**USCS**

Tech	DA
Date	5/11/23
Check	DA
Review	
Approve	

UNIAXIAL COMPRESSIVE STRENGTH OF INTACT ROCK CORE SPECIMENS

ASTM D7012 - Method C

PROJECT NAME	SCS/STATE CCR PERMITTING SER. Y-9/GA
PROJECT NUMBER	GL1777449-Y9
SAMPLE ID	BW-5, S-18
SAMPLE DEPTH	27.2 - 28.0'

Length (in)	
	4.731
	4.726
	4.787
	4.796

Average: 4.760

Load at Failure (lbs): 57,440

Diameter (in)	
	2.394
	2.393
	2.392
	2.387

Average: 2.392

Uniaxial Compressive Strength (psi): **12,787**

Weight (g): 911.01

L/D Ratio: 1.990

Photo of Break



Moisture Content

Wet Weight + Tare (g)	881.83
Dry Weight + Tare (g)	880.98
Tare Weight (g)	7.99
Weight of Water (g)	0.85
Dry Weight (g)	872.99
Moisture Content (%)	0.1

Area (in^2): 4.492

Volume (in^3): 21.381

Dry Density (pcf): **162.2**

Remarks

-

Description

-

-	**USCS**

Tech	DA
Date	5/11/23
Check	DA
Review	
Approve	

APPENDIX E

Geophysical Investigation Technical Memorandum

TECHNICAL MEMORANDUM

DATE 05-09-2023 **Project No.** GL1777449-Y9

TO Georgia Power

CC Robert K. Davis

FROM Chris Bryant **EMAIL kim.davis@wsp.com**

PLANT MCDONOUGH - 2022 PERMITTING SUPPORT AP-1 INVESTIGATION 22-23 BOREHOLE GEOPHYSICS

1.0 INTRODUCTION

This technical memorandum documents the downhole borehole geophysics completed by WSP's geophysical team in bedrock boreholes from March 20 to April 11, 2023 around Ash Pond 1 (AP-1) at Plant McDonough (Site), in Cobb County, Georgia

The downhole geophysics logging was part of an exploratory investigation that included HQ-diameter rotary coring to a depth of around 45 feet into bedrock to a total depth of 93 to 131 ft BGS. Packer testing was conducted in the holes.

Of the five boreholes drilled, downhole geophysics was performed on four boreholes (BW-1 through BW-4). The boreholes were located along the elevated service road surrounding AP-1. Downhole borehole geophysics was not completed in BW-5.

Each borehole had PVC casing temporarily installed to top of rock. The bedrock was HQ cored, and the overburden was either drilled using hollow stem auger or mud rotary methodologies.

2.0 SUMMARY OF WORK

The borehole geophysics was to support identification of lithologic contacts and flow zones. The geophysical logs included:

- Fluid temperature and conductivity (FTC) log (Mount Sopris Instruments, MSI model QL40-FTC) to evaluate borehole water quality characteristics and to identify bedrock flow zones.
- 3-arm summation caliper log (Mount Sopris Instruments, MSI, model QL40-CAL) to identify depth of casing bottom, potential casing defects, borehole accessibility, bedrock fractures, and borehole diameter variations/lithology.
- Natural gamma and single point resistance (SPR) logs (MSI model 40LGR-1000) to characterize lithologic changes, flow zones, and water quality.
- Static heat pulse flowmeter (HPFM) testing (MSI model HPFM-2293) to measure vertical flow at given depths within each borehole under static conditions to identify water flow zones up to 1.5 gallon per minute (gpm).

Stressed heat pulse flowmeter (HPFM) testing (MSI model HPFM-2293) was done by injecting water into the borehole.

3.0 BOREHOLE GEOPHYSICAL METHODS

WSP used a portable borehole geophysical logging system and tools manufactured by Mount Sopris Instrument Company (MSI). The logging acquisition software was MSI/ALT's LoggerSuite-13.2.2790.

3.1 Fluid Temperature and Fluid Conductivity (FTC)

A MSI model QL40-FTC combination fluid temperature and conductivity probe (SN 5518) was used for to record the fluid temperature log and fluid conductivity log of the fluid filling the borehole. This probe was run uncentralized, logged traveling down the borehole at 6 ft/min with a depth sample interval of 0.05 ft.

Fluid temperature logs are useful for delineating water-bearing zones and fluid flow into or out of the borehole by abrupt shifts in values or by slight changes in slope compared to the regional geothermal gradient, which is approximately 1-degree Fahrenheit per 100 feet of depth. Fluid conductivity is directly proportional to the concentration of dissolved solids in the borehole fluid and can also be used to delineate fluid flow into or out of the borehole as well as a general indicator of water quality in the borehole. These measurements apply to the fluid (water) in the borehole and may not be the same as the temperature and resistivity of the rocks surrounding the borehole.

3.2 Caliper

A MSI model QL40-CAL (SN 5521) 3-arm summation caliper probe was used to record the caliper log run uncentralized (except for the angled borehole in which the tool was centralized), traveling up the borehole at 10 to 12 ft/min with a depth sample interval of 0.05 ft. This log is calibrated at the start of each run using an MSI calibration jig.

This measurement gives the borehole diameter as indicated by the average deflection of three spring-loaded arms pressed against the wall of the borehole. Abrupt shifts to larger diameter (kicks) can indicate the locations where fractures intersect the borehole wall. However, the thickness of the caliper arms and the mechanical enlargement of fractures by drilling result in only a very approximate, qualitative relation between fracture aperture and the size of the caliper deflection (Long et al, 1996). Changes in borehole diameter indicated by the caliper log are also useful in interpreting other geophysical logs since changes in borehole diameter can affect interpretations of flowmeter, formation resistivity logs, and borehole imaging logs such as televiewers.

3.3 Natural Gamma and Single-Point Resistance (SPR)

WSP used a MSI 40LGR-1000 (SN 5809) combination natural gamma (gamma) and single-point resistance (SPR) probe run uncentralized traveling up the borehole at 10 to 12 ft/min with a depth sample interval of 0.05 ft. The SPR was run traveling down the borehole at 10 to 12 ft/min with a depth sample interval of 0.05 ft.

The gamma log is sometimes referred to as gamma, gamma ray and total count gamma. The gamma sensor is a Sodium Iodine crystal that emits a pulse of light when struck by a gamma photon. The primary sources of naturally occurring radiation in the geologic environment are the isotopes of the daughter products of the most abundant radionuclides such as 40K, the uranium-radium series and the thorium series. The decay of these isotopes produces alpha and beta particles, and gamma rays. The gamma rays are emitted at discrete energy levels. The gamma tool measures only the total gamma ray energy. This measurement gives the average

natural gamma activity of the formation adjacent to the borehole, and can be related to variations in lithology, and occasionally to degree of weathering in cases where alteration results in the local deposition of radioisotopes along fracture planes.

The SPR log measures the electrical resistance in ohms between an electrode in the borehole and an electrode at surface (the mud plug). The resistance of the intervening earth material is a function of composition, cross-sectional area and length of the travel path. However, as there is no way to measure the length or cross-sectional area of the travel path, the measurement is relative, and the logs cannot be related quantitatively to formation resistivity. SPR logs deflect according to the changes in bed resistivity adjacent to the borehole electrode, with positive deflections indicating an increase in resistivity. The response is independent of bed thickness, resulting in a high vertical resolution of contacts between materials of differing resistivity. In sedimentary rock, the primary use is for accurately identifying lithologic contacts. Local changes in resistivity can be related to lithology, and local reductions in resistance can be caused by clay mineral alteration adjacent to fractures.

3.4 Heat Pulse Flowmeter (HPFM)

WSP used a MSI model HFP-2293 heat pulse flowmeter (SN 5517) to measure small vertical flow components at given depths in the borehole. This measurement gives the vertical flow at a given depth in the borehole where the probe is held stationary long enough for all effects of probe movement on the fluid column to have faded. The measurement gives the time required for vertical flow to move a thermally tagged parcel of water a known distance (2 cm) up or down after heating by capacitor discharge onto an electrical grid. The probe measures flow through a cylindrical measurement section where the annulus surrounding this cylinder is blocked by a flexible disk, the diverter.

Flowmeter response times were converted to flow rates using calibration curves provided by MSI. Upward flow is detected by the upper thermistor and reported as a positive value, while downward flow is detected by the lower thermistor and reported as a negative value. The heat-pulse flowmeter has a low flow detection limit of about 0.01 gpm (Hess, 1986). The upper flow detection limit is associated with the thermal inertia of the thermistors, which cannot respond quickly enough to detect flow if the flow exceeds about 1.5 gpm in either direction (up or down).

The HPFM testing was only possible in boring BW-4 because of equipment malfunction.

4.0 BOREHOLE GEOPHYSICAL LOGGING RESULTS

ALT's WellCAD v5.6 software was used to process the geophysical log data. All logs are depth referenced to ground surface. Log plots for each borehole are included in Appendix A.

4.1 Borehole BW-1

The FTC logs indicate flow from the base of the casing and a fracture at 52 ft depth; which coincided with loss of drill fluid. There was no core recovered from BW-1 from around 48 ft to 67 ft.

4.2 Borehole BW-2

The gamma, SPR, and caliper show a change at 88.5 ft depth (~701 ft elevation) and a possible flow zone. This coincides with the base of a highly fractured zone.

Below the flow zone at 88.5 this depth is more resistive, higher gamma counts and harder. This generally coincides with a rock demonstrating less fracturing, less weathering and increased RQDs.

4.3 Borehole BW-3

The FTC logs indicate flow from the base of the casing, at a fracture at 65.3 ft depth (~724 ft elevation), which coincides with approximate the top of rock. Flow is also indicated in at a fracture at 70.5 ft depth (~719 ft elevation). This coincides with a highly fractured (>2 fractures per inch) recorded in the borehole log. The gamma, SPR, and caliper show a change 82 ft depth (~707 ft elevation) The formation below this depth is more resistive, higher gamma counts and harder. This is logged as a decrease in weathering and increase in rock strength and core recovery. The FTC logs indicate possible flow at this depth.

4.4 Borehole BW-4

The FTC logs indicate possible flow from the base of the casing, generally coinciding with the top of rock. The gamma, SPR, and caliper show a change 99.5 ft depth (~697 ft elevation) where the formation below becomes more resistive, higher gamma counts and harder. This coincides with an increase in the RQD and rock strength and a decrease in weathering.

5.0 SURVEY LIMITATIONS

WSP's geophysical services are conducted in a manner consistent with the level of care and skill ordinarily exercised by other members of the technical community currently practicing under similar conditions subject to the time limits, financial, and physical constraints applicable to the services.

6.0 REFERENCES

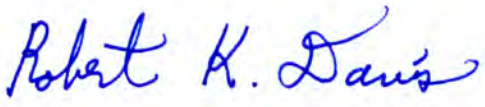
Hess, A.E., 1986, Identifying hydraulically conductive fractures with a slow-velocity borehole flowmeter, Canadian Geotechnical Journal, v. 23, p. 69-78.

Long, J.C.S., and others, 1996. Rock fractures and fluid flow--Contemporary understanding and applications, Washington, D.C.: National Academy Press, 551 p.

WSP USA INC.



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Technical Principal, Senior Geophysical Consultant, PG

CAB/RKD/cab

Appendixes: Appendix A, Geophysical Logs

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APPENDIX A

Geophysical Logs

Preliminary

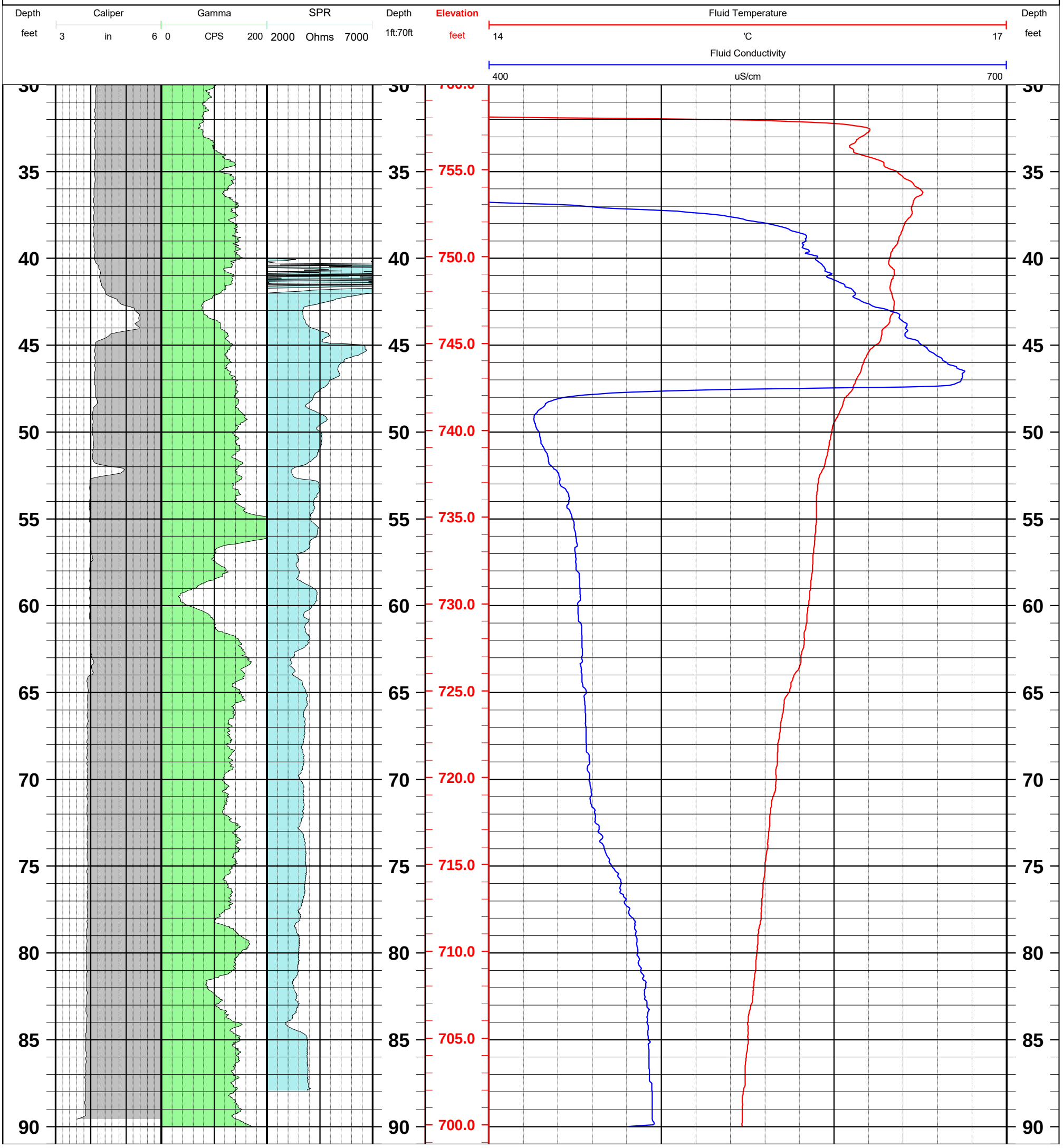
Geophysical Record of Borehole: BW-1

Project Title: Plant McDonough Permitting Support AP-1 Investigation
Project Number: GL1777449-Y9
Client: Georgia Power
Date: April 11, 2023



Driller:	Premier	**Casing Dia.:**	4 in	**Log Depth Ref.:**	Ground Surface	**Location:**	Plant McDonough AP-1
Drilled Depth:	93 ft	**Casing Material:**	PVC	**Water Level:**	see notes		
Drill Date:	March 10, 2023	**Casing Depth:**	42 ft bgs	**Borehole Incl.:**	vertical	**Log Date:**	3-20-2023 and 4-11-2023
Drill Method.:	Mud rotary & HQ core	**Casing Stick-up:**	see notes	**Borehole Az.:**	na	**Logged By:**	Chris Bryant and Geoff Busby
GS Elevation:	789.9 (feet NAVD 88)	**Easting:**	2200836.2	**Northing:**	1391134.5	**Coord. Sys.:**	GA ST Plane West (ft NAD83)

Notes: All tools were zeroed with the probe top at TOC, and depth referenced to ground surface during processing. The casing stick-up on 3-20-23 was 0.25 ft ags and was below GS on 4-11-2023. Water levels were 32.05' BTC on 3-20-23 and 31.47' BGS 7:22 on 4-11-23.



Preliminary

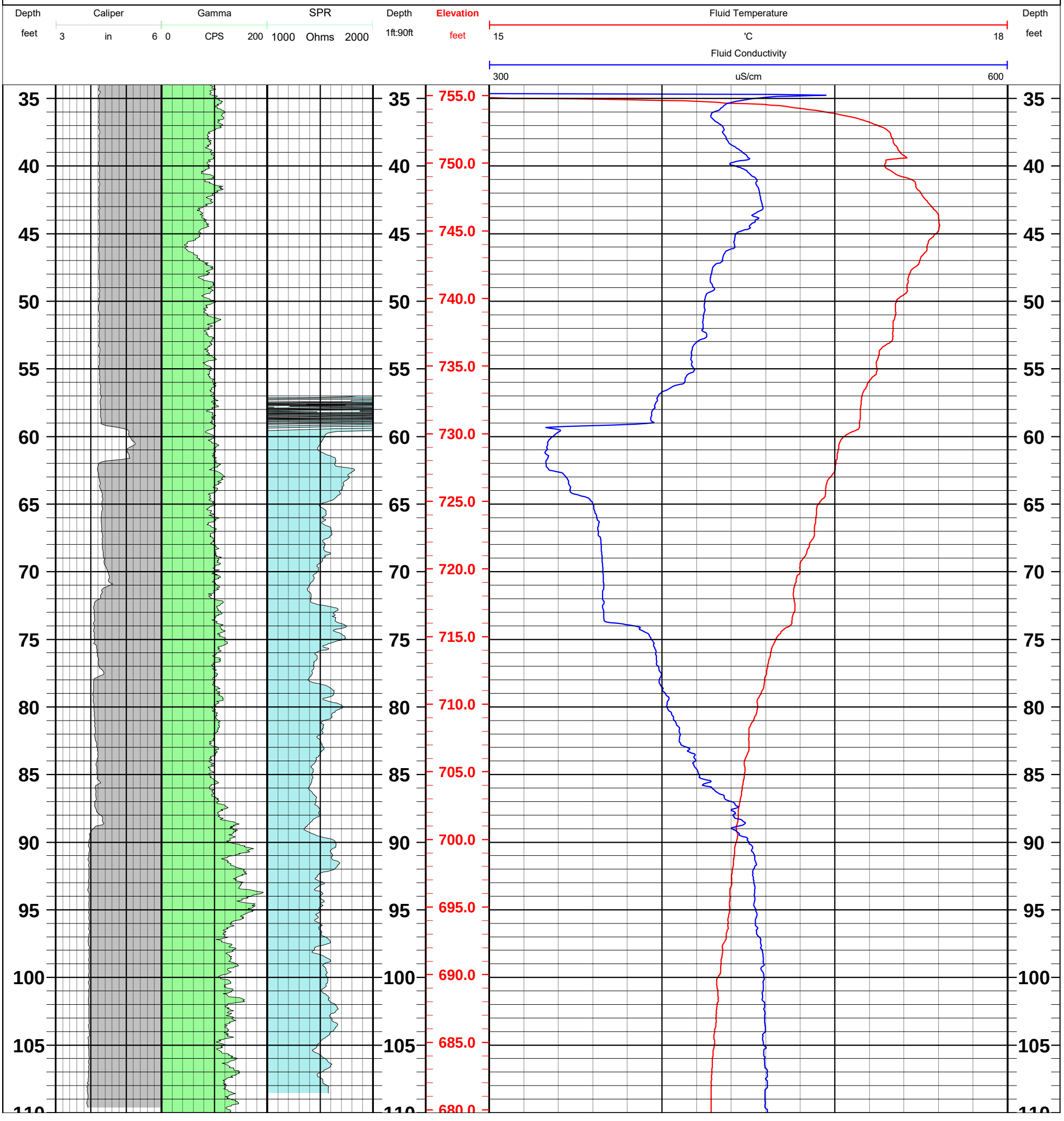
Geophysical Record of Borehole: BW-2

Project Title: Plant McDonough Permitting Support AP-1 Investigation
Project Number: GL1777449-Y9
Client: Georgia Power
Date: April 11, 2023



Driller:	Premier	**Casing Dia.:**	4 in	**Log Depth Ref.:**	Ground Surface	**Location:**	Plant McDonough AP-1
Drilled Depth:	110 ft	**Casing Material:**	PVC	**Water Level:**	see notes		
Drill Date:	March 14, 2023	**Casing Depth:**	59 ft bgs	**Borehole Incl.:**	vertical	**Log Date:**	3-21-2023 and 4-11-2023
Drill Method.:	Mud rotary & HQ core	**Casing Stick-up:**	see notes	**Borehole Az.:**	na	**Logged By:**	Chris Bryant and Geoff Busby
GS Elevation:	789.8 (feet NAVD 88)	**Easting:**	2201056.5	**Northing:**	1390483.2	**Coord. Sys.:**	GA ST Plane West (ft NAD83)

Notes: All tools were zeroed with the probe top at TOC, and depth referenced to ground surface during processing. The casing stick-up on 3-21-23 was 0.25 ft ags and was below GS on 4-11-2023. Water levels were 35.09' BTC @ 9:07 on 3-21-23 and 34.05' BTC @ 9:18 on 4-11-23



Preliminary

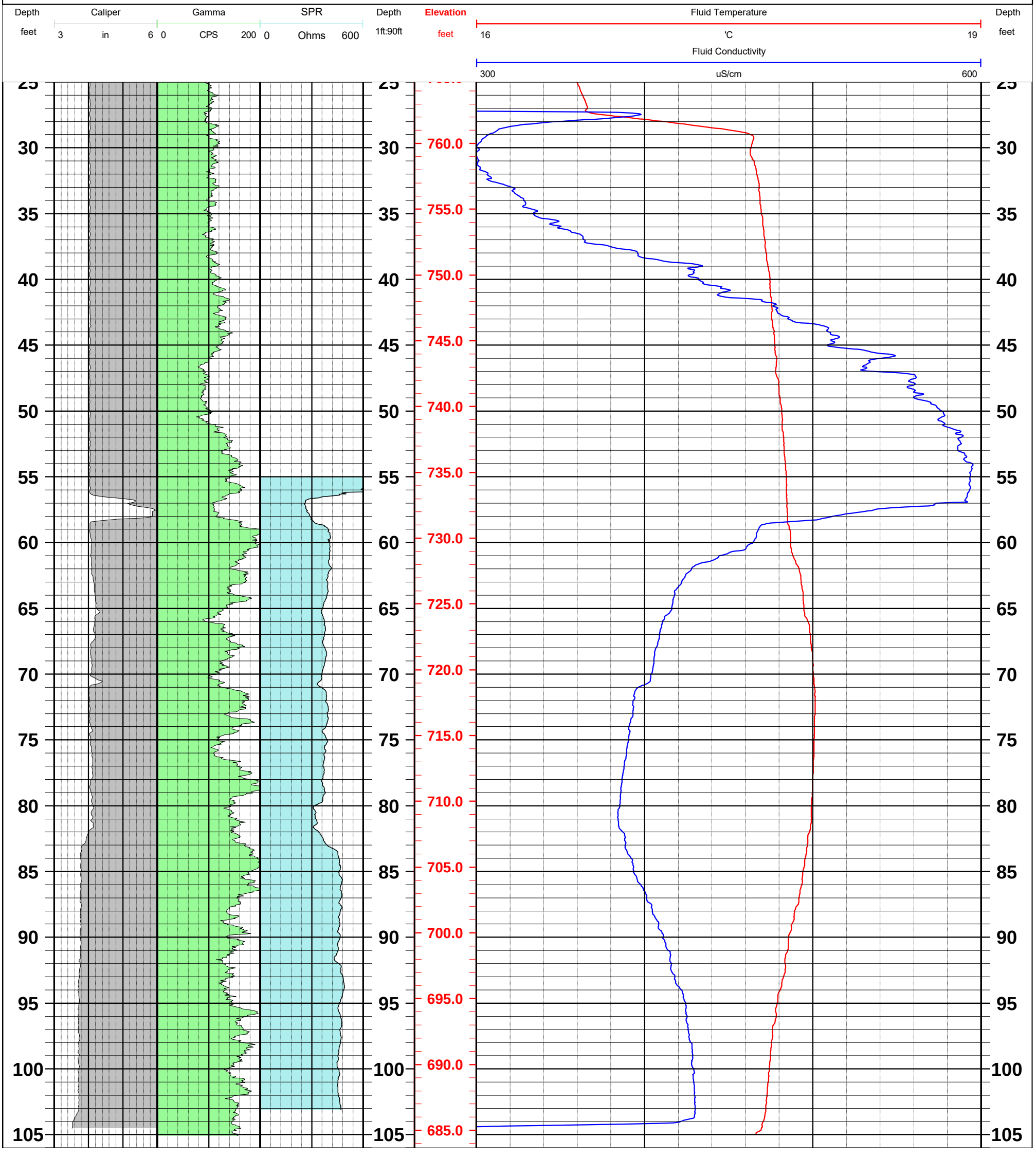
Geophysical Record of Borehole: BW-3

Project Title: Plant McDonough Permitting Support AP-1 Investigation
Project Number: GL1777449-Y9
Client: Georgia Power
Date: April 11, 2023



Driller:	Premier	**Casing Dia.:**	4 in	**Log Depth Ref.:**	Ground Surface	**Location:**	Plant McDonough AP-1
Drilled Depth:	106 ft	**Casing Material:**	PVC	**Water Level:**	27.44" BTC 12:40		
Drill Date:	March 22, 2023	**Casing Depth:**	57 ft bgs	**Borehole Incl.:**	vertical	**Log Date:**	March 22, 2023
Drill Method.:	Mud rotary & HQ core	**Casing Stick-up:**	0.21 ft ags	**Borehole Az.:**	na	**Logged By:**	Chris Bryant and Geoff Busby
GS Elevation:	789.67 (feet NAVD 88)	**Easting:**	2201675.12	**Northing:**	1390653.98	**Coord. Sys.:**	GA ST Plane West (ft NAD83)

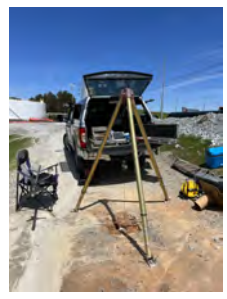
Notes: All tools were zeroed with the probe top at TOC, and depth referenced to ground surface during processing.



Preliminary

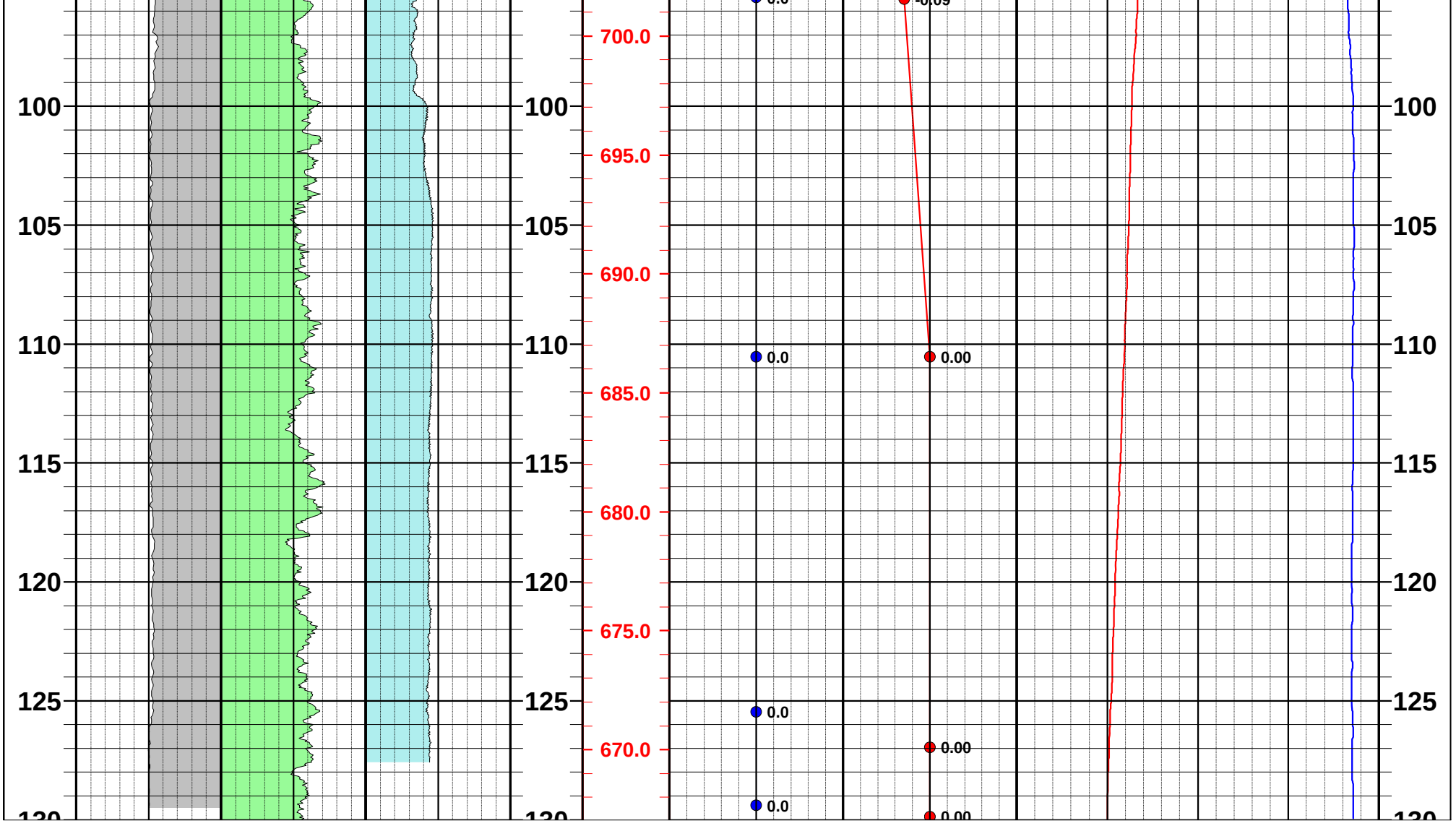
Geophysical Record of Borehole: BW-4

Project Title: Plant McDonough Permitting Support AP-1 Investigation
Project Number: GL1777449-Y9
Client: Georgia Power
Date: April 11, 2023



Driller:	Premier	**Casing Dia.:**	4 in	**Log Depth Ref.:**	Ground Surface	**Location:**	Plant McDonough AP-1
Drilled Depth:	131 ft	**Casing Material:**	PVC	**Water Level:**	20.53' BGS @ 13:10		
Drill Date:	March , 2023	**Casing Depth:**	77 ft bgs	**Borehole Incl.:**	vertical	**Log Date:**	April 10, 2023
Drill Method.:	Mud rotary & HQ core	**Casing Stick-up:**	0 ft ags	**Borehole Az.:**	na	**Logged By:**	Chris Bryant and Geoff Busby
GS Elevation:	797.05 (feet NAVD 88)	**Easting:**	2201755.32	**Northing:**	1391306.59	**Coord. Sys.:**	GA ST Plane West (ft NAD83)

Notes: All tools were zeroed with the probe top at TOC, and depth referenced to ground surface during processing.
The HPFM was run under ambient conditions and under stressed (injection). No ambient flow was measured. The injection rate was 1 gpm.
Injection started at 15:46 with the water level at 20.53 ft bgs and ended at 16:16 with water flowing out of the TOC.



APPENDIX F

Hydrogeological Investigation Technical Memorandum

TECHNICAL MEMORANDUM

DATE May 10, 2023 **Project No.** GL1777449-Y9

TO David Hannam, P.G.
WSP USA

CC Greg Hebeler, PhD, P.E.
Lizmarie Steel, P.E.

FROM Ryan Feldmann, P.E., Justin White, P.E. **EMAIL** **Justin.White@wsp.com**

BOREHOLE WATER PRESSURE TESTING METHODS & RESULTS – PLANT MCDONOUGH, ATLANTA, GEORGIA

This memorandum details the field methods and analyses used for water pressure (packer) tests conducted at the Georgia Power's Plant McDonough facility in Atlanta, Georgia.

The results of each test are presented in one or both of the formats below.

- Lugeon value
- Coefficient of hydraulic conductivity "k" with units centimeters per second (cm/s)

Two different methods of analysis are described in the following sections.

1.0 SUMMARY OF WATER PRESSURE TEST PROCEDURE

A down-hole straddle packer and multiple single packer configurations (e.g., wireline and conventional) were used to perform hydrogeological testing during and/or after drilling in each borehole. Example test setups for conventional and wireline packer testing are illustrated schematically in Figures 1 and 2.

Where possible, five consecutive water injection (pump-in) tests were conducted, each for a duration of approximately 10 minutes. Generally, the test pressures used were calculated based on overburden pressure as follows.

- Step 1: low pressure; 0.25 x Overburden Pressure
- Step 2: medium pressure; 0.50 x Overburden Pressure
- Step 3: peak pressure; 0.75 x Overburden Pressure
- Step 4: medium pressure (Step 2 pressure); 0.50 x Overburden Pressure
- Step 5: low pressure (Step 1 pressure); 0.25 x Overburden Pressure

The pressures were kept below the overburden pressure for each test to prevent hydraulic jacking of discontinuities in the rock within the test section.

The volume of water pumped into the test section was measured by mechanical flowmeter and recorded each 2 minutes (approximately) of the test. The average flow was then calculated for each pressure step. The average flow was divided by the length of test section, which provides a flow in gallons per minute (gpm) per foot.

1.1 Surface Equipment

The main components for the surface equipment were as follows:

- Drill rig pump used for water withdrawal and injection
- Flow control manifold
- Real-time read-out gauge

The injection pump was the drill rig piston pump with a maximum injection rate of approximately 15-20 gallons per minute (gpm). The main components of the flow control manifold with their functions are described below:

- A bypass gate valve was opened if the flow rate had to be adjusted below the lower limit of the pump.
- A flow meter with a recommended operation range between 0.1 gpm and 20 gpm was used to measure water flow.

1.2 Downhole Equipment

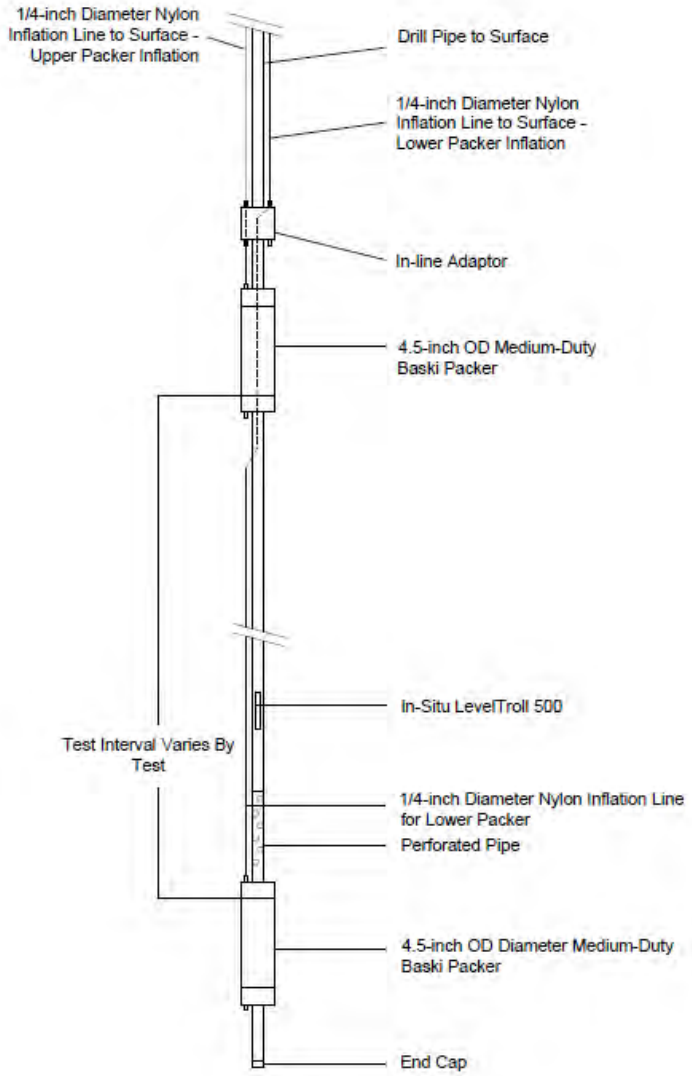
1.2.1 Conventional Downhole Equipment

The conventional down-hole packer equipment used for testing consisted of a pneumatic packer tool (either a straddle packer or single packer set up) lowered on 1-inch metal pipe and a data logging pressure transducer in the test interval. Packers were manufactured by QSP Packers, LLC of Sumner, Washington and specifications are listed below:

- Constructed on 1 inch, NPT-threaded, chrome steel mandrel
- Un-inflated diameter of 2.13 inches
- Un-inflated element length of 24.5 inches
- Rated for drillhole diameters up to 4.33 inches
- A maximum pressure differential rating of 500 pounds per square inch (psi) in HQ 3.78-in diameter drillhole

The packers were inflated from the surface through quarter-inch diameter nylon lines (690 psi pressure rating) using compressed Argon gas provided by the driller, Premier Drilling. A schematic of the downhole packer assembly is shown in Figure 1, below.

Figure 1: Example Conventional Straddle Packer Schematic



1.2.2 Wireline Downhole Equipment

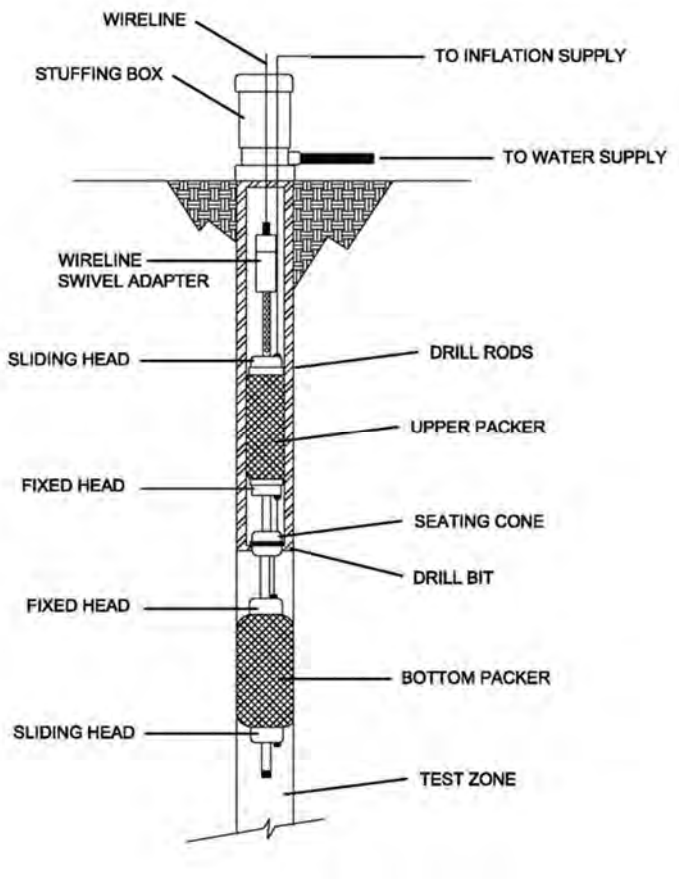
The wireline packer down-hole equipment used for testing consisted of a pneumatic packer tool lowered by wireline and a data logging pressure transducer in the test interval. One packer element was located within the drill rods immediately above the drill bit, and the other packer element seated within the rock interval immediately below the drill bit. For the straddle packer setup, an additional packer was placed below the previously mentioned packers to isolate the interval of interest. Packers were manufactured by QSP Packers, LLC of Sumner, Washington and specifications are listed below:

- Constructed on 1 inch, NPT-threaded, chrome steel mandrel
- Un-inflated diameter of 2.13 inches
- Un-inflated element length of 24.5 inches

- Rated for drillhole diameters up to 4.33 inches
- A maximum pressure differential rating of 500 pounds per square inch (psi) in HQ 3.78-in diameter drillhole

The packers were inflated from the surface through quarter-inch diameter nylon lines (690 psi pressure rating) using compressed Argon gas provided by the driller, Premier Drilling. A schematic of the downhole packer assembly is shown in Figure 2, below.

Figure 2: Example Wireline Packer Testing Tool Schematic



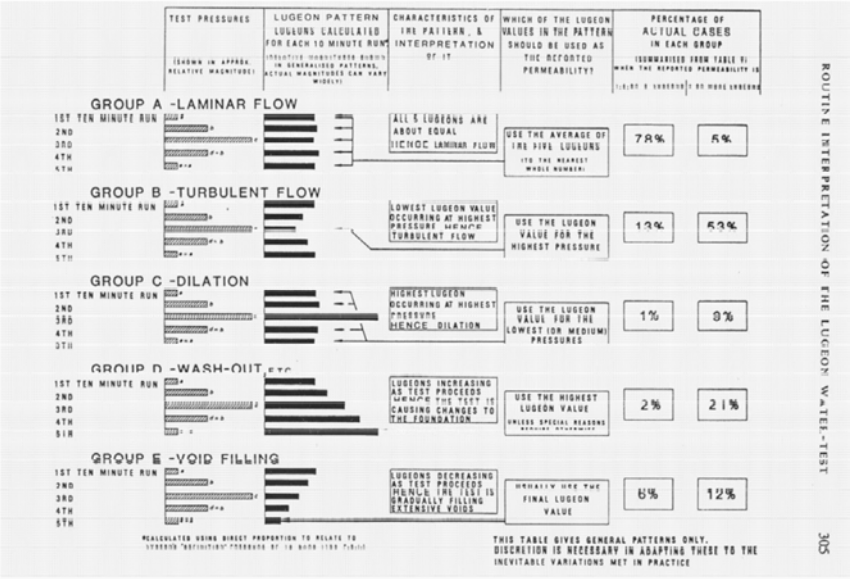
2.0 CALCULATION OF LUGEON VALUES

The method used to calculate the Lugeon values was adopted from the paper by A.C. Houlsby, entitled "Routine Interpretation of the Lugeon Water Test"[1]. A Lugeon value was calculated for each of the five test stages using the following formula: Lugeon value = water flow in test (liters/meter/minute) x 1000 kPa / test pressure (kPa)

The calculated Lugeon values were then plotted on a bar chart and the observed pattern is interpreted as a "flow type" using guidelines from the Houlsby paper, see Figure 3 below. Based on the interpreted flow type, an indicative Lugeon value was chosen as representative of the test section.

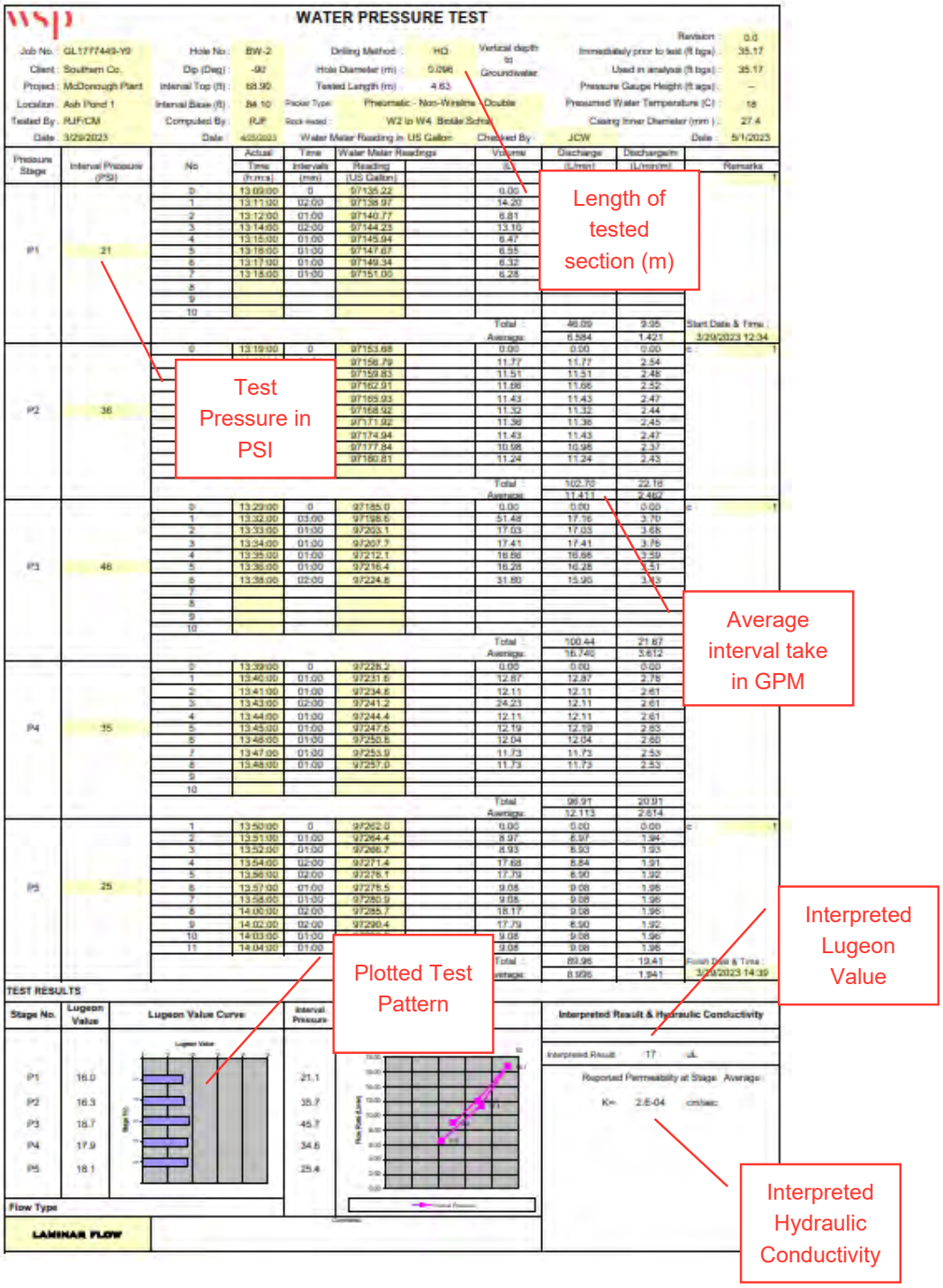
[1]A.C. Houlsby, Routine Interpretation of the Lugeon Water Test, The Quarterly Journal of Engineering Geology, Vol. 9 (4), 1976.

Figure 3: Guideline for Interpreting Lugeon Patterns (Sourced from Houlsby)



An annotated example of the Lugeon calculation is provided in Figure 4 below. Testing results are in Table 1 of Section 4.

Figure 4: Packer Testing Field Form - Annotated



3.0 CALCULATION OF INTERVAL TRANSMISSIVITY AND COEFFICIENT OF HYDRAULIC CONDUCTIVITY

3.1 Analysis Software

FracMan HydroBench® (version 7.00) was used to analyze slug withdrawal and recovery phases of select tests. HydroBench® is an in-house software developed by WSP and based on a numerical drillhole simulator using an automated matching procedure (nonlinear regression algorithms). In addition, the software includes the deconvolution approach to analyze slug test data. Both homogeneous and composite flow models may be used to interpret the data and the flow geometry may also be matched to infer the local connectivity of a fracture network. HydroBench® includes the derivative of pressure (i.e., rate of pressure change) with respect to the natural logarithm of time that has been shown to significantly improve the diagnostic and quantitative analysis of slug tests and constant-rate pumping tests (Spane and Wurstner 1993). Transmissivity normalized plots are included in the software package and allow comparison of different phases of a hydrogeological test by normalizing the pressure response.

3.2 Input Parameters

In general, the input parameters for slug tests and constant rate injections are considered to be well constrained. The test interval volume and estimate of the test interval compressibility were used to estimate the wellbore storage. The wellbore storage value was based on the volume change in HQ-size drill pipe or a 5-inch augered borehole per unit change in head taking into account the inclined drill pipe area.

In the analyses, storativity is assumed and skin is a matched parameter with a high correlation between parameters; an order of magnitude error in storativity will typically approach an error in skin by one unit. Skin is dimensionless parameter that defines the disturbed zone from drilling in the immediate vicinity of the borehole wall. A negative skin indicates a near well hydraulic conductivity that is greater than the formation hydraulic conductivity and the opposite for a positive skin value. The analyses emphasized hydraulic properties beyond the skin zone. Total compressibility is the water compressibility plus the formation compressibility on a pore volume basis. The storativity value for each interval was based on an assumed rock mass porosity of 10% (typical for limestone), system compressibility of 2 x 10-9 1/Pa and test interval volume. (Freeze and Cherry, 1979).

4.0 TESTING RESULTS

A total of 17 packers tests were completed in five investigation boreholes (BW-1, BW-2, BW-3, BW-4, and BW-5) covering a cumulative borehole length of 264 feet. The hydraulic conductivity values were primarily moderate (1 x 10^{-04} to 1 x 10^{-05} cm/s), with several in the 1 x 10^{-03} cm/s (high) range and several in the 1 x 10^{-07} cm/ s (low) range, and a geometric mean of 5 x 10^{-05} cm/s (~4 Lu).

The hydraulic conductivity/Lugeon distribution is shown on Table 1 based on depth of the test interval.

Table 1: McDonough Ash Pond 1 Spring 2023 Testing Results

Borehole	Interval (ft BGS)	Interval Length (ft)	Soil/ Rock Layer	Test Sequence	Estimated Lugeons (Lu)	Conductivity k (cm/s)	Transmissivity T (m^2/s)	Comments
BW-1	27.7-45.0	17.3	PWR	Lugeon	<1	3.E-06	1.E-07	Tested PWR in 5-inch augered broehole.
BW-1	46.0-67.0	21.0	Bedrock	Constant Rate Injection	158	2.E-03	1.E-04	
BW-1	61.2-78.0	16.8	Bedrock	Lugeon	133	1.E-03	7.E-05	
BW-1	76.2-93.0	16.8	Bedrock	Lugeon	2	2.E-05	1.E-06	
BW-2	Open BH, 80.3-ft TD	45.5	Bedrock	Constant Rate Injection	NA	7.E-05	1.E-05	SWL=34.80 ft BGS. Grout/bedrock interface at 62 ft BGS.
BW-2	68.9-84.1	15.2	Bedrock	Lugeon	17	2.E-04	8.E-06	
BW-2	78.1-95.0	16.9	Bedrock	Lugeon	12	1.E-04	6.E-06	
BW-2	96.1-110.0	13.9	Bedrock	Lugeon	<1	5.E-06	2.E-07	
BW-3	62.7-106.0	43.3	Bedrock	Lugeon	9	9.E-05	1.E-05	
BW-3	77.7-106.0	28.3	Bedrock	Lugeon	6	6.E-05	5.E-06	
BW-3	87.6-106.0	18.4	Bedrock	Lugeon	5	5.E-05	3.E-06	
BW-4	82.3-131.0	48.7	Bedrock	Lugeon	2	2.E-05	3.E-06	
BW-4	91.2-116.0	24.8	Bedrock	Lugeon	2	2.E-05	1.E-06	
BW-4	113.1-131.0	17.9	Bedrock	Lugeon	1	1.E-05	5.E-07	
BW-5	Open BH, 25.0-ft total	16.7	PWR	Slug Withdrawal	NA	1.E-04	5.E-06	SWL=8.32 ft BGS. PWR begins between 10.5 and 11 ft BGS.
BW-5	26.2-71.0	44.8	Bedrock	Lugeon	1	1.E-05	1.E-06	
BW-5	54.1-71.0	16.9	Bedrock	Lugeon	2	2.E-05	1.E-06	

Notes:

1. SWL - static water level
2. PWR - partially weathered rock
3. ft bgs - ft below ground surface
4. ft - feet
5. cm/s - centimeters per second
6. m^2/s - square meters per second
7. BH - borehole
8. TD - total depth
9. Lu - Lugeon
10. NA – no applicable

4.1 Data Backup

Copies of test calculations sheets are included as attachments to this memorandum.

Attachments:

Appendix A – Lugeon Test Sheets

Appendix B – HydroBench Analysis Outputs

APPENDIX A

Lugeon Test Sheets

WATER PRESSURE TEST

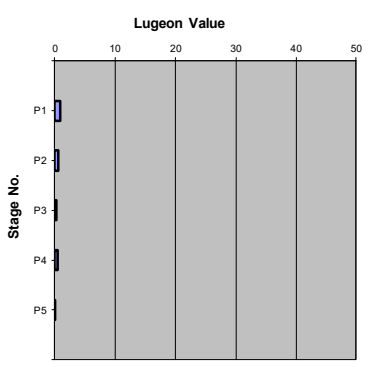
								Revision :	0.0
Job No. :	GL1777449-Y9	Hole No :	BW-1	Drilling Method :	HQ	Vertical depth to Groundwater		Immediately prior to test (ft bgs) :	20.91
Client :	Southern Co.	Dip (Deg) :	-90	Hole Diameter (m) :	0.124			Used in analysis (ft bgs) :	21.42
Project :	McDonough Plant	Interval Top (ft) :	27.65	Tested Length (m) :	5.29			Pressure Gauge Height (ft ags) :	2.60
Location :	Ash Pond 1	Interval Base (ft) :	45.00	Packer Type:	Pneumatic - Non-Wireline - Single			Presumed Water Temperature (C) :	20
Tested By :	C. Mikilitus	Computed By :	RJF	Rock tested :	Partially Weathered Rock (PWR)			Casing Inner Diameter (mm) :	27.4
Date :	3/8/2023	Date :	4/24/2023	Water Meter Reading in	US Gallon	Checked By :	JCW	Date :	5/1/2023

Pressure Stage	Interval Pressure (PSI)	No	Actual Time (h:m:s)	Time Intervals (min)	Water Meter Readings Reading (US Gallon)		Volume (L)	Discharge (L/min)	Discharge/m (L/min/m)	Remarks
										c : 1
P1	16	0	15:47:00	0	94516.3		0.00	0.00	0.00	
		1	15:48:00	01:00	94516.5		0.91	0.91	0.17	
		2	15:49:00	01:00	94516.7		0.79	0.79	0.15	
		3	15:50:00	01:00	94516.9		0.83	0.83	0.16	
		4	15:51:00	01:00	94517.2		0.87	0.87	0.16	
		5	15:52:00	01:00	94517.4		0.79	0.79	0.15	
		6	15:53:00	01:00	94517.6		0.79	0.79	0.15	
		7	15:54:00	01:00	94517.8		0.68	0.68	0.13	
		8	15:55:00	01:00	94517.9		0.64	0.64	0.12	
		9	15:56:00	01:00	94518.1		0.64	0.64	0.12	
		10	15:57:00		94518.2		0.57			
							Total :	6.97	1.32	Start Date & Time :
							Average:	0.774	0.146	3/8/23 15:46
P2	27	0	15:58	0	94518.41		0.00	0.00	0.00	c : 1
		1	15:59	01:00	94518.94		2.01	2.01	0.38	
		2	16:00	01:00	94519.22		1.06	1.06	0.20	
		3	16:02	02:00	94519.70		1.82	0.91	0.17	
		4	16:03	01:00	94519.87		0.64	0.64	0.12	
		5	16:04	01:00	94519.96		0.34	0.34	0.06	
		6	16:05	01:00	94520.06		0.38	0.38	0.07	
		7	16:06	01:00	94520.25		0.72	0.72	0.14	
		8	16:07	01:00	94520.46		0.79	0.79	0.15	
		9	16:08	01:00	94520.68		0.83	0.83	0.16	
		10								
							Total :	7.68	1.45	
							Average:	0.854	0.161	
P3	39	0	16:09	0	94520.98		0.00	0.00	0.00	c : 1
		1	16:10	01:00	94521.10		0.45	0.45	0.09	
		2	16:11	01:00	94521.22		0.45	0.45	0.09	
		3	16:12	01:00	94521.35		0.49	0.49	0.09	
		4	16:13	01:00	94521.46		0.42	0.42	0.08	
		5	16:14	01:00	94521.57		0.42	0.42	0.08	
		6	16:15	01:00	94521.68		0.42	0.42	0.08	
		7	16:16	01:00	94521.78		0.38	0.38	0.07	
		8	16:17	01:00	94521.90		0.45	0.45	0.09	
		9	16:18	01:00	94522.01		0.42	0.42	0.08	
		10								
							Total :	3.90	0.74	
							Average:	0.433	0.082	
P4	28	0	16:19	0	94522.10		0.00	0.00	0.00	c : 1
		1	16:20	01:00	94522.30		0.76	0.76	0.14	
		2	16:23	03:00	94522.87		2.16	0.72	0.14	
		3	16:24	01:00	94523.02		0.57	0.57	0.11	
		4	16:25	01:00	94523.22		0.76	0.76	0.14	
		5	16:26	01:00	94523.39		0.64	0.64	0.12	
		6	16:27	01:00	94523.56		0.64	0.64	0.12	
		7	16:28	01:00	94523.72		0.61	0.61	0.11	
		8	16:29	01:00	94523.85		0.49	0.49	0.09	
		9								
		10								
							Total :	5.19	0.98	
							Average:	0.648	0.123	
P5	16	1	16:30	0	94523.77		0.00	0.00	0.00	c : 1
		2	16:31	01:00	94523.78		0.04	0.04	0.01	
		3	16:32	01:00	94523.80		0.08	0.08	0.01	
		4	16:33	01:00	94523.81		0.04	0.04	0.01	
		5	16:34	01:00	94523.82		0.04	0.04	0.01	
		6	16:35	01:00	94523.83		0.04	0.04	0.01	
		7	16:36	01:00	94523.84		0.04	0.04	0.01	
		8	16:37	01:00	94523.85		0.04	0.04	0.01	
		9	16:38	01:00	94523.85		0.00	0.00	0.00	
		10	16:39	01:00	94523.85		0.00	0.00	0.00	
		11	16:40	01:00	94523.85		0.00	0.00	0.00	
							Total :	0.30	0.06	Finish Date & Time :
							Average:	0.030	0.006	3/8/23 17:15

TEST RESULTS

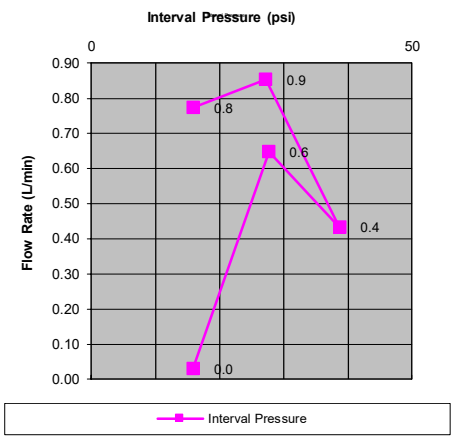
Stage No.	Lugeon Value
P1	0.8
P2	0.5
P3	0.2
P4	0.4
P5	0.0

Lugeon Value Curve



Interval Pressure
15.8
27.2
38.7
27.6
15.8

Pressure Vs Flow



Interpreted Result & Hydraulic Conductivity

Interpreted Result 0 uL

Reported Permeability at Stage P2, P3, & P4

K= 3.E-06 cm/sec

Flow Type

VOID FILLING

Comments:

WATER PRESSURE TEST

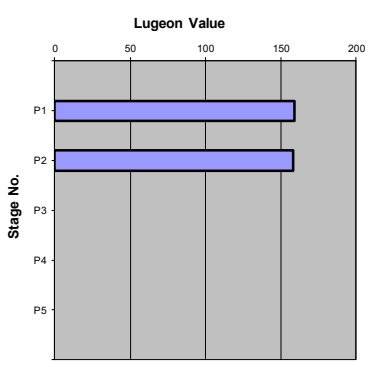
								Revision :	0.0
Job No. :	GL1777449-Y9	Hole No :	BW-1	Drilling Method :	HQ	Vertical depth to Groundwater		Immediately prior to test (ft bgs) :	>33
Client :	Southern Co.	Dip (Deg) :	-90	Hole Diameter (m) :	0.096			Used in analysis (ft bgs) :	>33
Project :	McDonough Plant	Interval Top (ft) :	48.06	Tested Length (m) :	5.77			Pressure Gauge Height (ft ags) :	--
Location :	Ash Pond 1	Interval Base (ft) :	67.00	Packer Type:	Pneumatic - Wireline - Single			Presumed Water Temperature (C) :	13
Tested By :	C. Mikilitus	Computed By :	RJF	Rock tested :	W2 to W3 Muscovite Biotite Schist			Casing Inner Diameter (mm) :	77.8
Date :	3/13/2023	Date :	4/26/2023	Water Meter Reading in	US Gallon	Checked By :	JCW	Date :	5/1/2023

Pressure Stage	Interval Pressure (PSI)	No	Actual Time (h:m:s)	Time Intervals (min)	Water Meter Readings Reading (US Gallon)		Volume (L)	Discharge (L/min)	Discharge/m (L/min/m)	Remarks
										c : 1
P1	18	0	9:14:00	0	94591.72		0.00	0.00	0.00	
		1	9:15:00	01:00	94610.37		70.60	70.60	12.23	
		2	9:16:00	01:00	94629.25		71.47	71.47	12.38	
		3	9:17:00	01:00	94645.28		60.68	60.68	10.51	
		4	9:18:00	01:00	94659.23		52.81	52.81	9.14	
		5	9:19:00	01:00	94678.92		74.53	74.53	12.91	
		6	9:20:00	01:00	94697.95		72.04	72.04	12.48	
		7	9:21:00	01:00	94716.81		71.39	71.39	12.36	
		8	9:22:00	01:00	94735.14		69.39	69.39	12.02	
		9	9:23:00	01:00	94752.92		67.30	67.30	11.66	
		10	9:24:00	01:00	94771.73		71.20	71.20	12.33	
							Total :	681.41	118.01	Start Date & Time :
							Average:	68.141	11.801	3/13/2023 9:06
P2	29	0	9:25:00	0	94797.24		0.00	0.00	0.00	c : 1
		1	9:26:00	01:00	94828.36		117.80	117.80	20.40	
		2	9:27:00	01:00	94859.17		116.63	116.63	20.20	
		3	9:28:00	01:00	94888.45		110.84	110.84	19.19	
		4	9:37:00	09:00	95155.82		1012.11	112.46	19.47	
		5	9:38:00	01:00	95183.23		103.76	103.76	17.97	
		6								
		7								
		8								
		9								
		10								
							Total :	561.48	97.24	
							Average:	112.296	19.447	
P3	0	0		0			0.00	0.00	0.00	c : 1
		1								Ran out of water (~850 gallons), stop test
		2								
		3								
		4								
		5								
		6								
		7								
		8								
		9								
		10								
							Total :			
							Average:			
P4	0	0		0			0.00	0.00	0.00	c : 1
		1								
		2								
		3								
		4								
		5								
		6								
		7								
		8								
		9								
		10								
							Total :			
							Average:			
P5	0	1		0			0.00	0.00	0.00	c : 1
		2								
		3								
		4								
		5								
		6								
		7								
		8								
		9								
		10								
		11								
							Total :			Finish Date & Time :
							Average:			3/13/2023 9:40

TEST RESULTS

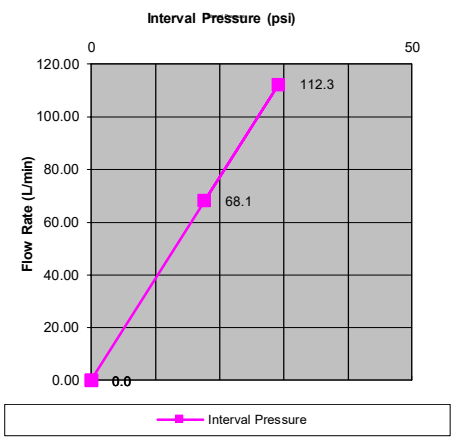
Stage No.	Lugeon Value
P1	158.9
P2	157.8
P3	NA
P4	NA
P5	NA

Lugeon Value Curve



Interval Pressure
17.6
29.2
0.0
0.0
0.0

Pressure Vs Flow



Interpreted Result & Hydraulic Conductivity

Interpreted Result 158 uL

Reported Permeability at Stage 1 and 2

K= 2.E-03 cm/sec

Flow Type

LAMINAR FLOW

Comments:

WATER PRESSURE TEST

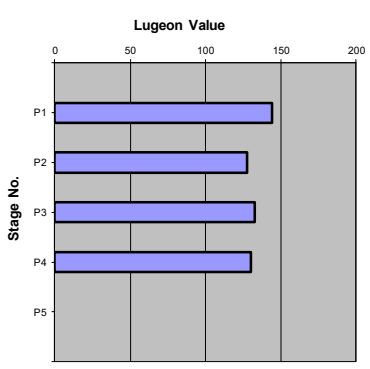
								Revision :	0.0
Job No. :	GL1777449-Y9	Hole No :	BW-1	Drilling Method :	HQ	Vertical depth to Groundwater		Immediately prior to test (ft bgs) :	34.40
Client :	Southern Co.	Dip (Deg) :	-90	Hole Diameter (m) :	0.096			Used in analysis (ft bgs) :	34.40
Project :	McDonough Plant	Interval Top (ft) :	61.16	Tested Length (m) :	5.13			Pressure Gauge Height (ft ags) :	--
Location :	Ash Pond 1	Interval Base (ft) :	78.00	Packer Type:	Pneumatic - Wireline - Single			Presumed Water Temperature (C) :	16
Tested By :	C. Mikilitus	Computed By :	RJF	Rock tested :	Slightly Weathered Muscovite Biotite Schist			Casing Inner Diameter (mm) :	77.8
Date :	3/13/2023	Date :	4/24/2023	Water Meter Reading in	US Gallon	Checked By :	JCW	Date :	5/1/2023

Pressure Stage	Interval Pressure (PSI)	No	Actual Time (h:m:s)	Time Intervals (min)	Water Meter Readings Reading (US Gallon)		Volume (L)	Discharge (L/min)	Discharge/m (L/min/m)	Remarks
										c : 1
P1	19	0	12:27	0	95280.61		0.00	0.00	0.00	
		1	12:28	01:00	95296.44		59.92	59.92	11.67	
		2	12:30	02:00	95328.58		121.66	60.83	11.85	
		3	12:31	01:00	95344.82		61.48	61.48	11.97	
		4	12:32	01:00	95360.62		59.81	59.81	11.65	
		5	12:33	01:00	95376.63		60.60	60.60	11.80	
		6	12:34	01:00	95392.71		60.87	60.87	11.86	
		7	12:35	01:00	95409.95		65.26	65.26	12.71	
		8	12:36	01:00	95424.88		56.52	56.52	11.01	
		9	12:37	01:00	95440.85		60.45	60.45	11.77	
		10								
							Total :	545.74	106.30	Start Date & Time :
							Average:	60.638	11.811	3/13/23 12:18
P2	28	0	12:38	0	95459.74		0.00	0.00	0.00	c : 1
		1	12:39	01:00	95479.62		75.25	75.25	14.66	
		2	12:40	01:00	95499.30		74.50	74.50	14.51	
		3	12:41	01:00	95520.63		80.74	80.74	15.73	
		4	12:42	01:00	95541.85		80.33	80.33	15.65	
		5	12:43	01:00	95561.44		74.16	74.16	14.44	
		6	12:44	01:00	95582.73		80.59	80.59	15.70	
		7	12:45	01:00	95603.82		79.83	79.83	15.55	
		8	12:46	01:00	95623.56		74.72	74.72	14.55	
		9	12:47	01:00	95644.93		80.89	80.89	15.76	
		10								
							Total :	701.02	136.54	
							Average:	77.891	15.171	
P3	33	0	12:48	0	95668.15		0.00	0.00	0.00	c : 1
		1	12:49	01:00	95693.26		95.05	95.05	18.51	
		2	12:50	01:00	95719.03		97.55	97.55	19.00	
		3	12:51	01:00	95744.38		95.96	95.96	18.69	
		4	12:52	01:00	95769.84		96.38	96.38	18.77	
		5	12:53	01:00	95794.95		95.05	95.05	18.51	
		6	12:55	02:00	95844.28		186.73	93.37	18.19	
		7	12:56	01:00	95869.76		96.45	96.45	18.79	
		8	12:57	01:00	95894.74		94.56	94.56	18.42	
		9								
		10								
							Total :	764.37	148.88	
							Average:	95.546	18.610	
P4	28	0	13:00	0	95958.54		0.00	0.00	0.00	c : 1
		1	13:01	01:00	95979.67		79.99	79.99	15.58	
		2	13:02	01:00	96000.69		79.57	79.57	15.50	
		3	13:03	01:00	96021.62		79.23	79.23	15.43	
		4	13:04	01:00	96042.36		78.51	78.51	15.29	
		5	13:05	01:00	96062.08		74.65	74.65	14.54	
		6	13:06	01:00	96082.94		78.96	78.96	15.38	
		7	13:07	01:00	96105.40		85.02	85.02	16.56	
		8								
		9								
		10								
							Total :	555.93	108.28	
							Average:	79.418	15.469	
P5	0	1		0			0.00	0.00	0.00	c : 1
		2								Ran out of water during the last step of the test
		3								
		4								
		5								
		6								
		7								
		8								
		9								
		10								
		11								
							Total :			Finish Date & Time :
							Average:			3/13/23 13:15

TEST RESULTS

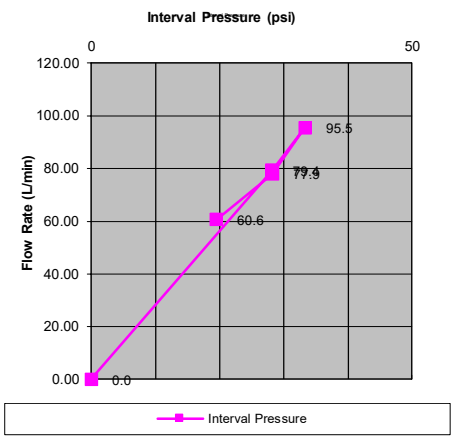
Stage No.	Lugeon Value
P1	144.0
P2	127.5
P3	132.3
P4	130.1
P5	NA

Lugeon Value Curve



Interval Pressure
19.4
28.2
33.3
28.2
0.0

Pressure Vs Flow



Interpreted Result & Hydraulic Conductivity

Interpreted Result 133 uL

Reported Permeability at Stage Average

K= 1.E-03 cm/sec

Flow Type

LAMINAR FLOW

Comments:

WATER PRESSURE TEST

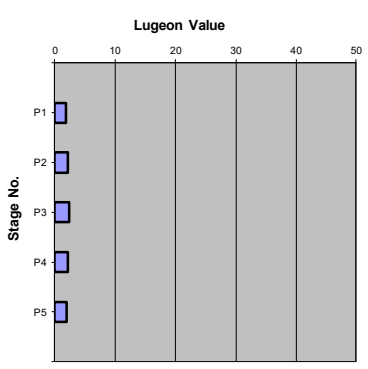
								Revision :	0.0
Job No. :	GL1777449-Y9	Hole No :	BW-1	Drilling Method :	HQ	Vertical depth to Groundwater		Immediately prior to test (ft bgs) :	30.12
Client :	Southern Co.	Dip (Deg) :	-90	Hole Diameter (m) :	0.096			Used in analysis (ft bgs) :	30.12
Project :	McDonough Plant	Interval Top (ft) :	76.16	Tested Length (m) :	5.13			Pressure Gauge Height (ft ags) :	--
Location :	Ash Pond 1	Interval Base (ft) :	93.00	Packer Type:	Pneumatic - Wireline - Single			Presumed Water Temperature (C) :	15
Tested By :	C. Mikilitus	Computed By :	RJF	Rock tested :	Slightly Weathered Muscovite Biotite Schist			Casing Inner Diameter (mm) :	77.8
Date :	3/13/2023	Date :	4/24/2023	Water Meter Reading in	US Gallon	Checked By :	JCW	Date :	5/1/2023

Pressure Stage	Interval Pressure (PSI)	No	Actual Time (h:m:s)	Time Intervals (min)	Water Meter Readings Reading (US Gallon)		Volume (L)	Discharge (L/min)	Discharge/m (L/min/m)	Remarks
										c : 1
P1	25	0	15:29:00	0	96138.84		0.00	0.00	0.00	
		1	15:30:00	01:00	96139.04		0.76	0.76	0.15	
		2	15:31:00	01:00	96139.31		1.02	1.02	0.20	
		3	15:32:00	01:00	96139.59		1.06	1.06	0.21	
		4	15:33:00	01:00	96139.86		1.02	1.02	0.20	
		5	15:34:00	01:00	96140.13		1.02	1.02	0.20	
		6	15:35:00	01:00	96140.38		0.95	0.95	0.18	
		7	15:36:00	01:00	96140.64		0.98	0.98	0.19	
		8	15:37:00	01:00	96140.91		1.02	1.02	0.20	
		9	15:38:00	01:00	96141.16		0.95	0.95	0.18	
		10	15:39:00		96141.41		0.95			
							Total :	8.78	1.71	Start Date & Time :
							Average:	0.976	0.190	3/13/2023 15:21
P2	33	0	15:40:00	0	96141.81		0.00	0.00	0.00	c : 1
		1	15:41:00	01:00	96142.22		1.55	1.55	0.30	
		2	15:42:00	01:00	96142.65		1.63	1.63	0.32	
		3	15:43:00	01:00	96143.10		1.70	1.70	0.33	
		4	15:44:00	01:00	96143.53		1.63	1.63	0.32	
		5	15:45:00	01:00	96143.91		1.44	1.44	0.28	
		6	15:46:00	01:00	96144.32		1.55	1.55	0.30	
		7	15:47:00	01:00	96144.73		1.55	1.55	0.30	
		8	15:48:00	01:00	96145.14		1.55	1.55	0.30	
		9	15:49:00	01:00	96145.54		1.51	1.51	0.29	
		10	15:50:00	01:00	96145.95		1.55	1.55	0.30	
							Total :	15.67	3.05	
							Average:	1.567	0.305	
P3	44	0	15:51:00	0	96146.54		0.00	0.00	0.00	c : 1
		1	15:52:00	01:00	96147.15		2.31	2.31	0.45	
		2	15:53:00	01:00	96147.77		2.35	2.35	0.46	
		3	15:54:00	01:00	96148.39		2.35	2.35	0.46	
		4	15:55:00	01:00	96148.98		2.23	2.23	0.44	
		5	15:56:00	01:00	96149.61		2.38	2.38	0.46	
		6	15:57:00	01:00	96150.18		2.16	2.16	0.42	
		7	15:58:00	01:00	96150.77		2.23	2.23	0.44	
		8	15:59:00	01:00	96151.34		2.16	2.16	0.42	
		9	16:00:00	01:00	96151.83		1.85	1.85	0.36	
		10								
							Total :	20.02	3.90	
							Average:	2.225	0.433	
P4	34	0	16:01:00	0	96152.37		0.00	0.00	0.00	c : 1
		1	16:02:00	01:00	96152.80		1.63	1.63	0.32	
		2	16:03:00	01:00	96153.21		1.55	1.55	0.30	
		3	16:04:00	01:00	96153.62		1.55	1.55	0.30	
		4	16:05:00	01:00	96154.03		1.55	1.55	0.30	
		5	16:06:00	01:00	96154.44		1.55	1.55	0.30	
		6	16:07:00	01:00	96154.84		1.51	1.51	0.29	
		7	16:08:00	01:00	96155.24		1.51	1.51	0.29	
		8	16:09:00	01:00	96155.64		1.51	1.51	0.29	
		9	16:10:00	01:00	96156.03		1.48	1.48	0.29	
		10								
							Total :	13.85	2.70	
							Average:	1.539	0.300	
P5	24	1	16:11:00	0	96156.30		0.00	0.00	0.00	c : 1
		2	16:12:00	01:00	96156.56		0.98	0.98	0.19	
		3	16:13:00	01:00	96156.83		1.02	1.02	0.20	
		4	16:14:00	01:00	96157.11		1.06	1.06	0.21	
		5	16:15:00	01:00	96157.37		0.98	0.98	0.19	
		6	16:16:00	01:00	96157.63		0.98	0.98	0.19	
		7	16:17:00	01:00	96157.90		1.02	1.02	0.20	
		8	16:18:00	01:00	96158.15		0.95	0.95	0.18	
		9	16:19:00	01:00	96158.41		0.98	0.98	0.19	
		10	16:20:00	01:00	96158.67		0.98	0.98	0.19	
		11								
							Total :	8.97	1.75	Finish Date & Time :
							Average:	0.997	0.194	3/13/2023 16:40

TEST RESULTS

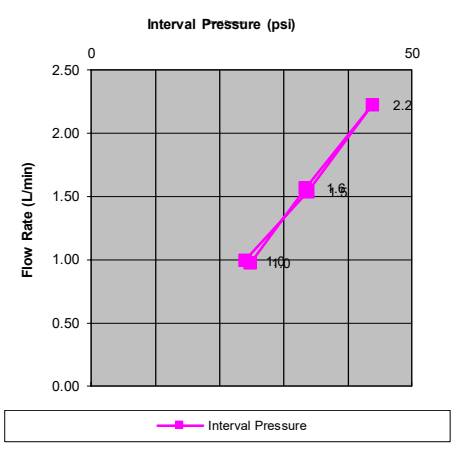
Stage No.	Lugeon Value
P1	1.8
P2	2.2
P3	2.3
P4	2.1
P5	1.9

Lugeon Value Curve



Interval Pressure
24.8
33.4
43.8
33.7
23.9

Pressure Vs Flow



Interpreted Result & Hydraulic Conductivity

Interpreted Result 2 uL

Reported Permeability at Stage P1, P2, P3, P4

K= 2.E-05 cm/sec

Flow Type

LAMINAR FLOW

Comments:

WATER PRESSURE TEST

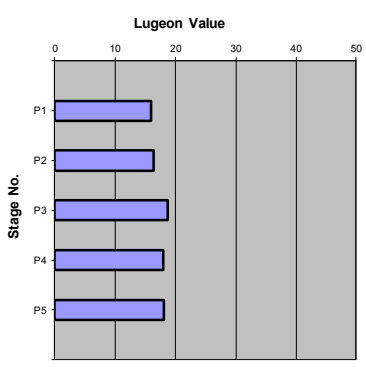
								Revision :	0.0
Job No. :	GL1777449-Y9	Hole No :	BW-2	Drilling Method :	HQ	Vertical depth to Groundwater		Immediately prior to test (ft bgs) :	35.17
Client :	Southern Co.	Dip (Deg) :	-90	Hole Diameter (m) :	0.096			Used in analysis (ft bgs) :	35.17
Project :	McDonough Plant	Interval Top (ft) :	68.90	Tested Length (m) :	4.63			Pressure Gauge Height (ft ags) :	--
Location :	Ash Pond 1	Interval Base (ft) :	84.10	Packer Type:	Pneumatic - Non-Wireline - Double			Presumed Water Temperature (C) :	18
Tested By :	RJF/CM	Computed By :	RJF	Rock tested :	W2 to W4 Biotite Schist			Casing Inner Diameter (mm) :	27.4
Date :	3/29/2023	Date :	4/25/2023	Water Meter Reading in	US Gallon	Checked By :	JCW	Date :	5/1/2023

Pressure Stage	Interval Pressure (PSI)	No	Actual Time (h:m:s)	Time Intervals (min)	Water Meter Readings Reading (US Gallon)		Volume (L)	Discharge (L/min)	Discharge/m (L/min/m)	Remarks
										c : 1
P1	21	0	13:09:00	0	97135.22		0.00	0.00	0.00	
		1	13:11:00	02:00	97138.97		14.20	7.10	1.53	
		2	13:12:00	01:00	97140.77		6.81	6.81	1.47	
		3	13:14:00	02:00	97144.23		13.10	6.55	1.41	
		4	13:15:00	01:00	97145.94		6.47	6.47	1.40	
		5	13:16:00	01:00	97147.67		6.55	6.55	1.41	
		6	13:17:00	01:00	97149.34		6.32	6.32	1.36	
		7	13:18:00	01:00	97151.00		6.28	6.28	1.36	
		8								
		9								
		10								
							Total :	46.09	9.95	Start Date & Time :
							Average:	6.584	1.421	3/29/2023 12:34
P2	36	0	13:19:00	0	97153.68		0.00	0.00	0.00	c : 1
		1	13:20:00	01:00	97156.79		11.77	11.77	2.54	
		2	13:21:00	01:00	97159.83		11.51	11.51	2.48	
		3	13:22:00	01:00	97162.91		11.66	11.66	2.52	
		4	13:23:00	01:00	97165.93		11.43	11.43	2.47	
		5	13:24:00	01:00	97168.92		11.32	11.32	2.44	
		6	13:25:00	01:00	97171.92		11.36	11.36	2.45	
		7	13:26:00	01:00	97174.94		11.43	11.43	2.47	
		8	13:27:00	01:00	97177.84		10.98	10.98	2.37	
		9	13:28:00	01:00	97180.81		11.24	11.24	2.43	
		10								
							Total :	102.70	22.16	
							Average:	11.411	2.462	
P3	46	0	13:29:00	0	97185.0		0.00	0.00	0.00	c : 1
		1	13:32:00	03:00	97198.6		51.48	17.16	3.70	
		2	13:33:00	01:00	97203.1		17.03	17.03	3.68	
		3	13:34:00	01:00	97207.7		17.41	17.41	3.76	
		4	13:35:00	01:00	97212.1		16.66	16.66	3.59	
		5	13:36:00	01:00	97216.4		16.28	16.28	3.51	
		6	13:38:00	02:00	97224.8		31.80	15.90	3.43	
		7								
		8								
		9								
		10								
							Total :	100.44	21.67	
							Average:	16.740	3.612	
P4	35	0	13:39:00	0	97228.2		0.00	0.00	0.00	c : 1
		1	13:40:00	01:00	97231.6		12.87	12.87	2.78	
		2	13:41:00	01:00	97234.8		12.11	12.11	2.61	
		3	13:43:00	02:00	97241.2		24.23	12.11	2.61	
		4	13:44:00	01:00	97244.4		12.11	12.11	2.61	
		5	13:45:00	01:00	97247.6		12.19	12.19	2.63	
		6	13:46:00	01:00	97250.8		12.04	12.04	2.60	
		7	13:47:00	01:00	97253.9		11.73	11.73	2.53	
		8	13:48:00	01:00	97257.0		11.73	11.73	2.53	
		9								
		10								
							Total :	96.91	20.91	
							Average:	12.113	2.614	
P5	25	1	13:50:00	0	97262.0		0.00	0.00	0.00	c : 1
		2	13:51:00	01:00	97264.4		8.97	8.97	1.94	
		3	13:52:00	01:00	97266.7		8.93	8.93	1.93	
		4	13:54:00	02:00	97271.4		17.68	8.84	1.91	
		5	13:56:00	02:00	97276.1		17.79	8.90	1.92	
		6	13:57:00	01:00	97278.5		9.08	9.08	1.96	
		7	13:58:00	01:00	97280.9		9.08	9.08	1.96	
		8	14:00:00	02:00	97285.7		18.17	9.08	1.96	
		9	14:02:00	02:00	97290.4		17.79	8.90	1.92	
		10	14:03:00	01:00	97292.8		9.08	9.08	1.96	
		11	14:04:00	01:00	97295.2		9.08	9.08	1.96	
							Total :	89.96	19.41	Finish Date & Time :
							Average:	8.996	1.941	3/29/2023 14:39

TEST RESULTS

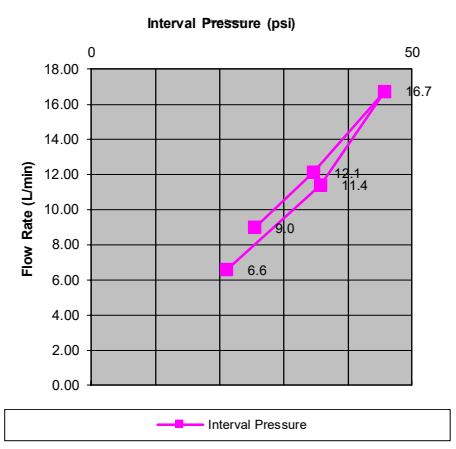
Stage No.	Lugeon Value
P1	16.0
P2	16.3
P3	18.7
P4	17.9
P5	18.1

Lugeon Value Curve



Interval Pressure
21.1
35.7
45.7
34.6
25.4

Pressure Vs Flow



Interpreted Result & Hydraulic Conductivity

Interpreted Result 17 uL

Reported Permeability at Stage Average

K= 2.E-04 cm/sec

Flow Type

LAMINAR FLOW

Comments:

WATER PRESSURE TEST

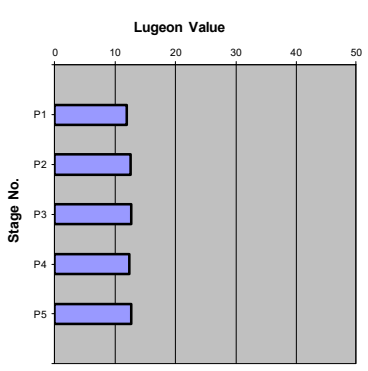
								Revision :	0.0
Job No. :	GL1777449-Y9	Hole No :	BW-2	Drilling Method :	HQ	Vertical depth to Groundwater		Immediately prior to test (ft bgs) :	37.30
Client :	Southern Co.	Dip (Deg) :	-90	Hole Diameter (m) :	0.096			Used in analysis (ft bgs) :	37.30
Project :	McDonough Plant	Interval Top (ft) :	78.13	Tested Length (m) :	5.14			Pressure Gauge Height (ft ags) :	--
Location :	Ash Pond 1	Interval Base (ft) :	95.00	Packer Type:	Pneumatic - Wireline - Single			Presumed Water Temperature (C) :	13
Tested By :	C. Mikilitus	Computed By :	RJF	Rock tested :	W2 to W3 Biotite Schist			Casing Inner Diameter (mm) :	77.8
Date :	3/15/2023	Date :	4/25/2023	Water Meter Reading in	US Gallon	Checked By :	JCW	Date :	5/1/2023

Pressure Stage	Interval Pressure (PSI)	No	Actual Time (h:m:s)	Time Intervals (min)	Water Meter Readings Reading (US Gallon)		Volume (L)	Discharge (L/min)	Discharge/m (L/min/m)	Remarks
										c : 1
P1	25	0	9:49:00	0	96389.58		0.00	0.00	0.00	
		1	9:50:00	01:00	96390.63		3.97	3.97	0.77	
		2	9:51:00	01:00	96392.44		6.85	6.85	1.33	
		3	9:52:00	01:00	96394.22		6.74	6.74	1.31	
		4	9:53:00	01:00	96396.01		6.78	6.78	1.32	
		5	9:54:00	01:00	96397.82		6.85	6.85	1.33	
		6	9:55:00	01:00	96399.63		6.85	6.85	1.33	
		7	9:56:00	01:00	96402.26		9.96	9.96	1.94	
		8	9:57:00	01:00	96403.16		3.41	3.41	0.66	
		9	9:58:00	01:00	96404.71		5.87	5.87	1.14	
		10	9:59:00		96406.41		6.44			
							Total :	57.27	11.14	Start Date & Time :
							Average:	6.364	1.237	3/15/2023 9:37
P2	34	0	10:00:00	0	96408.85		0.00	0.00	0.00	c : 1
		1	10:01:00	01:00	96411.29		9.24	9.24	1.80	
		2	10:02:00	01:00	96413.72		9.20	9.20	1.79	
		3	10:03:00	01:00	96416.15		9.20	9.20	1.79	
		4	10:04:00	01:00	96418.55		9.08	9.08	1.77	
		5	10:05:00	01:00	96420.02		5.56	5.56	1.08	
		6	10:06:00	01:00	96423.32		12.49	12.49	2.43	
		7	10:07:00	01:00	96425.83		9.50	9.50	1.85	
		8	10:08:00	01:00	96428.15		8.78	8.78	1.71	
		9	10:09:00	01:00	96430.68		9.58	9.58	1.86	
		10								
							Total :	82.64	16.07	
							Average:	9.182	1.785	
P3	46	0	10:10:00	0	96433.82		0.00	0.00	0.00	c : 1
		1	10:11:00	01:00	96437.53		14.04	14.04	2.73	
		2	10:12:00	01:00	96440.61		11.66	11.66	2.27	
		3	10:13:00	01:00	96444.24		13.74	13.74	2.67	
		4	10:14:00	01:00	96447.53		12.45	12.45	2.42	
		5	10:15:00	01:00	96451.12		13.59	13.59	2.64	
		6	10:16:00	01:00	96454.43		12.53	12.53	2.44	
		7	10:17:00	01:00	96457.53		11.73	11.73	2.28	
		8	10:18:00	01:00	96461.03		13.25	13.25	2.58	
		9	10:19:00	01:00	96463.92		10.94	10.94	2.13	
		10								
							Total :	113.94	22.15	
							Average:	12.660	2.461	
P4	35	0	10:20:00	0	96466.21		0.00	0.00	0.00	c : 1
		1	10:21:00	01:00	96469.13		11.05	11.05	2.15	
		2	10:22:00	01:00	96471.45		8.78	8.78	1.71	
		3	10:23:00	01:00	96473.96		9.50	9.50	1.85	
		4	10:24:00	01:00	96476.32		8.93	8.93	1.74	
		5	10:25:00	01:00	96478.74		9.16	9.16	1.78	
		6	10:27:00	02:00	96483.92		19.61	9.80	1.91	
		7	10:28:00	01:00	96486.03		7.99	7.99	1.55	
		8	10:29:00	01:00	96488.47		9.24	9.24	1.80	
		9								
		10								
							Total :	74.46	14.48	
							Average:	9.307	1.810	
P5	24	1	10:30:00	0	96490.20		0.00	0.00	0.00	c : 1
		2	10:31:00	01:00	96491.92		6.51	6.51	1.27	
		3	10:32:00	01:00	96493.64		6.51	6.51	1.27	
		4	10:33:00	01:00	96495.37		6.55	6.55	1.27	
		5	10:34:00	01:00	96497.10		6.55	6.55	1.27	
		6	10:35:00	01:00	96498.82		6.51	6.51	1.27	
		7	10:36:00	01:00	96500.55		6.55	6.55	1.27	
		8	10:37:00	01:00	96502.23		6.36	6.36	1.24	
		9	10:38:00	01:00	96503.97		6.59	6.59	1.28	
		10	10:39:00	01:00	96505.68		6.47	6.47	1.26	
		11								
							Total :	58.60	11.39	Finish Date & Time :
							Average:	6.511	1.266	3/15/2023 10:54

TEST RESULTS

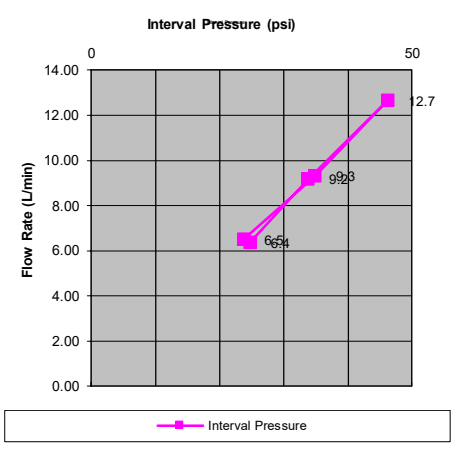
Stage No.	Lugeon Value
P1	11.9
P2	12.5
P3	12.6
P4	12.3
P5	12.7

Lugeon Value Curve



Interval Pressure
24.7
33.8
46.2
34.9
23.7

Pressure Vs Flow



Interpreted Result & Hydraulic Conductivity

Interpreted Result 12 uL

Reported Permeability at Stage Average

K= 1.E-04 cm/sec

Flow Type

LAMINAR FLOW

Comments:

WATER PRESSURE TEST

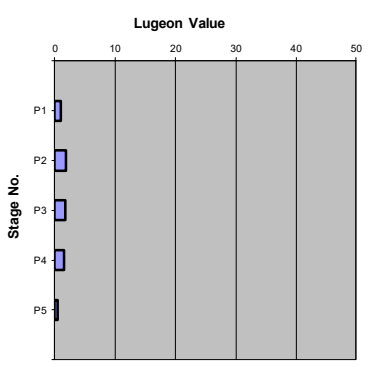
								Revision :	0.0
Job No. :	GL1777449-Y9	Hole No :	BW-2	Drilling Method :	HQ	Vertical depth to Groundwater		Immediately prior to test (ft bgs) :	35.46
Client :	Southern Co.	Dip (Deg) :	-90	Hole Diameter (m) :	0.096			Used in analysis (ft bgs) :	35.46
Project :	McDonough Plant	Interval Top (ft) :	96.06	Tested Length (m) :	4.25			Pressure Gauge Height (ft ags) :	--
Location :	Ash Pond 1	Interval Base (ft) :	110.00	Packer Type:	Pneumatic - Wireline - Single			Presumed Water Temperature (C) :	17
Tested By :	C. Mikilitus	Computed By :	RJF	Rock tested :	Moderately Weathered Biotite Schist			Casing Inner Diameter (mm) :	77.8
Date :	3/15/2023	Date :	4/25/2023	Water Meter Reading in	US Gallon	Checked By :	JCW	Date :	5/1/2023

Pressure Stage	Interval Pressure (PSI)	No	Actual Time (h:m:s)	Time Intervals (min)	Water Meter Readings Reading (US Gallon)		Volume (L)	Discharge (L/min)	Discharge/m (L/min/m)	Remarks
										c : 1
P1	25	0	12:28:00	0	96522.76		0.00	0.00	0.00	
		1	12:29:00	01:00	96522.93		0.64	0.64	0.15	
		2	12:30:00	01:00	96523.07		0.53	0.53	0.12	
		3	12:31:00	01:00	96523.20		0.49	0.49	0.12	
		4	12:32:00	01:00	96523.32		0.45	0.45	0.11	
		5	12:33:00	01:00	96523.45		0.49	0.49	0.12	
		6	12:34:00	01:00	96523.57		0.45	0.45	0.11	
		7	12:35:00	01:00	96523.67		0.38	0.38	0.09	
		8	12:36:00	01:00	96523.78		0.42	0.42	0.10	
		9	12:37:00	01:00	96523.88		0.38	0.38	0.09	
		10	12:38:00	01:00	96523.97		0.34	0.34	0.08	
							Total :	4.58	1.08	Start Date & Time :
							Average:	0.458	0.108	3/15/2023 12:19
P2	36	0	12:39:00	0	96524.25		0.00	0.00	0.00	c : 1
		1	12:40:00	01:00	96524.59		1.29	1.29	0.30	
		2	12:41:00	01:00	96524.91		1.21	1.21	0.29	
		3	12:42:00	01:00	96525.23		1.21	1.21	0.29	
		4	12:43:00	01:00	96525.55		1.21	1.21	0.29	
		5	12:44:00	01:00	96525.84		1.10	1.10	0.26	
		6	12:45:00	01:00	96526.14		1.14	1.14	0.27	
		7	12:46:00	01:00	96526.42		1.06	1.06	0.25	
		8	12:47:00	01:00	96526.69		1.02	1.02	0.24	
		9	12:48:00	01:00	96526.96		1.02	1.02	0.24	
		10								
							Total :	10.26	2.41	
							Average:	1.140	0.268	
P3	45	0	12:49:00	0	96527.36		0.00	0.00	0.00	c : 1
		1	12:50:00	01:00	96527.78		1.59	1.59	0.37	
		2	12:51:00	01:00	96528.17		1.48	1.48	0.35	
		3	12:52:00	01:00	96528.54		1.40	1.40	0.33	
		4	12:53:00	01:00	89658.92		-26004.34	-26004.34	-6118.67	
		5	12:54:00	01:00	96529.27		26007.11	26007.11	6119.32	
		6	12:55:00	01:00	96529.63		1.36	1.36	0.32	
		7	12:56:00	01:00	96529.98		1.32	1.32	0.31	
		8	12:57:00	01:00	96530.33		1.32	1.32	0.31	
		9	12:58:00	01:00	96530.68		1.32	1.32	0.31	
		10								
							Total :	12.57	2.96	
							Average:	1.396	0.329	
P4	36	0	12:59:00	0	96530.93		0.00	0.00	0.00	c : 1
		1	13:00:00	01:00	96531.18		0.95	0.95	0.22	
		2	13:01:00	01:00	96531.42		0.91	0.91	0.21	
		3	13:02:00	01:00	96531.67		0.95	0.95	0.22	
		4	13:03:00	01:00	96531.93		0.98	0.98	0.23	
		5	13:04:00	01:00	96532.18		0.95	0.95	0.22	
		6	13:05:00	01:00	96532.42		0.91	0.91	0.21	
		7	13:06:00	01:00	96532.66		0.91	0.91	0.21	
		8	13:07:00	01:00	96532.89		0.87	0.87	0.20	
		9	13:08:00	01:00	96533.13		0.91	0.91	0.21	
		10								
							Total :	8.33	1.96	
							Average:	0.925	0.218	
P5	25	1	13:09:00	0	96533.37		0.00	0.00	0.00	c : 1
		2	13:10:00	01:00	96533.61		0.91	0.91	0.21	Markedly different
		3	13:11:00	01:00	96533.65		0.15	0.15	0.04	than other steps,
		4	13:12:00	01:00	96533.65		0.00	0.00	0.00	excluded from
		5	13:13:00	01:00	96533.67		0.08	0.08	0.02	analysis
		6	13:14:00	01:00	96533.69		0.08	0.08	0.02	
		7	13:15:00	01:00	96533.70		0.04	0.04	0.01	
		8								
		9								
		10								
		11								
							Total :	1.25	0.29	Finish Date & Time :
							Average:	0.208	0.049	3/15/2023 13:33

TEST RESULTS

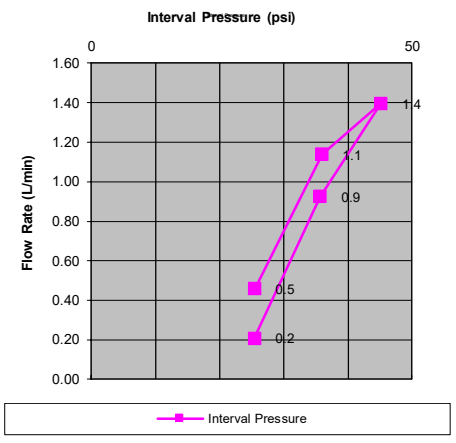
Stage No.	Lugeon Value
P1	1.0
P2	1.8
P3	1.7
P4	1.4
P5	0.5

Lugeon Value Curve



Interval Pressure
25.4
35.9
45.2
35.7
25.4

Pressure Vs Flow



Interpreted Result & Hydraulic Conductivity

Interpreted Result 0 uL

Reported Permeability at Stage P5

K= 5.E-06 cm/sec

Flow Type

DILATION

Comments:

WATER PRESSURE TEST

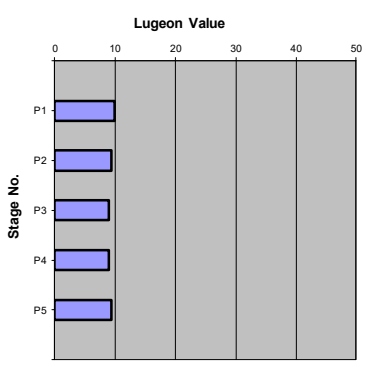
						Revision :	0.0
Job No. :	GL1777449-Y9	Hole No :	BW-3	Drilling Method :	HQ	Vertical depth to Groundwater	Immediately prior to test (ft bgs) : 26.39
Client :	Southern Co.	Dip (Deg) :	-90	Hole Diameter (m) :	0.096		Used in analysis (ft bgs) : 26.39
Project :	McDonough Plant	Interval Top (ft) :	62.68	Tested Length (m) :	13.21		Pressure Gauge Height (ft ags) : --
Location :	Ash Pond 1	Interval Base (ft) :	106.00	Packer Type:	Pneumatic - Non-Wireline - Single		Presumed Water Temperature (C) : 21
Tested By :	R. Feldmann	Computed By :	RJF	Rock tested :	W1 to W4 Muscovite Biotite Schist		Casing Inner Diameter (mm) : 27.4
Date :	3/28/2023	Date :	4/25/2023	Water Meter Reading in	US Gallon	Checked By : JCW	Date : 5/1/2023

Pressure Stage	Interval Pressure (PSI)	No	Actual Time (h:m:s)	Time Intervals (min)	Water Meter Readings Reading (US Gallon)		Volume (L)	Discharge (L/min)	Discharge/m (L/min/m)	Remarks
										c : 1
P1	23	0	13:57:00	0	96900.1		0.00	0.00	0.00	
		1	13:58:00	01:00	96903.8		14.08	14.08	1.07	
		2	13:59:00	01:00	96907.4		13.67	13.67	1.03	
		3	14:00:00	01:00	96910.7		12.57	12.57	0.95	
		4	14:01:00	01:00	96913.9		12.11	12.11	0.92	
		5	14:02:00	01:00	96917.2		12.49	12.49	0.95	
		6	14:03:00	01:00	96920.5		12.49	12.49	0.95	
		7	14:04:00	01:00	96923.7		12.11	12.11	0.92	
		8	14:05:00	01:00	96926.8		11.73	11.73	0.89	
		9	14:06:00	01:00	96930.0		12.11	12.11	0.92	
		10	14:08:00	02:00	96936.1		23.09	11.55	0.87	
							Total :	124.92	9.46	Start Date & Time :
							Average:	12.492	0.946	3/28/2023 13:28
P2	35	0	14:09:00	0	96940.7		0.00	0.00	0.00	c : 1
		1	14:10:00	01:00	96945.5		18.17	18.17	1.38	
		2	14:11:00	01:00	96950.4		18.55	18.55	1.40	
		3	14:13:00	02:00	96960.2		37.10	18.55	1.40	
		4	14:14:00	01:00	96964.9		17.79	17.79	1.35	
		5	14:15:00	01:00	96969.7		18.17	18.17	1.38	
		6	14:17:00	02:00	96979.2		35.96	17.98	1.36	
		7	14:18:00	01:00	96984.0		18.17	18.17	1.38	
		8								
		9								
		10								
							Total :	127.38	9.64	
							Average:	18.197	1.378	
P3	46	0	14:19:00	0	96990.3		0.00	0.00	0.00	c : 1
		1	14:20:00	01:00	96996.5		23.47	23.47	1.78	
		2	14:21:00	01:00	97002.7		23.47	23.47	1.78	
		3	14:22:00	01:00	97008.0		20.06	20.06	1.52	
		4	14:23:00	01:00	97015.0		26.50	26.50	2.01	
		5	14:25:00	02:00	97027.3		46.56	23.28	1.76	
		6	14:26:00	01:00	97033.4		23.09	23.09	1.75	
		7	14:27:00	01:00	97039.5		23.09	23.09	1.75	
		8	14:28:00	01:00	97045.6		23.09	23.09	1.75	
		9	14:29:00	01:00	97051.6		22.71	22.71	1.72	
		10	14:30:00	01:00	97057.7		23.09	23.09	1.75	
							Total :	231.86	17.56	
							Average:	23.186	1.756	
P4	31	0	14:31:00	0	97062.2		0.00	0.00	0.00	c : 1
		1	14:32:00	01:00	97066.3		15.52	15.52	1.18	
		2	14:33:00	01:00	97070.4		15.52	15.52	1.18	
		3	14:35:00	02:00	97078.6		31.04	15.52	1.18	
		4	14:36:00	01:00	97082.7		15.52	15.52	1.18	
		5	14:38:00	02:00	97090.9		31.04	15.52	1.18	
		6	14:39:00	01:00	97095.1		15.90	15.90	1.20	
		7	14:40:30	01:30	97101.1		22.71	15.14	1.15	
		8								
		9								
		10								
							Total :	108.64	8.23	
							Average:	15.520	1.175	
P5	18	1	14:41:00	0	97102.5		0.00	0.00	0.00	c : 1
		2	14:42:00	01:00	97105.3		10.60	10.60	0.80	
		3	14:43:00	01:00	97108.0		10.22	10.22	0.77	
		4	14:44:00	01:00	97110.7		10.22	10.22	0.77	
		5	14:46:00	02:00	97115.8		19.31	9.65	0.73	
		6	14:49:00	03:00	97123.1		27.63	9.21	0.70	
		7	14:51:00	02:00	97127.6		17.03	8.52	0.64	
		8	14:52:00	01:00	97129.6		7.57	7.57	0.57	
		9								
		10								
		11								
							Total :	65.99	5.00	Finish Date & Time :
							Average:	9.427	0.714	3/28/2023 15:13

TEST RESULTS

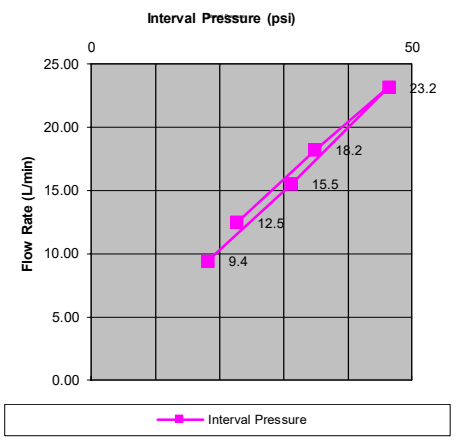
Stage No.	Lugeon Value
P1	9.9
P2	9.4
P3	9.0
P4	8.9
P5	9.3

Lugeon Value Curve



Interval Pressure
22.6
34.8
46.4
31.1
18.2

Pressure Vs Flow



Interpreted Result & Hydraulic Conductivity

Interpreted Result 9 uL

Reported Permeability at Stage P2 through P5

K= 9.E-05 cm/sec

Flow Type

LAMINAR FLOW

Comments:
First Step was filling the voids

WATER PRESSURE TEST

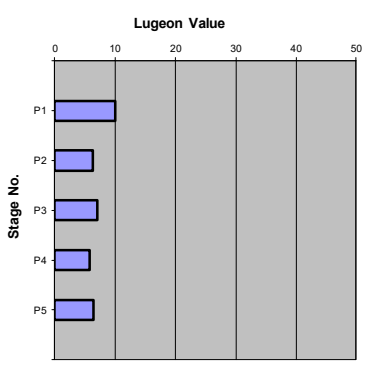
								Revision :	0.0
Job No. :	GL1777449-Y9	Hole No :	BW-3	Drilling Method :	HQ	Vertical depth to Groundwater		Immediately prior to test (ft bgs) :	26.45
Client :	Southern Co.	Dip (Deg) :	-90	Hole Diameter (m) :	0.096			Used in analysis (ft bgs) :	26.45
Project :	McDonough Plant	Interval Top (ft) :	77.69	Tested Length (m) :	8.63			Pressure Gauge Height (ft ags) :	--
Location :	Ash Pond 1	Interval Base (ft) :	106.00	Packer Type:	Pneumatic - Non-Wireline - Single			Presumed Water Temperature (C) :	21
Tested By :	R. Feldmann	Computed By :	RJF	Rock tested :	W1 to W4 Muscovite Biotite Schist			Casing Inner Diameter (mm) :	27.4
Date :	3/28/2023	Date :	4/25/2023	Water Meter Reading in	US Gallon	Checked By :	JCW	Date :	5/1/2023

Pressure Stage	Interval Pressure (PSI)	No	Actual Time (h:m:s)	Time Intervals (min)	Water Meter Readings Reading (US Gallon)		Volume (L)	Discharge (L/min)	Discharge/m (L/min/m)	Remarks
										c : 1
P1	17	0	12:06:00	0	96800.56		0.00	0.00	0.00	
		1	12:07:00	01:00	96802.05		5.64	5.64	0.65	
		2	12:08:00	01:00	96803.48		5.41	5.41	0.63	
		3	12:09:00	01:00	96804.83		5.11	5.11	0.59	
		4	12:10:00	01:00	96806.08		4.73	4.73	0.55	
		5	12:11:00	01:00	96807.36		4.85	4.85	0.56	
		6	12:12:00	01:00	96809.89		9.58	9.58	1.11	
		7	12:13:00	01:00	96811.88		7.53	7.53	0.87	
		8								
		9								
		10								
							Total :	42.85	4.96	Start Date & Time :
							Average:	6.122	0.709	3/28/2023 11:23
P2	30	0	12:14:00	0	96811.88		0.00	0.00	0.00	c : 1
		1	12:15:00	01:00	96813.77		7.15	7.15	0.83	
		2	12:16:00	01:00	96815.59		6.89	6.89	0.80	
		3	12:17:00	01:00	96817.42		6.93	6.93	0.80	
		4	12:18:00	01:00	96819.23		6.85	6.85	0.79	
		5	12:19:00	01:00	96821.00		6.70	6.70	0.78	
		6	12:21:00	02:00	96824.59		13.59	6.79	0.79	
		7	12:22:00	01:00	96826.38		6.78	6.78	0.79	
		8	12:23:00	01:00	96828.14		6.66	6.66	0.77	
		9	12:24:00	01:00	96829.85		6.47	6.47	0.75	
		10								
							Total :	61.23	7.09	
							Average:	6.803	0.788	
P3	48	0	12:27:00	0	96838.18		0.00	0.00	0.00	c : 1
		1	12:28:00	01:00	96840.97		10.56	10.56	1.22	
		2	12:29:00	01:00	96843.74		10.49	10.49	1.21	
		3	12:30:00	01:00	96849.31		21.08	21.08	2.44	
		4	12:31:00	01:00	96851.98		10.11	10.11	1.17	
		5	12:32:00	01:00	96857.14		19.53	19.53	2.26	
		6	12:34:00	02:00	96862.37		19.80	9.90	1.15	
		7	12:36:00	02:00	96864.39		7.65	3.82	0.44	
		8								
		9								
		10								
							Total :	85.49	9.91	
							Average:	12.213	1.415	
P4	34	0	12:37:00	0	96864.39		0.00	0.00	0.00	c : 1
		1	12:39:00	02:00	96868.13		14.16	7.08	0.82	
		2	12:43:00	04:00	96873.55		20.52	5.13	0.59	
		3	12:45:00	02:00	96875.29		6.59	3.29	0.38	
		4	12:47:00	02:00	96882.09		25.74	12.87	1.49	
		5								
		6								
		7								
		8								
		9								
		10								
							Total :	28.37	3.29	
							Average:	7.093	0.822	
P5	23	1	12:48:00	0	96882.09		0.00	0.00	0.00	c : 1
		2	12:49:00	01:00	96884.57		9.39	9.39	1.09	
		3	12:51:00	02:00	96887.00		9.20	4.60	0.53	
		4	12:52:00	01:00	96888.22		4.62	4.62	0.54	
		5	12:54:00	02:00	96890.59		8.97	4.49	0.52	
		6	12:55:00	01:00	96891.78		4.50	4.50	0.52	
		7	12:56:00	01:00	96892.96		4.47	4.47	0.52	
		8	12:57:00	01:00	96894.18		4.62	4.62	0.54	
		9								
		10								
		11								
							Total :	36.68	4.25	Finish Date & Time :
							Average:	5.240	0.607	3/28/2023 13:17

TEST RESULTS

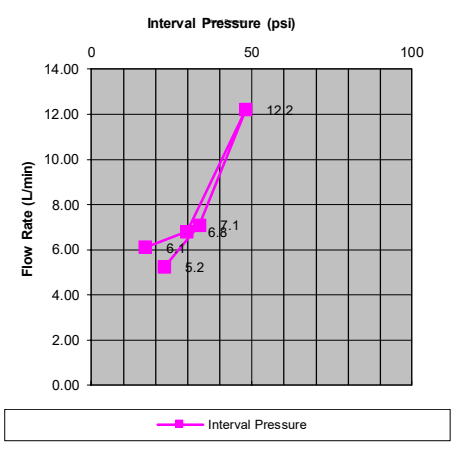
Stage No.	Lugeon Value
P1	10.0
P2	6.3
P3	7.0
P4	5.8
P5	6.3

Lugeon Value Curve



Interval Pressure
16.8
29.8
48.1
33.6
22.7

Pressure Vs Flow



Interpreted Result & Hydraulic Conductivity

Interpreted Result 6 uL

Reported Permeability at Stage P2 through P5

K= 6.E-05 cm/sec

Flow Type

LAMINAR FLOW

Comments:
First Step was filling the voids

WATER PRESSURE TEST

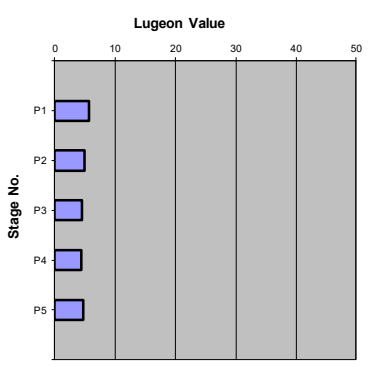
						Revision :	0.0
Job No. :	GL1777449-Y9	Hole No :	BW-3	Drilling Method :	HQ	Vertical depth to Groundwater	Immediately prior to test (ft bgs) : 27.31
Client :	Southern Co.	Dip (Deg) :	-90	Hole Diameter (m) :	0.096		Used in analysis (ft bgs) : 27.31
Project :	McDonough Plant	Interval Top (ft) :	87.54	Tested Length (m) :	5.63		Pressure Gauge Height (ft ags) : --
Location :	Ash Pond 1	Interval Base (ft) :	106.00	Packer Type:	Pneumatic - Non-Wireline - Single		Presumed Water Temperature (C) : 19
Tested By :	R. Feldmann	Computed By :	RJF	Rock tested :	W1 to W2 Muscovite Biotite Schist		Casing Inner Diameter (mm) : 27.4
Date :	3/28/2023	Date :	4/25/2023	Water Meter Reading in	US Gallon	Checked By : JCW	Date : 5/1/2023

Pressure Stage	Interval Pressure (PSI)	No	Actual Time (h:m:s)	Time Intervals (min)	Water Meter Readings Reading (US Gallon)		Volume (L)	Discharge (L/min)	Discharge/m (L/min/m)	Remarks
										c : 1
P1	24	0	9:57:00	0	96744.00		0.00	0.00	0.00	
		1	9:59:00	02:00	96745.99		7.53	3.77	0.67	
		2	10:00:00	01:00	96746.84		3.22	3.22	0.57	
		3	10:01:00	01:00	96747.66		3.10	3.10	0.55	
		4	10:02:00	01:00	96748.45		2.99	2.99	0.53	
		5	10:04:00	02:00	96749.99		5.83	2.91	0.52	
		6	10:05:00	01:00	96750.73		2.80	2.80	0.50	
		7								
		8								
		9								
		10								
							Total :	18.79	3.34	Start Date & Time :
							Average:	3.132	0.557	3/28/2023 9:55
P2	35	0	10:07:00	0	96753.08		0.00	0.00	0.00	c : 1
		1	10:08:00	01:00	96754.27		4.50	4.50	0.80	
		2	10:09:00	01:00	96755.41		4.32	4.32	0.77	
		3	10:12:00	03:00	96758.68		12.38	4.13	0.73	
		4	10:13:00	01:00	96759.75		4.05	4.05	0.72	
		5	10:14:00	01:00	96760.80		3.97	3.97	0.71	
		6	10:15:00	01:00	96761.85		3.97	3.97	0.71	
		7	10:16:00	01:00	96762.91		4.01	4.01	0.71	
		8								
		9								
		10								
							Total :	28.96	5.15	
							Average:	4.137	0.735	
P3	47	0	10:17:00	0	96764.18		0.00	0.00	0.00	c : 1
		1	10:18:00	01:00	96765.48		4.92	4.92	0.87	
		2	10:19:00	01:00	96766.79		4.96	4.96	0.88	
		3	10:22:00	03:00	96770.73		14.91	4.97	0.88	
		4	10:23:00	01:00	96772.03		4.92	4.92	0.87	
		5	10:24:00	01:00	96773.34		4.96	4.96	0.88	
		6	10:25:00	01:00	96774.64		4.92	4.92	0.87	
		7	10:26:00	01:00	96775.96		5.00	5.00	0.89	
		8	10:27:00	01:00	96777.25		4.88	4.88	0.87	
		9								
		10								
							Total :	39.53	7.02	
							Average:	4.942	0.878	
P4	34	0	10:28:00	0	96778.27		0.00	0.00	0.00	c : 1
		1	10:29:00	01:00	96779.20		3.52	3.52	0.63	
		2	10:30:00	01:00	96780.14		3.56	3.56	0.63	
		3	10:31:00	01:00	96781.07		3.52	3.52	0.63	
		4	10:33:00	02:00	96782.93		7.04	3.52	0.63	
		5	10:36:00	03:00	96785.68		10.41	3.47	0.62	
		6	10:37:00	01:00	96786.59		3.44	3.44	0.61	
		7	10:38:00	01:00	96787.52		3.52	3.52	0.63	
		8								
		9								
		10								
							Total :	24.55	4.36	
							Average:	3.508	0.623	
P5	22	1	10:39:00	0	96788.27		0.00	0.00	0.00	c : 1
		2	10:40:00	01:00	96788.93		2.50	2.50	0.44	
		3	10:41:00	01:00	96789.60		2.54	2.54	0.45	
		4	10:42:00	01:00	96790.28		2.57	2.57	0.46	
		5	10:43:00	01:00	96790.94		2.50	2.50	0.44	
		6	10:45:00	02:00	96792.27		5.03	2.52	0.45	
		7	10:46:00	01:00	96792.92		2.46	2.46	0.44	
		8	10:47:00	01:00	96793.58		2.50	2.50	0.44	
		9	10:48:00	01:00	96794.23		2.46	2.46	0.44	
		10								
		11								
							Total :	20.04	3.56	Finish Date & Time :
							Average:	2.505	0.445	3/28/2023 11:09

TEST RESULTS

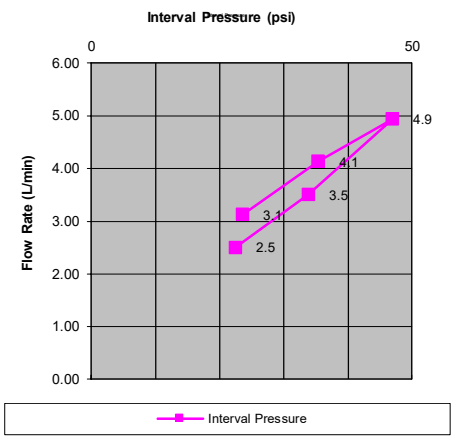
Stage No.	Lugeon Value
P1	5.6
P2	4.9
P3	4.4
P4	4.4
P5	4.7

Lugeon Value Curve



Interval Pressure
23.5
35.4
46.9
33.8
22.5

Pressure Vs Flow



Interpreted Result & Hydraulic Conductivity

Interpreted Result 5 uL

Reported Permeability at Stage Average

K= 5.E-05 cm/sec

Flow Type

LAMINAR FLOW

Comments:

WATER PRESSURE TEST

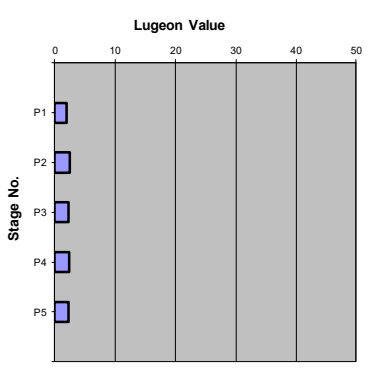
								Revision :	0.0
Job No. :	GL1777449-Y9	Hole No :	BW-4	Drilling Method :	HQ	Vertical depth to Groundwater		Immediately prior to test (ft bgs) :	16.54
Client :	Southern Co.	Dip (Deg) :	-90	Hole Diameter (m) :	0.096			Used in analysis (ft bgs) :	16.54
Project :	McDonough Plant	Interval Top (ft) :	82.26	Tested Length (m) :	14.86			Pressure Gauge Height (ft ags) :	--
Location :	Ash Pond 1	Interval Base (ft) :	131.00	Packer Type:	Pneumatic - Wireline - Single			Presumed Water Temperature (C) :	20
Tested By :	R. Feldmann	Computed By :	RJF	Rock tested :	W1 to W4 Muscovite Biotite Schist			Casing Inner Diameter (mm) :	77.8
Date :	3/27/2023	Date :	4/25/2023	Water Meter Reading in	US Gallon	Checked By :	JCW	Date :	5/1/2023

Pressure Stage	Interval Pressure (PSI)	No	Actual Time (h:m:s)	Time Intervals (min)	Water Meter Readings Reading (US Gallon)		Volume (L)	Discharge (L/min)	Discharge/m (L/min/m)	Remarks
										c : 1
P1	21	0	14:58:00	0	96675.79		0.00	0.00	0.00	
		1	14:59:00	01:00	96676.53		2.80	2.80	0.19	
		2	15:00:00	01:00	96677.24		2.69	2.69	0.18	
		3	15:02:00	02:00	96678.54		4.92	2.46	0.17	
		4	15:03:00	01:00	96679.32		2.95	2.95	0.20	
		5	15:04:00	01:00	96680.00		2.57	2.57	0.17	
		6	15:05:00	01:00	96680.67		2.54	2.54	0.17	
		7	15:06:00	01:00	96681.29		2.35	2.35	0.16	
		8	15:08:00	02:00	96682.52		4.66	2.33	0.16	
		9	15:09:00	01:00	96683.13		2.31	2.31	0.16	
		10								
							Total :	23.00	1.55	Start Date & Time :
							Average:	2.555	0.172	3/27/2023 14:30
		0	15:10:00	0	96684.37		0.00	0.00	0.00	c : 1
		1	15:11:00	01:00	96685.81		5.45	5.45	0.37	
		2	15:14:00	03:00	96689.84		15.26	5.09	0.34	
		3	15:18:00	04:00	96695.09		19.87	4.97	0.33	
		4	15:19:00	01:00	96696.44		5.11	5.11	0.34	
P2	34	5								
		6								
		7								
		8								
		9								
		10								
							Total :	20.61	1.39	
							Average:	5.154	0.347	
		0	15:21:00	0	96700.06		0.00	0.00	0.00	c : 1
		1	15:22:00	01:00	96701.86		6.81	6.81	0.46	
		2	15:23:00	01:00	96703.70		6.97	6.97	0.47	
		3	15:24:00	01:00	96705.53		6.93	6.93	0.47	
		4	15:26:00	02:00	96709.17		13.78	6.89	0.46	
P3	50	5	15:30:00	04:00	96716.37		27.25	6.81	0.46	
		6								
		7								
		8								
		9								
		10								
							Total :	34.41	2.32	
							Average:	6.882	0.463	
		0	15:31:00	0	96717.60		0.00	0.00	0.00	c : 1
		1	15:32:00	01:00	96718.77		4.43	4.43	0.30	
		2	15:34:00	02:00	96721.10		8.82	4.41	0.30	
		3	15:37:00	03:00	96724.72		13.70	4.57	0.31	
		4	15:38:00	01:00	96725.93		4.58	4.58	0.31	
P4	30	5	15:39:00	01:00	96727.12		4.50	4.50	0.30	
		6	15:40:00	01:00	96728.34		4.62	4.62	0.31	
		7								
		8								
		9								
		10								
							Total :	27.11	1.82	
							Average:	4.518	0.304	
		1	15:41:00	0	96729.13		0.00	0.00	0.00	c : 1
		2	15:42:00	01:00	96729.86		2.76	2.76	0.19	
		3	15:43:00	01:00	96730.60		2.80	2.80	0.19	
		4	15:44:00	01:00	96731.35		2.84	2.84	0.19	
		5	15:45:00	01:00	96732.10		2.84	2.84	0.19	
P5	21	6	15:46:00	01:00	96732.85		2.84	2.84	0.19	
		7	15:47:00	01:00	96733.61		2.88	2.88	0.19	
		8	15:48:00	01:00	96734.39		2.95	2.95	0.20	
		9	15:50:00	02:00	96735.94		5.87	2.93	0.20	
		10	15:51:00	01:00	96736.72		2.95	2.95	0.20	
		11								
							Total :	25.80	1.74	Finish Date & Time :
							Average:	2.866	0.193	3/27/2023 16:21

TEST RESULTS

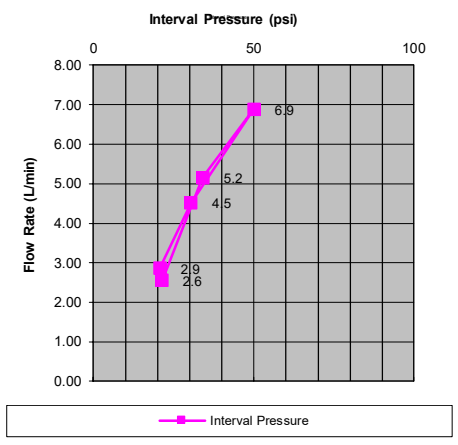
Stage No.	Lugeon Value
P1	1.9
P2	2.4
P3	2.2
P4	2.4
P5	2.2

Lugeon Value Curve



Interval Pressure
21.3
34.0
50.0
30.4
20.8

Pressure Vs Flow



Interpreted Result & Hydraulic Conductivity

Interpreted Result 2 uL

Reported Permeability at Stage Average

K= 2.E-05 cm/sec

Flow Type

LAMINAR FLOW

Comments:

WATER PRESSURE TEST

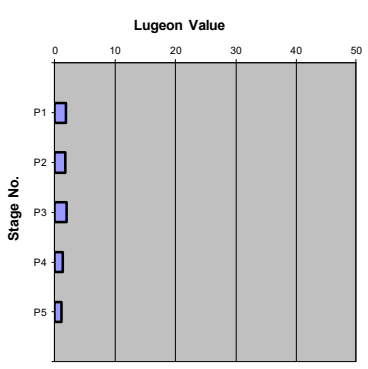
								Revision :	0.0
Job No. :	GL1777449-Y9	Hole No :	BW-4	Drilling Method :	HQ	Vertical depth to Groundwater		Immediately prior to test (ft bgs) :	22.39
Client :	Southern Co.	Dip (Deg) :	-90	Hole Diameter (m) :	0.096			Used in analysis (ft bgs) :	22.39
Project :	McDonough Plant	Interval Top (ft) :	91.24	Tested Length (m) :	7.55			Pressure Gauge Height (ft ags) :	--
Location :	Ash Pond 1	Interval Base (ft) :	116.00	Packer Type:	Pneumatic - Wireline - Single			Presumed Water Temperature (C) :	20
Tested By :	R. Feldmann	Computed By :	RJF	Rock tested :	W1 to W3 Muscovite Biotite Schist			Casing Inner Diameter (mm) :	77.8
Date :	3/23/2023	Date :	4/25/2023	Water Meter Reading in	US Gallon	Checked By :	JCW	Date :	5/1/2023

Pressure Stage	Interval Pressure (PSI)	No	Actual Time (h:m:s)	Time Intervals (min)	Water Meter Readings Reading (US Gallon)		Volume (L)	Discharge (L/min)	Discharge/m (L/min/m)	Remarks
										c : 1
P1	22	0	10:49:00	0	96,580.78		0.00	0.00	0.00	
		1	10:50:00	01:00	96,581.19		1.55	1.45	0.19	
		2	10:51:00	01:00	96,581.53		1.29	1.18	0.16	
		3	10:52:00	01:00	96,581.90		1.40	1.30	0.17	
		4	10:54:00	02:00	96,582.59		2.61	1.20	0.16	
		5	10:59:00	05:00	96,584.21		6.13	1.12	0.15	
		6								
		7								
		8								
		9								
		10								
							Total :	6.26	0.83	Start Date & Time :
							Average:	1.252	0.166	3/23/2023 10:14
P2	31	0	11:00:00	0	96,584.69		0.00	0.00	0.00	c : 1
		1	11:01:00	01:00	96,585.21		1.97	1.80	0.24	
		2	11:04:00	03:00	96,586.74		5.79	1.76	0.23	
		3	11:08:00	04:00	96,588.68		7.34	1.66	0.22	
		4	11:09:00	01:00	96,589.15		1.78	1.61	0.21	
		5								
		6								
		7								
		8								
		9								
		10								
							Total :	6.83	0.90	
							Average:	1.707	0.226	
P3	44	0	11:10:00	0	96,590.00		0.00	0.00	0.00	c : 1
		1	11:11:00	01:00	96,590.78		2.95	2.61	0.35	
		2	11:12:00	01:00	96,591.59		3.07	2.73	0.36	
		3	11:15:00	03:00	96,593.92		8.82	2.60	0.34	
		4	11:18:00	03:00	96,595.17		4.73	1.24	0.16	
		5	11:20:00	02:00	96,597.64		9.35	4.34	0.57	
		6								
		7								
		8								
		9								
		10								
							Total :	13.52	1.79	
							Average:	2.703	0.358	
P4	30	0	11:22:00	0	96,598.58		0.00	0.00	0.00	c : 1
		1	11:23:00	01:00	96,598.86		1.06	0.92	0.12	
		2	11:24:00	01:00	96,599.25		1.48	1.33	0.18	
		3	11:25:00	01:00	96,599.63		1.44	1.29	0.17	
		4	11:26:00	01:00	96,600.01		1.44	1.29	0.17	
		5	11:28:00	02:00	96,600.77		2.88	1.29	0.17	
		6	11:29:00	01:00	96,601.15		1.44	1.29	0.17	
		7	11:30:00	01:00	96,601.53		1.44	1.29	0.17	
		8								
		9								
		10								
							Total :	8.72	1.16	
							Average:	1.246	0.165	
P5	20	1	11:31:00	0	96,601.77		0.00	0.00	0.00	c : 1
		2	11:32:00	01:00	96,601.98		0.79	0.70	0.09	
		3	11:33:00	01:00	96,602.19		0.79	0.70	0.09	
		4	11:39:00	06:00	96,603.44		4.73	0.70	0.09	
		5	11:40:00	01:00	96,603.65		0.79	0.70	0.09	
		6								
		7								
		8								
		9								
		10								
		11								
							Total :	2.81	0.37	Finish Date & Time :
							Average:	0.703	0.093	3/23/2023 0:10

TEST RESULTS

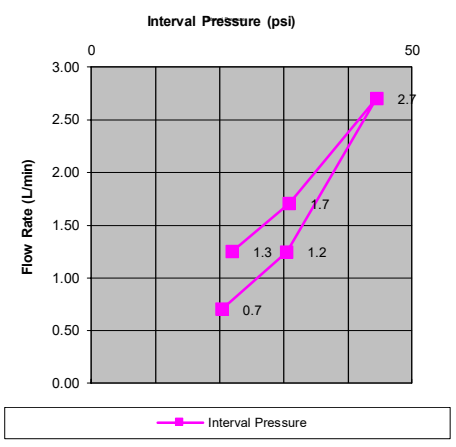
Stage No.	Lugeon Value
P1	1.8
P2	1.7
P3	1.9
P4	1.3
P5	1.1

Lugeon Value Curve



Interval Pressure
22.0
30.9
44.5
30.4
20.3

Pressure Vs Flow



Interpreted Result & Hydraulic Conductivity

Interpreted Result 2 uL

Reported Permeability at Stage Average

K= 2.E-05 cm/sec

Flow Type

LAMINAR FLOW

Comments:

WATER PRESSURE TEST

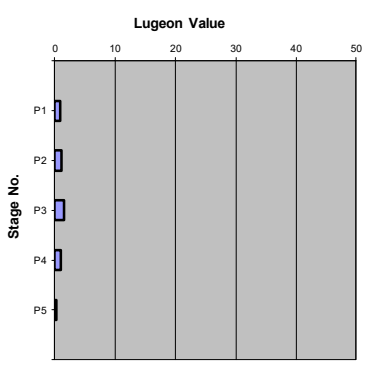
								Revision :	0.0
Job No. :	GL1777449-Y9	Hole No :	BW-4	Drilling Method :	HQ	Vertical depth to Groundwater		Immediately prior to test (ft bgs) :	27.46
Client :	Southern Co.	Dip (Deg) :	-90	Hole Diameter (m) :	0.096			Used in analysis (ft bgs) :	27.46
Project :	McDonough Plant	Interval Top (ft) :	113.14	Tested Length (m) :	5.45			Pressure Gauge Height (ft ags) :	--
Location :	Ash Pond 1	Interval Base (ft) :	131.00	Packer Type:	Pneumatic - Non-Wireline - Double			Presumed Water Temperature (C) :	20
Tested By :	CM/RJF	Computed By :	RJF	Rock tested :	Fresh Muscovite Biotite Schist			Casing Inner Diameter (mm) :	77.8
Date :	3/27/2023	Date :	4/26/2023	Water Meter Reading in	US Gallon	Checked By :	JCW	Date :	5/1/2023

Pressure Stage	Interval Pressure (PSI)	No	Actual Time (h:m:s)	Time Intervals (min)	Water Meter Readings Reading (US Gallon)		Volume (L)	Discharge (L/min)	Discharge/m (L/min/m)	Remarks
										c : 1
P1	13	0	12:33:00	0	96653.07		0.00	0.00	0.00	0.16 L/min leak through stuffing box
		1	12:34:00	01:00	96653.19		0.45	0.29	0.05	
		2	12:35:00	01:00	96653.30		0.42	0.25	0.05	
		3	12:36:00	01:00	96653.40		0.38	0.21	0.04	
		4	12:38:00	02:00	96653.63		0.87	0.27	0.05	
		5	12:40:00	02:00	96653.84		0.79	0.23	0.04	
		6	12:41:00	01:00	96653.95		0.42	0.25	0.05	
		7	12:42:00	01:00	96654.06		0.42	0.25	0.05	
		8	12:43:00	01:00	96654.16		0.38	0.21	0.04	
		9								
		10								
							Total :	1.98	0.36	Start Date & Time :
							Average:	0.248	0.046	3/27/2023 11:08
P2	22	0	12:44:00	0	96654.35		0.00	0.00	0.00	c : 1
		1	12:45:00	01:00	96654.59		0.91	0.61	0.11	0.3 L/min leak through stuffing box
		2	12:46:00	01:00	96654.80		0.79	0.49	0.09	
		3	12:47:00	01:00	96655.01		0.79	0.49	0.09	
		4	12:49:00	02:00	96655.45		1.67	0.53	0.10	
		5	12:50:00	01:00	96655.68		0.87	0.57	0.10	
		6	12:51:00	01:00	96655.89		0.79	0.49	0.09	
		7	12:52:00	01:00	96656.11		0.83	0.53	0.10	
		8	12:53:00	01:00	96656.34		0.87	0.57	0.10	
		9								
		10								
							Total :	4.30	0.79	
							Average:	0.538	0.099	
P3	34	0	12:54:00	0	96656.74		0.00	0.00	0.00	c : 1
		1	12:55:00	01:00	96657.19		1.70	1.22	0.22	0.48 L/min leak through stuffing box
		2	12:56:00	01:00	96657.61		1.59	1.11	0.20	
		3	12:57:00	01:00	96658.04		1.63	1.15	0.21	
		4	12:58:00	01:00	96658.47		1.63	1.15	0.21	
		5	12:59:00	01:00	96658.90		1.63	1.15	0.21	
		6	13:00:00	01:00	96659.31		1.55	1.07	0.20	
		7	13:02:00	02:00	96660.18		3.29	1.17	0.21	
		8	13:03:00	01:00	96660.57		1.48	1.00	0.18	
		9								
		10								
							Total :	9.01	1.65	
							Average:	1.126	0.207	
P4	22	0	13:04:00	0	96660.81		0.00	0.00	0.00	c : 1
		1	13:05:00	01:00	96660.99		0.68	0.46	0.08	0.23 L/min leak through stuffing box
		2	13:06:00	01:00	96661.17		0.68	0.46	0.08	
		3	13:07:00	01:00	96661.36		0.72	0.49	0.09	
		4	13:08:00	01:00	96661.54		0.68	0.46	0.08	
		5	13:09:00	01:00	96661.72		0.68	0.46	0.08	
		6	13:10:00	01:00	96661.91		0.72	0.49	0.09	
		7	13:12:00	02:00	96662.28		1.40	0.48	0.09	
		8	13:13:00	01:00	96662.46		0.68	0.46	0.08	
		9	13:14:00	01:00	96662.65		0.72	0.49	0.09	
		10								
							Total :	4.24	0.78	
							Average:	0.471	0.087	
P5	12	1	13:17:00	0	96662.82		0.00	0.00	0.00	c : 1
		2	13:18:00	01:00	96662.86		0.15	0.03	0.01	0.12 L/min leak through stuffing box
		3	13:19:00	01:00	96662.91		0.19	0.07	0.01	
		4	13:22:00	03:00	96663.08		0.64	0.09	0.02	
		5	13:23:00	01:00	96663.13		0.17	0.05	0.01	
		6	13:24:00	01:00	96663.18		0.21	0.09	0.02	
		7	13:25:00	01:00	96663.23		0.19	0.07	0.01	
		8								
		9								
		10								
		11								
							Total :	0.40	0.07	
							Average:	0.067	0.012	3/27/2023 13:55

TEST RESULTS

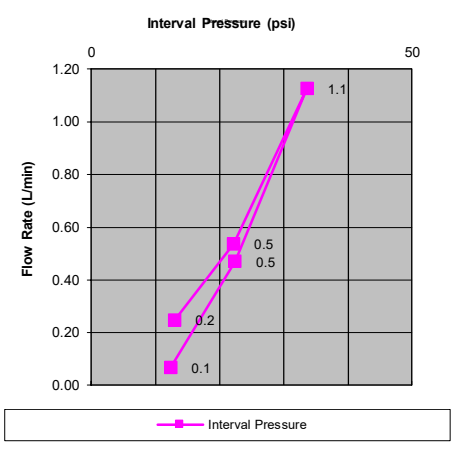
Stage No.	Lugeon Value
P1	0.8
P2	1.1
P3	1.5
P4	0.9
P5	0.2

Lugeon Value Curve



Interval Pressure
13.0
22.1
33.6
22.4
12.3

Pressure Vs Flow



Interpreted Result & Hydraulic Conductivity

Interpreted Result 1 uL

Reported Permeability at Stage P2 and P4

K= 1.E-05 cm/sec

Flow Type

DILATION

Comments:

WATER PRESSURE TEST

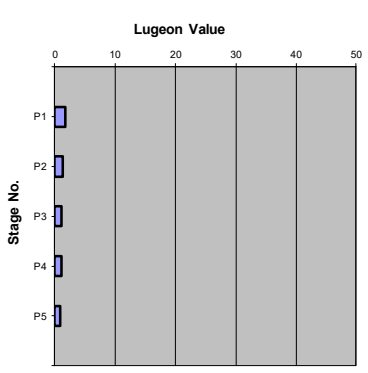
								Revision :	0.0
Job No. :	GL1777449-Y9	Hole No :	BW-5	Drilling Method :	HQ	Vertical depth to Groundwater		Immediately prior to test (ft bgs) :	5.09
Client :	Southern Co.	Dip (Deg) :	-90	Hole Diameter (m) :	0.096			Used in analysis (ft bgs) :	5.09
Project :	McDonough Plant	Interval Top (ft) :	26.21	Tested Length (m) :	13.66			Pressure Gauge Height (ft ags) :	--
Location :	Ash Pond 1	Interval Base (ft) :	71.00	Packer Type:	Pneumatic - Wireline - Single			Presumed Water Temperature (C) :	16
Tested By :	C. Mikilitus	Computed By :	RJF	Rock tested :	W2 Gneiss and W2 Muscovite Biotite Schist			Casing Inner Diameter (mm) :	77.8
Date :	3/8/2023	Date :	4/26/2023	Water Meter Reading in	US Gallon	Checked By :	JCW	Date :	5/1/2023

Pressure Stage	Interval Pressure (PSI)	No	Actual Time (h:m:s)	Time Intervals (min)	Water Meter Readings Reading (US Gallon)		Volume (L)	Discharge (L/min)	Discharge/m (L/min/m)	Remarks
										c : 1
P1	17	0	7:33:00	0	94487.70		0.00	0.00	0.00	
		1	7:34:00	01:00	94488.22		1.97	1.97	0.14	
		2	7:35:00	01:00	94488.71		1.85	1.85	0.14	
		3	7:38:00	03:00	94490.08		5.19	1.73	0.13	
		4	7:39:00	01:00	94490.49		1.55	1.55	0.11	
		5	7:40:00	01:00	94490.93		1.67	1.67	0.12	
		6	7:41:00	01:00	94491.38		1.70	1.70	0.12	
		7	7:42:00	01:00	94491.84		1.74	1.74	0.13	
		8	7:43:00	01:00	94492.23		1.48	1.48	0.11	
		9								
		10								
							Total :	13.69	1.00	Start Date & Time :
							Average:	1.711	0.125	3/8/2023 7:10
P2	33	0	7:44:00	0	94492.93		0.00	0.00	0.00	c : 1
		1	7:45:00	01:00	94493.61		2.57	2.57	0.19	
		2	7:46:00	01:00	94494.27		2.50	2.50	0.18	
		3	7:47:00	01:00	94494.84		2.16	2.16	0.16	
		4	7:48:00	01:00	94495.58		2.80	2.80	0.21	
		5	7:50:00	02:00	94496.86		4.85	2.42	0.18	
		6	7:51:00	01:00	94497.51		2.46	2.46	0.18	
		7	7:53:00	02:00	94498.73		4.62	2.31	0.17	
		8								
		9								
		10								
							Total :	17.22	1.26	
							Average:	2.461	0.180	
P3	49	0	7:54:00	0	94499.57		0.00	0.00	0.00	c : 1
		1	7:55:00	01:00	94500.38		3.07	3.07	0.22	
		2	7:56:00	01:00	94501.18		3.03	3.03	0.22	
		3	7:57:00	01:00	94501.92		2.80	2.80	0.21	
		4	7:59:00	02:00	94503.46		5.83	2.91	0.21	
		5	8:00:00	01:00	94504.20		2.80	2.80	0.21	
		6	8:01:00	01:00	94504.92		2.73	2.73	0.20	
		7	8:02:00	01:00	94505.63		2.69	2.69	0.20	
		8	8:03:00	01:00	94506.35		2.73	2.73	0.20	
		9								
		10								
							Total :	22.75	1.67	
							Average:	2.844	0.208	
P4	32	0	8:05:00	0	94507.44		0.00	0.00	0.00	c : 1
		1	8:06:00	01:00	94507.98		2.04	2.04	0.15	
		2	8:07:00	01:00	94508.52		2.04	2.04	0.15	
		3	8:09:00	02:00	94509.63		4.20	2.10	0.15	
		4	8:10:00	01:00	94510.18		2.08	2.08	0.15	
		5	8:11:00	01:00	94510.72		2.04	2.04	0.15	
		6	8:12:00	01:00	94511.26		2.04	2.04	0.15	
		7	8:13:00	01:00	94511.82		2.12	2.12	0.16	
		8								
		9								
		10								
							Total :	14.48	1.06	
							Average:	2.068	0.151	
P5	17	1	8:14:00	0	94512.15		0.00	0.00	0.00	c : 1
		2	8:15:00	01:00	94512.38		0.87	0.87	0.06	
		3	8:16:00	01:00	94512.61		0.87	0.87	0.06	
		4	8:17:00	01:00	94512.84		0.87	0.87	0.06	
		5	8:18:00	01:00	94513.07		0.87	0.87	0.06	
		6	8:19:00	01:00	94513.30		0.87	0.87	0.06	
		7	8:20:00	01:00	94513.53		0.87	0.87	0.06	
		8	8:21:00	01:00	94513.76		0.87	0.87	0.06	
		9	8:22:00	01:00	94513.98		0.83	0.83	0.06	
		10	8:23:00	01:00	94514.20		0.83	0.83	0.06	
		11								
							Total :	7.76	0.57	Finish Date & Time :
							Average:	0.862	0.063	3/8/2023 8:23

TEST RESULTS

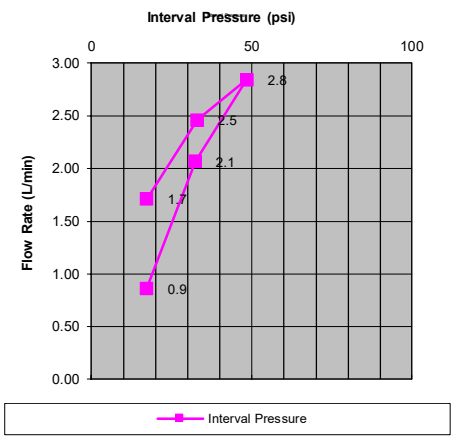
Stage No.	Lugeon Value
P1	1.7
P2	1.3
P3	1.0
P4	1.1
P5	0.9

Lugeon Value Curve



Interval Pressure
17.2
32.9
48.5
32.3
17.3

Pressure Vs Flow



Interpreted Result & Hydraulic Conductivity

Interpreted Result 1 uL

Reported Permeability at Stage P2 through P5

K= 1.E-05 cm/sec

Flow Type

LAMINAR FLOW

Comments:
Void filling during the first step.

WATER PRESSURE TEST

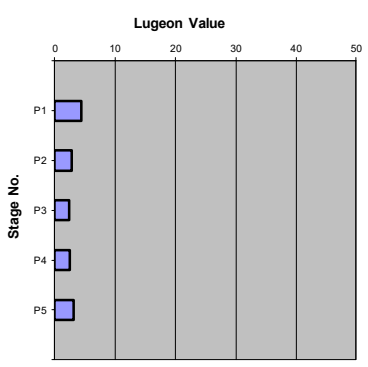
								Revision :	0.0
Job No. :	GL1777449-Y9	Hole No :	BW-5	Drilling Method :	HQ	Vertical depth to Groundwater		Immediately prior to test (ft bgs) :	-1.30
Client :	Southern Co.	Dip (Deg) :	-90	Hole Diameter (m) :	0.096			Used in analysis (ft bgs) :	-1.30
Project :	McDonough Plant	Interval Top (ft) :	54.10	Tested Length (m) :	5.15			Pressure Gauge Height (ft ags) :	--
Location :	Ash Pond 1	Interval Base (ft) :	71.00	Packer Type:	Pneumatic - Wireline - Single			Presumed Water Temperature (C) :	19
Tested By :	C. Mikilitus	Computed By :	RJF	Rock tested :	W2 Muscovite Biotite Schist			Casing Inner Diameter (mm) :	77.8
Date :	3/7/2023	Date :	4/26/2023	Water Meter Reading in	US Gallon	Checked By :	JCW	Date :	5/1/2023

Pressure Stage	Interval Pressure (PSI)	No	Actual Time (h:m:s)	Time Intervals (min)	Water Meter Readings Reading (US Gallon)		Volume (L)	Discharge (L/min)	Discharge/m (L/min/m)	Remarks
										c : 1
P1	12	0	15:44:00	0	94455.83		0.00	0.00	0.00	
		1	15:45:00	01:00	94456.28		1.70	1.70	0.33	
		2	15:46:00	01:00	94456.56		1.06	1.06	0.21	
		3	15:48:00	02:00	94457.10		2.04	1.02	0.20	
		4	15:49:00	01:00	94457.38		1.06	1.06	0.21	
		5	15:50:00	01:00	94457.65		1.02	1.02	0.20	
		6	15:51:00	01:00	94457.92		1.02	1.02	0.20	
		7	15:52:00	01:00	94458.19		1.02	1.02	0.20	
		8								
		9								
		10								
							Total :	7.91	1.54	Start Date & Time :
							Average:	1.130	0.219	3/7/2023 14:18
P2	25	0	15:54:00	0	94459.04		0.00	0.00	0.00	c : 1
		1	15:55:00	01:00	94459.45		1.55	1.55	0.30	
		2	15:56:00	01:00	94459.86		1.55	1.55	0.30	
		3	15:58:00	02:00	94460.65		2.99	1.50	0.29	
		4	16:00:00	02:00	94461.44		2.99	1.50	0.29	
		5	16:02:00	02:00	94462.25		3.07	1.53	0.30	
		6								
		7								
		8								
		9								
		10								
							Total :	7.63	1.48	
							Average:	1.526	0.296	
P3	42	0	16:05:00	0	94464.05		0.00	0.00	0.00	c : 1
		1	16:06:00	01:00	94464.64		2.23	2.23	0.43	
		2	16:08:00	02:00	94465.77		4.28	2.14	0.42	
		3	16:09:00	01:00	94466.33		2.12	2.12	0.41	
		4	16:10:00	01:00	94466.88		2.08	2.08	0.40	
		5	16:11:00	01:00	94467.46		2.20	2.20	0.43	
		6	16:13:00	02:00	94468.53		4.05	2.03	0.39	
		7								
		8								
		9								
		10								
							Total :	12.79	2.48	
							Average:	2.132	0.414	
P4	26	0	16:14:00	0	94468.96		0.00	0.00	0.00	c : 1
		1	16:15:00	01:00	94469.31		1.32	1.32	0.26	
		2	16:16:00	01:00	94469.68		1.40	1.40	0.27	
		3	16:17:00	01:00	94470.06		1.44	1.44	0.28	
		4	16:18:00	01:00	94470.43		1.40	1.40	0.27	
		5	16:21:00	03:00	94471.56		4.28	1.43	0.28	
		6	16:22:00	01:00	94471.93		1.40	1.40	0.27	
		7	16:23:00	01:00	94472.31		1.44	1.44	0.28	
		8	16:24:00	01:00	94472.68		1.40	1.40	0.27	
		9	16:25:00	01:00	94473.05		1.40	1.40	0.27	
		10	16:26:00	01:00	94473.42		1.40	1.40	0.27	
							Total :	14.03	2.72	
							Average:	1.403	0.272	
P5	11	1	16:30:00	0	94474.66		0.00	0.00	0.00	c : 1
		2	16:31:00	01:00	94474.84		0.68	0.68	0.13	
		3	16:32:00	01:00	94475.03		0.72	0.72	0.14	
		4	16:33:00	01:00	94475.22		0.72	0.72	0.14	
		5	16:34:00	01:00	94475.41		0.72	0.72	0.14	
		6	16:35:00	01:00	94475.60		0.72	0.72	0.14	
		7	16:36:00	01:00	94475.79		0.72	0.72	0.14	
		8	16:37:00	01:00	94475.98		0.72	0.72	0.14	
		9	16:38:00	01:00	94476.18		0.76	0.76	0.15	
		10	16:39:00	01:00	94476.38		0.76	0.76	0.15	
		11	16:41:00	02:00	94476.74		1.36	0.68	0.13	
							Total :	7.19	1.40	Finish Date & Time :
							Average:	0.719	0.140	3/7/2023 16:56

TEST RESULTS

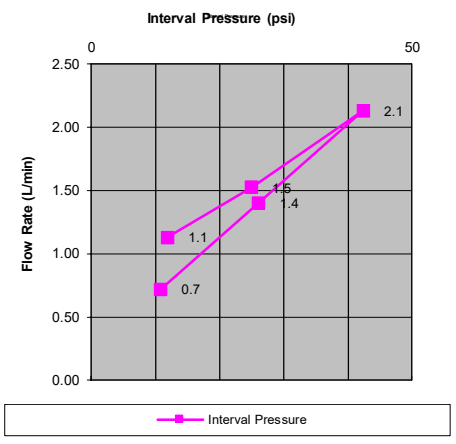
Stage No.	Lugeon Value
P1	4.4
P2	2.8
P3	2.3
P4	2.5
P5	3.1

Lugeon Value Curve



Interval Pressure
11.8
25.0
42.4
26.1
10.8

Pressure Vs Flow



Interpreted Result & Hydraulic Conductivity

Interpreted Result 2 uL

Reported Permeability at Stage P3

K= 2.E-05 cm/sec

Flow Type

TURBULENT FLOW

Comments:

APPENDIX B

HydroBench Analysis Outputs

HYDROBENCH REPORT

Project	McDonough
Site	Ash Pond 1
Source Well	BW-2
Test Name	BW-2(62-80)CRI
Test Date/Time	3/14/2023, 1309
Interval	top: 34.80 ft bottom: 80.25 ft

Basic Data

Test Interval	45.45 ft	
Porosity	0.10	
Well Radius	0.158 ft	Tubing Radius
Inclination	0.0 deg	
Test Volume	26.496 gal (US)	
Well Type	Source	

Fluid Properties

Viscosity	0.001 Pa*s
Density	1000.0 kg/m³
Compressibility	2.0e-09 1/Pa

History Definition

Name	Category	Duration [min]	P(o) [psi]	Rate [gpm]	C [ft³/psi]	Skin
Auto_History	Const. Pressure	5.00	33.16			0.00

Sequence Definition

Name	Category	t(o) [min]	P(o) [psi]	P(i) [psi]	Rate [gpm]	C [ft³/psi]
PSR	Recovery	0.00000	33.16			2.2e-01
CRI-1.27	Constant Rate	14.00000	33.09		-1.27e+00	1.8e-01
CRIR	Recovery	29.00000	39.57			1.8e-01

Analysis Results

Analysis "CRI"

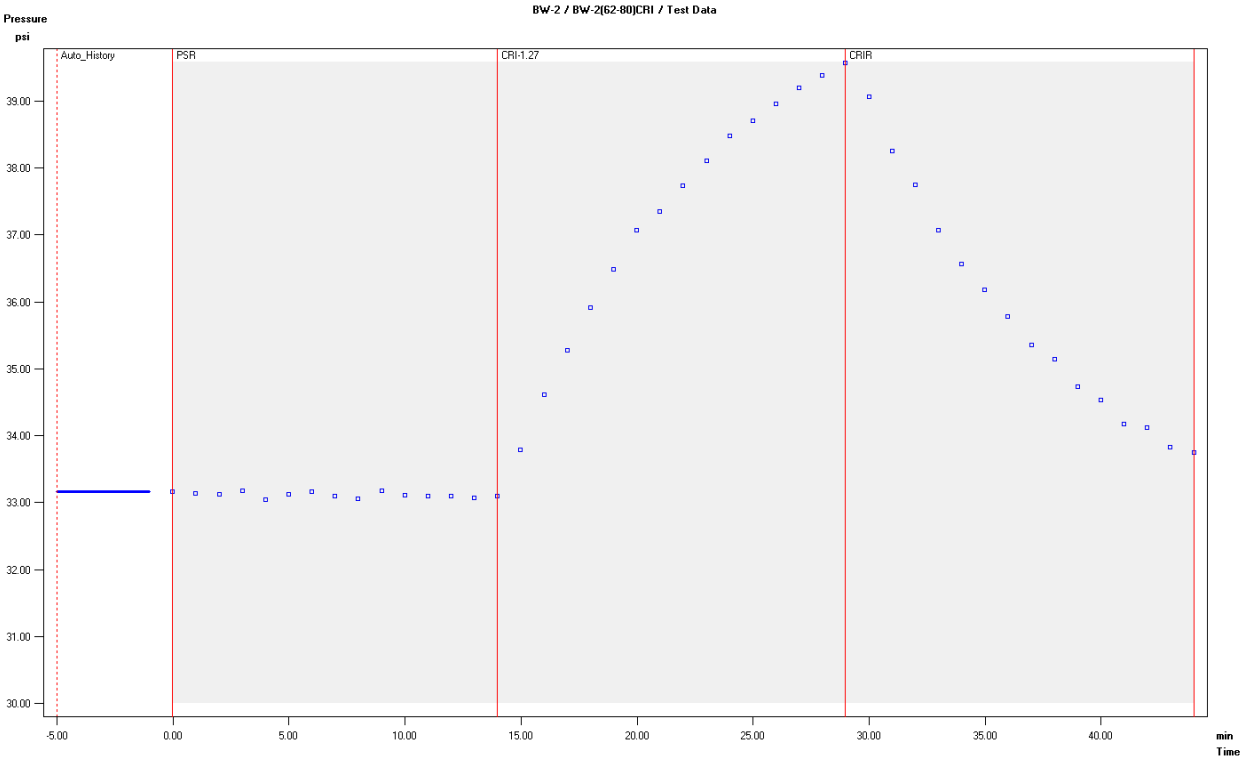
Static Pressure: 30.45 psi

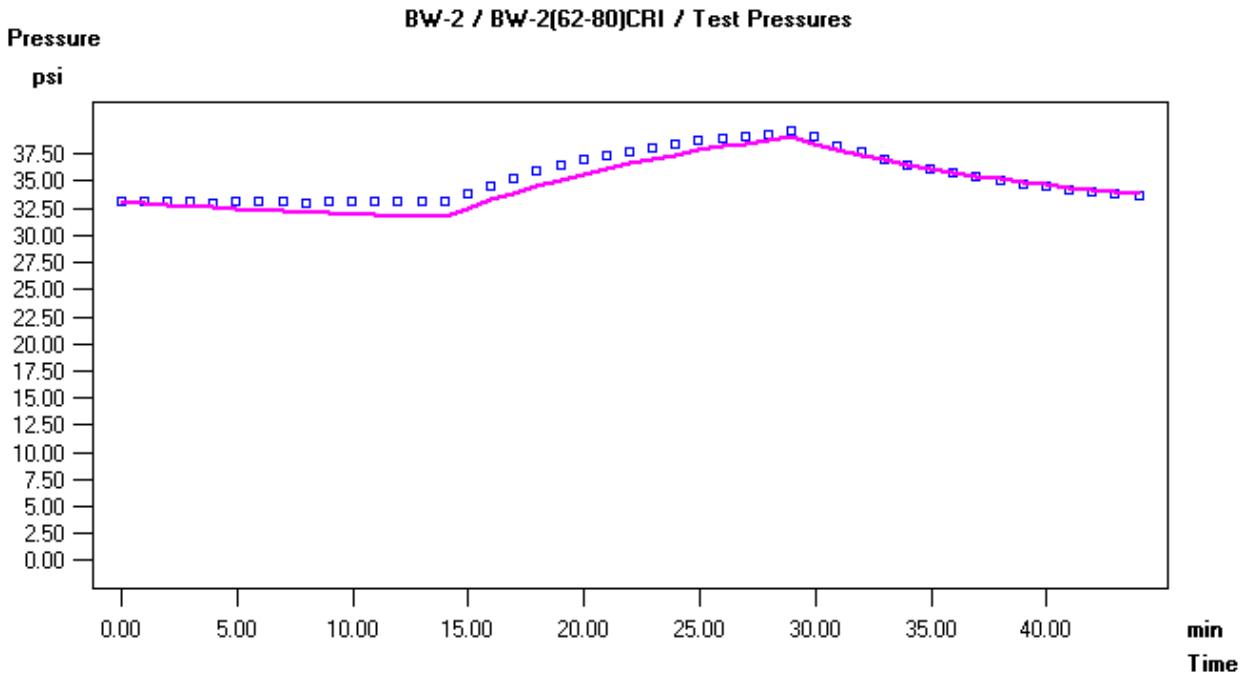
Shell Parameters:

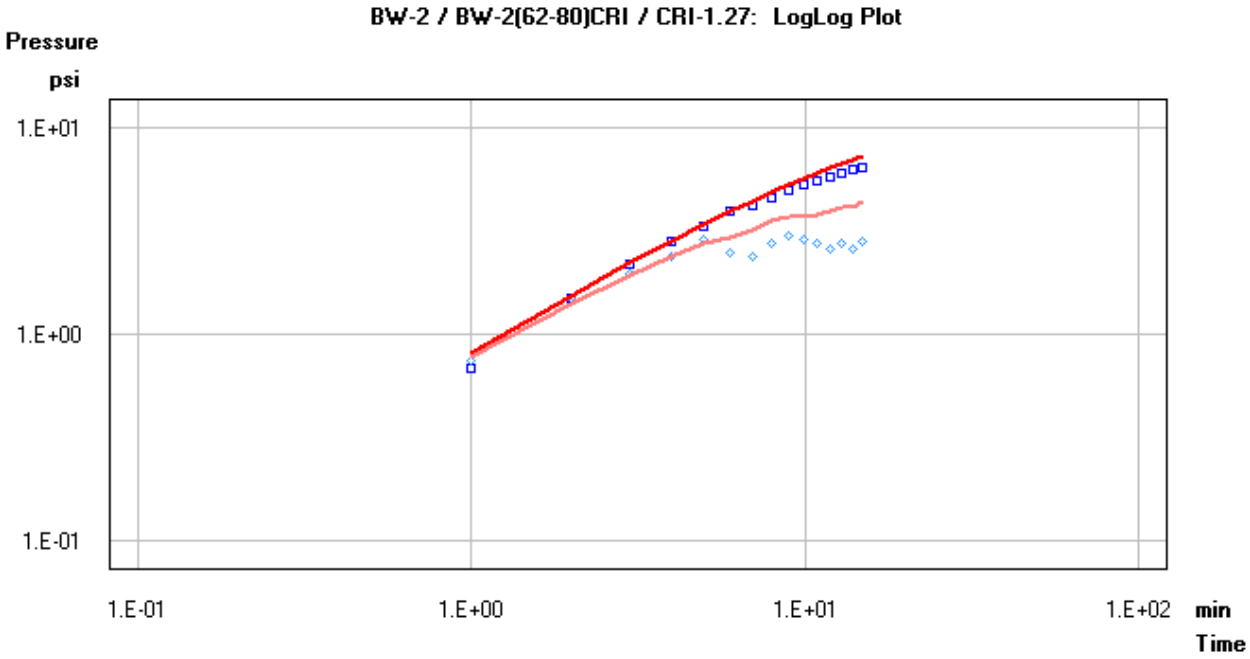
Name	Transmissivity [m²/s]	Storativity [-]	Radius [m]	Flow Dimension [-]
Shell 1	9.5e-06	1.1e-05	- -	2.0

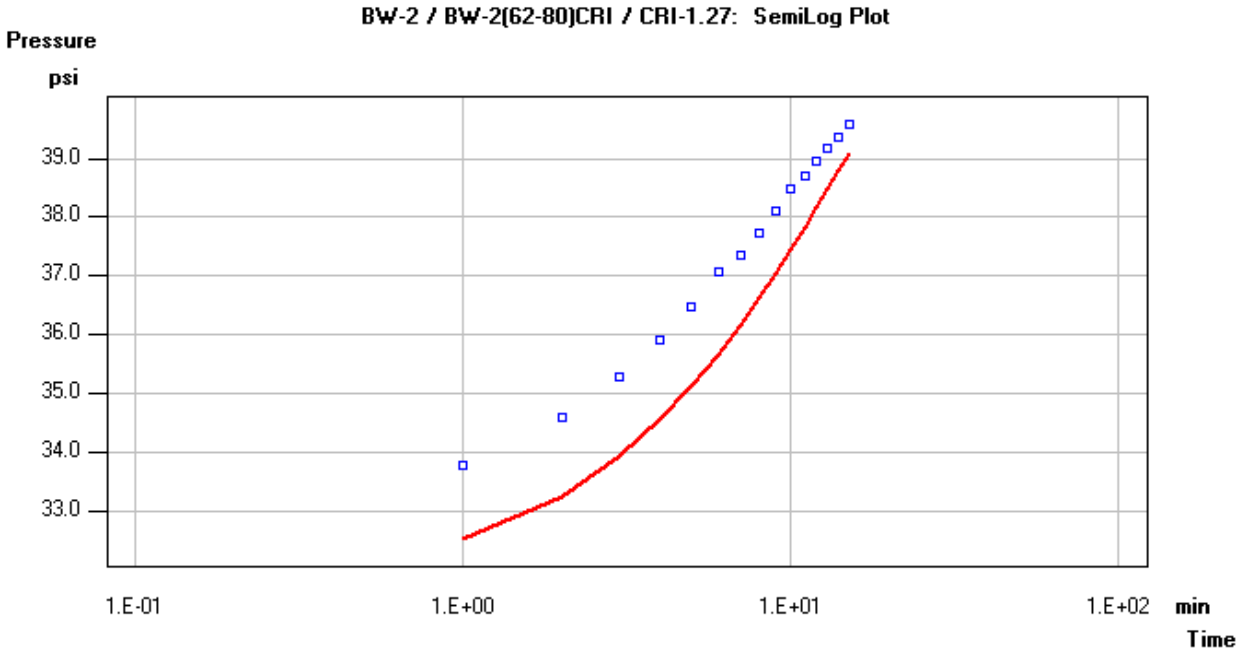
Sequence Parameters:

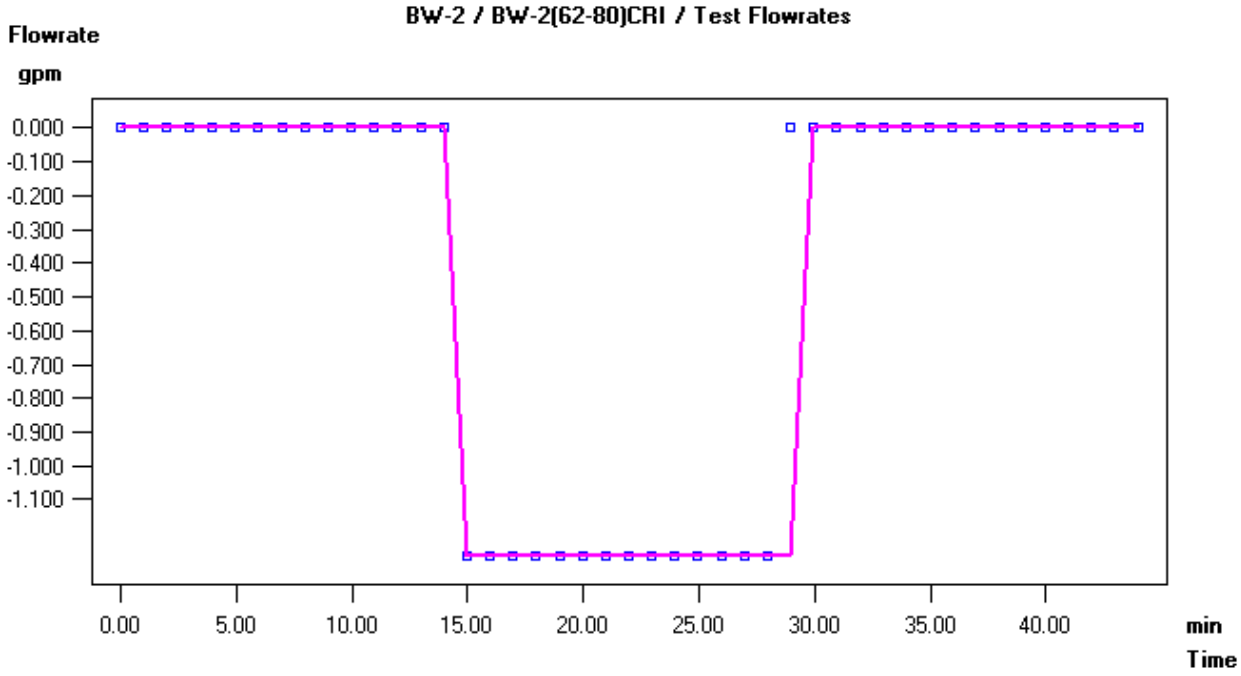
Name	Wellbore Storage [ft³/psi]	Skin [-]
PSR	9.0e-07	0.0
CRI-1.27	7.4e-07	0.0
CRIR	7.4e-07	0.0

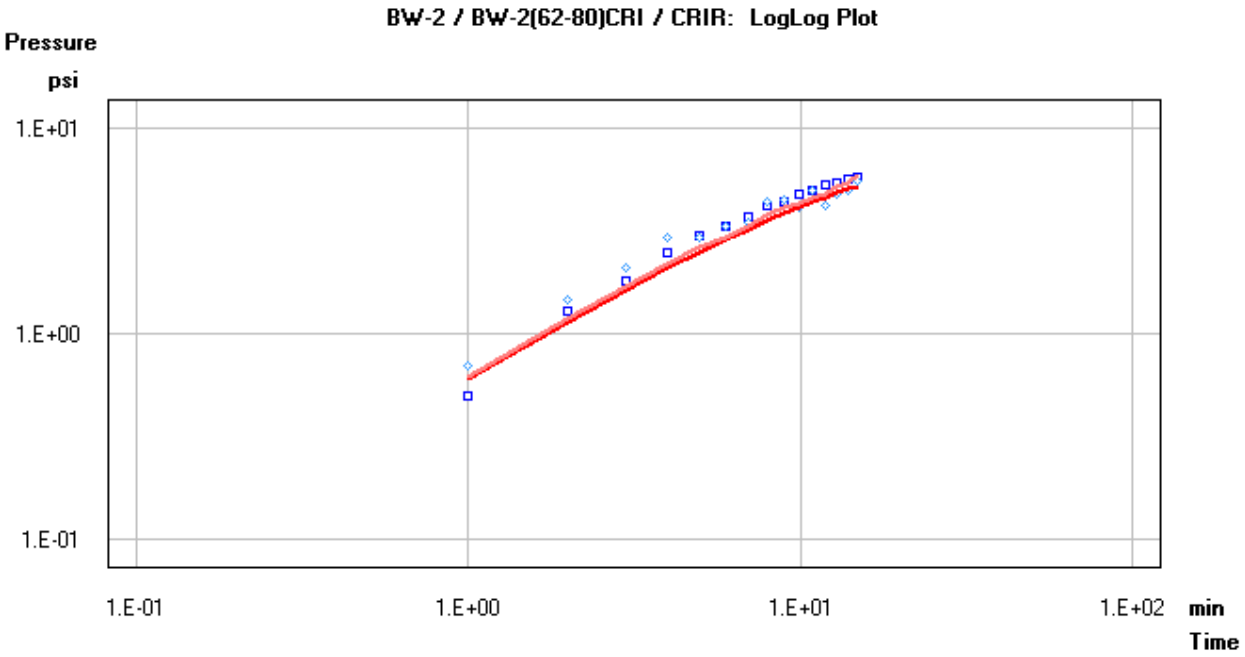


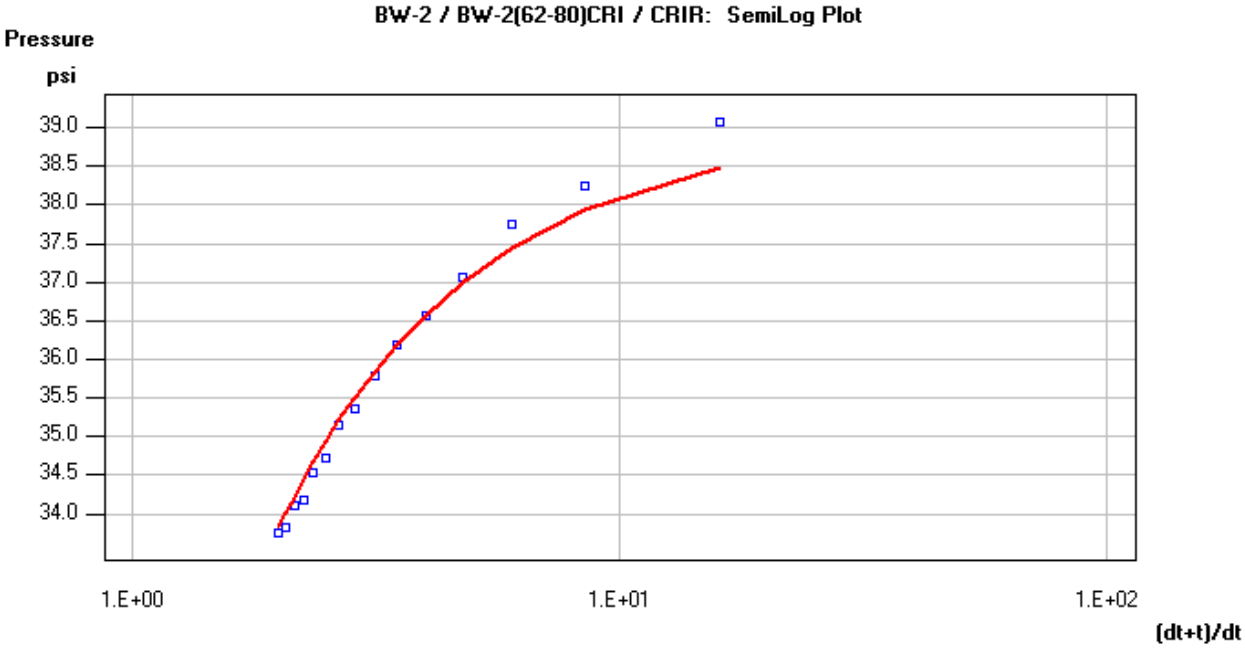

BW-2 / BW-2(62-80)CRI / Test Pressures
Pressure
psi
37.50
35.00
32.50
30.00
27.50
25.00
22.50
20.00
17.50
15.00
12.50
10.00
7.50
5.00
2.50
0.00
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
min
Time


BW-2 / BW-2(62-80)CRI / CRI-1.27: LogLog Plot
Pressure
psi
1.E+01
1.E+00
1.E-01
1.E-01
1.E+00
1.E+01
1.E+02
min
Time


BW-2 / BW-2(62-80)CRI / CRI-1.27: SemiLog Plot
Pressure
psi
39.0
38.0
37.0
36.0
35.0
34.0
33.0
1.E-01
1.E+00
1.E+01
1.E+02
min
Time


BW-2 / BW-2(62-80)CRI / Test Flowrates
Flowrate
gpm
0.000
-0.100
-0.200
-0.300
-0.400
-0.500
-0.600
-0.700
-0.800
-0.900
-1.000
-1.100
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
min
Time


BW-2 / BW-2(62-80)CRI / CRIR: LogLog Plot
Pressure
psi
1.E+01
1.E+00
1.E-01
1.E-01
1.E+00
1.E+01
1.E+02
min
Time


BW-2 / BW-2(62-80)CRI / CRIR: SemiLog Plot
Pressure
psi
39.0
38.5
38.0
37.5
37.0
36.5
36.0
35.5
35.0
34.5
34.0
1.E+00
1.E+01
1.E+02
(dt+t)/dt

HYDROBENCH REPORT

Project	McDonough
Site	Ash Pond 1
Source Well	BW-5
Test Name	BW-5(SWL-25)
Test Date/Time	3/7/2023, 0800
Interval	top: 8.32 ft bottom: 25.00 ft
Description	PWR starts between 10.5 and 11 ft bgs

Basic Data

Test Interval	16.68 ft		
Porosity	0.10		
Well Radius	0.203 ft	Tubing Radius	0.043 ft
Inclination	0.0 deg		
Test Volume	16.169 gal (US)		
Well Type	Source		

Fluid Properties

Viscosity	0.001 Pa*s
Density	1000.0 kg/m³
Compressibility	2.0e-09 1/Pa

History Definition

Name	Category	Duration [min]	P(o) [psi]	Rate [gpm]	C [ft³/psi]	Skin
Auto_History	Const. Pressure	17.00	21.25			0.00

Sequence Definition

Name	Category	t(o) [min]	P(o) [psi]	P(i) [psi]	Rate [gpm]	C [ft³/psi]
PSR	Recovery	0.00000	21.25			3.0e-01
SW-Init	dP-Event	18.00000	21.26	3.8 *		3.0e-01
SW1	Slug	20.00000	17.48	21.3		3.0e-01

Analysis Results

Analysis "SW1"

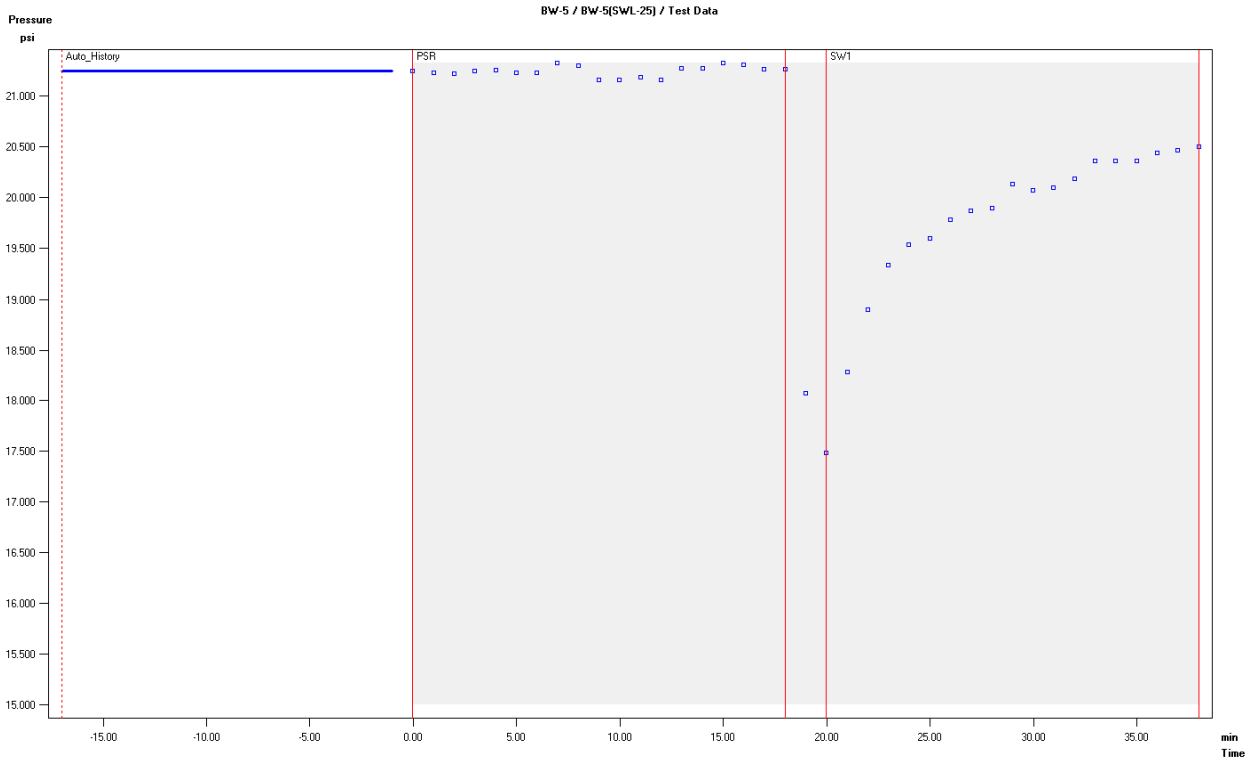
Static Pressure: 21.23 psi

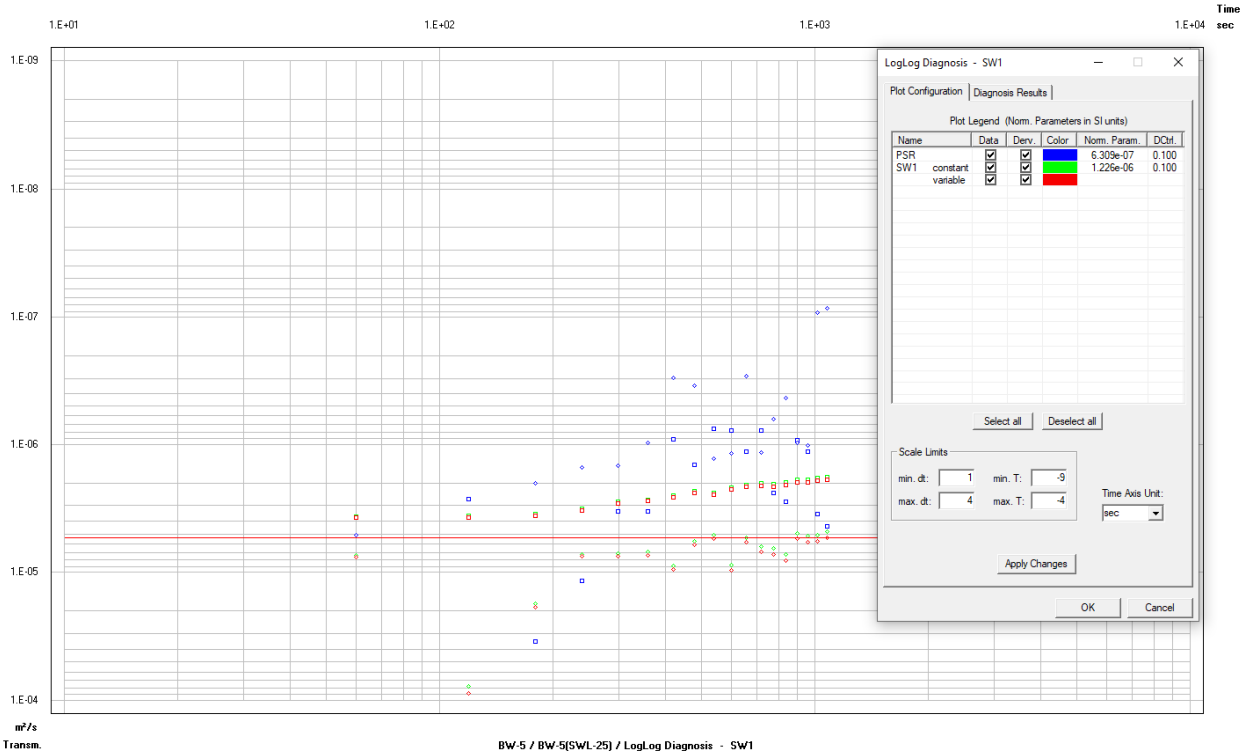
Shell Parameters:

Name	Transmissivity [m²/s]	Storativity [-]	Radius [m]	Flow Dimension [-]
Shell 1	5.4e-06	6.0e-06	- -	2.0

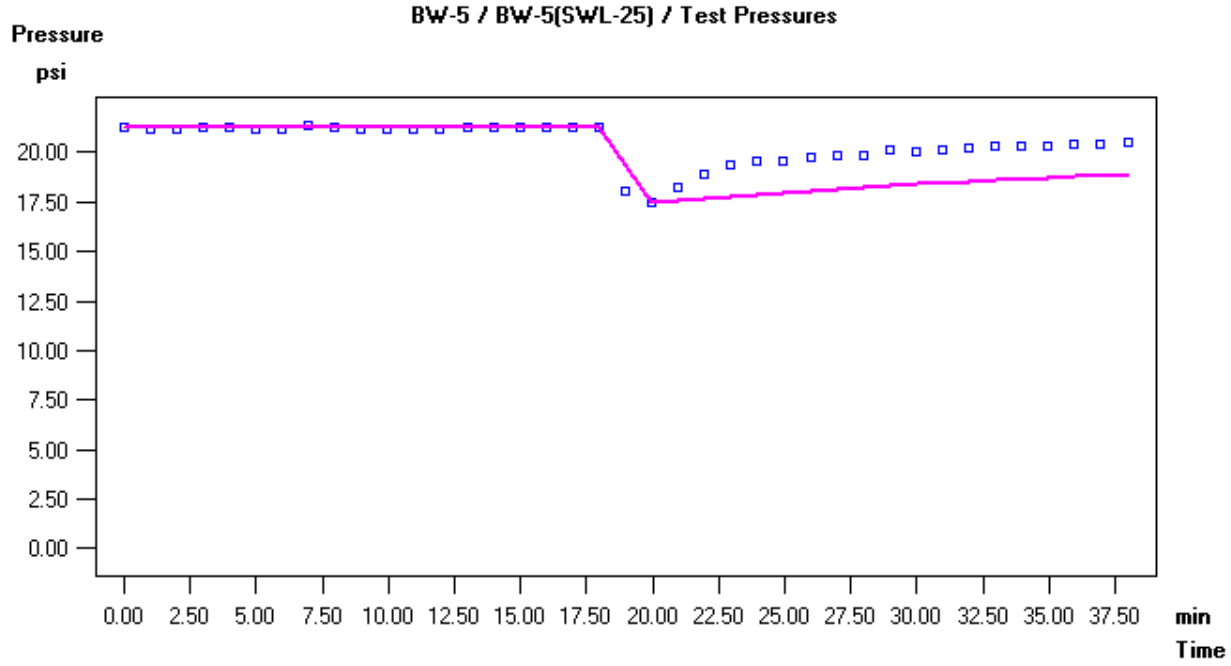
Sequence Parameters:

Name	Wellbore Storage [ft³/psi]	Skin [-]
PSR	1.2e-06	0.0
SW-Init	1.2e-06	0.0
SW1	1.2e-06	0.0

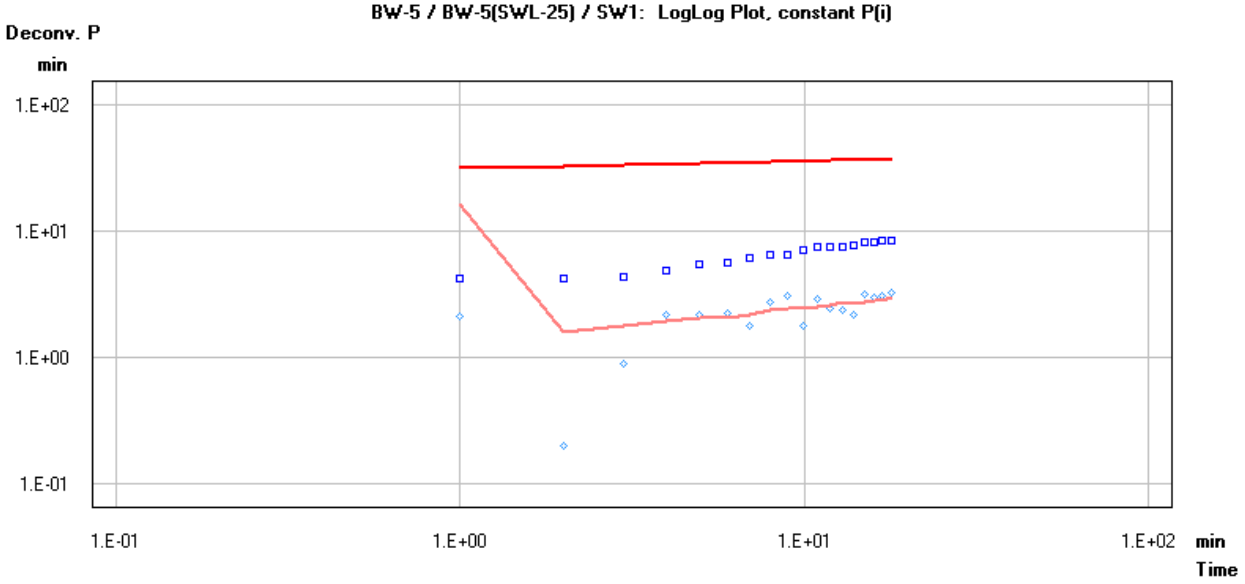




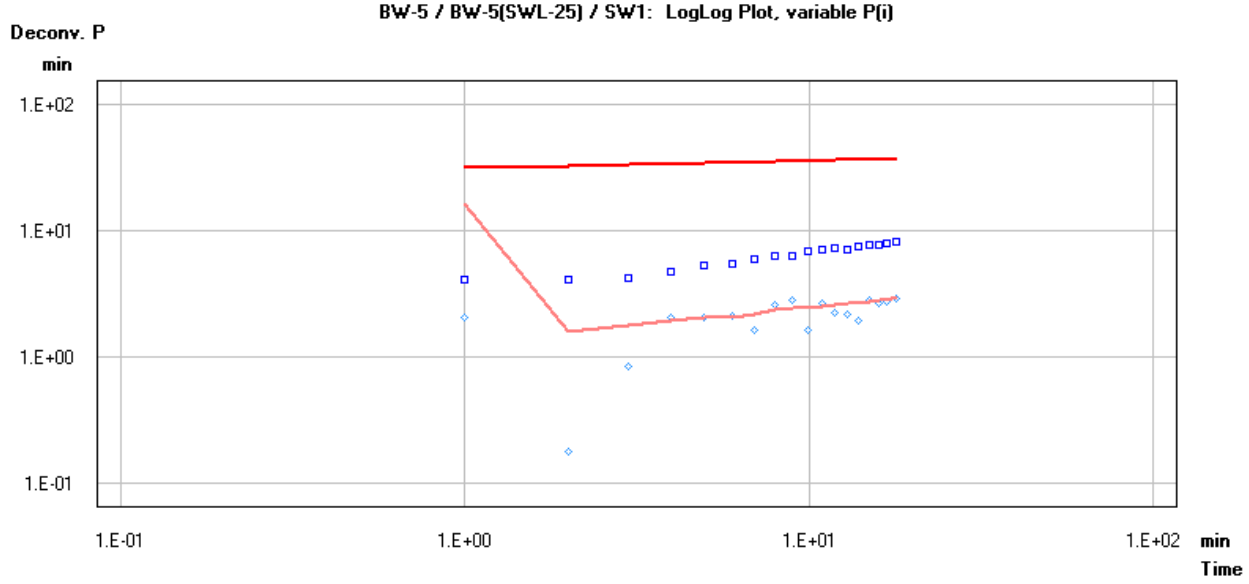
BW-5 / BW-5(SWL-25) / LogLog Diagnosis - SW1



BW-5 / BW-5(SWL-25) / SW1: LogLog Plot, constant P(i)



BW-5 / BW-5(SWL-25) / SW1: LogLog Plot, variable P(i)



APPENDIX G

Combined Geophysical and Hydrogeological Drillhole Logs

Preliminary

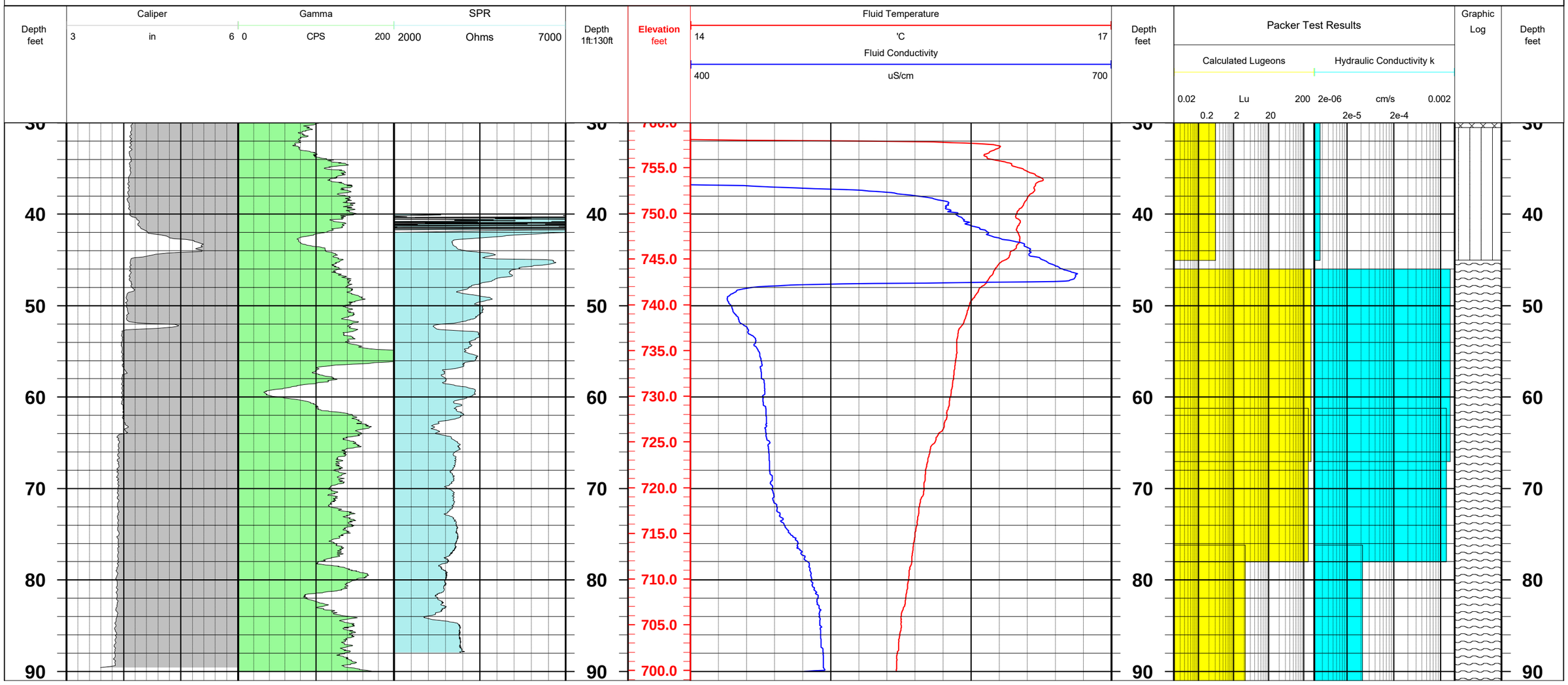
Geophysical Record of Borehole: BW-1

Project Title: Plant McDonough Permitting Support AP-1 Investigation
Project Number: GL1777449-Y9
Date: May 17, 2023
Client: Georgia Power
Location: Plant McDonough AP-1



Driller: Premier
Drill Method.: Mud rotary & HQ core
Drill Date: March 10, 2023
Drilled Depth: 93 ft
Water Level: 32.05' BTC
Log Date: March 20, 2023
Casing Material: PVC
Casing Depth: 42 ft bgs
Casing Dia.: 4 in
Casing Stick-up: 0.25 ft ags
Log Depth Ref.: Ground Surface
Borehole Incl.: vertical
Logged By: Chris Bryant and Geoff Busby
GS Elevation: 787.44 (feet NAVD 88)
Easting: 2200838.18
Northing: 1391132.95
Coord. Sys.: GA ST Plane West (ft NAD83)
Borehole Az.: na

Notes: All tools were zeroed with the probe top at TOC, and depth referenced to ground surface during processing. Auger refusal at 45.0 ft, assumed top of rock. PVC casing grouted in place.



Preliminary

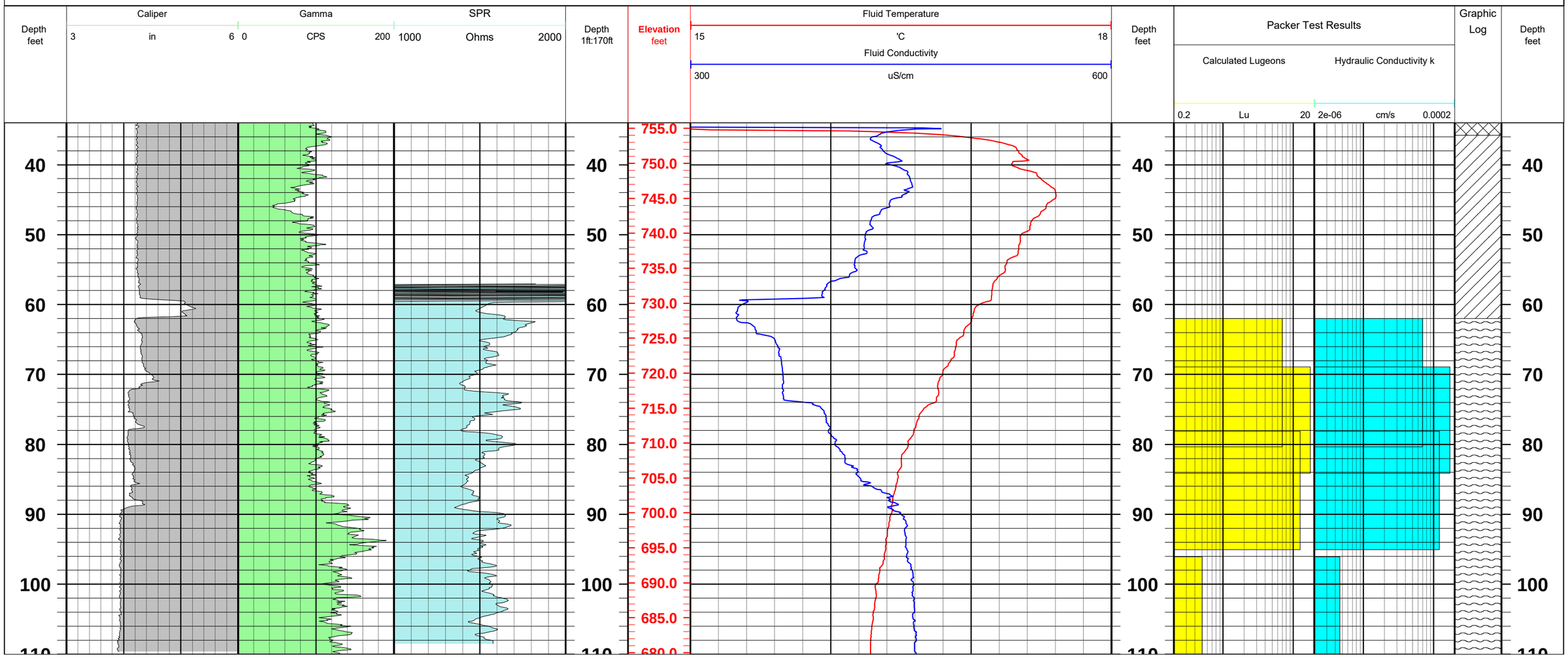
Geophysical Record of Borehole: BW-2

Project Title: Plant McDonough Permitting Support AP-1 Investigation
Project Number: GL1777449-Y9
Date: May 17, 2023
Client: Georgia Power
Location: Plant McDonough AP-1



Driller: Premier
Drill Method.: Mud rotary & HQ core
Drill Date: March 10, 2023
Drilled Depth: 110 ft
Water Level: see notes
Log Date: 3-21-2023 and 4-11-2023
Casing Material: PVC
Casing Depth: 59 ft bgs
Casing Dia.: 4 in
Casing Stick-up: see notes
Log Depth Ref.: Ground Surface
Borehole Incl.: vertical
Logged By: Chris Bryant and Geoff Busby
GS Elevation: 789.8 (feet NAVD 88)
Easting: 2201056.5
Northing: 1390483.2
Coord. Sys.: GA ST Plane West (ft NAD83)
Borehole Az.: na

Notes: All tools were zeroed with the probe top at TOC, and depth referenced to ground surface during processing. The casing stick-up on 3-21-23 was 0.25 ft ags and was below GS on 4-11-2023. Water levels were 35.09' BTC @ 9:07 on 3-21-23 and 34.05' BTC @ 9:18 on 4-11-23. Auger refusal at 62.0 ft, assumed top of rock. PVC casing grouted in place.



Preliminary

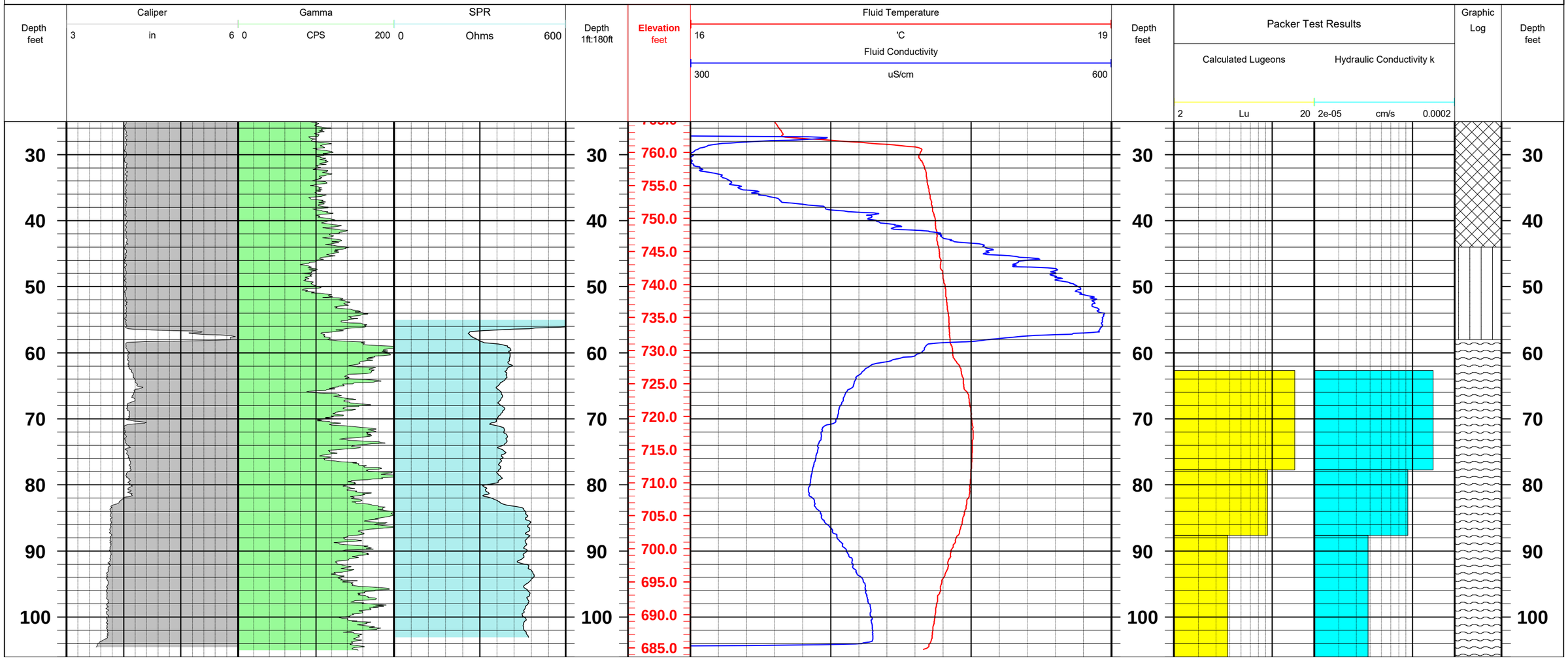
Geophysical Record of Borehole: BW-3

Project Title: Plant McDonough Permitting Support AP-1 Investigation
Project Number: GL1777449-Y9
Date: May 17, 2023
Client: Georgia Power
Location: Plant McDonough AP-1



Driller: Premier
Drill Method.: Mud rotary & HQ core
Drill Date: March 22, 2023
Drilled Depth: 106 ft
Water Level: 27.44" BTC 12:40
Log Date: March 22, 2023
Casing Material: PVC
Casing Depth: 57 ft bgs
Casing Dia.: 4 in
Casing Stick-up: 0.21 ft ags
Log Depth Ref.: Ground Surface
Borehole Incl.: vertical
Logged By: Chris Bryant and Geoff Busby
GS Elevation: 789.67 (feet NAVD 88)
Easting: 2201675.12
Northing: 1390653.98
Coord. Sys.: GA ST Plane West (ft NAD83)
Borehole Az.: na

Notes: All tools were zeroed with the probe top at TOC, and depth referenced to ground surface during processing. Auger refusal at 58 ft, assumed top of rock. PVC casing grouted in place.



Preliminary

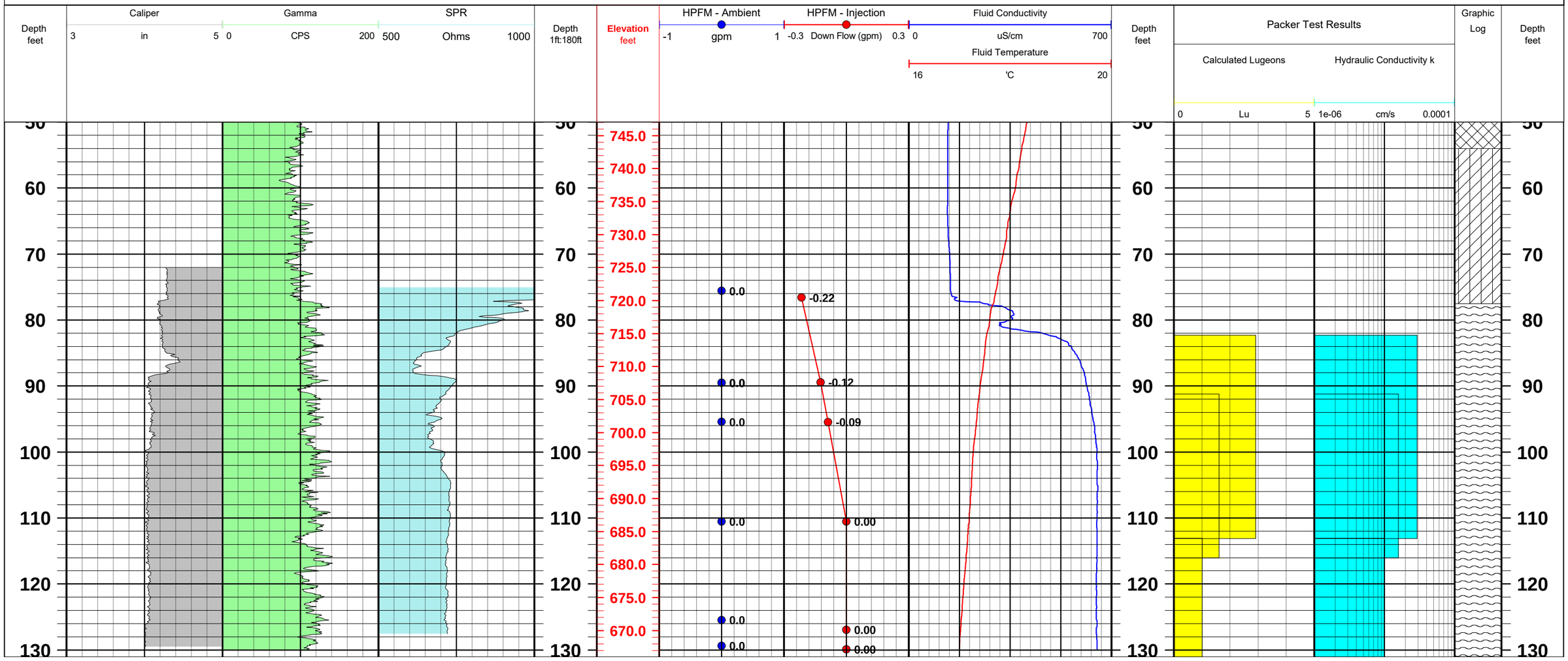
Geophysical Record of Borehole: BW-4

Project Title: Plant McDonough Permitting Support AP-1 Investigation
Project Number: GL1777449-Y9
Date: May 17, 2023
Client: Georgia Power
Location: Plant McDonough AP-1



Driller: Premier
Drill Method.: Mud rotary & HQ core
Drill Date: March 22, 2023
Drilled Depth: 131 ft
Water Level: 20.53' BGS @ 13:10
Log Date: April 10, 2023
Casing Material: PVC
Casing Depth: 77 ft bgs
Casing Dia.: 4 in
Casing Stick-up: 0.0 ft ags
Log Depth Ref.: Ground Surface
Borehole Incl.: vertical
Logged By: Chris Bryant
GS Elevation: 797.05 (feet NAVD 88)
Easting: 2201755.32
Northing: 1391306.59
Coord. Sys.: GA ST Plane West (ft NAD83)
Borehole Az.: na

Notes: All tools were zeroed with the probe top at TOC, and depth referenced to ground surface during processing. Auger refusal at 77.5 ft, assumed top of rock. PVC casing grouted in place.
The HPFM was run under ambient conditions and under stressed (injection). No ambient flow was measured. The injection rate was 1 gpm.Injection started at 15:46 with the water level at 20.53 ft bgs and ended at 16:16 with water flowing out of the TOC.





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APPENDIX B

Three-Dimensional Numerical Groundwater Modeling Report

Submitted under separate cover due to size limitations

APPENDIX C

Drillers Bonds

PERFORMANCE BOND FOR WATER WELL CONTRACTORS AND 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 Obligee, 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 Obligee; provided that the rights of the Obligee 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: _____ (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

Surety, By: _____ (L.S.)
Sandra J. Mathis, Attorney-In-Fact

SAFECO

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. MATHIS; 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 ...ment making or evidencing such appointment, the signatures may be affixed by facsimile. On any instrument conferring such authority or on any bond or ...aking 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

SAFECO INSURANCE COMPANY OF AMERICA CORPORATE SEAL 1953 STATE OF WASHINGTON

GENERAL INSURANCE COMPANY OF AMERICA CORPORATE SEAL 1929 State of Washington

R A Pierson
R.A. PIERSON, SECRETARY

® Registered trademark of SAFECO Corporatio
2/7/01 PC

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 Obligee, 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 Obligee; provided that the rights of the Obligee 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

WESTERN SURETY COMPANY CORPORATE SEAL SOUTH DAKOTA

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

Form 90-A-4-2001

CNA SURETY

Transaction Report & Invoice

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

RECEIVED
JUL 18
STARR-MATHEWS AGENCY
ROME, GA 30161

Agency Code: 10-01912

Transaction Description: RENEWAL
Transaction Effective Date: 07/01/2002

Number: 68616636

SF

Written By: WESTERN SURETY COMPANY
Description: WATER WELL CONTRACTOR

Obligee: DEPT. OF NATURAL RESOURCES
205 BUTLER ST., STE. 1366
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 68616636	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 [redacted] SF
DESCRIPTION WATER WELL CONTRACTOR

OBLIGEE STATE OF GEORGIA

AGENCY CODE 10-01912 CHARGE $200.00

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
SEAL SOUTH DAKOTA SEAL

My Commission Expires November 30, 2006

D. Krell
Notary Public

Form F1875-4-2001

Cells 1 & 2

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 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 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

S-0157/GEEF 11/99

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: _____
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.

K.D RILEY COMM. EXP. NOTARY PUBLIC 12 - 09 - 2013 STATE OF WASHINGTON

By: KDRiley
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 biding 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, 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

Cells 9 & 10

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-a Kleidosty
D-Ann Kleidosty, Attorney-In-Fact

S-0157/GEEF 11/99

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 Kieldosty; 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: _____
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.

K.D. RILEY, COMM. EXP. NOTARY PUBLIC 12-08-2013 STATE OF WASHINGTON

By: _____
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 biding 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, 20 14.

By: _____
David M. Carey, Assistant Secretary

Not valid for mortgage, note, l[illegible] letter of credit, currency rate, interest rate or resi[illegible] 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

SOUTHERN COMPANY
Energy to Serve Your World®

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,

Clementine Broaders

Clementine Broaders
Southern Company Services, Inc.
Risk Management Department

/cb

Enclosure

cc: Stacy Sprayberry, SCS

Liberty Mutual.

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.

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, 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.

Notarial Seal
Teresa Pastella, Notary Public
Plymouth Twp., Montgomery County
My Commission Expires Mar. 28, 2012
Member, Pennsylvania Association of Notaries

By _____
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, 2002:

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. Carey, Assistant Secretary

Not valid for mortgage, note, line of credit, bank deposit, 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.

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 2 6 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 S. MacArthur
Assistant Vice President

Enclosure

/bsm

MARSH

BMA

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

Invoice No.
382424

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. Obligee(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		TOTAL:	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.

Liberty Mutual.

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.

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.

Notarial Seal
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. Carey, Assistant Secretary

Not valid for mortgage, note or letter of credit, bank deposit, 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.

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/OO 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 20 10 .

Michael C. Rice dba Boart Longyear Company

PRINCIPAL, BY _____ (L.S.)

TITLE: Franchise Manager

Westchester Fire Insurance Company

SURETY BY: Cynthia L. Choren

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.

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

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

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 person's 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 Roider, Pamela A Beckman, 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, A.D. 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 28, 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:

[x] **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 J

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 26th 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.

DocuGard #04546 contains a security pantograph, blue background, heat-sensitive ink, coin-reactive watermark, and microtext printing on border.

HEAT SENSITIVE SHIELD • FADES WITH HEAT OR TOUCH •

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

D-Ann Kleidosty, Attorney-in-Fact

S-0157/GEEF 11/99

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, 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, 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, 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 - 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

D-Ann Kleidosty, Attorney-in-Fact

S-0157/GEEF 11/99

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, 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, 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, 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

S-0157/GE 8/08

XDP

OneBeacon
INSURANCE GROUP

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.

ATLANTIC SPECIALTY INSURANCE COMPANY CORPORATE SEAL 1986 NEW YORK

By _____
Paul J. Brehm, Senior Vice President

STATE OF MINNESOTA
HENNEPIN COUNTY

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.

TARA JANELLE STAFFORD
NOTARY PUBLIC - MINNESOTA
My Commission Expires
January 31, 2020

_____
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

ATLANTIC SPECIALTY INSURANCE COMPANY CORPORATE SEAL 1986 NEW YORK

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

S-0157/GE 8/08

XDP

Liberty Mutual SURETY

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, 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: _____
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, 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

S-0157/GE 8/08

XDP

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.

Liberty Mutual. SURETY

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, 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: _____
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, 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 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

Loretta M. Jones, Attorney-in-Fact

S-0157/GEEF 11/99

Liberty Mutual. SURETY

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 McElhaney, 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: _____
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: _____
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: _____
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, 2021
(MONTH-DAY-YEAR)

and ending on June 30, 2022
(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 05/06/2021
(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 Insurance Services, Inc.
Agent

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

(205) 252-9871
Telephone Number of Agent

S-0157/GE 8/08

XDP

Liberty Mutual. SURETY

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: **8205019-016032**

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, Alisa B. Ferris; Anna Childress; Jeffrey M. Wilson; Mark W. Edwards II; Richard H. Mitchell; Robert R. Freel; Sam Audia; William M. Smith

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 11th day of March , 2021 .

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

By: _____
David M. Carey, Assistant Secretary

State of PENNSYLVANIA
County of MONTGOMERY ss

On this 11th day of March , 2021 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.

TERESA PASTELLA COMMONWEALTH OF PENNSYLVANIA NOTARY PUBLIC

Commonwealth of Pennsylvania - Notary Seal
Teresa Pastella, Notary Public
Montgomery County
My commission expires March 28, 2025
Commission number 1126044
Member, Pennsylvania Association of Notaries

By: _____
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 6th day of May , 2021 .

By: _____
Renee C. Llewellyn, Assistant Secretary

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

For bond and/or Power of Attorney (POA) verification inquiries, please call 610-832-8240 or email HOSUR@libertymutual.com.

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, 2022
(MONTH-DAY-YEAR)

and ending on June 30, 2023
(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 05/06/2021
(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 Insurance Services, Inc.
Agent

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

(205) 252-9871
Telephone Number of Agent

S-0157/GE 8/08

XDP

Liberty Mutual. SURETY

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: **8205019-016032**

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, Alisa B. Ferris; Anna Childress; Jeffrey M. Wilson; Mark W. Edwards II; Richard H. Mitchell; Robert R. Freel; Sam Audia; William M. Smith

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 11th day of March , 2021 .

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

By: _____
David M. Carey, Assistant Secretary

State of PENNSYLVANIA
County of MONTGOMERY ss

On this 11th day of March , 2021 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.

TERESA PASTELLA COMMONWEALTH OF PENNSYLVANIA NOTARY PUBLIC

Commonwealth of Pennsylvania - Notary Seal
Teresa Pastella, Notary Public
Montgomery County
My commission expires March 28, 2025
Commission number 1126044
Member, Pennsylvania Association of Notaries

By: _____
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:

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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 6th day of May , 2021 .

By: _____
Renee C. Llewellyn, Assistant Secretary

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

For bond and/or Power of Attorney (POA) verification inquiries, please call 610-832-8240 or email HOSUR@libertymutual.com.

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, 2023
(MONTH-DAY-YEAR)

and ending on June 30, 2024
(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 05/22/2023
(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 Insurance Services, LLC
Agent

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

(205) 252-9871
Telephone Number of Agent

S-0157/GE 8/08

XDP

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.

Liberty Mutual. SURETY

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

Certificate No **8205019-016032**

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, Alisa B. Ferris; Anna Childress; Jeffrey M. Wilson; Mark W. Edwards II; Richard H. Mitchell; Robert R. Freel; Sam Audia; William M. Smith

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 11th day of March, 2021.

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

By: _____
David M. Carey, Assistant Secretary

State of PENNSYLVANIA
County of MONTGOMERY ss

On this 11th day of March, 2021 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 - Notary Seal
Teresa Pastella, Notary Public
Montgomery County
My commission expires March 28, 2025
Commission number 1126044
Member, Pennsylvania Association of Notaries

By: _____
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:

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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 22nd day of May, 2023

By: _____
Renee C. Llewellyn, Assistant Secretary

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

For bond and/or Power of Attorney (POA) verification inquiries, please call 610-832-8240 or email HOSUR@libertymutual.com.

McGriff
SURETY DIVISION
2211 7TH AVENUE SOUTH, BIRMINGHAM, AL 35233
MEAGAN CARTER

LETTER OF TRANSMITTAL

To: Clementine Broaders
Southern Power Company

Date: 5/22/2023

We are sending you:

☐	Duplicate Original	☐	Consent of Surety	☐	Certificate of Insurance
☒	CC / VC	☐	Change Order	☐	Motor Fuel Bonds
☐	Invoice	☐	Financial/ Indemnity	☐	Bond

No. of Copies:	Description:
(1)	CC
	Bond No. 4993104
	**Please review and notify if you should have any questions, or if changes or amendments are needed. **

These are transmitted as checked below:

☐	Info and/or necessary action in remarks	☐	For your file	☒	As requested
☒	For your use	☐	Returned for corrections	☐	Please sign as indicated and return

REMARKS: UPS

If enclosures are not as noted, kindly notify at once.

Signed: Meagan Carter, *Senior Client Service Specialist – Surety*

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, 2024
(MONTH-DAY-YEAR)

and ending on June 30, 2025
(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 05/31/2023
(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 Insurance Services, LLC
Agent

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

(205) 252-9871
Telephone Number of Agent

S-0157/GE 8/08

XDF

TRAVELERS

Travelers Casualty and Surety Company of America
Travelers Casualty and Surety Company
St. Paul Fire and Marine Insurance Company

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company are corporations duly organized under the laws of the State of Connecticut (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint **Jeffrey M Wilson** of **BIRMINGHAM**, **Alabama**, their true and lawful Attorney(s)-in-Fact to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed, and their corporate seals to be hereto affixed, this **21st** day of **April**, **2021**.

State of Connecticut

City of Hartford ss.

By: _____
Robert L. Raney, Senior Vice President

On this the **21st** day of **April**, **2021**, before me personally appeared **Robert L. Raney**, who acknowledged himself to be the Senior Vice President of each of the Companies, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of said Companies by himself as a duly authorized officer.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

My Commission expires the **30th** day of **June**, **2026**

_____
Anna P. Nowik, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of each of the Companies, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, **Kevin E. Hughes**, the undersigned, Assistant Secretary of each of the Companies, do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which remains in full force and effect.

Dated this **31st** day of **May**, **2023**.

_____
Kevin E. Hughes, Assistant Secretary

To verify the authenticity of this Power of Attorney, please call us at 1-800-421-3880.
Please refer to the above-named Attorney(s)-in-Fact and the details of the bond to which this Power of Attorney is attached.

APPENDIX D

Boring Logs

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: 841.37
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)	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		837.9	1	DO	2-4-6	10	1.50
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		3.50	2	DO	4-6-6	12	1.50
10	830					3	DO	5-13-35	48	1.50
15	825	12.20 - 29.50 Bedrock; GNEISS; competent, thinly foliated.	BR		829.2 12.20					
20	820									
25	815									
30	810	Boring completed at 28.90 ft			812.5 28.9					
35	805									
40	800									
45										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0-17.6'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 17.6'-27.6'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 12'-28.9'
Type: FilterSil

FILTER PACK SEAL
Interval: 8'-12'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0'-8'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad:
Protective Casing: 4"x4"x5' aluminum

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: HQ Core Barrell

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

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: 805.67
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: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES
0	805	0.00 - 5.00 CL-CH, low to high plasticity CLAY with trace fine sand; red orange; cohesive, moist	CL-CH		800.7						
5	800	5.00 - 13.50 ML, SILT, trace fine sand, low plasticity; yellowish brown, contians mica; cohesive, moist, w<PL, soft.	ML		792.2						
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, relict structure (gneissic); cohesive, moist, w<PL, soft.	ML		777.2	S1	DO	6-7-7	14	0.83 / 1.50	
						S2	DO	5-9-13	22	1.50 / 1.50	Pure Gold Grout – Mixture
20	785					S3	DO	5-9-10	19	1.50 / 1.50	
25	780										
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		767.2	S4	DO	5-8-11	19	1.50 / 1.50	
						S5	DO	5-11-15	26	1.50 / 1.50	
35	770										
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			S6	DO	4-8-10	18	1.50 / 1.50	
						S7	DO	20-50/4	50/4	0.75 / 1.50	Pel-Plug 3/8" Bentonite – Pellets
45		Log continued on next page									

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 59.3'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 48.9' - 58.9'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: 58.9' - 59.3'

FILTER PACK
Interval: 46.9' - 59.3'
Type: FilterSil Gravel Pack

FILTER PACK SEAL
Interval: 43.4' -46.9'
Type: Pel-Plug 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0' - 43.4'
Type: Pure Gold Grout Mixture

WELL COMPLETION
Pad: 4' x 4' concrete
Protective Casing: 4" x 4" x 5' Aluminum

DRILLING METHODS
Soil Drill: 8.25 Hollow-Stem Auger
Rock Drill: N/A

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

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE DGWA-70A/B-70A

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: 805.67
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: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
45	760	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. *(Continued)*	ML									
						S8	DO	50/4	50/4	0.00 / 1.50	FilterSil Gravel Pack	
50	755				752.2							
		53.50 - 60.00 SM, Silty SAND, fine grained, low plasticity; dark gray, contians mica; non-cohesive, moist, w<PL, dense.	PWR		53.50	S9	DO	50/3	50/3	0.25 / 1.50	0.010" Slotted Schedule 40 PVC	
55	750											
						S10	DO	50/2	50/2	0.17 / 1.50		
60	745	Boring completed at 60.00 ft			745.7							
65	740											
70	735											
75	730											
80	725											
85	720											
90												

WELL CASING
Interval: 0' - 59.3'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 48.9' - 58.9'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: 58.9' - 59.3'

FILTER PACK
Interval: 46.9' - 59.3'
Type: FilterSil Gravel Pack

FILTER PACK SEAL
Interval: 43.4' -46.9'
Type: Pel-Plug 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0' - 43.4'
Type: Pure Gold Grout Mixture

WELL COMPLETION
Pad: 4' x 4' concrete
Protective Casing: 4" x 4" x 5' Aluminum

DRILLING METHODS
Soil Drill: 8.25 Hollow-Stem Auger
Rock Drill: N/A

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

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.

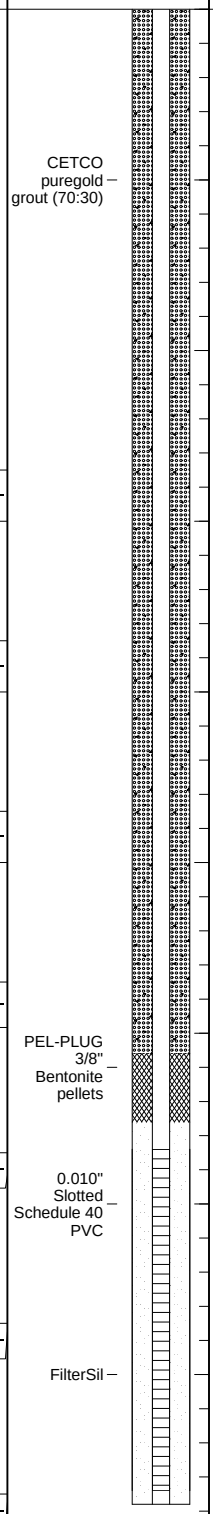
DRILL RIG: CME 550
DATE STARTED: 2/28/17
DATE COMPLETED: 2/28/17

NORTHING: 1,393,963.30
EASTING: 2,201,714.80
GS ELEVATION: 861.22
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)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0	860	0.00 - 10.50 Hydrovac								
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
						S2	SPT	2-5-7	12	1.50 1.50
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	S3	SPT	4-7-11	18	1.50 1.50
						S4	SPT	8-21-50/4	71/10	1.33 1.33
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	S5	SPT	43-50/2	50/2	0.67 0.67
40	820	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	S6	SPT	50/3	50/3	0.25 0.25
		Boring completed at 43.80 ft			817.4	S7	SPT	50/3	50/3	0.25 0.25

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-33.4'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screen

WELL SCREEN
Interval: 33.4'-43.4'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 32.6'-43.8'
Type: FilterSil

FILTER PACK SEAL
Interval: 30.6'-32.6'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 1'-30.6'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 4'x4' Concrete
Protective Casing: 4" x 4" x 5' Aluminum

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: N/A

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

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

SOUTHERN COMPANY

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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation fro 0 ft to 9.0 ft						
			754.7					
10		**Silt (ML)** - tan to mottled tan, brown and red, damp, soft, SILT with clay (about 5% clay); micaceous; trace schistose texture (highly weathered)		SS -1	9.5	1-1-3 (4)		residual soil.
15		- yellow tan, medium stiff, SAA		SS -2	14.5	2-2-3 (5)		residual soil.
20		- tan, yellow and green banding, soft, SAA; softer; less clay		SS -3	19.5	1-1-2 (3)		residual soil.
25				SS	24.5	2-2-4		

(Continued Next Page)

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

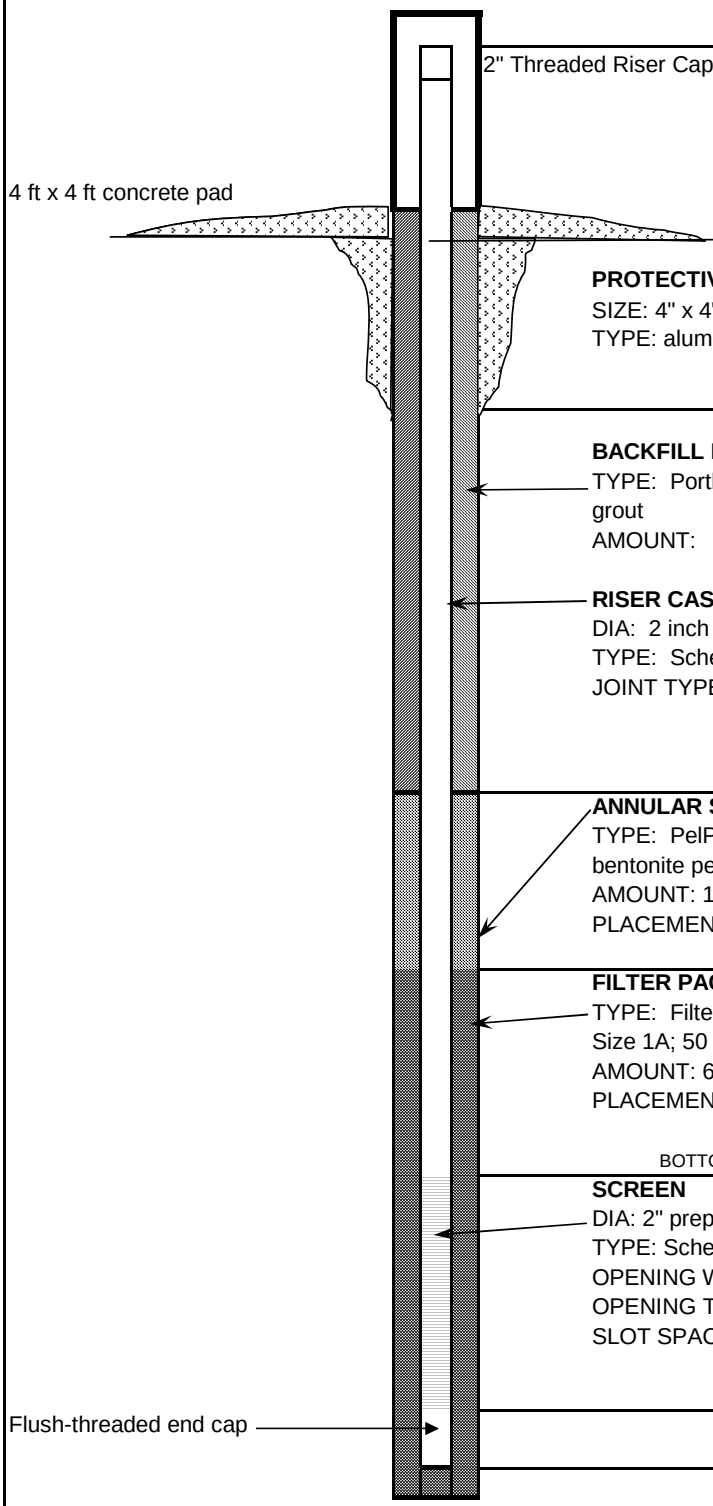
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)* - green-gray, moist, medium stiff, SILT; micaceous; lacks structure		-4		(6)		
30		- mottled tan, green, and white-gray, very damp, stiff, sandy SILT		SS -5	29.5	4-5-7 (12)		upper saprolite.
35		- brown, very hard, SILT with gravel; saprolite; highly weathered schist fragments		SS -6	34.5	50 (0)		lower saprolite.
40		- brown, very moist, very hard, sandy SILT, weathered schist fragments	722.7	SS -7	39.5	22-32-23 (55)		lower saprolite.
		Bottom of borehole at 41.0 feet.						
45								
50								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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-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
GROUND SURFACE	0.0	763.64
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 20 bags cement 10 lbs bentonite **RISER CASING** DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded TOP OF SEAL	24.6	739.0
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1.5 buckets PLACEMENT: Poured TOP OF FILTER PACK	27.0	736.6
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 6.75 Bags PLACEMENT: Poured w/water BOTTOM OF RISER / TOP OF SCREEN	29.3	734.3
SCREEN 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	724.3
BOTTOM OF CASING	39.7	723.9

SOUTHERN COMPANY

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** 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.

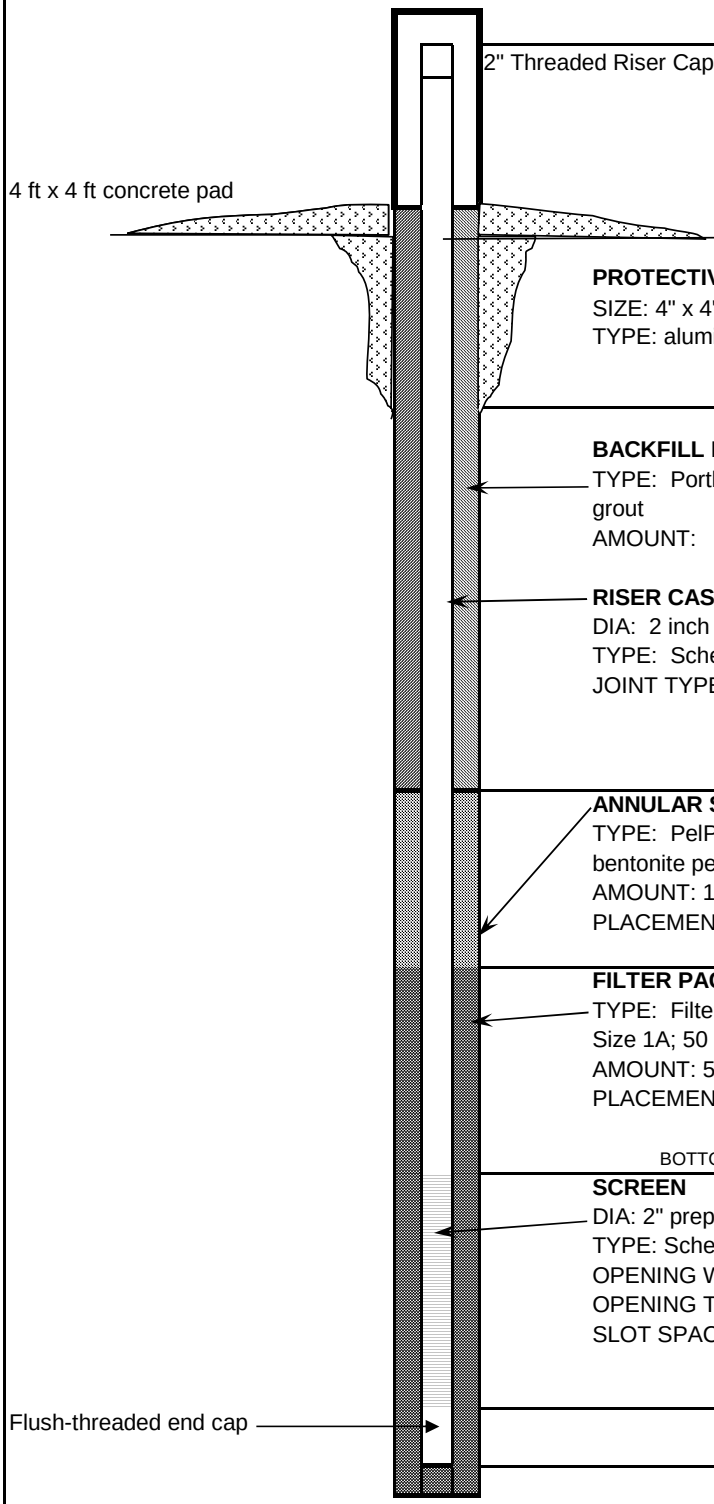
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 9.0 ft						
			745.7					
10		**Silt (ML)** - olive-gray to tan, moist, medium stiff, SILT; micaceous; trace schist gravel; <5% clay		SS -1	9.5	2-3-4 (7)		residual soil.
15		- more tan, wet, very soft, SAA		SS -2	14.5	WH-WH-1 (1)		
20		- tan-brown-gray, very moist, stiff, SILT; micaceous; more prevalent schistose gravel		SS -3	19.5	2-4-5 (9)		residual soil.
		- SAA with very fine-grained sand	730.0					
25								

Bottom of borehole at 24.7 feet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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: Greg Dyer	DRILLING METHODS: HS Auger	DGWC-38/B-38
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		
GROUND SURFACE	0.0	754.67
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 4 bags cement 6 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	10.4	744.3
ANNULAR SEAL 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
FILTER PACK 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
SCREEN 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
BOTTOM OF CASING	25.0	729.7

SOUTHERN COMPANY

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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 9.5 ft						
5								water table in hydrovac hole at about 2 ft bgs.
			747.5	UD -1	9.5			
10		**Elastic Silt (MH)** - tan, wet, medium stiff, medium plasticity, clayey SILT with fine sand						
				SS -1	14.5	1-2-6 (8)		
15			741.8					residual soil.
		Silt (ML) - tan-brown, wet, medium stiff, sandy SILT; contains schist gravel at base						
				SS -2	19.5	2-2-5 (7)		
20		▽ - mottled tan, orange and brown, wet, medium stiff, clayey SILT; micaceous						residual soil/upper saprolite transition.
			732.5	SS	24.5	3-2-4		
25		**Lean Clay (CL)**						

(Continued Next Page)

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

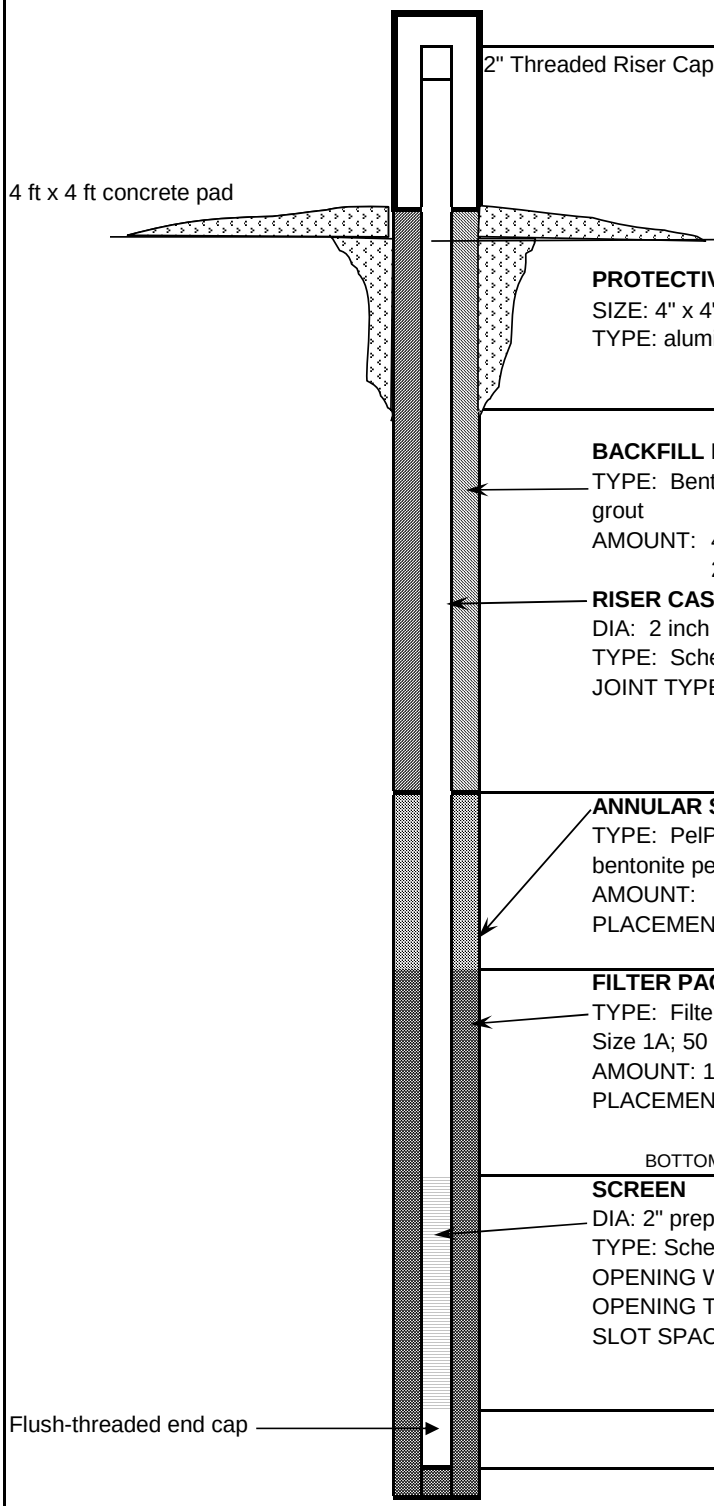
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- mottled tan, brown and black, damp, medium stiff, low plasticity, silty CLAY; relict structures observed; highly weathered	731.0	-3		(6)		upper saprolite.
		Lean Clay (CL)*(con't)*						
		Bottom of borehole at 26.0 feet.						

30
35
40
45
50

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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		
GROUND SURFACE	0.0	756.93
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Bentonite Plug grout AMOUNT: 4 buckets 200 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	4.9	752.0
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 3.5 buckets PLACEMENT: Poured		
TOP OF FILTER PACK	8.0	748.9
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 11 Bags PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	10.8	746.1
SCREEN 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	736.1
BOTTOM OF CASING	21.2	735.7

SOUTHERN COMPANY

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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 9.5 ft						
10		**Silt (ML)** - 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.
15		- tan to tan-brown, damp, stiff, sandy SILT; contains highly weathered schist; manganese staining		SS -2	14.5	4-5-6 (11)		upper saprolite.
20		- 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.
25				SS	24.5	7-11-12		

(Continued Next Page)

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

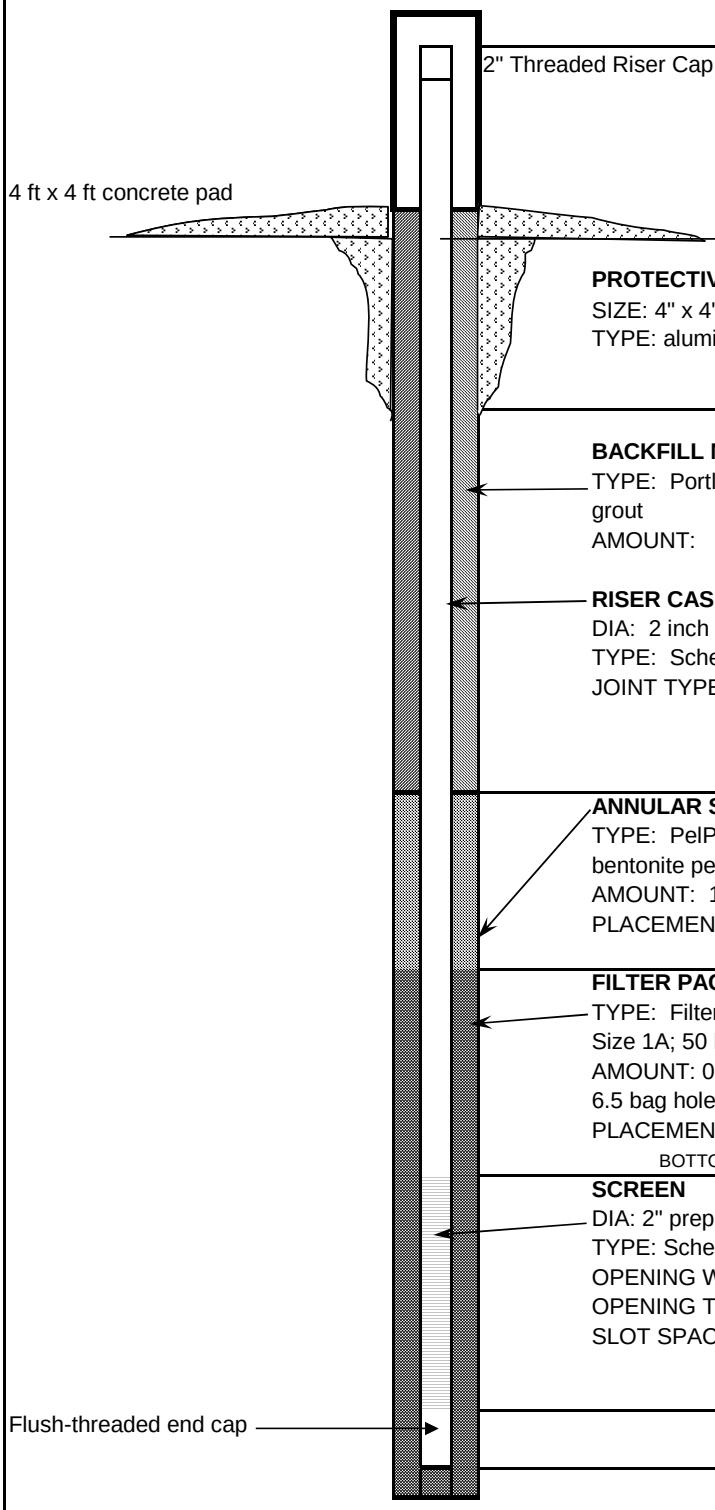
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)* - white-gray, very moist, very stiff, SILT wtih clay; trace quartz sand; micaceous in parts; leached zone		-4		(23)		weathered quartz vein or feldspar rich zone.
30		- brown, very moist, very stiff, SILT with clay and trace gravel; trace quartz/feldspar gravel		SS -5	29.5	6-9-10 (19)		upper saprolite.
35		- white-gray brown, very moist, medium stiff, SILT with clay and trace gravel; clay is more plastic	740.2	SS -6	34.5	1-1-4 (5)		
		Bottom of borehole at 36.0 feet.						

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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-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	776.12
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 6 bags cement 6 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	19.0	757.1
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	21.4	754.7
FILTER PACK 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	751.6
SCREEN 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	741.6
BOTTOM OF CASING	34.9	741.2

RECORD OF BOREHOLE DGWC-67/B-67

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 56.00 ft
LOCATION: West Toe of AP-1

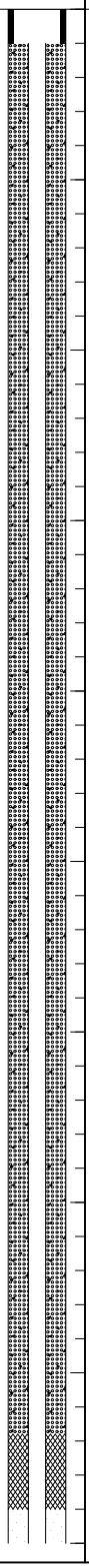
DRILL RIG: Geoprobe
DATE STARTED: 3/8/17
DATE COMPLETED: 3/14/17

NORTHING: 1,390,953.80
EASTING: 2,200,830.70
GS ELEVATION: 766.80
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)	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
5	760									
10	755	10.00 - 15.00 Sandy Silt, sands fine, brown, highly weathered, micaceous, low plastic, cohesive, dry.	ML		756.8 10.00	S2	GRAB			0.50
					751.8	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		15.00					
					746.8	S4	SPT	9-25-25	50	1.50 / 1.50
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		20.00					
					741.8	S5	SPT	6-10-14	24	1.16 / 1.50
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		25.00					
					736.8	S6	SPT	13-20-22	42	1.16 / 1.50
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		30.00					
					731.8	S7	SPT	7-10-13	23	1.00 / 1.50
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		35.00					
					726.8	S8	SPT	7-16-23	39	1.33 / 1.50
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		40.00					
					721.8	S9	SPT	12-15-18	33	1.16 / 1.50
45		Log continued on next page								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-46.3'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 46.3'-56.3'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: .010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 44.0'-56.7'
Type: FilterSil

FILTER PACK SEAL
Interval: 44.0'-41.8'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0'-41.8'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 4'x4' Concrete
Protective Casing: 8" Round Flush Mount

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: N/A

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

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE DGWC-67/B-67

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 56.00 ft
LOCATION: West Toe of AP-1

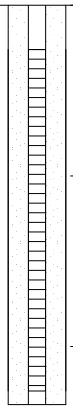
DRILL RIG: Geoprobe
DATE STARTED: 3/8/17
DATE COMPLETED: 3/14/17

NORTHING: 1,390,953.80
EASTING: 2,200,830.70
GS ELEVATION: 766.80
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)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
45		45.00 - 50.00 Saprolite, silt and sand, sands fine to coarse, grey to brown, highly weathered, micaceous, low plastic, cohesive, moist, sample spoon wet.	ML		45.00					
	720					S10	SPT	50/4	50/4	0.33 0.33
50					716.8					
		50.00 - 55.00 Saprolite, silt and sand, sands fine to coarse, trace pebbles, grey to dark brown, highly weathered, micaceous, non plastic, noncohesive, moist, sample spoon wet.	PWR		50.00					
	715					S11	SPT	50/2	50/2	0.16 0.16
55					711.8					
		55.00 - 56.00 Auger Refusal	PWR		55.00 710.8					
		Boring completed at 56.00 ft								
	710									
60										
	705									
65										
	700									
70										
	695									
75										
	690									
80										
	685									
85										
	680									
90										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-46.3'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 46.3'-56.3'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: .010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 44.0'-56.7'
Type: FilterSil

FILTER PACK SEAL
Interval: 44.0'-41.8'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0'-41.8'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 4'x4' Concrete
Protective Casing: 8" Round Flush Mount

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: N/A

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

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

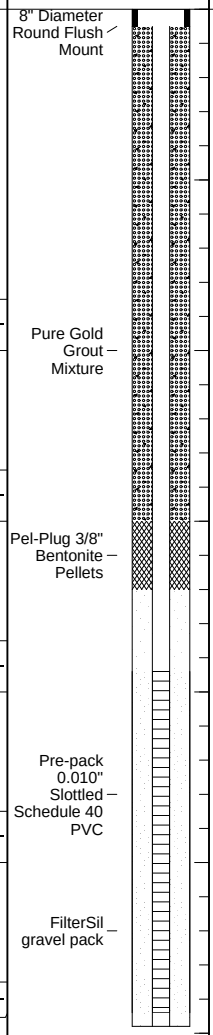
DRILL RIG: Geoprobe 7822DT
DATE STARTED: 4/19/17
DATE COMPLETED: 4/20/17

NORTHING: 1,391,301.20
EASTING: 2,200,734.90
GS ELEVATION: 765.06
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)	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							
5	760									
					756.6					
		8.50 - 13.50 CL, CLAY, with trace sand, moderate plasticity; red-orange brown, fill; cohesive, moist, w<PL, soft to firm.	CL		8.50	S1	DO	13-18-9	27	1.50 / 1.50
10	755									
					751.6					
		13.50 - 28.50 ML, SILT, low plasticity; brown to silver, relict structure; cohesive, moist to wet, w<PL, very soft.	ML		13.50	S2	DO	WOH-WOH-3	3	1.50 / 1.50
15	750									
						S3	DO	4-6-16	22	1.33 / 1.50
20	745									
						S4	DO	WOH-16-24	40	1.50 / 1.50
25	740									
					736.6					
		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.	SM		28.50 735.1	S5	DO	13-50/5	50/5	0.75 / 0.92
30	735	Boring completed at 30.00 ft								
35	730									
40	725									
45										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 29.8'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 19.4' - 29.4 '
Material: Schedule 40 PVC pre-pack
Diameter: 2"
Slot Size: 0.010"
End Cap: 29.4' - 29.8'

FILTER PACK
Interval: 17.0' - 29.8'
Type: FilterSil gravel pack

FILTER PACK SEAL
Interval: 15.0' - 17.0'
Type: Pel-Plug 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0' - 15.0'
Type: Pure Gold Grout Mixture

WELL COMPLETION
Pad: 4' x 4' concrete
Protective Casing: 8" Diameter Round Flush Mount

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

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

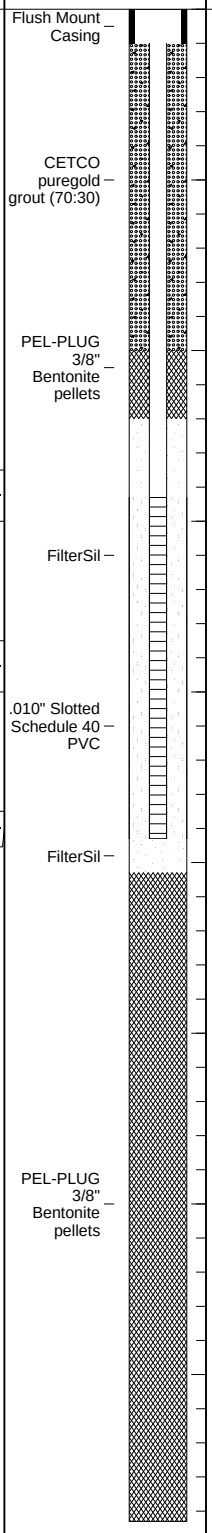
DRILL RIG: Geoprobe
DATE STARTED: 3/15/17
DATE COMPLETED: 3/16/17

NORTHING: 1,391,585.00
EASTING: 2,200,657.10
GS ELEVATION: 763.99
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)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0	763.99	0.00 - 10.00 Hydrovac								
5	760									
10	755				754 10.00					
		10.00 - 24.90 Silty Sand, fine to coarse, banded grey and brown, heighly weathered, noncohesive, moist, very dense, sample spoon wet	SM			S1	SPT	26-36-48	84	1.58 1.50
15	750									
						S2	SPT	3-23-17	40	1.00 1.50
20	745									
						S3	SPT	50/6	50/6	0.50 0.50
25	740				739.1 24.90					
		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							
30	735									
35	730									
40	725									
45	720				719.7					
		Boring completed at 44.30 ft								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-14.3'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screen

WELL SCREEN
Interval: 14.3'-24.3'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: .010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 12.0'-24.7'
Type: FilterSil

FILTER PACK SEAL
Interval: 10.0'-12.0'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0'-10.0'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 4'x4' Concrete
Protective Casing: 8" Round Flush

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: HQ Core Barrell

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE DGWC-121

SHEET 1 of 2

PROJECT: SCS Plant McDonough
PROJECT NUMBER: GL166849621
DRILLED DEPTH: 50.00 ft
LOCATION: Smyrna, GA

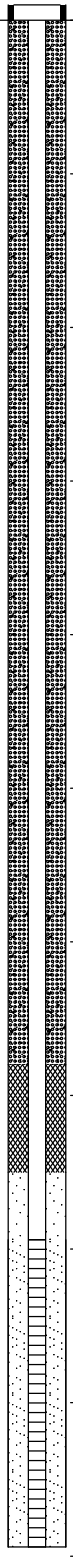
DRILL RIG: Terra Sonic 150T
Truck-Mounted Sonic
DATE STARTED: 3/22/22
DATE COMPLETED: 3/22/22

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)	DESCRIPTION	USCS	ELEV. / DEPTH (ft)	SAMPLE NO.	REC
0	764	0.00 - 8.00 Fill material			1	6.50 10.00
				756.5		
		8.00 - 10.00 MH, CLAYEY SILT; very micaceous, little fine to coarse sand, brown/red brown, saprolitic, dry	MH	8.00 754.5		
10	754	10.00 - 20.00 ML, fine sandy SILT; very micaceous, little clay, brown to dark brown, saprolitic, crenulated, dry	ML	10.00	2	9.75 10.00
				744.5		
20	744	20.00 - 29.50 SW-ML, fine SAND and SILT; very micaceous, little clay, dark brown to brown, iron staining, saprolitic, moist	SW-ML	20.00	3	9.75 10.00
				734.0		
30	734	29.50 - 30.00 TWR, Transitionally Weathered Rock; muscovite schist	TWR	30.00		
		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
				724.5		
40	724	40.00 - 48.50 TWR; same as above	TWR	40.00	5	7.50 10.00
				716.0		
		48.50 - 50.00 muscovite SCHIST, fine to coarse grained, medium strong,		48.50 714.5		
50	714	Log continued on next page				

MONITORING WELL DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-39.7'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 39.7'-49.7'
Material: 0.010" Slotted
Diameter: 2"
Slot Size: 0.010"
End Cap: 3"

FILTER PACK
Interval: 37.5'-49.7'
Type: Filter Sil - Filtration sand and gravel, industrial quartz
Quantity: 3.5 x 50 lb bag

FILTER PACK SEAL
Interval: 34'-37.5'
Type: Pel Plug Bentonite Pellets
Quantity: 1 x 50 lb bucket

ANNULUS SEAL
Interval: 0'-34'
Type: Aquaguard bentonite grout
Quantity: 2 bags Aquaguard + 40 gal water

WELL COMPLETION
Pad: 4' x 4'
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic
Sample Type: Sonic

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

WSP GOLDER

BOREHOLE RECORD PLANT MCDONOUGH_DGWC-121, B-122D, B-123D.GPJ PIEDMONT.GDT 5/13/22

RECORD OF BOREHOLE DGWC-121

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: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	PHOTO	REC	MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
50		slightly to moderately weathered, slightly to moderately fractured, some iron staining								
		Boring completed at 50.00 ft								
55	710									
60	705									
65	700									
70	695									
75	690									
80	685									
85	680									
90	675									
95	670									
100	665									

WELL CASING
Interval: 0'-39.7'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 39.7'-49.7'
Material: 0.010" Slotted
Diameter: 2"
Slot Size: 0.010"
End Cap: 3"

FILTER PACK
Interval: 37.5'-49.7'
Type: Filter Sil - Filtration sand and gravel, industrial quartz
Quantity: 3.5 x 50 lb bag

FILTER PACK SEAL
Interval: 34'-37.5'
Type: Pel Plug Bentonite Pellets
Quantity: 1 x 50 lb bucket

ANNULUS SEAL
Interval: 0'-34'
Type: Aquaguard bentonite grout
Quantity: 2 bags Aquaguard + 40 gal water

WELL COMPLETION
Pad: 4' x 4'
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic
Sample Type: Sonic

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

WSP GOLDER

RECORD OF BOREHOLE B-62

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 39.90 ft
LOCATION: South of the Main road.

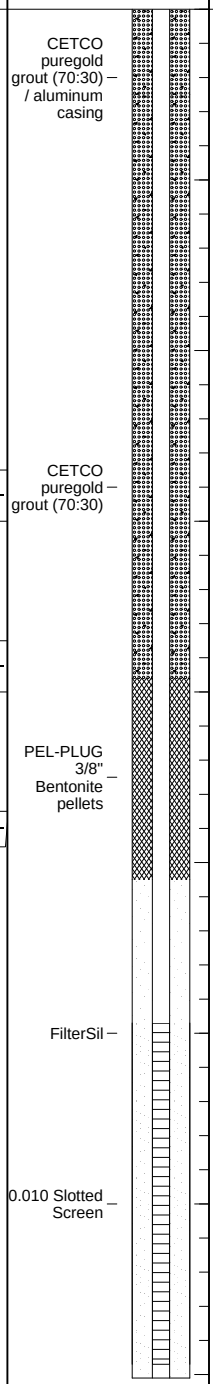
DRILL RIG: CME 55
DATE STARTED: 10/4/16
DATE COMPLETED: 10/4/16

NORTHING: 1,389,828.10
EASTING: 2,201,811.20
GS ELEVATION: 760.40
TOC ELEVATION: 760.08 ft

DEPTH W.L.: 21.57
ELEVATION W.L.: 738.83
DATE W.L.: 10/6/2016
TIME W.L.: 1000

DEPTH (ft)	ELEVATION (ft)	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 - 13.50 Top 10' were Hydrovac for utilities.								
					746.9					
		13.50 - 18.50 SM, silty SAND, fine, low to moderate plasticity; red-brown; cohesive, wet, w~PL, very soft to soft.	SM		13.50	1	DO	3-1-3	4	1.00 1.50
					741.9					
		18.50 - 23.50 CL, CLAY, trace silt and fine sand, moderate plasticity; red-brown; cohesive, moist to wet, w~PL, soft to firm.	CL		18.50	2	DO	1-1-1	2	1.50 1.50
					736.9					
		23.50 - 24.60 SP, poorly-graded SAND, fine to coarse, non plastic; gray to black; non-cohesive, wet, w<PL, very dense, PWR. Auger Refusal at 24.2	SP		23.50 735.8	3	DO	50/4	50/4	0.16 0.33
		24.60 - 39.90 Bedrock; SCHIST fresh to slightly weathered, foliated, dark green to black, fine to medium grained.	BR		24.60					
					720.5					
		Boring completed at 39.90 ft								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-30'
Material: Schedule 40 PVC
Diameter: 2
Joint Type: Flush/Screw

WELL SCREEN
Interval: 29.7'-39.7'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 25.5'-40.1'
Type: FilterSil

FILTER PACK SEAL
Interval: 19.6'-25.5'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0'-19.6'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round Ground Flush

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: HQ Core Barrell

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE B-100

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 44.80 ft
LOCATION: Smyrna, GA

DRILL RIG: CME 550X
DATE STARTED: 7/8/20
DATE COMPLETED: 7/8/20

NORTHING: 1,390,254.80
EASTING: 2,202,242.10
GS ELEVATION: 775.32
TOC ELEVATION: 777.95 ft

DEPTH W.L.: 34.78
ELEVATION W.L.: 743.17
DATE W.L.: 7/8/20
TIME W.L.: 15:50

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES
0	775	0.00 - 11.00 SILT-SILTY GRAVEL; mix of topsoil, residuum, fill, rip-rap boulders, soil; clayey silt, red-brown, micaceous, moist, moderately weathered, non-cohesive, moist, (backfilled cuttings)	ML-GM		764.3	R1	AUGER			0.00 / 11.00	Bentonite Grout
10	765				11.00 761.8						
15	760	13.50 - 15.00 SILT; with sand, gravel and trace clay, red-brown, highly weathered, non-cohesive, dry to moist, loose to compact	ML		13.50 760.3	R2	SS	3-3-2		1.45 / 1.50	
					15.00 756.8						
20	755	18.50 - 20.00 SILTY SAND; heavy organic matter (wood), red-brown with black organic matter, moderately weathered, non-cohesive, dry, loose	SM		18.50 755.3	R3	SS	3-3-2		0.60 / 1.50	
					20.00 751.8						
25	750	23.50 - 25.00 CLAYEY SAND; some organic matter, brown, silightly weathered, cohesive, w<PL, soft	SC		23.50 750.3	R4	SS	2-1-2		1.60 / 1.50	
					25.00 746.8						
30	745	28.50 - 30.00 CLAYEY SAND WITH SILT; trace organic matter, brown with some red, micaceous, moderately weathered, cohesive, w>PL, firm to soft, moist to wet	SC-SM		28.50 745.3	R5	SS	1-2-1		1.50 / 1.50	Bentonite Pellets
					30.00 741.8						Sand Filter Pack
35	740	33.50 - 35.00 CLAYEY SAND; some silt, red with some brown, highly weathered trace mica, cohesive, w>PL, wet, soft to very soft, trace gravel	SC		33.50 740.3	R6	SS	WH-WH-2		1.40 / 1.50	
					35.00 736.8						
40		38.50 - 40.00 CLAYEY SAND; some gravel of gneiss (bottom 0.5'), black-brown with red, highly	SC		38.50 735.3	R7	SS	2-6-22		1.30 / 1.50	3" PVC 0.010

Log continued on next page

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-44'8"
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Screw fit with rubber seam

WELL SCREEN
Interval: 34'8"-44'8"
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 32'2"-44'8"
Type: Filtersil std61

FILTER PACK SEAL
Interval: 30'-32'2"
Type: 3/8" Coated Pel-Plug

ANNULUS SEAL
Interval: 2'-30'
Type: Aquagaurd Bentonite Grout

WELL COMPLETION
Pad: 4'x4'x4"
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: Auger
Rock Drill:

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: SCS CFS
DRILLER: S. Deuty

GA INSPECTOR: Chris Tidwell
CHECKED BY: Brian Steele, PG
DATE: 8/24/2020

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 9/2/20

RECORD OF BOREHOLE B-100

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 44.80 ft
LOCATION: Smyrna, GA

DRILL RIG: CME 550X
DATE STARTED: 7/8/20
DATE COMPLETED: 7/8/20

NORTHING: 1,390,254.80
EASTING: 2,202,242.10
GS ELEVATION: 775.32
TOC ELEVATION: 777.95 ft

DEPTH W.L.: 34.78
ELEVATION W.L.: 743.17
DATE W.L.: 7/8/20
TIME W.L.: 15:50

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
40	735	weathered, non-cohesive, wet, loose to compact			40.00						Slot U-Pack Screen	
					732.8							
		42.50 - 45.00 CLAYEY SAND; some gravel, red with black and brown, highly weathered, cohesive, w~PL, firm to soft, micaceous schist gravel	SC		42.50	R8	SS	4-5-12		0.00 / 1.50		
45	730	Boring completed at 44.80 ft			730.3 45.00							
50	725											
55	720											
60	715											
65	710											
70	705											
75	700											
80												

WELL CASING
Interval: 0'-44'8"
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Screw fit with rubber seam

WELL SCREEN
Interval: 34'8"-44'8"
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 32'2"-44'8"
Type: Filtersil std61

FILTER PACK SEAL
Interval: 30'-32'2"
Type: 3/8" Coated Pel-Plug

ANNULUS SEAL
Interval: 2'-30'
Type: Aquagaurd Bentonite Grout

WELL COMPLETION
Pad: 4'x4'x4"
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: Auger
Rock Drill:

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: SCS CFS
DRILLER: S. Deuty

GA INSPECTOR: Chris Tidwell
CHECKED BY: Brian Steele, PG
DATE: 8/24/2020

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 9/2/20

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: 776.03 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 DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0		0.00 - 10.00 Air knife; FILL	FILL						Stick-up	**B-105D** Borehole Diameter: 4" **WELL CASING** Interval: 0'-70' Material: Schedule 40 PVC Diameter: 2" Joint Type: Screw fit with rubber seam **WELL SCREEN** Interval: 60'-70' Material: Schedule 40 PVC Diameter: 2" Slot Size: .010" End Cap: Schedule 40 PVC **FILTER PACK** Interval: 57.5'-60.0' Type: FilterSil Quantity: 4-50 lbs bags **FILTER PACK SEAL** Interval: 53.75'-57.5 Type: 3/8" Uncoated Pel-Plug Quantity: 1-5 gallon bucket **ANNULUS SEAL** Interval: 0'-53.75 Type: AquaGuard Bentonite Grout Quantity: Approximately 80 gallons **NOTES**
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	1	ROTO SONIC	9.25 10.00		
15		15.00 - 27.00 (ML), SILT; olive brown to silvery brown, low plasticity, moist, firm, w<PL, contains muscovite	ML		15.00	2	ROTO SONIC	6.00 7.50		
25		27.00 - 27.50 (CL), CLAY; white, medium plasticity, firm, moist, w<PL, possible WT	CL		27.50	3	ROTO SONIC	8.50 10.00		
30		27.50 - 32.50 (ML), SILT; gray/brown, fine grain, low to medium plasticity, moist, w~PL, soft to firm	ML							
35		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 33.80				AquaGuard Bentonite Grout	
		33.80 - 37.50 (ML), SILT; gray/brown, fine grain, low to moderate plasticity, moist, w~PL, soft to firm	ML							
40		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		
45		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		
50		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		
		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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST (2).GPJ PIEDMONT.GDT 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: 776.03 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: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
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		50.00	7	ROTO SONIC	5.00 / 5.00	3/8" Uncoated Pel-Plug	**B-105D** Borehole Diameter: 4" **WELL CASING** Interval: 0'-70' Material: Schedule 40 PVC Diameter: 2" Joint Type: Screw fit with rubber seam **WELL SCREEN** Interval: 60'-70' Material: Schedule 40 PVC Diameter: 2" Slot Size: .010" End Cap: Schedule 40 PVC **FILTER PACK** Interval: 57.5'-60.0' Type: FilterSil Quantity: 4-50 lbs bags **FILTER PACK SEAL** Interval: 53.75'-57.5 Type: 3/8" Uncoated Pel-Plug Quantity: 1-5 gallon bucket **ANNULUS SEAL** Interval: 0'-53.75 Type: AquaGuard Bentonite Grout Quantity: Approximately 80 gallons **NOTES**
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		55.00	8	ROTO SONIC	2.75 / 3.50	Sand Filter Pack	
60						9	ROTO SONIC	4.80 / 6.50		
65						10	ROTO SONIC	4.25 / 5.00	U-Pack Screen	
70		Boring completed at 70.00 ft								
75										
80										
85										
90										
95										
100										

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST (2).GPJ PIEDMONT.GDT 2/3/21

RECORD OF BOREHOLE B-112D

PROJECT: Plant McDonough
PROJECT NUMBER: 166849621
DRILLED DEPTH: 55.00 ft
LOCATION: Offset of DGWC-69

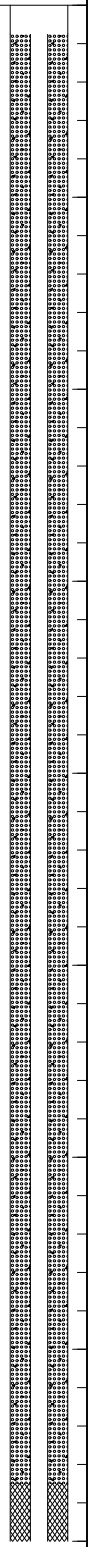
DRILL RIG: TSi 150CC
DATE STARTED: 3/21/21
DATE COMPLETED: 3/22/21

NORTHING: 1,391,564.2
EASTING: 2,200,664.1
GS ELEVATION: 765.98
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)	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		759.0	Hand Auger		0.00 10.00
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		7.00 754.5			
10	755	11.50 - 12.50 ML, Clayey SILT, low plasticity; brown to gray-brown; soft, moist, W<PL	ML		11.50 753.5			
		12.50 - 16.00 SM, SILTY SAND, non to low plasticity; tan to brown to beige; loose to compact, dry, W<PL	SM		12.50 750.0	1		9.00 10.00
15	750	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		16.00 746.0			
20	745	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 contians vein quartz and augened potassium feldspar (K-spar)	BR		20.00 736.0	2		3.80 10.00
25	740							
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		30.00 726.0	3		7.80 10.00
35	730							
40		Log continued on next page						

PIEZOMETER DIAGRAM and NOTES



PIEZOMETER CONSTRUCTION DETAILS

WELL CASING
Interval: 0-44.7'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 44.7-54.7'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: 54.7-55'

FILTER PACK
Interval: 42.5-55'
Type: #1 Filter Sand
Quantity: 4-50 lbs bags

FILTER PACK SEAL
Interval: 38.5-42.5'
Type: 3/8" Uncoated Pel-Plug
Quantity: 1 - 5 gallon bucket

ANNULUS SEAL
Interval: 0-38.5'
Type: AquaGuard Bentonite Grout
Quantity: Approximately 80 gallons

WELL COMPLETION
Pad: 4'x4'x4" Concrete
Protective Casing: 8" Flush Mount

DRILLING METHODS
Soil Drill: Rotosonic (6 inch casing by 4 inch core barrel)
Rock Drill: Rotosonic
Sample Type: Rotosonic

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

GOLDER
MEMBER OF WSP

RECORD OF BOREHOLE B-112D

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: 765.98
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)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	PHOTO	REC	PIEZOMETER DIAGRAM and NOTES
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		40.00	4		5.00 / 10.00	#1 Sand filter pack
45	720								
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		716.0 50.00	5		5.00 / 5.00	0.010" Slotted Schedule 40 PVC
55	710	Boring completed at 55.00 ft			711.0				Sump
60	705								
65	700								
70	695								
75	690								
80									

PIEZOMETER CONSTRUCTION DETAILS

WELL CASING
Interval: 0-44.7'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 44.7-54.7'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: 54.7-55'

FILTER PACK
Interval: 42.5-55'
Type: #1 Filter Sand
Quantity: 4-50 lbs bags

FILTER PACK SEAL
Interval: 38.5-42.5'
Type: 3/8" Uncoated Pel-Plug
Quantity: 1 - 5 gallon bucket

ANNULUS SEAL
Interval: 0-38.5'
Type: AquaGuard Bentonite Grout
Quantity: Approximately 80 gallons

WELL COMPLETION
Pad: 4'x4'x4" Concrete
Protective Casing: 8" Flush Mount

DRILLING METHODS
Soil Drill: Rotosonic (6 inch casing by 4 inch core barrel)
Rock Drill: Rotosonic
Sample Type: Rotosonic

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

GOLDER
MEMBER OF WSP

SOUTHERN COMPANY

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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML) - Gravel surface with some vegetation.						
		- brown, medium stiff, SILT with mica and quartz fragments.						
5		- CL-ML: dark red, stiff, SILT/CLAY; micaceous		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		

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GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:43 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

Bottom of borehole at 54.4 feet.

SOUTHERN COMPANY

BORING LOG

BORING B-02

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
		Silt (ML)*(con't)* - 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.
			804.2	RC -1	44.1			
45		**Gneiss** - dark gray, hard, slightly weathered, augen gneiss with iron staining along partings. - extremely weathered and broken gneiss						H2O on augers when pulled.
		- gray, hard, slightly weathered, staining along vertical fractures						
50		- 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.		RC -2	49.4			
		- Schist: hard, slightly weathered, with chlorite						

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:43 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

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SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

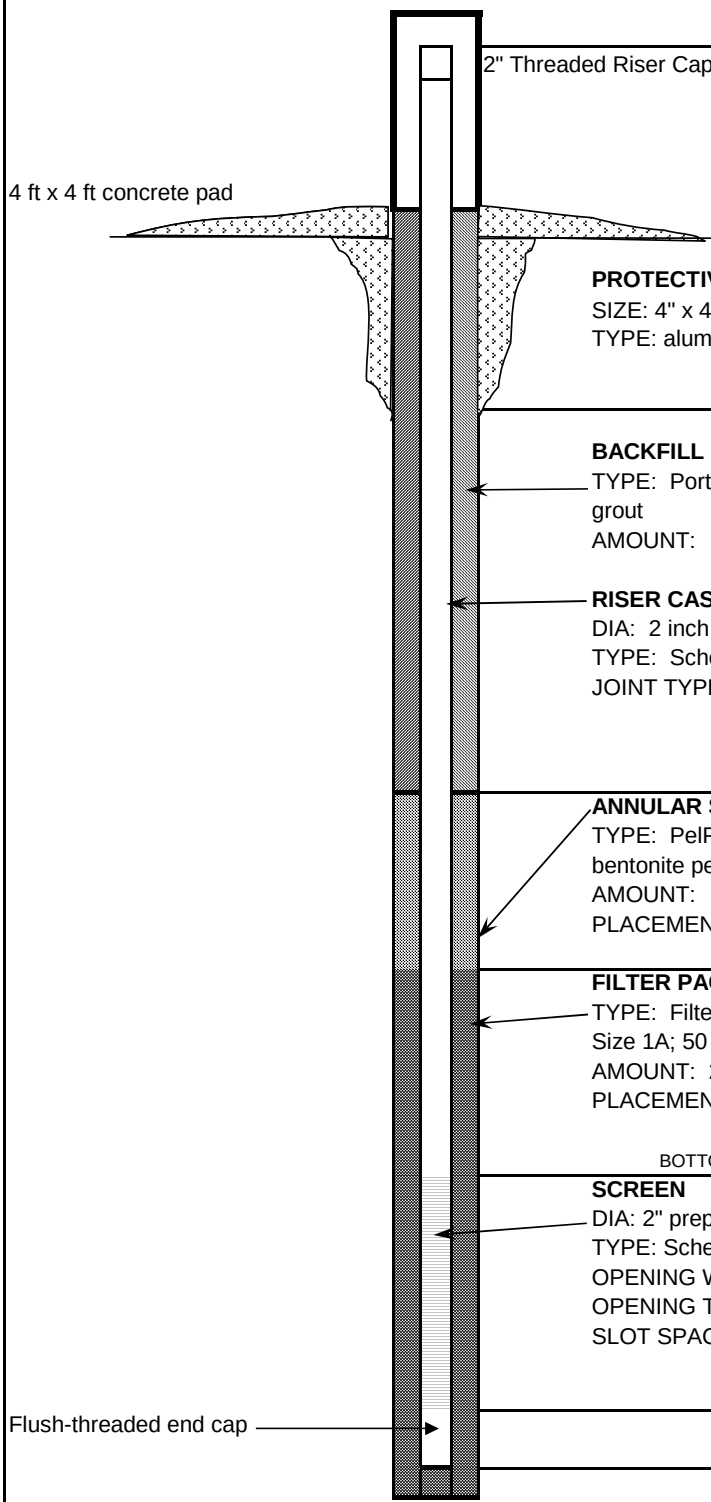
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

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					
60								
65								
70								
75								
80								

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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 DGWC-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
GROUND SURFACE	0.0	848.17
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 10 bags cement 4 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	31.0	817.2
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1.75 buckets PLACEMENT: Poured		
TOP OF FILTER PACK	35.1	813.1
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 2.5 Bags PLACEMENT: Poured		
BOTTOM OF RISER / TOP OF SCREEN	38.7	809.5
SCREEN 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	799.5
BOTTOM OF CASING	49.0	799.2

SOUTHERN COMPANY

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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML) - 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)		WT @ 23'.
25				SS	24.5	6-11-12		

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SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

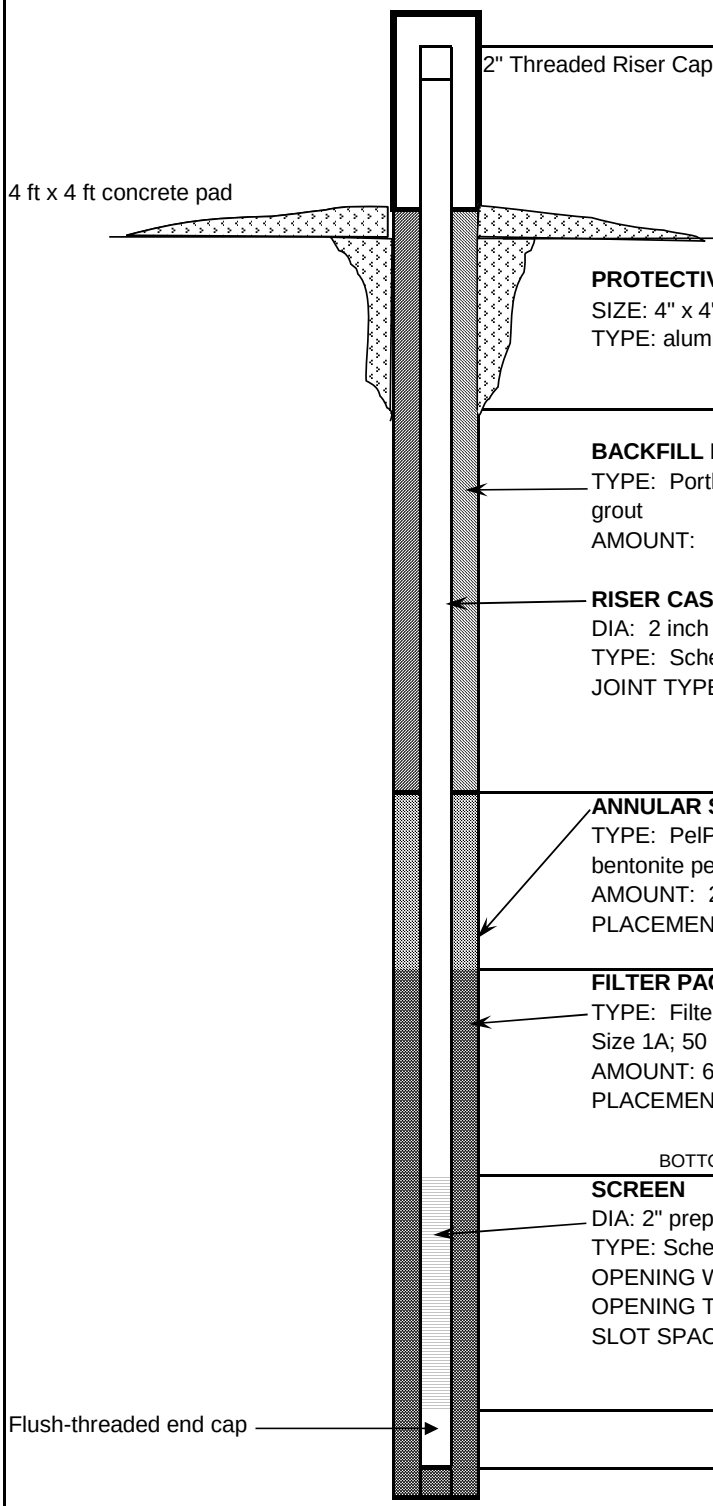
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)*		-5		(23)		
		- very stiff, SAA						
30				SS -6	29.5	10-18-23 (41)		
		- hard, SAA						
35				SS -7	34.5	6-11-13 (24)		
		- very stiff, SAA						
40				SS -8	39.5	5-6-5 (11)		
		- stiff, SAA						
45				SS -9	44.5	25-45 (45)		
		- hard, SAA	766.1					
		Bottom of borehole at 46.0 feet.						
50								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:43 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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
GROUND SURFACE	0.0	812.06
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 6 bags cement 9 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	27.0	785.1
ANNULAR SEAL 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
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 6.5 Bags PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	34.7	777.4
SCREEN 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	767.4
BOTTOM OF CASING	45.0	767.1

SOUTHERN COMPANY

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** 10/4/2012 **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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML) - reddish brown, SILT						
			784.2	SS -1	4.5	WH-WH-WH (0)		
5		**Silty Sand (SM)** - olive gray, damp, very loose, silty SAND to sandy SILT						
			779.2	SS -2	9.5	WH-WH-WH (0)		
10		**Silt (ML)** - yellowish to light brown, damp, very soft, SILT with mica (gneiss)						upper saprolite.
				SS -3	14.5	2-2-4 (6)		
15		- greenish gray, wet, medium stiff, sandy SILT saprolite with relic structure (gneiss). ▽						lower saprolite.
				SS -4	19.5	1-2-3 (5)		
20		- medium stiff, SAA						lower saprolite.
				SS	24.5	50		
25		- very hard, SAA; slightly less weathered.						

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SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

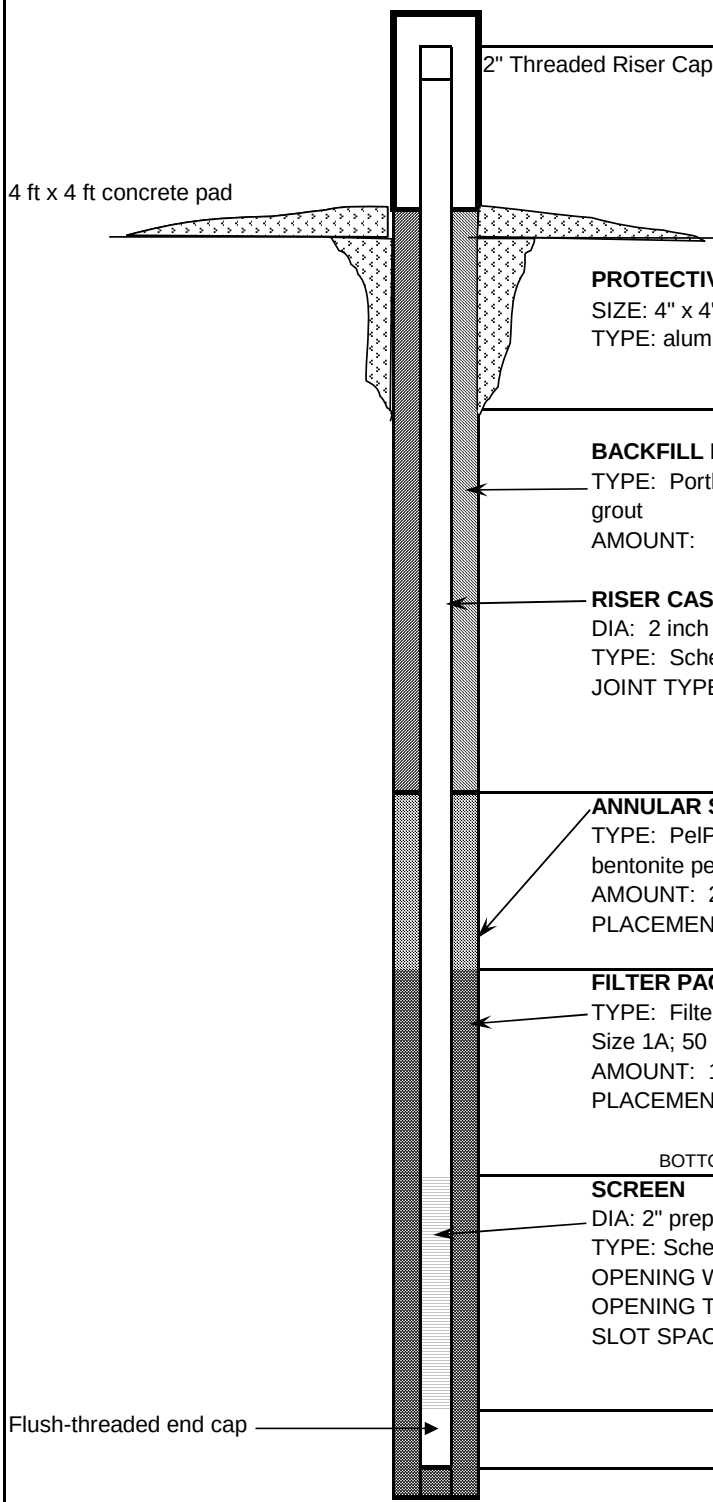
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
			763.3	-5 RC -1	24.9	(0)		lower saprolite.
		Gneiss - black (biotite) and white, hard, slightly weathered, AUGEN GNEISS with water staining along foliations (approx. 45 degrees).						
30			758.7					
		Bottom of borehole at 30.0 feet.						
35								
40								
45								
50								

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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-5/B-5
LOGGER: Rhonda Tinsley	DRILLING METHODS: HS Auger/HQ Rock Core	
DATE CONSTRUCTED: 10/4/2012	N: 1394306.3 E:2202965.1	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-3.0	791.75
GROUND SURFACE	0.0	788.64
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 5 bags cement 7 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	12.0	776.6
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 2 buckets PLACEMENT: Tremie		
TOP OF FILTER PACK	16.0	772.6
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 1.5 Bags PLACEMENT: Tremie		
BOTTOM OF RISER / TOP OF SCREEN	19.7	768.9
SCREEN 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	758.9
BOTTOM OF CASING	30.0	758.6

SOUTHERN COMPANY

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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)						
5		- 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		

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GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

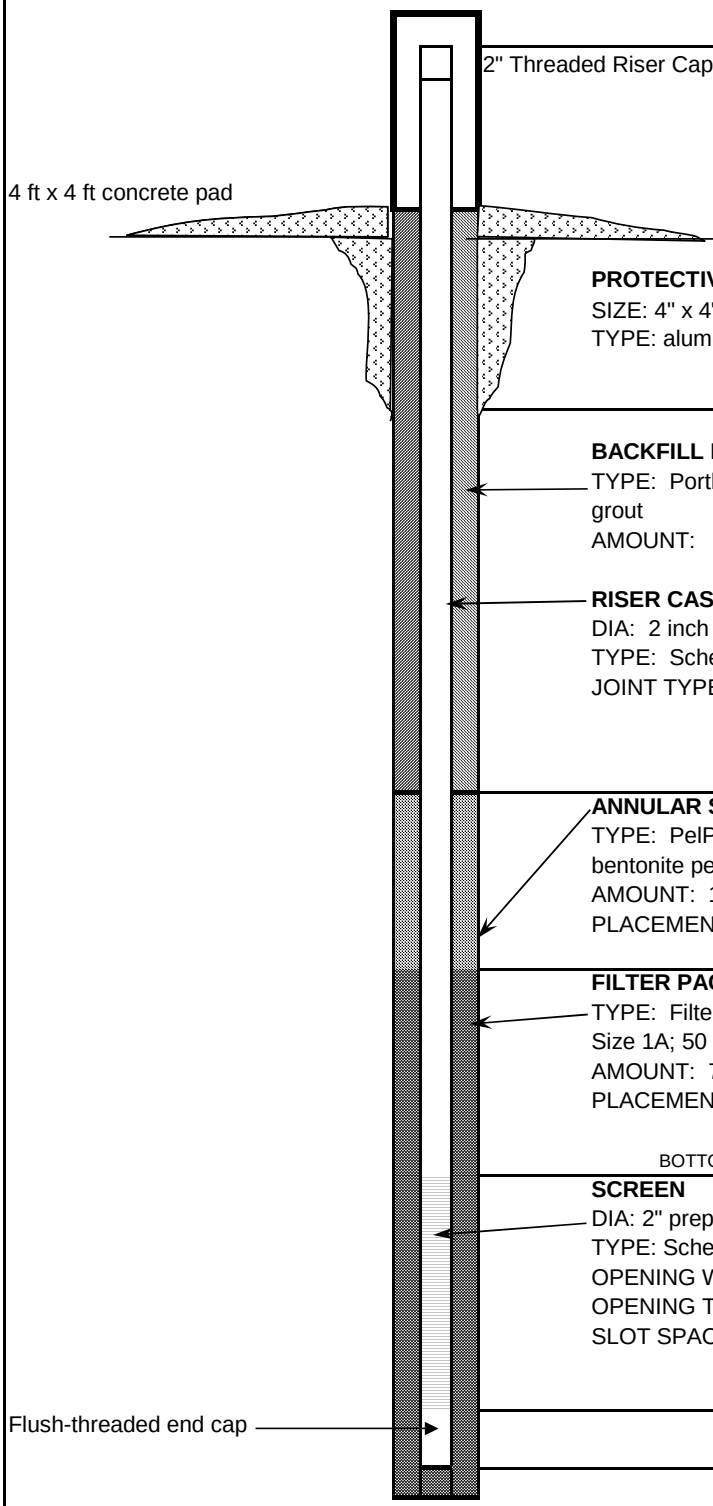
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)* - 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.
30		- very hard, SAA; more competent; rock fragments less weathered		SS -6	29.5	9-10-50 (60)		transition to lower saprolite.
35		- 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.
40		- brown black, damp, very hard, sandy SILT with gravel; contains black manganese, red iron and weathered quartz zones; less gneissic gravel than above; micaceous		SS -8	39.5	11-12-50 (62)		fewer rock fragments.
45		**Silty Gravel (GM)** - brown, tan and black, damp, very dense, silty GRAVEL; predominately weathered to partially weathered gneiss fragments	779.6 775.0	SS -9	44.5	17-50 (50)		transitioning to partially weathered rock.
50		Bottom of borehole at 49.1 feet.						

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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-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	824.02
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 6.25 bags cement 9 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	34.8	789.2
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Tremie w/water		
TOP OF FILTER PACK	36.8	787.2
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 7 Bags PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	38.7	785.3
SCREEN 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	775.3
BOTTOM OF CASING	49.1	774.9

SOUTHERN COMPANY

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** 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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)						no residual soil; low area previously excavated..
5		- 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)		upper saprolite.
10		- brown-tan, dry, very stiff, gravelly SILT; relic 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		**Silty Gravel (GM)**	797.3	SS	24.5	51-15-25		

(Continued Next Page)

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

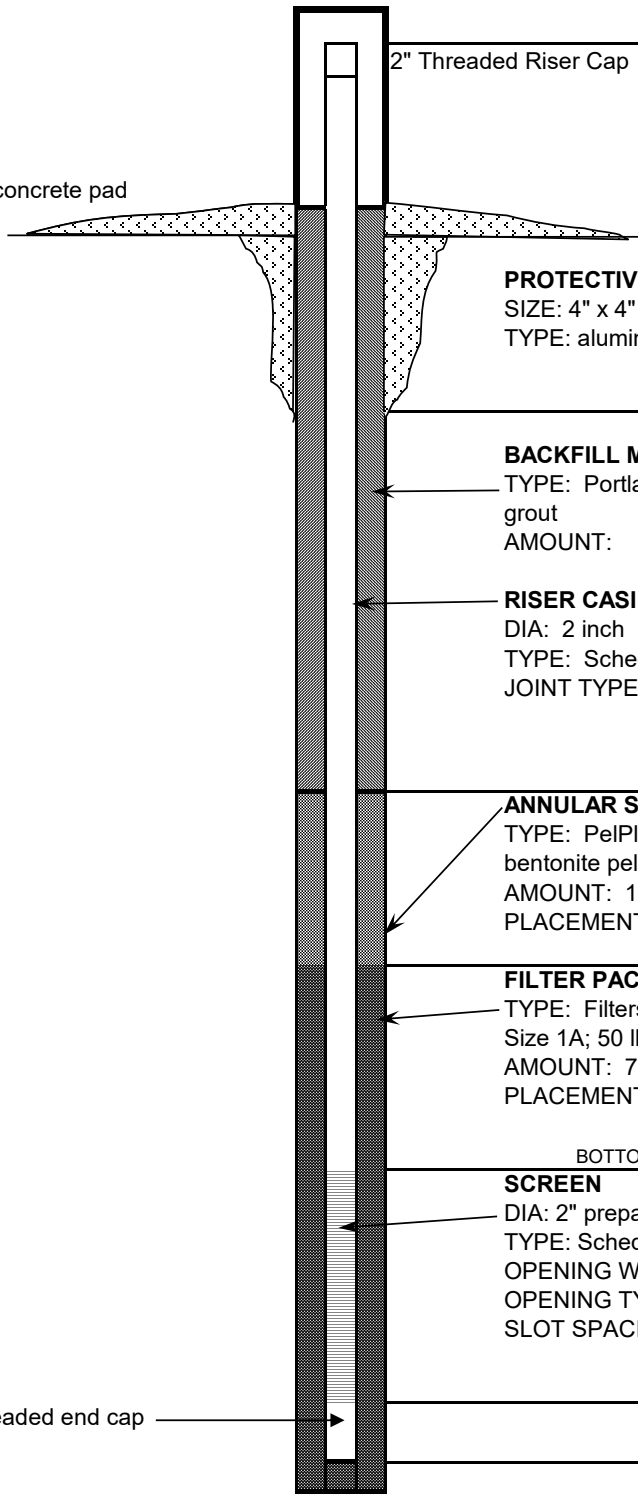
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silty Gravel (GM)*(con't)* - brown-black, damp, hard, silty GRAVEL; contains few rock fragments; crumbles to gravely silt to silty gravel; manganese staining		-5		(40)		H2O return when pulling augers.
30			791.7	SS -6	29.5	50 (0)		
		- very hard, partially weathered rock; schist fragments; crumbles to gravel with minor silt; micaceous Bottom of borehole at 30.1 feet.						
35								
40								
45								
50								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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-9/ B-9
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 10/10/2012	N: 1394055.9 E:2204170.0	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-3.1	824.35
2" Threaded Riser Cap		
GROUND SURFACE	0.0	821.86
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 5 bags cement 7 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	15.0	806.9
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	17.5	804.4
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 7 Bags PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	19.6	802.3
SCREEN 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	792.3
BOTTOM OF CASING	30.0	791.9

SOUTHERN COMPANY

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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)						
5		- 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		

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GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

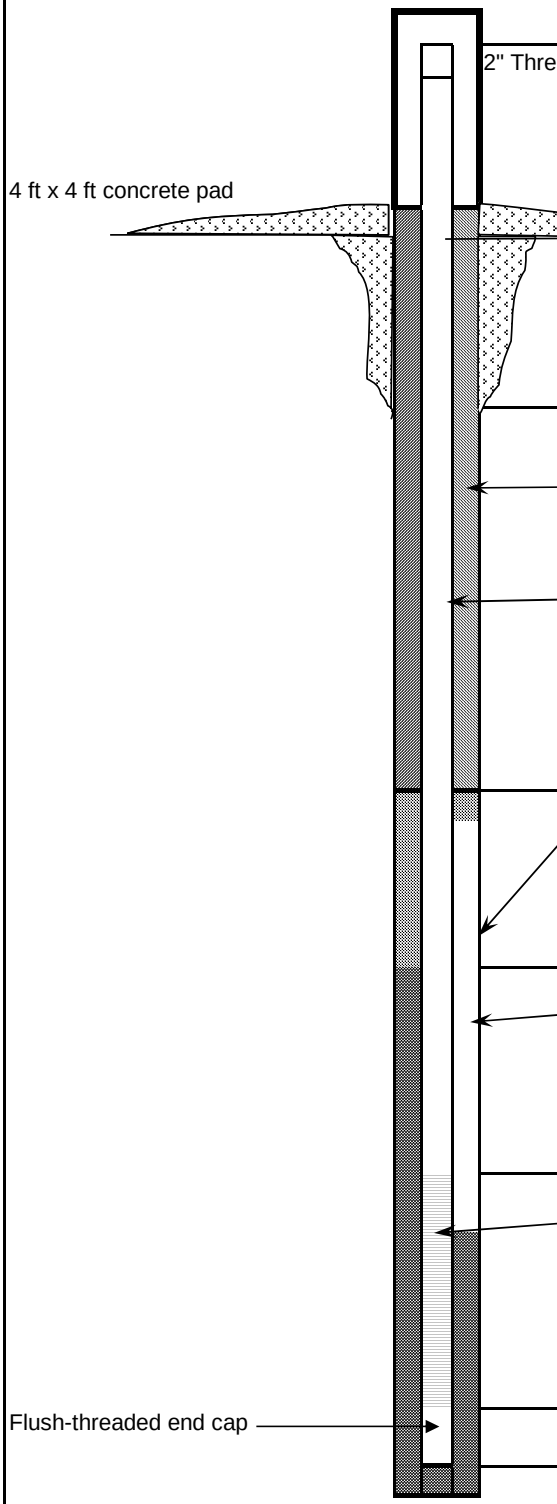
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)*		-5		(7)		
		- very damp, medium stiff, SAA						
30				SS -6	29.5	4-5-5 (10)		
		- stiff, SAA; contains highly weathered schist fragments						upper saprolite.
35				SS -7	34.5	7-8-9 (17)		
		- brown, very damp, very stiff, gravelly SILT wtih clay; contains highly weathered schist fragments; samples crumble and rub to clayey silt.						upper saprolite.
40				SS -8	39.5	6-12-16 (28)		
		- hard, SAA; more rock fragments; less weathered						lower saprolite.
45				SS -9	44.5			
		- wet, hard, gravelly SILT; prevalent relict structures	774.9					lower saprolite.
		Bottom of borehole at 46.0 feet.						
50								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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: Greg Dyer	DRILLING METHODS: HS Auger	DGWC-10/B-10
DATE CONSTRUCTED: 10/11/2012	N: 1393818.3 E:2204201.1	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.6	823.55
GROUND SURFACE	0.0	820.82
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 6 bags cement 9 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	29.8	791.0
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	32.1	788.7
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 6.75 Bags PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	35.0	785.8
SCREEN 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	775.8
BOTTOM OF CASING	45.4	775.4

SOUTHERN COMPANY

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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)						
5		- 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		

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GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

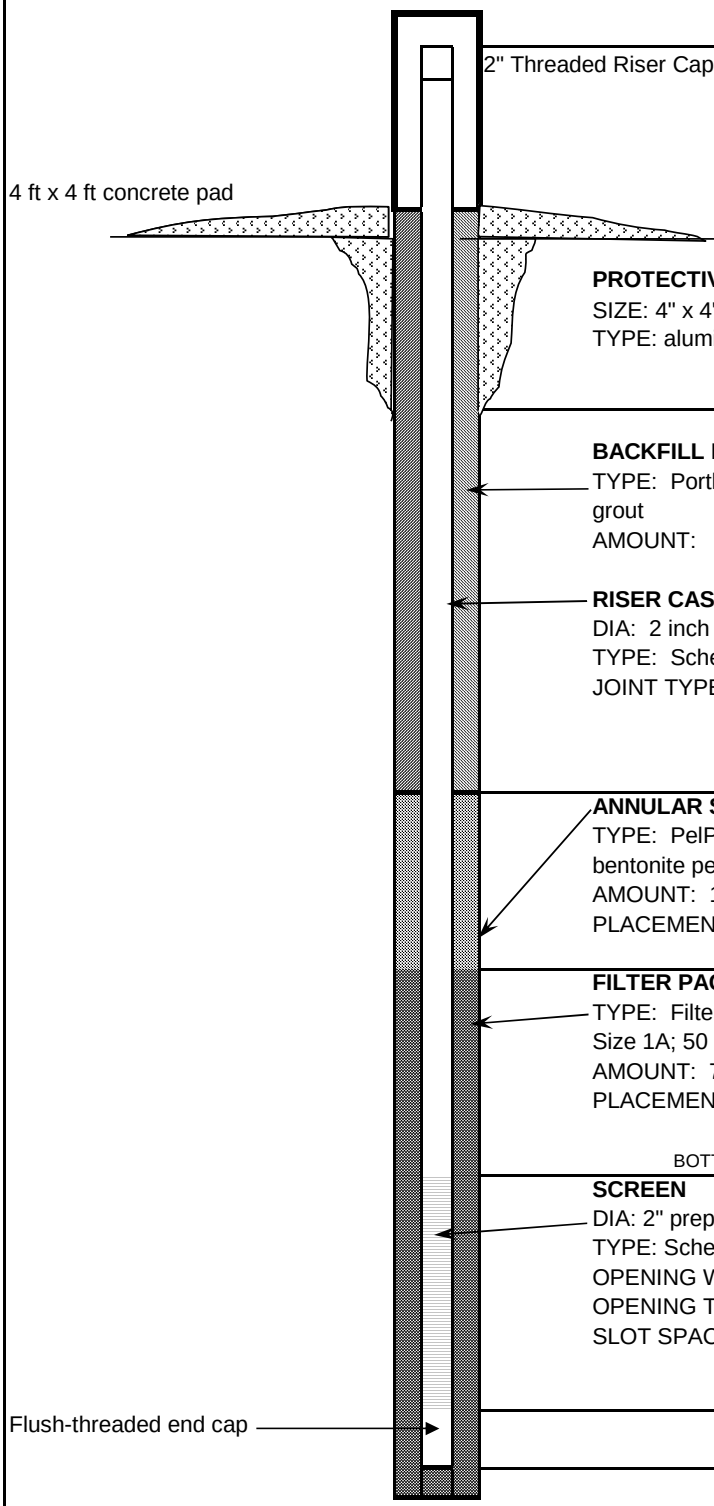
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)*		-5		(19)		
		- light tan, wet, very stiff, SAA; contains fine sand and small schist fragments						
30				SS -6	29.5	5-6-8 (14)		
		- stiff, SAA						
35				SS -7	34.5	6-8-14 (22)		
		- very stiff, SAA						
40				SS -8	39.5	12-20-25 (45)		
		- hard, SAA						
45				SS -9	44.5	26-50 (50)		
		- gray, very hard, SAA; contains schist gravel throughout						
50				SS -10	49.5	50 (0)		
		- dark gray, very hard, SAA	747.1					
		Bottom of borehole at 51.0 feet.						

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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: C. Sellers/K. Byrd	DRILLING METHODS: HS Auger	DGWC-11/B-11
DATE CONSTRUCTED: 10/15/2012	N: 1393547.1 E:2204166.2	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.5	800.57
GROUND SURFACE	0.0	797.99
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 7 bags cement 10.5 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	33.9	764.1
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	36.2	761.8
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 7 Bags PLACEMENT: Tremie		
BOTTOM OF RISER / TOP OF SCREEN	38.8	759.2
SCREEN 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	749.2
BOTTOM OF CASING	49.1	748.9

SOUTHERN COMPANY

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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)						
5		- brown/tan, damp, soft, SILT with some clay; micaceous		SS -1	4.5	1-2-2 (4)		
				UD -1	7.0			
		▽	761.7	SS -2	9.5	WH-WH-WH (0)		
10		**Lean Clay (CL)** - red/orange/light brown, wet, very soft, CLAY; contains sparse mica and fine sand grains						
			756.7	SS -3	14.5	WH-WH-7 (7)		
15		**Silt (ML)** - yellowish orange, wet, medium stiff, sandy SILT; very fine-grained						
20		- light to olive gray, wet, very stiff, SILT; micaceous; contains heavily weathered schist fragments		SS -4	19.5	6-11-8 (19)		
25			746.2	SS	24.5	2-2-3		

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GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

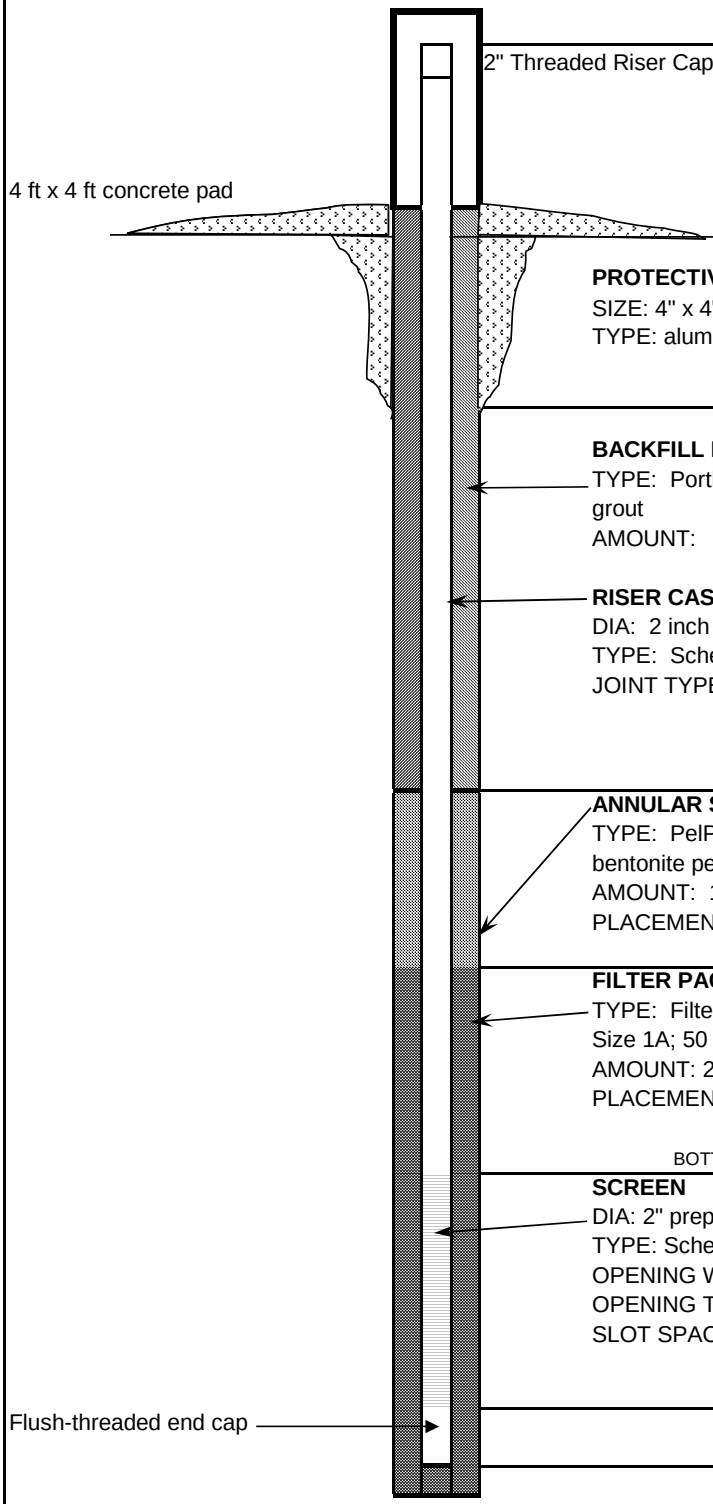
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- yellowish orange, damp, medium stiff, clayey SILT; micaceous	-5			(5)		
		Bottom of borehole at 26.0 feet.						

30
35
40
45
50

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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
GROUND SURFACE	0.0	771.10
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 4 bags cement 6 lbs bentonite **RISER CASING** DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	10.2	760.9
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	12.6	758.5
FILTER PACK 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	756.4
SCREEN 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	746.4
BOTTOM OF CASING	25.1	746.0

SOUTHERN COMPANY

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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 9.0 ft						
10		**Silt (ML)** - tan-brown, dry, very hard, SILT; saprolite (weathered schist); intact relict schistosity	781.8	SS -1	9.5	21-50 (50)		
15		- mottled tan, brown and red with black manganese staining, dry, very hard, clayey SILT; saprolite		SS -2	14.5	18-30-50 (80)		
20		- damp, hard, SAA		SS -3	19.5	6-14-26 (40)		
25				SS	24.5	12-22-31		

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

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SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

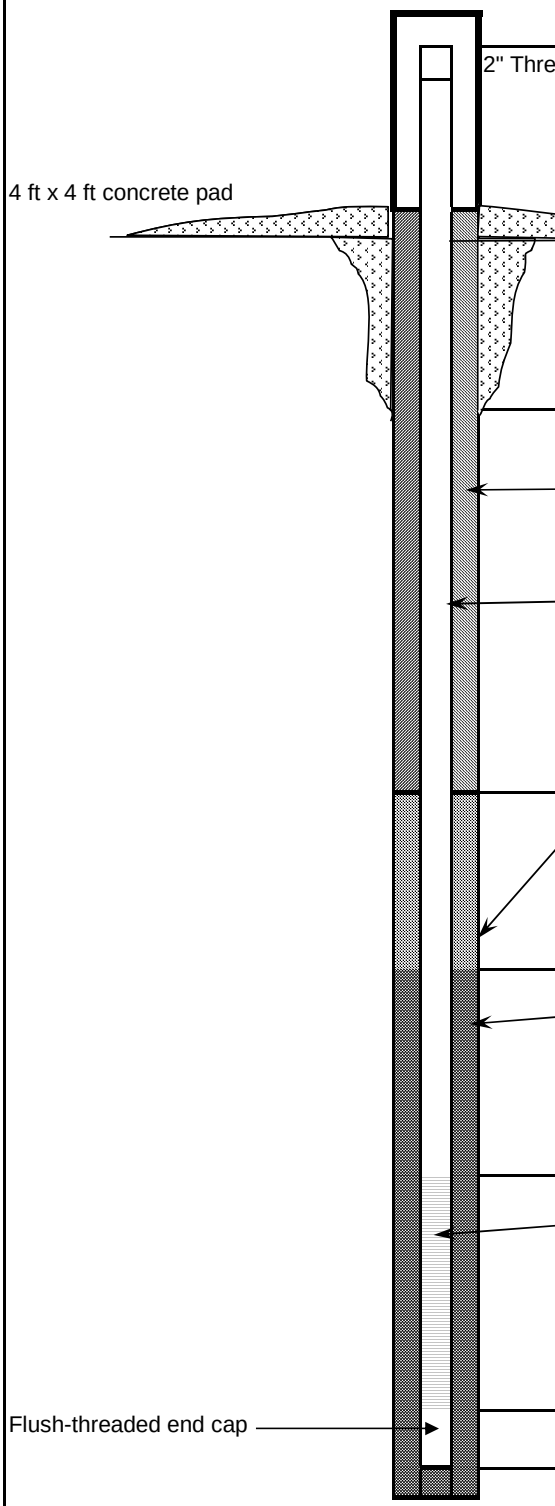
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)*		-4		(53)		
		- SAA						
		▼						
				SS -5	29.5	14-20-28 (48)		
30		- SAA						
				SS -6	34.5	12-50 (50)		
35		- moist, very hard, SAA with more competent schist fragments						
				SS -7	39.5	18-29-50 (79)		
40		- very hard, SAA; more sandy silt and less schist fragments						
				SS -8	44.5	50 (0)		saprock/top of rock transition.
45		- gray-brown, saprock/pwr; limited recovery as top of rock was encountered	745.3					
		Bottom of borehole at 46.0 feet.						
50								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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: Greg Dyer	DRILLING METHODS: HS Auger	DGWC-13/B-13
DATE CONSTRUCTED: 11/29/2012	N: 1392881.1 E:2204084.6	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.8	794.10
GROUND SURFACE	0.0	791.20
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 14 bags cement 14 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	29.0	762.2
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	31.2	760.0
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 7 Bags PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	33.4	757.8
SCREEN 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	747.8
BOTTOM OF CASING	43.8	747.4

SOUTHERN COMPANY

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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 9.0 ft						
			780.8					
10		**Silt (ML)** - tan with green and red-orange mottling, damp, soft, SILT; trace of schistose bedding; trace schist fragments; slightly micaceous and quartzose		SS -1	9.5	1-2-2 (4)		residual soil. upper saprolite.
15		- 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.
			770.3					
20		**Silty Gravel (GM)** - brown, tan and silver, dry, very hard, SAPROCK; predominately schist fragments; moderately weathered		SS -3	19.5	16-50 (50)		saprock/pwr.
		- SAA; softer zone from 23' to 24'						
			765.5					
25		**Schist**		SS	24.5	50		

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SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

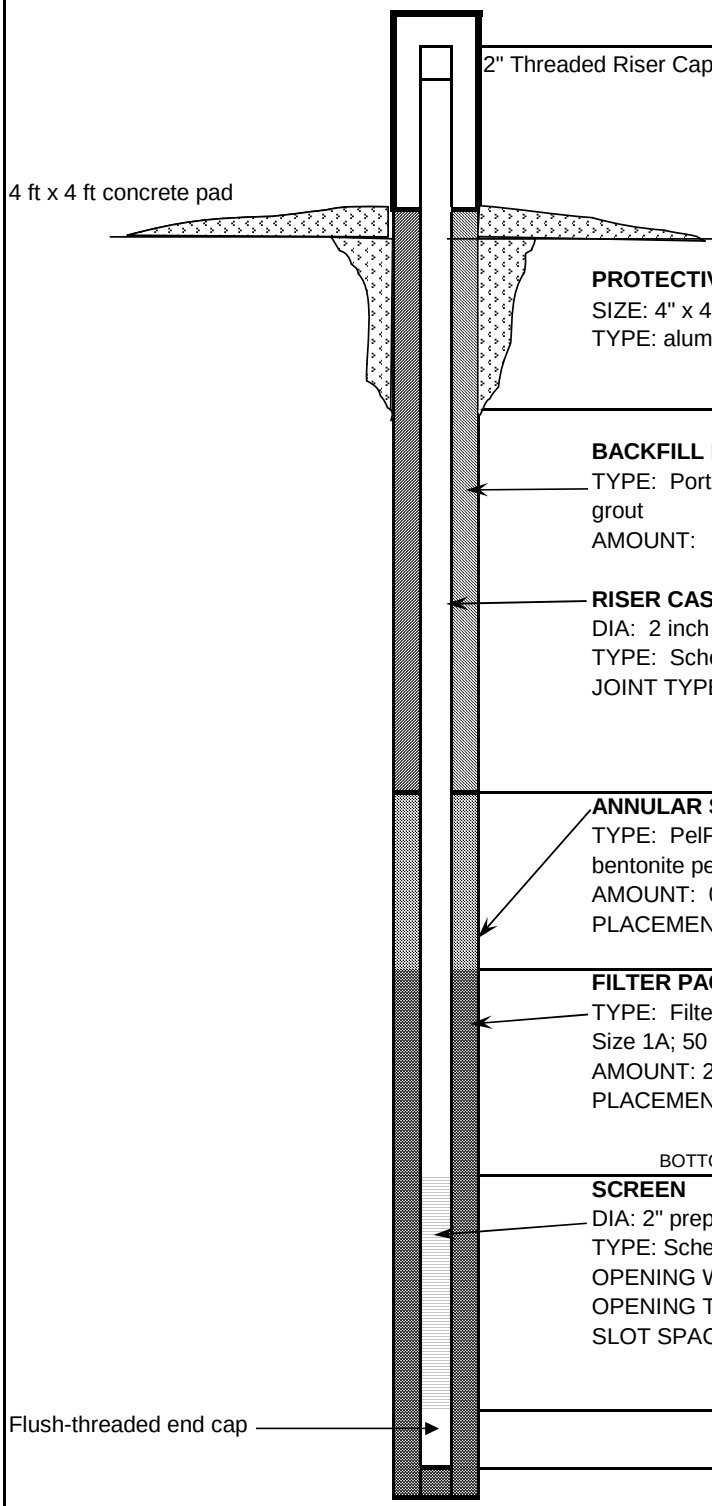
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- green, silver, black and white, BUTTON MICA SCHIST; heavily fractured; iron-staining; quartz banding; sheared foliations **Schist***(con't)* - gray, silver and black, SCHIST; fractured; iron staining; feldspar augens; shear foliation less common		-4		(0)		prevalent iron-staining and manganese oxides. black dike or mylonite cross-cuts schist @ 45 degrees at 27.5'.
30		- green, silver, black and white, BUTTON MICA SCHIST; heavily fractured; prevalent iron-staining; feldspar augens; sheared	758.9					
		- 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 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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	
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger/HQ Rock Core	DGWC-14/B-14
DATE CONSTRUCTED: 12/18/2012	N: 1392574.2 E:2204013.3	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.6	792.40
GROUND SURFACE	0.0	789.69
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 24 bags cement 30 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	12.5	777.2
ANNULAR SEAL 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	774.2
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 2 Bags PLACEMENT: poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	23.9	765.8
SCREEN 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	755.8
BOTTOM OF CASING	34.3	755.4

HOLE DIA: 7 inch (auger)
3.8 inch (HQ core)

SOUTHERN COMPANY

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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 9.0 ft						
			812.5					
10		**Silt (ML)** - tan-red, dry, soft, SILT; about 3% clay; few schistose rock fragments; slightly micaceous		SS -1	9.5	2-1-2 (3)		residual soil.
15		- light tan, dry, medium stiff, SILT; homoeneous silt (no clay or sand); slightly micaceous; trae gneiss fragments near base of sample		SS -2	14.5	2-3-4 (7)		residual soil.
20		- 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)		
25				SS	24.5	14-24-27		

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SOUTHERN COMPANY

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
		Silt (ML)*(con't)* - 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.
30		- 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.
35		- 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.
40		- olive green, tan and silver, moist, very hard, crumbles to SILT with clay; very micaceous; relict schitose structure; moderately weathered schist fragments		SS -7	39.5	14-36-50 (86)		lower saprolite.
45		**Silty Gravel (GM)** - olive green, tan and black, moist, very hard, crumbles to silty GRAVEL; less weathered schist fragments	777.0	SS -8	44.5	50 (0)		transition from saprolite to saprock.
50		**Silt (ML)** - 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.

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SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

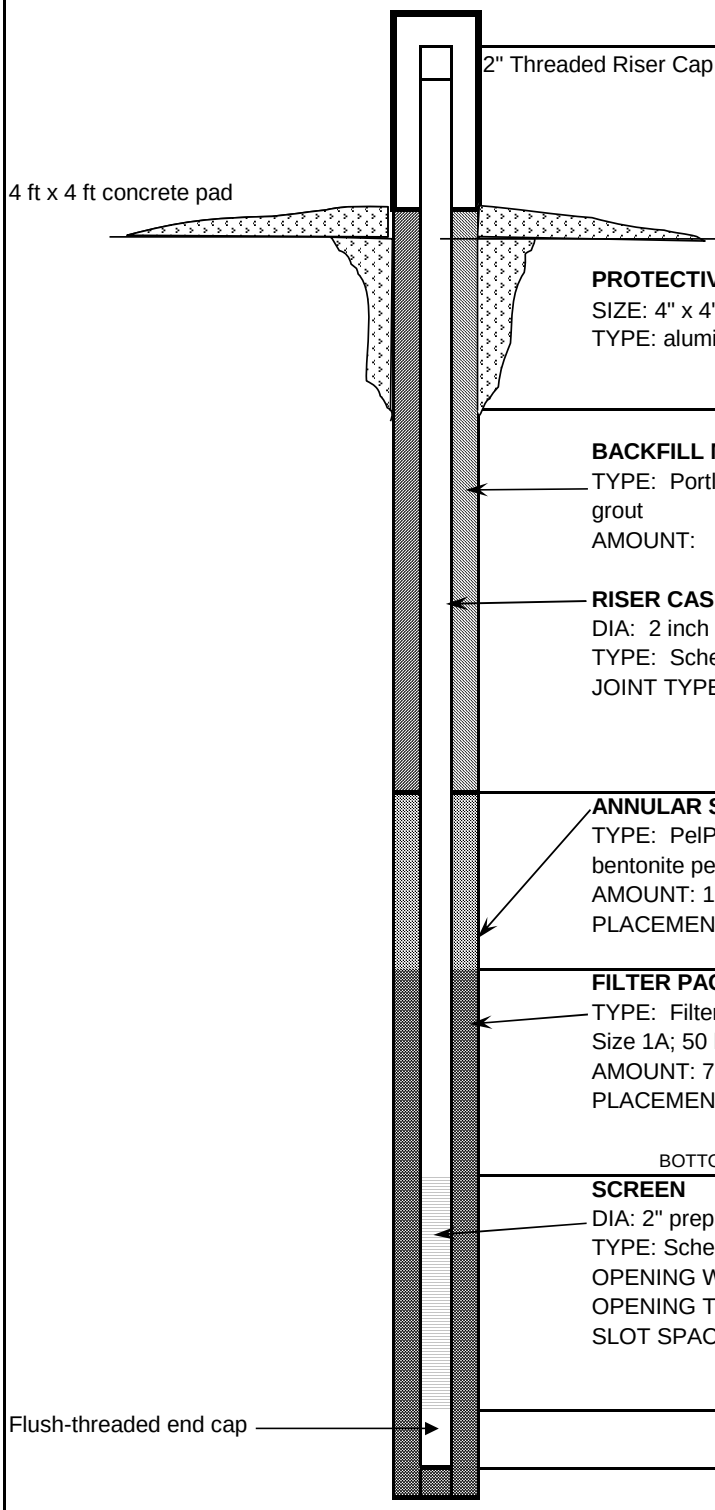
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
55		**Silty Gravel (GM)** - dark green and black, damp, very hard, weathered schist GRAVEL	767.0	SS -10	54.5	50 (0)		more competent saprock.
60		- very hard, SAA; damp to dry		SS -11	59.5	50 (0)		
65		- very hard, SAA		SS -12	64.5	50 (0)		
			754.3					
		Bottom of borehole at 67.2 feet.						
70								
75								
80								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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-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	824.50
GROUND SURFACE	0.0	821.43
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 13 bags cement 17.5 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	52.4	769.0
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	54.5	766.9
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 7 Bags PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	56.7	764.7
SCREEN 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	66.7	754.7
BOTTOM OF CASING	67.1	754.3

SOUTHERN COMPANY

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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 9 ft						
			814.6					
10		**Silt (ML)** - tan and brown, dry, stiff, SILT; slightly micaceous; trace manganese oxides		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		

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GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

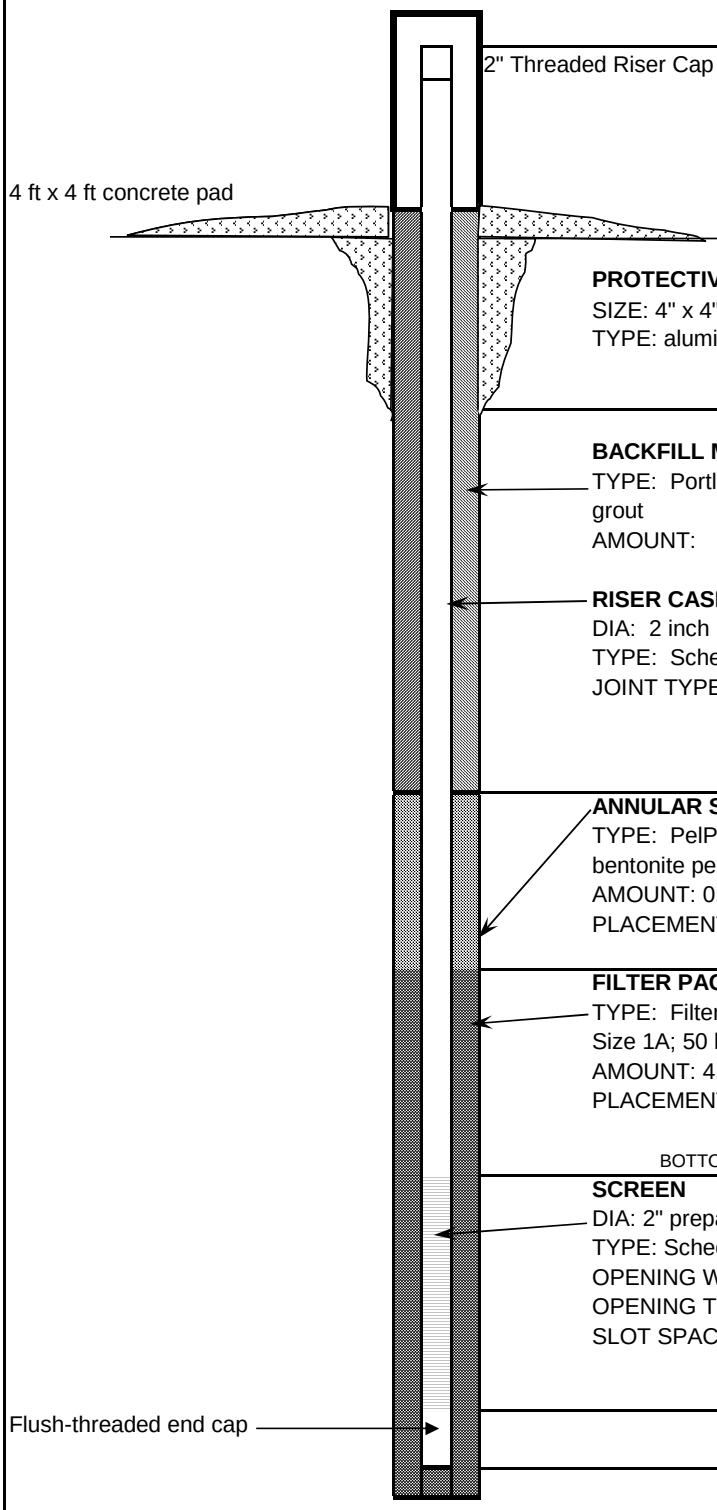
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)* - medium stiff, SAA; silt more elastic		-4		(6)		
30		- mottled tan, brown and black, moist, stiff, SILT; saprolite like relict structures; micaceous; weathered schistose foliations; trace gravel; trace manganese oxides		SS -5	29.5	7-5-6 (11)		upper saprolite.
35		- wet, stiff, SAA		SS -6	34.5	6-5-5 (10)		
40		- wet, stiff, SAA; more schist gravel and slightly less weathered		SS -7	39.5	5-6-5 (11)		
45		- wet, very stiff, SAA; slightly less weathered trend		SS -8	44.5	5-9-8 (17)		
			777.6					
		Bottom of borehole at 46.0 feet.						
50								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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-16/ B-16
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
GROUND SURFACE	0.0	823.54
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 5.5 bags cement 8 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	26.5	797.0
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 0.75 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	29.2	794.3
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 4.5 Bag PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	33.4	790.1
SCREEN 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	780.1
BOTTOM OF CASING	43.7	779.8

SOUTHERN COMPANY

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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 15.0 ft						
15		**Silt (ML)** - 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.
20		- brown, damp, stiff, SILT with clay; highly weathered relict structure; micaceous; trace manganese oxides		SS -2	19.5	4-6-9 (15)		upper saprolite.
25				SS	24.5	3-5-6		

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SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

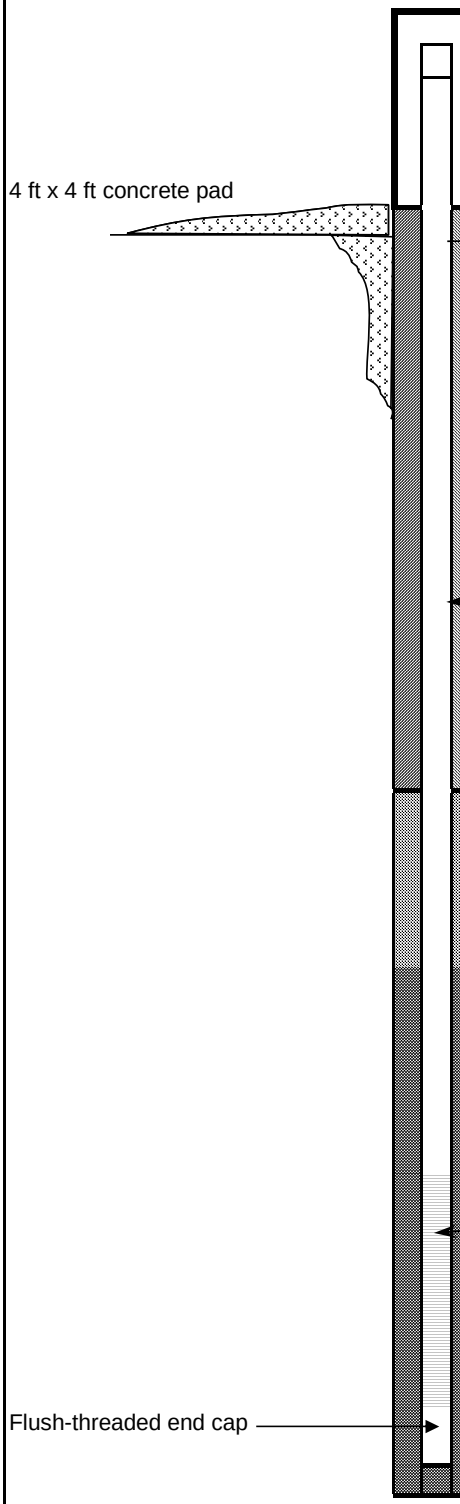
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)* - tand and green, damp, stiff, highly weathered relic structure; micaceous		-3		(11)		upper saprolite.
30		- green to mottled green, black, 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	788.2	SS -7	44.5	16-19-20 (39)		lower saprolite.
50		Bottom of borehole at 46.0 feet.						

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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: Greg Dyer	DRILLING METHODS: HS Auger	DGWC-17/B-17
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		
GROUND SURFACE	0.0	834.14
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 20 bags cement 30.5 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	30.0	804.1
ANNULAR SEAL TYPE: PelPlug TR-30 1/4" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	32.0	802.1
FILTER PACK 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	799.9
SCREEN 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	789.9
BOTTOM OF CASING	44.5	789.6

SOUTHERN COMPANY

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** 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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		- Vacuum excavation from 0 ft to 18.0 ft						
10								
15								
			805.9					
20		**Silt (ML)** - tan-orange, wet, medium stiff, SILT with clay; trace quartz gravel; mica flakes; trace relict structures but highly weathered		SS -1	19.5	2-3-5 (8)		residual soil-upper saprolite transition.
25				SS	24.5	3-5-6		

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SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

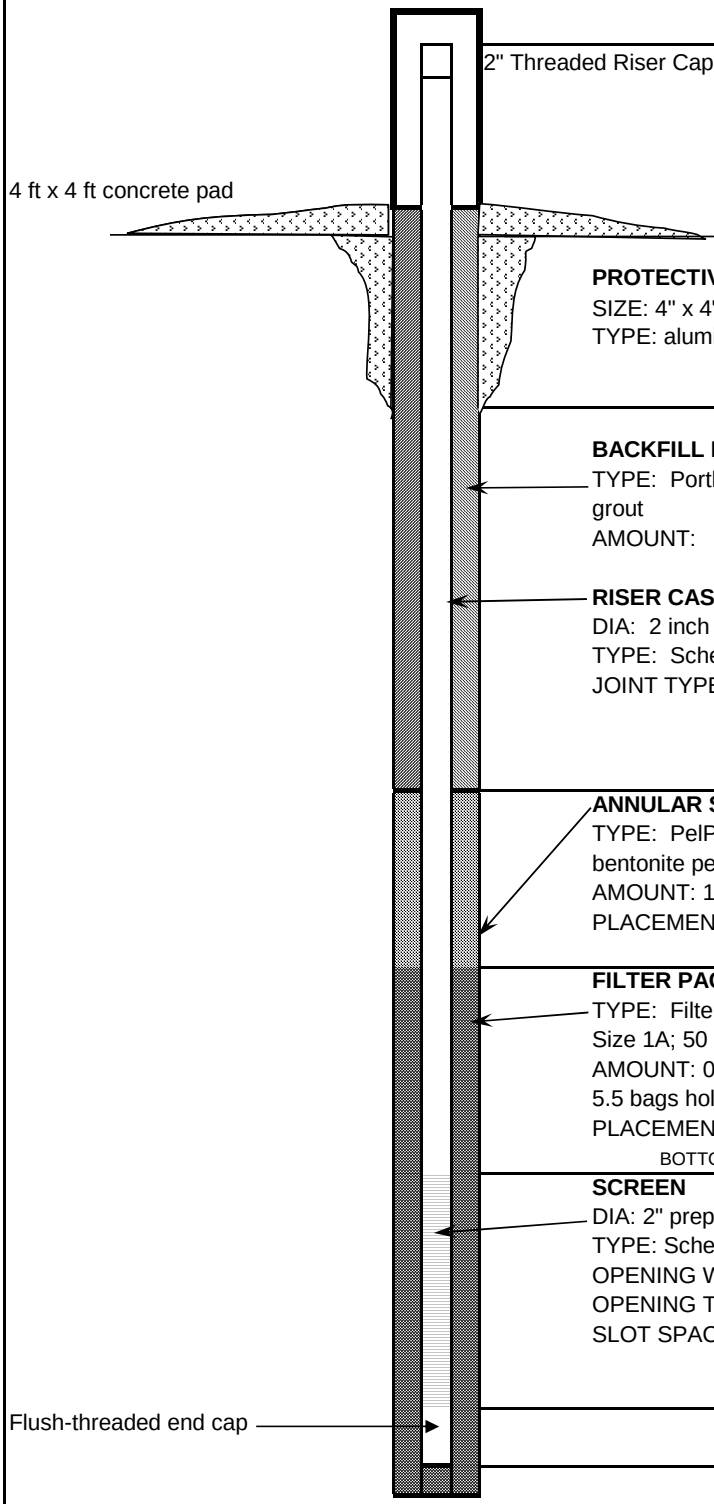
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)* - 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.						
35								
40								
45								
50								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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-18/ 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
GROUND SURFACE	0.0	823.89
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 28 bags cement 42 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	18.0	805.9
ANNULAR SEAL TYPE: PelPlug TR-30 1/4" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	19.2	804.7
FILTER PACK 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
SCREEN 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
BOTTOM OF CASING	32.6	791.3

SOUTHERN COMPANY

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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Fill (ML) - SILT						Vaccum excavation from 0 ft to 10 ft. Soil identified based on observation during vacuum excavation.
5			816.9					
		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.
15		- wet, medium stiff		SS -2	14.5	2-3-3 (6)		
20		- moist, very stiff, more iron oxide staining below 19 ft		SS -3	19.5	2-4-6 (10)		
25				SS	24.5	3-3-4		

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SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

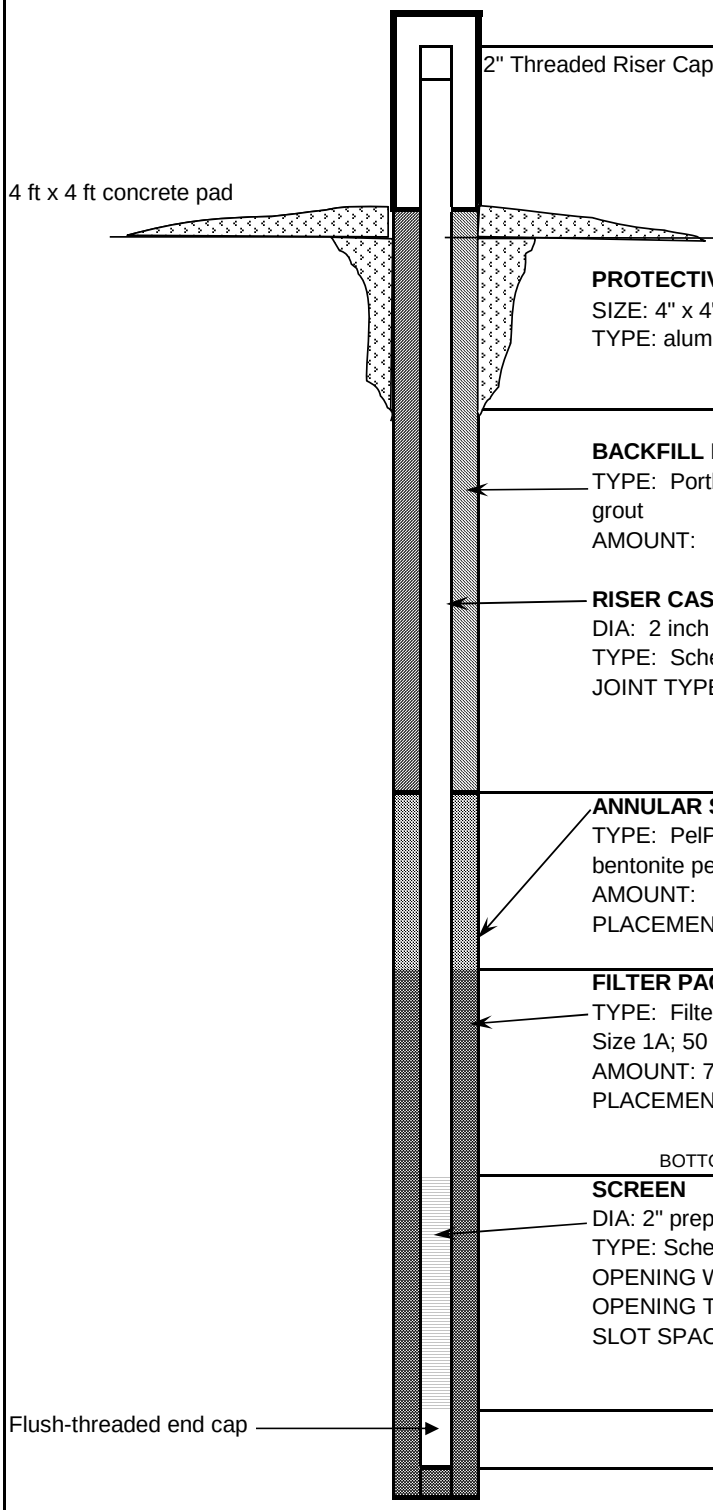
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)* - moist, medium stiff		-4		(7)		
		▼ - wet, soft, little mica; manganese oxide staining; very weathered; rock texture		SS -5	29.5	1-1-1 (2)		
30		- brown, wet, stiff, micaceous SILT						
35				SS -6	34.5	4-5-8 (13)		
40			781.9					
		Bottom of borehole at 41.0 feet.						
45								
50								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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 3	RIG TYPE: CME550	
LOGGER: B. Gallagher	DRILLING METHODS: HS Auger	DGWC-19/B-19
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		
GROUND SURFACE	0.0	822.87
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 16 bags cement 23 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	24.7	798.2
ANNULAR SEAL TYPE: PelPlug TR-30 1/4" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	27.2	795.7
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 7 Bags PLACEMENT: Tremie		
BOTTOM OF RISER / TOP OF SCREEN	29.4	793.5
SCREEN 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
BOTTOM OF CASING	39.8	783.1

SOUTHERN COMPANY

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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 10 ft						
10		**Silt (ML)**	809.8	SS -1	10.0	2-2-5 (7)		
		- yellowish red, medium stiff, micaceous SILT						
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		

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GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

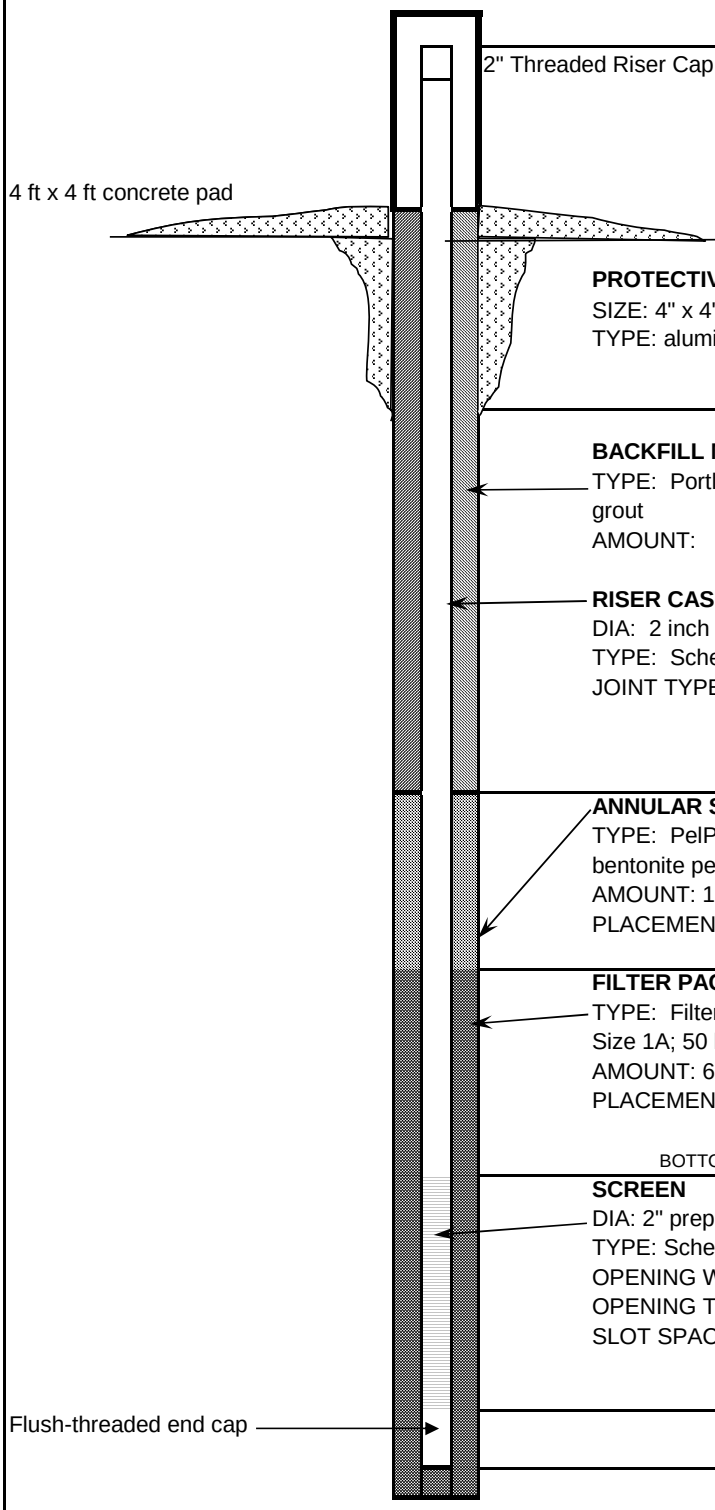
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)*		-4		(14)		
		- olive green, stiff, SAA						
30				SS -5	29.5	6-9-10 (19)		
		- stiff, SAA						
35				SS -6	34.5	3-4-5 (9)		
		- stiff, SAA with heavy staining						
40				SS -7	39.5	5-7-7 (14)		
		- SAA	778.8					
		Bottom of borehole at 41.0 feet.						
45								
50								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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
GROUND SURFACE	0.0	819.66
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 9 bags cement 12 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	24.7	795.0
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	26.7	793.0
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 6.5 Bags PLACEMENT: Tremie		
BOTTOM OF RISER / TOP OF SCREEN	29.1	790.6
SCREEN 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	780.6
BOTTOM OF CASING	39.7	780.0

SOUTHERN COMPANY

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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation form 0 ft to 9.5 ft						
5								
			804.0	SS -1	9.5	3-3-4 (7)		
10		**Clayey Silty Sand (SC-SM)** - orange and tan, moist, loose, silty, clayey SAND; micaceous; fine to very fine-grained						
			799.0	SS -2	14.5	4-3-6 (9)		
15		**Silty Sand (SM)** - tan, orange and black, damp, loose, silty SAND; micaceous; very fine-grained						
				SS -3	19.5	6-10-20 (30)		
20		- tan, orange and black, damp, medium dense, silty SAND; micaceous; fine-grained						upper saprolite.
				SS	24.5	10-16-18		
25								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

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SOUTHERN COMPANY

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
		Silty Sand (SM)*(con't)* - 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; relict structure; fine-grained		SS -8	44.5	9-16-21 (37)		saprolite.
50		- hard, SAA		SS -9	49.5	16-21-19 (40)		

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SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

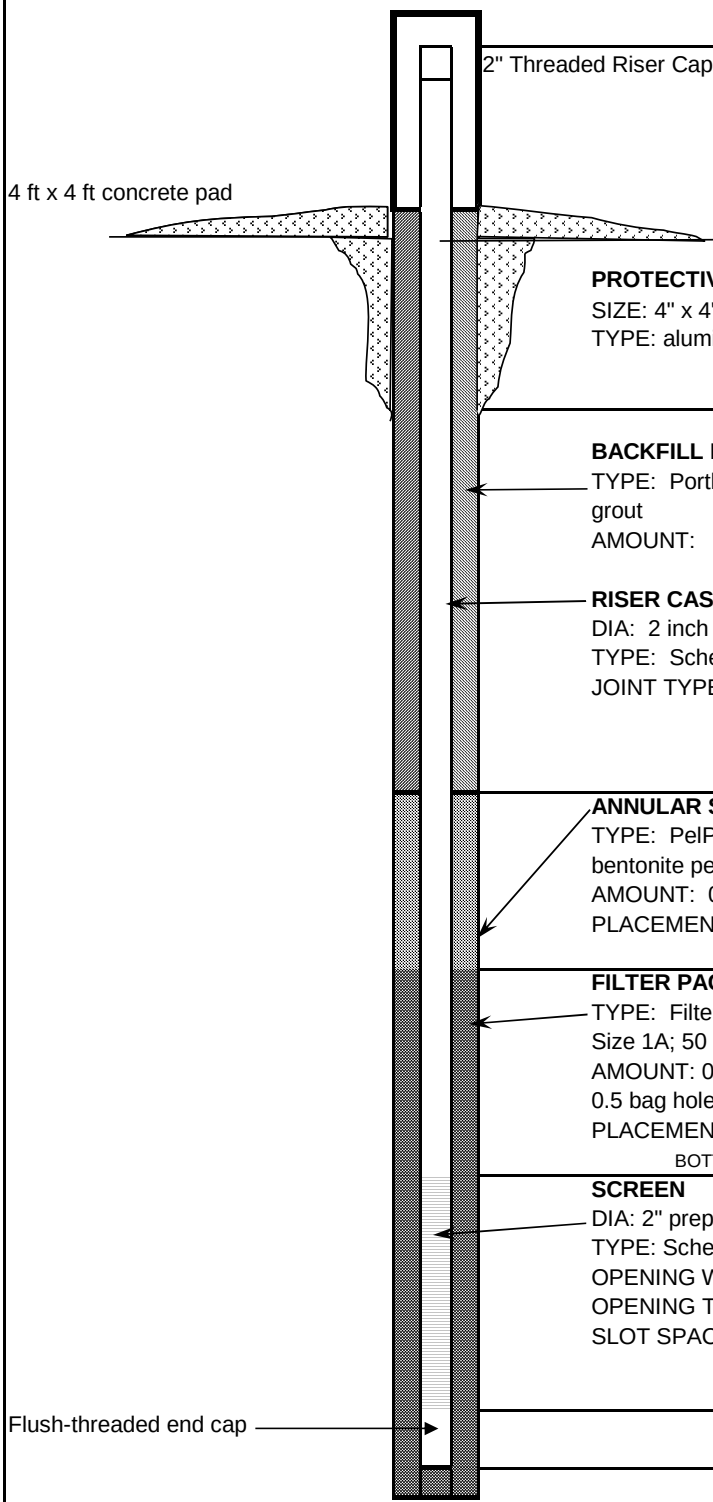
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
55		**Silty Sand (SM)***(con't)* - very hard, SAA		SS -10	54.5	50 (0)		
60			753.4	RC -1	60.1			
		Schist - black and gray, SCHIST SAPROCK saprock or schist like MYLONITE; weathering and iron and manganese staining along foliations						
65				RC -2	64.1			
			744.4					
70		Bottom of borehole at 69.1 feet.						
75								
80								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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-21/B-21
LOGGER: Dustin Brooks	DRILLING METHODS: HS Auger/HQ Rock Core	
DATE CONSTRUCTED: 10/31/2012	N: 1392067.5 E:2202063.5	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.8	816.28
GROUND SURFACE	0.0	813.47
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 15 bags cement 20 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	51.2	762.3
ANNULAR SEAL 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
FILTER PACK 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
SCREEN 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
BOTTOM OF CASING	69.0	744.5

HOLE DIA: 7 inch (auger)
3.8 inch (HQ core)

SOUTHERN COMPANY

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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 9.5 ft						
10		**Silt (ML)** - brown, very stiff, SILT; micaceous	804.2	SS -1	9.5	6-9-9 (18)		upper saprolite.
15		- tan, very moist, medium stiff, SILT; contains very fine sand and mica		SS -2	14.5	3-3-5 (8)		
20	▽	- wet, very stiff, SAA		SS -3	19.5	10-11-15 (26)		
25				SS	24.5	3-4-4		

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SOUTHERN COMPANY

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
		Silt (ML)*(con't)*		-4		(8)		
		- brown, medium stiff, SILT; contains fine sand and mica						
30				SS -5	29.5	10-16-19 (35)		
		- dark brown to dark gray, wet, hard, weathered schist						lower sparolite.
35				SS -6	34.5	50 (0)		
		- very hard, SAA						
40				SS -7	39.5	10-15-50 (65)		
		- brown to orange, wet, very hard						
		- black, weathered schist	769.2	SS -8	44.5	50 (0)		
45		**Schist**		RC -1	44.8			
		- very weathered SCHIST wtih mud in fractures						
			764.2	RC -2	49.5			
50		**Gneiss**						
		- very fractured BIOTITE GNEISS with schist-like features; red staining						

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SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

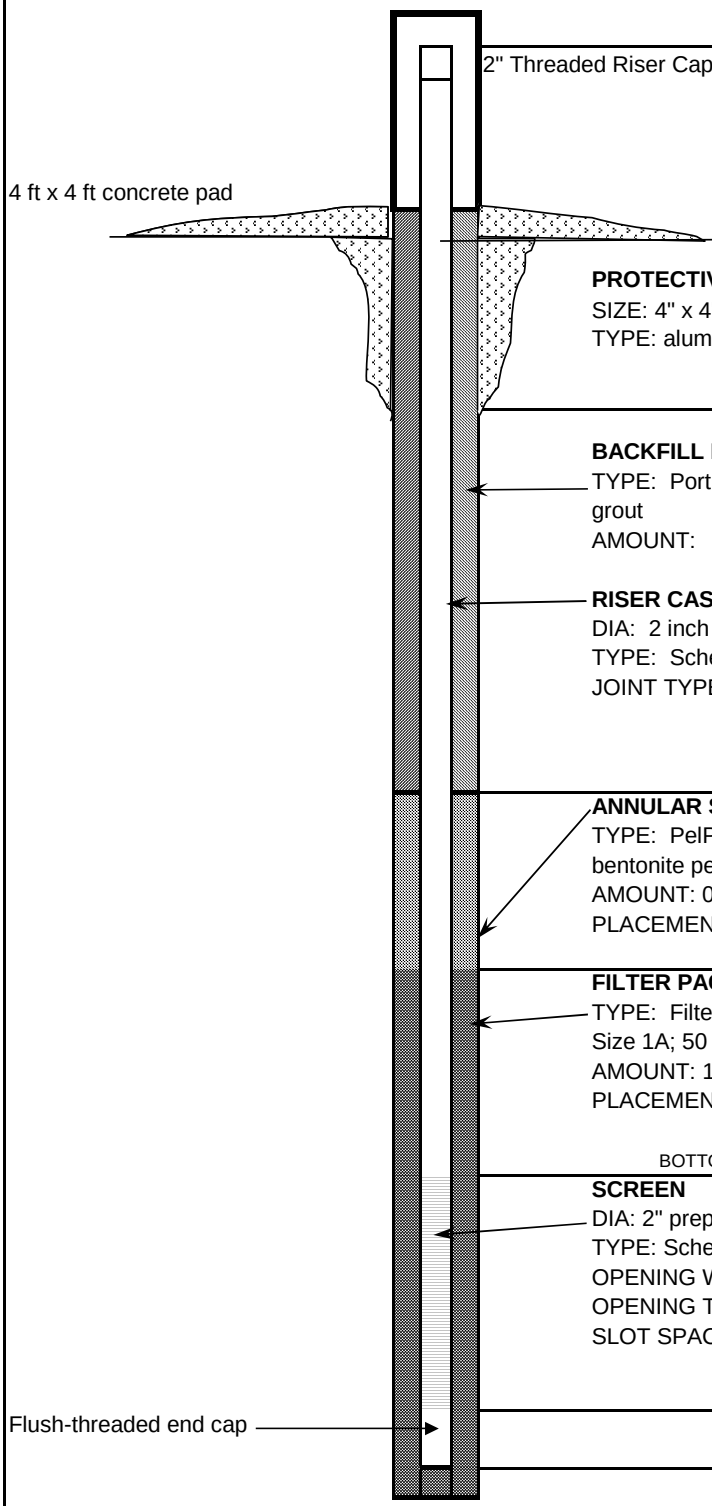
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
55		**Gneiss***(con't)* - GNEISS (mylonite); fractures throughout; stained	754.2	RC -3	54.5			
60		Bottom of borehole at 59.5 feet.						
65								
70								
75								
80								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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
GROUND SURFACE	0.0	813.69
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 9 bags cement 12.5 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	44.6	769.1
ANNULAR SEAL 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
FILTER PACK 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
SCREEN 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

HOLE DIA: 7 inch (auger)
3.8 inch (HQ core)

SOUTHERN COMPANY

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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vaccum excavation from 0 ft to 9.5 ft						
10		**Silt (ML)** - dark brown, wet, medium stiff, clayey SILT with gravel (schist)	806.2	SS -1	9.5	3-3-3 (6)		
15		- dark gray, very soft, clayey SILT; contains wood		SS -2	14.5	WH-1-1 (2)		
20		- light purple.gray, stiff, SILT; very fine-grained		SS -3	19.5	1-3-7 (10)		
25		**Silty Sand (SM)**	791.2	SS	24.5	10-14-16		

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SOUTHERN COMPANY

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
		Silty Sand (SM)*(con't)*		-4		(30)		
		- light tan, damp, medium dense, silty SAND; fine to very fine-grained; micaceous						
30				SS -5	29.5	7-5-2 (7)		
		- dark gray to brown, loose, angular gravel at top of sample; saprolite at bottom						
35				SS -6	34.5	13-17-50 (67)		
		- dark gray to brown, very dense, saprolite						
40				SS -7	39.5	50 (0)		
		- light tan to white, very dense, saprolite (silty); micaceous						
45				SS -8	44.5			
		- no sample obtained						
			768.6	RC -1	47.1			
		Gneiss						
50				RC -2	49.4			
		- weathered GNEISS; vertical fractures and red staining throughout						

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

(Continued Next Page)

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

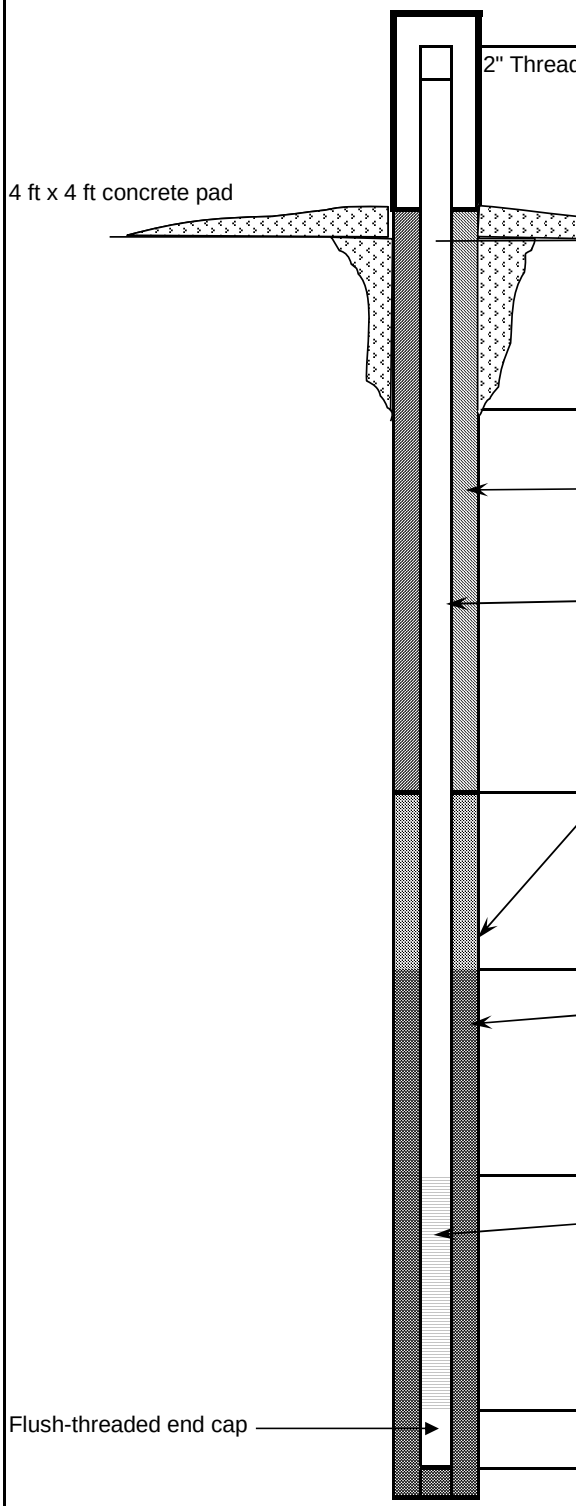
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
55		**Gneiss***(con't)* - light gray, GNEISS; some fractures	756.3	RC -3	54.4			
60		Bottom of borehole at 59.4 feet.						
65								
70								
75								
80								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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
GROUND SURFACE	0.0	815.63
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 8 bags cement 11 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	42.9	772.7
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 0.25 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	46.8	768.8
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 1 Bag PLACEMENT: Tremie		
BOTTOM OF RISER / TOP OF SCREEN	49.8	765.8
SCREEN 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	755.8
BOTTOM OF CASING	60.1	755.5

HOLE DIA: 7 inch (auger)
3.8 inch (HQ core)

SOUTHERN COMPANY

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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 9.5 ft						
5								
			792.5	SS -1	9.5	1-2-4 (6)		
10		**Lean Clay (CL)** - orange/tan, medium stiff, silty CLAY; micaceous; fine to very-fine grained						
			787.5	SS -2	14.5	3-4-6 (10)		
15		**Silt (ML)** - tan/orange/some white, stiff, SILT with very fine sand; very micaceous; saprolite						
				SS -3	19.5	4-4-5 (9)		
20		- SAA						
				SS	24.5	1-3-4		
25								

(Continued Next Page)

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

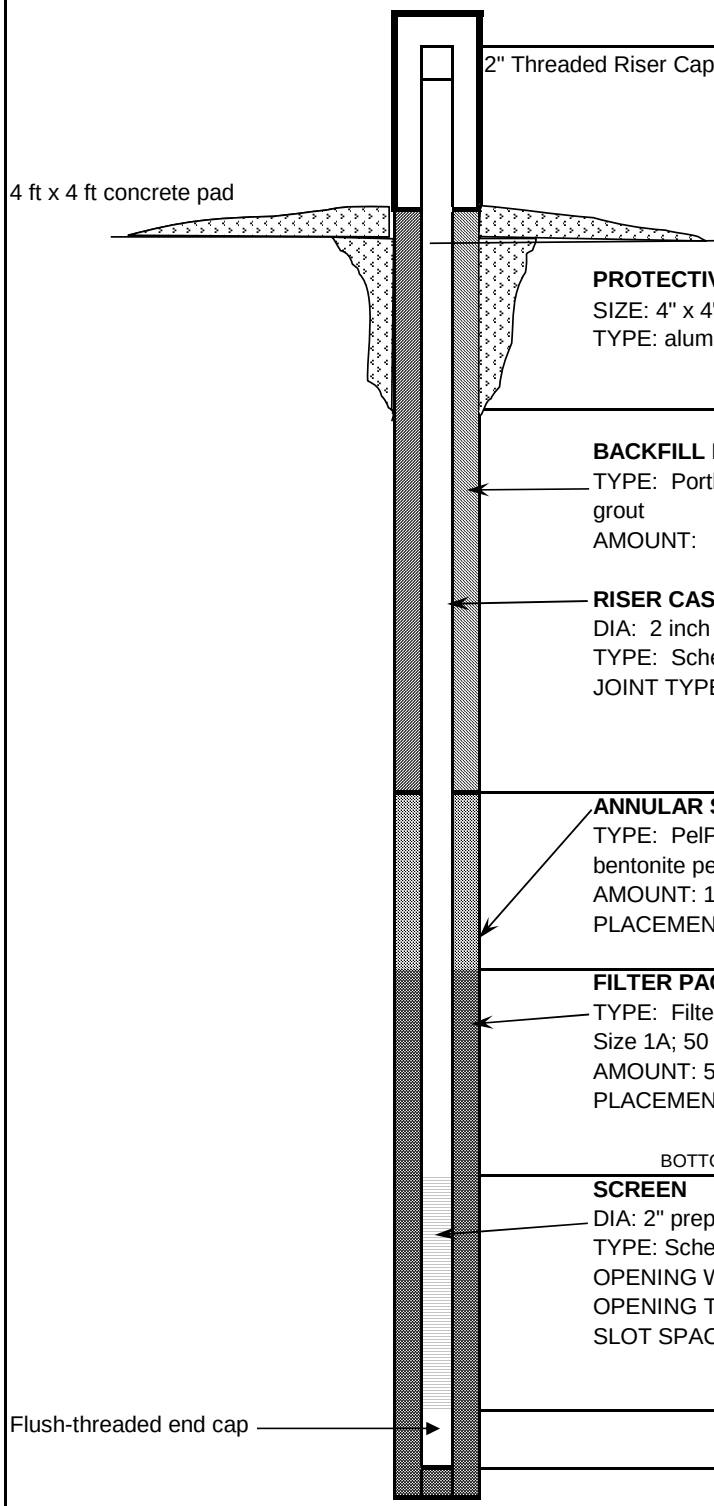
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)* - 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		**Silty Sand (SM)** - tan, damp, silty SAND	752.5 751.0	SS -9	49.5			
		Bottom of borehole at 51.0 feet.						

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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-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
GROUND SURFACE	0.0	801.98
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 8 bags cement 11 lbs bentonite **RISER CASING** DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded TOP OF SEAL	35.2	766.8
ANNULAR SEAL TYPE: PelPlug TR-30 1/4" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured TOP OF FILTER PACK	37.2	764.8
FILTER PACK 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
SCREEN 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
BOTTOM OF CASING	50.4	751.6

RECORD OF BOREHOLE DGWC-47/B-47

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 28.80 ft
LOCATION: Smyrna, GA

DRILL RIG: 100C Track Mounted Rig
DATE STARTED: 6/23/16
DATE COMPLETED: 6/23/16

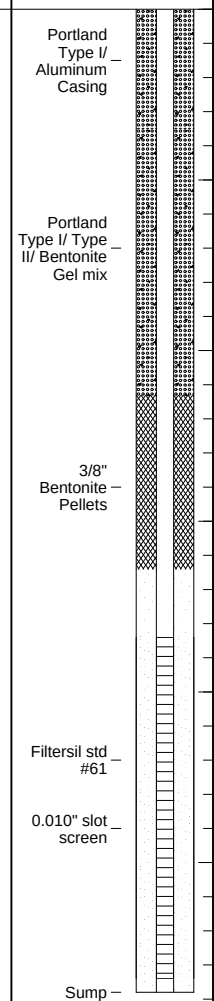
NORTHING: 1,391,553.80
EASTING: 2,202,610.50
GS ELEVATION: 794.35
TOC ELEVATION: 797.45 ft

DEPTH W.L.: 15.98
ELEVATION W.L.: 778.32
DATE W.L.: 6/23/2016
TIME W.L.: 15:56

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	ELEV. / DEPTH (ft)
0		0.00 - 4.00 SILT; red brown, trace subrounded to subangular fine gravel, gray to white, dry (fill)	ML	790.4 / 4.00
5	790	4.00 - 9.00 SILT; orange brown, some medium sand with black laminations, micaceous, stiff, dry to moist (saprolite)	ML	785.4 / 9.00
10	785	9.00 - 10.00 SILT; gray, some white and balck laminations, dry, stiff	ML	784.4 / 10.00
		10.00 - 13.00 SILT and GRAVEL; fine to coarse gravel and cobbles/moderately weathered rock (biotite schist), light brown silt and black with orange staining gravel, foliated, friable	GW-GM	781.4 / 13.00
15	780	13.00 - 20.00 GNEISS and weathered SCHIST; gray and white, foliated biotite gneiss, some orange staining, trace pyrite and garnets (saprock)	PWR	774.4 / 20.00
20	775	20.00 - 28.80 Biotite GNEISS (competent rock); some orange staining at fractures; trace pyrite and garnets	BR	765.6 / 28.80
25	770	Boring completed at 28.80 ft		
30	765			
35	760			
40	755			
45	750			

SAMPLES: SAMPLE NO., TYPE, REC

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-28.8'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush threaded with O-ring

WELL SCREEN
Interval: 18.4'-28.4'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 16.35'-28.8'
Type: Filtersil std61

FILTER PACK SEAL
Interval: 11.3'-16.4'
Type: 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0'-11.3'
Type: Portland Type I/Type II/Gel Mix

WELL COMPLETION
Pad: 4'x4'x4"
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE DGWC-48/B-48

SHEET 1 of 1

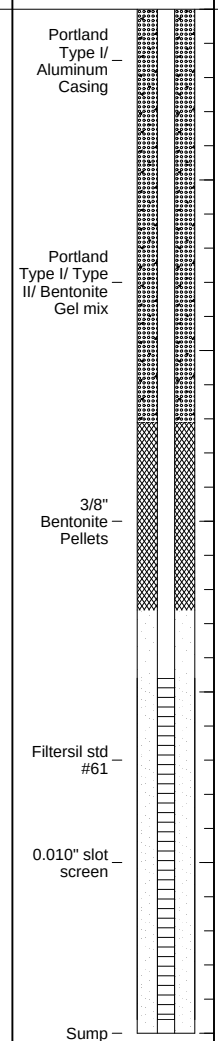
PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 30.00 ft
LOCATION: Smyrna, GA

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: 785.21
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

DEPTH (ft)	ELEVATION (ft)	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 - 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		3.00			
5	780							
10	775				774.2			
		11.00 - 24.00 SILT; gray to blackish brown, some fine to coarse sand, laminations, stiff to very stiff, dry	ML		11.00			
15	770							
20	765				761.2			
		24.00 - 30.00 biotite GNEISS; gray and white, orange staining, partially weathered bedrock, some clay, gray, micaceous	BR		24.00			
25	760							
30	755	Boring completed at 30.00 ft			755.2			
35	750							
40	745							
45								



WELL CASING
Interval: 0'-30'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush threaded with O-ring

WELL SCREEN
Interval: 19.6'-29.6'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 17.6'-30'
Type: Filtersil std61

FILTER PACK SEAL
Interval: 12.1'-17.6'
Type: 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0'-12.1'
Type: Portland Type I/Type II/Gel Mix

WELL COMPLETION
Pad: 4'x4'x4"
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

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

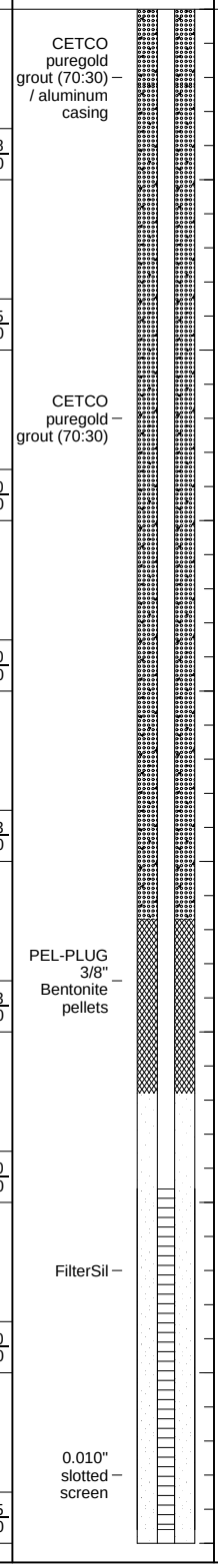
DRILL RIG: CME 55
DATE STARTED: 10/3/16
DATE COMPLETED: 10/3/16

NORTHING: 1,393,957.90
EASTING: 2,204,187.80
GS ELEVATION: 820.95
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)	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
5	815									
						2	DO	2-4-4	8	0.75 / 1.50
10	810									
					807.5					
		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, mosit to wet, soft to stiff.			13.50	3	DO	3-5-11	16	1.50 / 1.50
15	805									
						4	DO	3-5-9	16	1.50 / 1.50
20	800									
					797.5					
		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)			23.50	5	DO	7-8-14	22	1.33 / 1.50
25	795									
						6	DO	7-6-12	18	1.33 / 1.50
30	790									
			ML			7	DO	7-8-14	22	1.00 / 1.50
35	785									
						8	DO	14-32-50	82	1.00 / 1.50
40	780									
						9	DO	7-12-33	42	1.25 / 1.50
45		Boring completed at 45.00 ft			776					

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-34.6'
Material: Schedule 40 PVC
Diameter: 2
Joint Type: Flush/Screw

WELL SCREEN
Interval: 34.6'-44.6'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 31.8' - 45'
Type: FilterSil

FILTER PACK SEAL
Interval: 26.7'-31.8'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0'-26.7'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 4"x4"x5' aluminum

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: N/A

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

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE B-63

SHEET 1 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 46.00 ft
LOCATION: Due south of B-61. Flush mounted in the roadway.

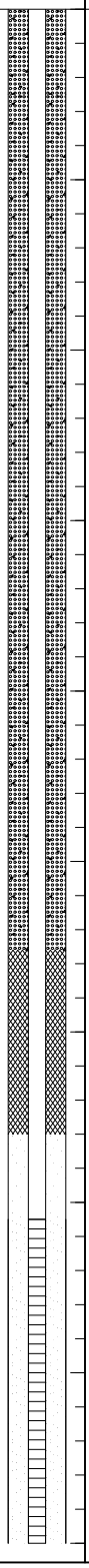
DRILL RIG: CME 55
DATE STARTED: 10/6/16
DATE COMPLETED: 10/6/16

NORTHING: 1,390,999.10
EASTING: 2,202,978.10
GS ELEVATION: 777.37
TOC ELEVATION: 777.10 ft

DEPTH W.L.: 34.2
ELEVATION W.L.: 743.1
DATE W.L.: 10/6/2016
TIME W.L.: 1745

DEPTH (ft)	ELEVATION (ft)	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 - 13.50 Top 12' were Hydrovac for utilities.								
5	770									
10	765				763.9					
15	760	13.50 - 18.50 CL-CH, CLAY, trace to some fine to coarse sand, moderate plasticity; reddish brown, fill; cohesive, moist, w<PL, firm	CL-CH		13.50 758.9	1	DO	3-2-2	4	0.75 1.50
20	755	18.50 - 24.50 ML, SILT, trace clay and sand, low plasticity; reddish brown; cohesive, moist, w<PL, firm.	ML		18.50	2	DO	1-1-2	3	1.50 1.50
25	750	24.50 - 25.00 SM, silty SAND, fine to coarse, non-plastic, trace silt; dark gray to black; non-cohesive, moist, w<PL, loose. 25.00 - 38.50 No samples were collected, due to the hole traveling on the driller.	SM		752.9 752.4 25.00	3	DO	8-20-10	30	1.50 1.50
30	745					4	DO	0-0-0	0	0.00 1.50
35	740					5	DO	0-0-0	0	0.00 1.50
40	735	38.50 - 46.00 SM, silty SAND, fine to coarse, non-plastic, trace gravel; dark gray; non-cohesive, wet, w<PL, very loose, PWR.	SM		738.9 38.50	6	DO	8-9-16	25	0.66 1.50
45		Log continued on next page				7	DO	50/1	50/1	0.08 0.08

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 35.5'
Material: Schedule 40 PVC
Diameter: 2
Joint Type: Flush/Screw

WELL SCREEN
Interval: 35.5'-45.5'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 33'- 45.9'
Type: FilterSil

FILTER PACK SEAL
Interval: 27.6'-33'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0' - 27.6'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round Flush Mount

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: N/A

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

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE B-63

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 46.00 ft
LOCATION: Due south of B-61. Flush mounted in the roadway.

DRILL RIG: CME 55
DATE STARTED: 10/6/16
DATE COMPLETED: 10/6/16

NORTHING: 1,390,999.10
EASTING: 2,202,978.10
GS ELEVATION: 777.37
TOC ELEVATION: 777.10 ft

DEPTH W.L.: 34.2
ELEVATION W.L.: 743.1
DATE W.L.: 10/6/2016
TIME W.L.: 1745

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
45			SM		731.4							
		Boring completed at 46.00 ft										
	730											
50												
	725											
55												
	720											
60												
	715											
65												
	710											
70												
	705											
75												
	700											
80												
	695											
85												
	690											
90												

WELL CASING
Interval: 0' - 35.5'
Material: Schedule 40 PVC
Diameter: 2
Joint Type: Flush/Screw

WELL SCREEN
Interval: 35.5'-45.5'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 33'- 45.9'
Type: FilterSil

FILTER PACK SEAL
Interval: 27.6'-33'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0' - 27.6'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round Flush Mount

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: N/A

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

SOUTHERN COMPANY
Energy to Serve Your World™

DRILLING LOG
GEOLOGICAL SERVICES

Hole No. **B-66**
Sheet 1 of 2

SITE	**Plant McDonough**	HOLE DEPTH	**55.5'**	SURFELEV	813.30
LOCATION	North of AP-4, near propertly line concrete pile	COORDINATES	33.831427		-84.470638
ANGLE		BEARING		CONTRACTOR	SCS
DRILL NO.		DRILLING METHOD	HSA	NO. SAMPLES	
NO. U.D. SAMPLES	0	CASING SIZE	2"	LENGTH	10'
CORE SIZE		TOTAL % REC.		WATER TABLE DEPTH	14.8' BLS
ELEV.	798.50' NAVD88	TIME AFTER COMP.		DATE TAKEN	
TYPE GROUT		QUANTITY		MIX	.
DRILLING START DATE	11/16/2016	DRILLER	Milam	RECORDER	Abraham
APPROVED		DRILLING COMP. DATE	11/16/2016		

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	813.30								
1	812.30								
2	811.30								
3	810.30								
4	809.30								
5	808.30	**HYDRO-EXCAVATION** 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	**CLAYEY SILT** Light Brown to reddish brown clayey silt; 10R/5/6; damp; FeO along fracture traces & relict foliations;	S-1	13.5-15	2-1-1	2		85	
15	798.30	organics absent.							
16	797.30								
17	796.30								
18	795.30								
19	794.30	**CLAYEY SILT** 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	**CLAYEY SILT** 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								

SOUTHERN COMPANY
Energy to Serve Your World™

DRILLING LOG
GEOLOGICAL SERVICES

Hole No. **B-66**
Sheet 2 of 2

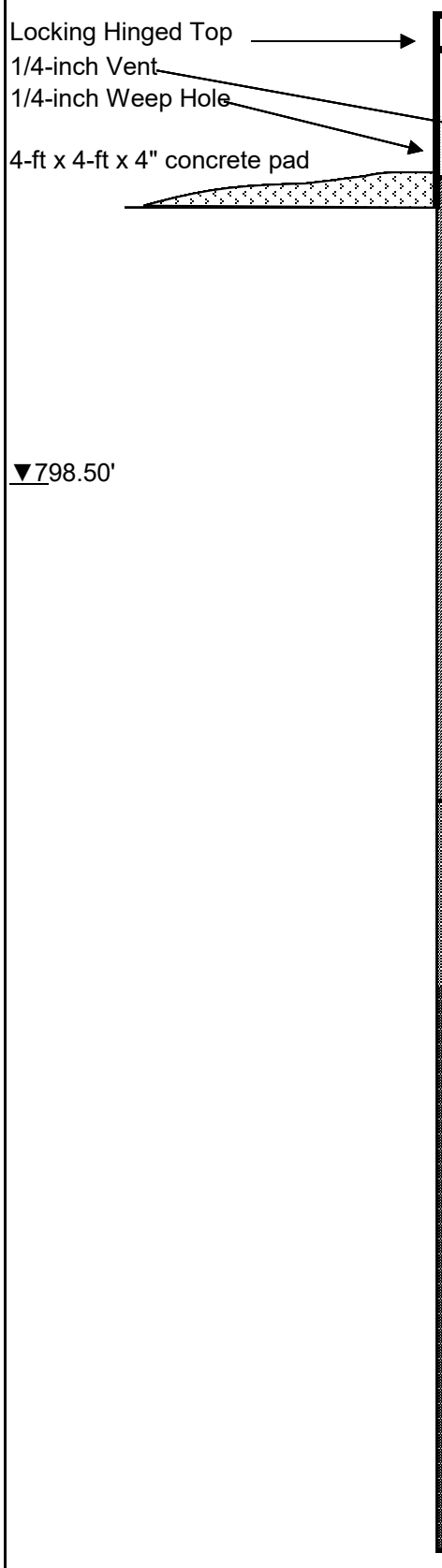
SITE **Plant McDonough** TOTAL DEPTH **55.5'** SURF.ELEV. 813.30

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	788.30								
26	787.30	**SILTY SAND**							
27	786.30								
28	785.30	Medium to dark gray silty sand with minor clay; 2.5Y/5/2; few brownish-black weathered	S-4	4-5-10	15	80			
29	784.30	minerals; micaceous texture;							
30	783.30	MnO bands along fracture & foliations; saprolite between 28 and 30 feet.							
31	782.30								
32	781.30	**SILTY SAND SAPROLITE**							
33	780.30	Light to dark gray SILTY SAND; 5Y/5/3;	S-5	7-9-16	25	90			
34	779.30	moist to wet saprolite; gravel-size rock frags; weathered feldspars & quartz; increasing							
35	778.30	biotite & MnO at 35-feet.							
36	777.30								
37	776.30								
38	775.30	Grayish brown - brownish-black SILTY SAND with minor clay; 5Y/3/2; fewer rock	S-6	6-8-10	18	90			
39	774.30	fragments than above; moist to wet.							
40	773.30								
41	772.30								
42	771.30								
43	770.30	**SILTY SAPROLITE** Yellowish brown silt with minor clay saprolite;	S-7	5-6-9	16	90			
44	769.30	2.5Y/6/3; lighter than above; abundant MnO streaks; wet but not saturated.							
45	768.30								
46	767.30								
47	766.30	**SILTY SAND SAPROLITE**							
48	765.30	Yellowish to blackish brown SILTY SAND saprolite; 2.5Y/6/3; minor rock fragments;	S-8	6-7-17	24	90			
49	764.30	saturated							
50	763.30								
51	762.30								
52	761.30								
53	760.30	**SILTY SAND SAPROLITE**							
54	759.30	Yellowish brown silty sand saprolite; minor clay; 2.5/Y/6/3; abundant MnO streaks	S-9	7-8-18	26	90			
55	758.30	parallel to relict foliations; saturated.							
56	757.30	END OF BORING; REGOLITH WELL							

Form GS9901 7-26-2004

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-66**
DATE CONSTRUCTED: 3/7/2016	Survey Coordinates: N: 1393858.2 E: 2204277.5	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-1.89	815.90
2" Threaded Riser Cap		
GROUND SURFACE	0.00	813.33
PROTECTIVE CASING		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Grout-bentonite mix AMOUNT: 4 x 50 lbs		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	37.6	775.7
ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets 5-gal buckets AMOUNT: 0.5 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	41.7	771.6
FILTER PACK TYPE: DSI Sand - 1A (20/40) Drillers Services, Inc. AMOUNT: 5 bags PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	45.0	768.3
SCREEN DIA: 2-inch 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	55.0	758.3
BOTTOM OF WELL	55.3	758.0

RECORD OF BOREHOLE B-77

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 42.00 ft
LOCATION: South by river, SW of B-63

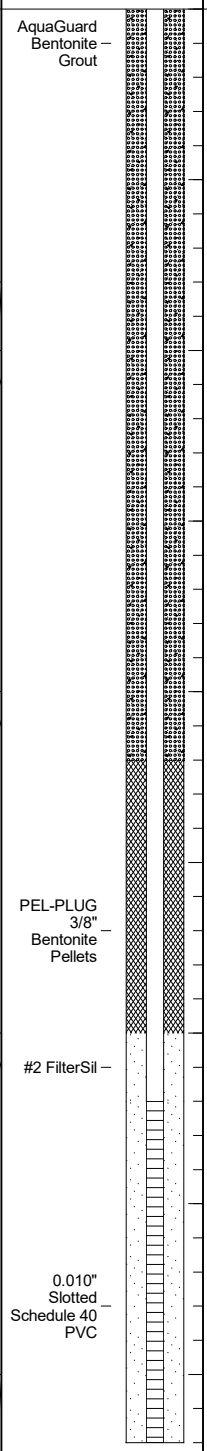
DRILL RIG: Rotosonic 1159
DATE STARTED: 9/17/19
DATE COMPLETED: 9/17/19

NORTHING: 1,390,948.70
EASTING: 2,202,942.00
GS ELEVATION: 777.12 ft
TOC ELEVATION: 776.86 ft

DEPTH W.L.: 28.50
ELEVATION W.L.: 748.6
DATE W.L.: 1/13/2020
TIME W.L.: 14:39

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC
0	777	0.00 - 8.00 Hydrovac, no soil recovery due to Hydrovac						
	775							
5								
	770				769.1			
		8.00 - 10.00 Fill			8.00	S1	ROTO SONIC	0.17 0.17
					767.1			
10		10.00 - 20.00 Sandy SILT, trace clay, some gravel, reddish brown, low plasticity, w<PL, moist, firm, cohesive			10.00	S2	ROTO SONIC	0.67 0.83
	765		MLS					
15								
	760							
					757.1			
20		20.00 - 30.00 Sandy SILT, micaceous, trace clay, some gravel, reddish brown, low plasticity, w<PL, moist, firm, cohesive			20.00	S3	ROTO SONIC	0.38 0.83
	755							
25			MLS					
	750							
					747.1			
30		30.00 - 40.00 Silty CLAY, some sand, transitioning from reddish-brown to brownish gray, w~PL, moderate plasticity, moist to wet, soft to firm, cohesive,			30.00	S4	ROTO SONIC	0.52 0.83
	745							
35			CL-ML					
	740							
					737.1			
40		40.00 - 42.00 Silty CLAY, some sand, transitioning from reddish-brown to brownish gray, w~PL, moderate plasticity, soft to firm, moist to wet,transition to PWR, cohesive	CL-ML		40.00	S5	ROTO SONIC	0.17 0.17
	735				735.1			
45		Boring completed at 42.00 ft						

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-32'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 32-42'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 30'-42'
Type: Filter Media

FILTER PACK SEAL
Interval: 22'-30'
Type: PEL-PLUG 3/8"

ANNULUS SEAL
Interval: 0'-22'
Type: AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 4'x4' Concrete
Protective Casing: 4" Stainless Steel

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Jose

GA INSPECTOR: D. Thomas
CHECKED BY: Timothy Richards, PG
DATE: 2/11/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 9/2/20

RECORD OF BOREHOLE B-82

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 45.00 ft
LOCATION: East of CCR Unit south of concrete plant

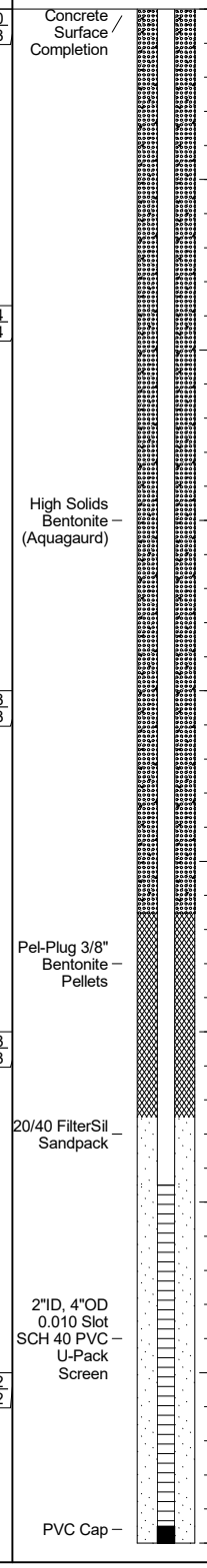
DRILL RIG: Rotosonic 1159
DATE STARTED: 9/21/19
DATE COMPLETED: 9/21/19

NORTHING: 1,393,750.00
EASTING: 2,204,258.10
GS ELEVATION: 807.55
TOC ELEVATION: 810.07 ft

DEPTH W.L.: 8.90
ELEVATION W.L.: 798.6
DATE W.L.: 1/13/2020
TIME W.L.: 15:59

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC
0		0.00 - 8.70 Hydrovac	NA		798.9	0		0.00 0.73
	805							
5								
	800							
		8.70 - 10.70 (ML) sandy SILT, non-plastic fines, fine sand; dark yellowish brown (10YR 4/2); non-cohesive, dry, loose	ML		8.70 796.9	1	ROTO SONIC	0.94 0.94
10		10.70 - 31.70 (SM) sandy SILT, fine to medium angular sand, non-plastic to low plasticity fines, some soft (crumble under finger pressure) fine angular gravel; dark yellowish brown (10YR 4/2) to pale yellowish brown (10YR 6/2), very micaceous, SAPROLITE; non-cohesive, dry, loose. Moist and compact starting at 20 feet bgs.			10.70			
	795							
15								
	790							
20			ML			2	ROTO SONIC	0.83 0.83
	785							
25								
	780							
30					775.9	3	ROTO SONIC	0.83 0.83
	775	31.70 - 35.50 (SP and ML) SAND and SILT, fine sub-angular sand, non-plastic to low plasticity fines; dark yellowish brown (10YR 4/2), highly micaceous, SAPROLITE; non-cohesive, wet, compact	SP & ML		31.70 772.1			
35		35.50 - 38.50 (CL) sandy SILTY CLAY, low to moderate plasticity fines, fine sand; moderate yellowish brown (10YR 4/2) to light brown (5YR 5/6), some relic foliations, highly micaceous, SAPROLITE; cohesive, w>PL, soft.	CL		35.50 769.1			
	770	38.50 - 40.00 (SC) CLAYEY SAND, fine angular sand, low to moderate plasticity fines; light brown (5YR 5/6) to moderate yellowish brown (10YR 5/4), iron oxide staining, very micaceous, some relic foliations, SAPROLITE; non-cohesive, wet, compact	SC		38.50 767.6			
40					40.00	4	ROTO SONIC	0.42 0.42
	765	40.00 - 45.00 (ML and SP) SILT and SAND, non-plastic to low plasticity fines, fine sand; dark yellowish brown (10YR 4/2) with frequent relic foliations, very micaceous, SAPROLITE; non-cohesive, wet to moist, compact	ML & SP		762.6			
45		Boring completed at 45.00 ft						

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0.0 - 34.5'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 34.5 - 44.5'
Material: Schedule 40 PVC
Schedule 40 PVC
Diameter: 2" ID 4 " OD
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 32.5 - 45.0'
Type: 20/40 FilterSil

FILTER PACK SEAL
Interval: 26.5 - 32.5'
Type: Pel-Plug 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0.4 - 26.5'
Type: High Solids Bentonite (Aquagaurd)

WELL COMPLETION
Pad: 4' x 4' x 4"
Protective Casing: 4" Stainless Steel

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic

~200 gallons of water used while drilling

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Jose

GA INSPECTOR: Jeff Ingram
CHECKED BY: Timothy Richards, PG
DATE: 2/12/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 9/2/20

RECORD OF BOREHOLE B-83

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: 777.17
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: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0	775	0.00 - 15.00 Hydrovac to 15' for utilities									AquaGuard Bentonite Grout	**WELL CASING** Interval: 0'-38.6' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw **WELL SCREEN** Interval: 38.6'-48.6' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC **FILTER PACK** Interval: 36.6'-50' Type: Filter Media **FILTER PACK SEAL** Interval: 30.7'-36.6' Type: PEL-PLUG 3/8" **ANNULUS SEAL** Interval: 0'-30.7' Type: AquaGuard Bentonite Grout **WELL COMPLETION** Pad: 2' x 2' concrete Protective Casing: 8" Round Ground Flush **DRILLING METHODS** Soil Drill: 4.25-inch ID Hollow-Stem Auger Rock Drill: N/A
5	770											
10	765											
15	760				762.2 15.00							
		15.00 - 19.00 ML, Gravelly SILT with some sand, brown-black, cohesive, W<PL, dry, soft	ML									
		19.00 - 20.00 ML, SILT, micaceous, brown, W<PL, moist, very soft	ML		758.2 19.00 757.2	S1	SS	6-4-4	8	1.25 1.50		
20	755	20.00 - 33.50 ML, SILT, brown, moist, W-PL, firm to stiff	ML		20.00	S2	SS	2-1-3	4	1.50 1.50		
25	750					S3	SS	1-1-2	3	1.50 1.50		
30	745				743.7						PEL-PLUG 3/8" Bentonite Pellets	
		33.50 - 38.50 CL, silty CLAY, micaceous, dark brown-tan, cohesive, moist, W>PL, very soft to soft	CL		33.50	S4	SS	1-1-2	3	1.50 1.50		
35	740				738.7						#2 FilterSil	
		38.50 - 43.50 CL, silty CLAY, brown with black and red, W>PL, very soft to soft	CL		38.50	S5	SS	3-3-4	7	1.50 1.50		
40	735				733.7							
		43.50 - 49.00 CL, silty CLAY, brown with orange, moist to wet, W<PL, very soft to firm Log continued on next page	CL-ML		43.50	S6	SS	WOH-4-8	12	1.50 1.50	0.010" Slotted	
45												

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

GOLDER

RECORD OF BOREHOLE B-83

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: 777.17
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: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
45		43.50 - 49.00 CL, silty CLAY, brown with orange, moist to wet, W<PL, very soft to firm *(Continued)*	CL-ML								Schedule 40 PVC	**WELL CASING** Interval: 0'-38.6' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw
	730											
					728.2							**WELL SCREEN** Interval: 38.6'-48.6' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC
		49.00 - 50.00 SM, silty SAND, PWR, black-brown mica schist	SM		49.00 727.2	S7	SS	8-15-18	33	1.50 1.50		
50		Boring completed at 50.00 ft										
	725											**FILTER PACK** Interval: 36.6'-50' Type: Filter Media
55												**FILTER PACK SEAL** Interval: 30.7'-36.6' Type: PEL-PLUG 3/8"
	720											**ANNULUS SEAL** Interval: 0'-30.7' Type: AquaGuard Bentonite Grout
60												**WELL COMPLETION** Pad: 2' x 2' concrete Protective Casing: 8" Round Ground Flush
	715											**DRILLING METHODS** Soil Drill: 4.25-inch ID Hollow-Stem Auger Rock Drill: N/A
65												
	710											
70												
	705											
75												
	700											
80												
	695											
85												
	690											
90												

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE B-88

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 72.40 ft
LOCATION: North end of site along fence

DRILL RIG: CME 550
DATE STARTED: 11/15/19
DATE COMPLETED: 11/15/19

NORTHING: 1,394,401.10
EASTING: 2,203,738.30
GS ELEVATION: 816.80
TOC ELEVATION: 820.07 ft

DEPTH W.L.: 31.47
ELEVATION W.L.: 785.53
DATE W.L.: 1/13/2020
TIME W.L.: 15:11

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0	815	0.00 - 10.00 Hydrovac to 10.00' to for utilites			806.8					
10	805	10.00 - 15.00 SM, silty SAND with trace gravel, white and orange, saprolite, non-cohesive, dry, loose	SM		10.00 801.8	1	SS	6-5-2	7	1.50 1.50
15	800	15.00 - 19.00 SM, silty SAND with trace gravel, white and orange, saprolite, non-cohesive, dry, loose	SM		15.00 797.8					
20	795	19.00 - 20.00 CL-ML, silt CLAY with some sand, brown, W<PL, firm	CL-ML		19.00 796.8	2	SS	7-5-2	7	1.50 1.50
		20.00 - 25.00 SM, silty SAND with some clay, fine to medium sand, orange and tan, low to no plasticity, W<PL, firm, cohesive	SM		20.00 791.8	3	SS	2-5-3	8	1.50 1.50
25	790	25.00 - 30.00 SM, silty SAND with some clay, fine to medium sand, orange and tan with white, saprolite, low to no plasticity, W<PL, firm, cohesive	SM		25.00 786.8	4	SS	2-2-5	7	1.50 1.50
30	785	30.00 - 34.00 SM, silty SAND with some clay, fine to medium sand, orange to tan with brown, saprolite, low to no plasticity, W<PL, firm, cohesive	SM		30.00 782.8					
		34.00 - 35.00 SM, silty SAND with some clay, fine sand, white, gneissic saprolite, non-cohesive, dense, dry	SM		34.00 781.8	5	SS	5-13-20	33	1.50 1.50
35	780	35.00 - 40.00 SM, silty SAND, white and grey, fine to medium sand, saprolite, dry, dense	SM		35.00 776.8	6	SS	13-25-26	51	1.00 1.50
40	775	40.00 - 44.40 ML, clayey SILT with trace sand and gravel, grey and brown some orange, saprolite, W<PL, very dense	ML		40.00 772.4	7	SS	13-50/4	<50	0.90 0.90
45		Log continued on next page	SP		44.40					

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES

AquaGuard Bentonite – Grout

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-72'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screen

WELL SCREEN
Interval: 62'-72'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 60'-72'
Type: Filter Media

FILTER PACK SEAL
Interval: 55'-60'
Type: PEL-PLUG 3/8"

ANNULUS SEAL
Interval: 0'-55'
Type: AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round Ground Flush

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Auger
Rock Drill: N/A

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

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE B-88

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 72.40 ft
LOCATION: North end of site along fence

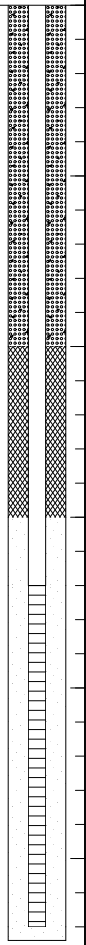
DRILL RIG: CME 550
DATE STARTED: 11/15/19
DATE COMPLETED: 11/15/19

NORTHING: 1,394,401.10
EASTING: 2,203,738.30
GS ELEVATION: 816.80
TOC ELEVATION: 820.07 ft

DEPTH W.L.: 31.47
ELEVATION W.L.: 785.53
DATE W.L.: 1/13/2020
TIME W.L.: 15:11

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
45		44.40 - 48.80 SP, SAND with some gravel, fine to coarse sand, PWR, moist, very dense. PWR at 48.50 feet bgs. *(Continued)*	SP							
	770				768.0	8	SS	50/4	<50	0.30 0.30
50		48.80 - 54.40 SP, SAND with some gravel, fine to coarse sand, PWR, moist, very dense	SP		48.80					
	765				762.4	9	SS	33-50/3	<50	0.90 0.90
55		54.40 - 59.40 SP, SAND with some silt and gravel, white and orange, fine to coarse sand, saprolite, PWR, moist to wet, very dense	SP-SM		54.40					
	760				757.4	10	SS	23-50/4	<50	0.90 0.90
60		59.40 - 63.80 SP, SAND with some silt and gravel, white and orange, fine to coarse sand, saprolite, PWR, moist to wet, very dense	SP-SM		59.40					
	755				753.0	11	SS	50/3	<50	0.30 0.30
65		63.80 - 69.00 SP, SAND with some silt and gravel, white and orange, fine to coarse sand, saprolite, PWR, wet, very dense	SP-SM		63.80					
	750				747.8	12	SS	38-50/1	<50	0.50 0.50
70					69.00					
	745	Boring completed at 72.40 ft								
75										
	740									
80										
	735									
85										
	730									
90										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-72'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screen

WELL SCREEN
Interval: 62'-72'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 60'-72'
Type: Filter Media

FILTER PACK SEAL
Interval: 55'-60'
Type: PEL-PLUG 3/8"

ANNULUS SEAL
Interval: 0'-55'
Type: AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round Ground Flush

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Auger
Rock Drill: N/A

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

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

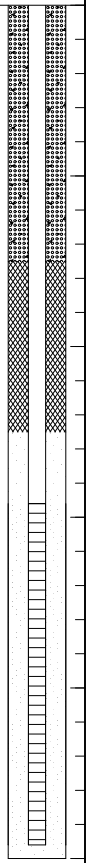
NORTHING: 1,394,392.70
EASTING: 2,203,026.70
GS ELEVATION: 785.30
TOC ELEVATION: 785.08 ft

DEPTH W.L.: 3.88
ELEVATION W.L.: 781.42
DATE W.L.: 1/14/2020
TIME W.L.: 12:36

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	ELEV. / DEPTH (ft)
0	785	0.00 - 2.00 SP, gravelly SAND, medium to coarse; brown, non-cohesive, moist	SP	783.3
		2.00 - 10.00 CL-ML, silty CLAY, some sand, trace gravel; brown and gray, cohesive, w ~ PL	CL-ML	2.00 775.3
10	775	10.00 - 25.00 SC, clayey SAND, medium to coarse, some silt, some gravel; brown, wet	SC	10.00 760.3
25	760	Boring completed at 25.00 ft		
30	755			
35	750			
40	745			
45				

SAMPLES: SAMPLE NO. | TYPE | REC

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-25'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screen

WELL SCREEN
Interval: 14.6'-24.6'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 12.5'-25.0'
Type: #2 FilterSil

FILTER PACK SEAL
Interval: 7.5'-12.5'
Type: PEL-PLUG 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0'-7.5'
Type: AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round Ground Flush

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Auger
Rock Drill: N/A

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE B-93

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 29.20 ft
LOCATION: West of site on site along Plant Atkinson Road

DRILL RIG: CME 550
DATE STARTED: 12/12/19
DATE COMPLETED: 12/12/19

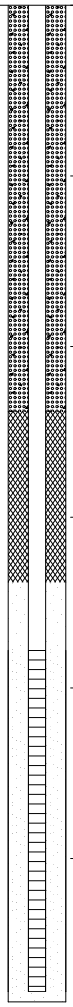
NORTHING: 1,394,348.70
EASTING: 2,202,946.70
GS ELEVATION: 789.19
TOC ELEVATION: 789.07 ft

DEPTH W.L.: 4.86
ELEVATION W.L.: 784.34
DATE W.L.: 1/14/2020
TIME W.L.: 12:38

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	ELEV. / DEPTH (ft)
0	785	0.00 - 5.00 SC, clayey SAND, fine to coarse; brown and orange-brown, non-cohesive, moist	SC	784.2
5	780	5.00 - 10.00 ML, clayey SILT, some sand, trace gravel; brown to light brown, cohesive, w < PL	ML	5.00 779.2
10	775	10.00 - 15.00 ML, sandy SILT, coarse sand, some clay; gray-brown, cohesive, w < PL	ML	10.00 774.2
15	770	15.00 - 20.00 ML, sandy SILT, coarse sand, some clay; brown, cohesive, w ~ PL	ML	15.00 769.2
20	765	20.00 - 29.20 SM, silty SAND, fine to coarse, some clay, trace gravel; brown and gray-brown, wet	SM	20.00
25	760	Boring completed at 29.20 ft		760
30	755			
35	750			
40	745			
45				

SAMPLES: SAMPLE NO. | TYPE | REC

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-29.2'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screen

WELL SCREEN
Interval: 18.9'-28.9'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 16.9'-29.2'
Type: #2 FilterSil

FILTER PACK SEAL
Interval: 11.9'-16.9'
Type: PEL-PLUG 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0'-11.9'
Type: Portland Cement, AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round Ground Flush

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Augers
Rock Drill: N/A

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE B-97

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 31.00 ft
LOCATION: East of B-98

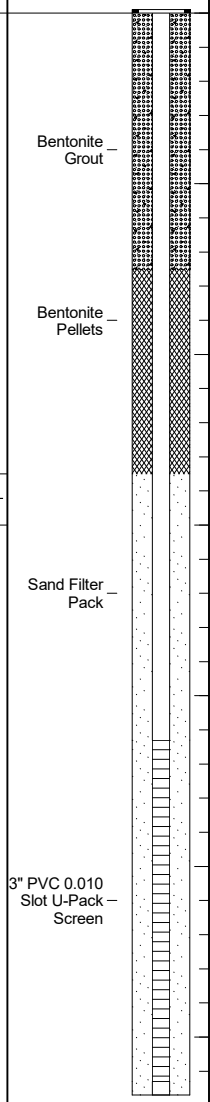
DRILL RIG: CME 550
DATE STARTED: 2/11/20
DATE COMPLETED: 2/11/20

NORTHING: 1,394,430.00
EASTING: 2,203,008.30
GS ELEVATION: 786.50
TOC ELEVATION: 786.29 ft

DEPTH W.L.: 3.24 ft bTOC
ELEVATION W.L.: 783.05
DATE W.L.: 2/27/2020
TIME W.L.: 10:54

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0	786	0.00 - 10.00 Hydro Vac'd for utilities clearance								
5	780									
10	776				776.5 10.00					
	775				773.0					
		13.50 - 16.00 gravelly SILTY SAND, no plasticity, medium grained sand, coarse gravel; tan to dark brown; non-cohesive, moist, compact	SM		13.50 770.5	S-01	DO	15-17-15	32	0.92 1.50
15	771	16.00 - 31.70 Fresh, foliated, dark grey and white, fine to coarse grained, strong, GNEISS			16.00					
20	765									
25	760									
30	756	29.00: Slightly weathered, porous, medium strong								
	755	Boring completed at 31.70 ft			754.8 31.70					
35	750									
40	745									
45										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0 ft-bgs - 31.7 ft-bgs
Material: PVC
Diameter: 2"
Joint Type: Flush

WELL SCREEN
Interval: 21.3 ft-bgs - 31.3 ft-bgs
Material: Schedule 40 PVC
Diameter: 3"
Slot Size: 0.010"
End Cap: 4"

FILTER PACK
Interval: 13.5 ft-bgs - 21.3 ft-bgs
Type: FilterSil Sand

FILTER PACK SEAL
Interval: 7.5 ft-bgs - 13.5 ft-bgs
Type: PEL-PLUG 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0 ft-bgs - 7.5 ft-bgs
Type: Portland Cement, AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 2'x2' Concrete Pad
Protective Casing: 8" Round Flush Mount

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Augers
Rock Drill: HQ Core Barrell

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 9/2/20

RECORD OF BOREHOLE B-98

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 19.40 ft
LOCATION: West of B-97

DRILL RIG: Geoprobe 7822DT
DATE STARTED: 2/10/20
DATE COMPLETED: 2/10/20

NORTHING: 1,394,392.50
EASTING: 2,202,934.00
GS ELEVATION: 789.81
TOC ELEVATION: 789.67 ft

DEPTH W.L.: 5.33 ft bTOC
ELEVATION W.L.: 784.34
DATE W.L.: 2/27/2020
TIME W.L.: 10:36

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0		0.00 - 10.00 Hydro Vac'd for utilities clearance							Bentonite Grout Bentonite Pellets Sand Filter Pack 3" PVC 0.010 Slot U-Pack Screen	**WELL CASING** Interval: 0 ft-bgs - 19.4 ft-bgs Material: PVC Diameter: 2" Joint Type: Flush **WELL SCREEN** Interval: 9 ft-bgs- 19 ft-bgs Material: Schedule 40 PVC Diameter: 3" Slot Size: 0.010" End Cap: 4" **FILTER PACK** Interval: 7 ft-bgs - 9 ft-bgs Type: FilterSil Sand **FILTER PACK SEAL** Interval: 4 ft-bgs - 7 ft-bgs Type: PEL-PLUG 3/8" Bentonite Pellets **ANNULUS SEAL** Interval: 0 ft-bgs - 4 ft-bgs Type: Portland Cement, AquaGuard Bentonite Grout **WELL COMPLETION** Pad: 2'x2' Concrete Pad Protective Casing: 8" Round Flush Mount **DRILLING METHODS** Soil Drill: 4.25-inch ID Hollow Stem Augers Rock Drill: N/A
5	785									
10	780	10.00 - 19.40 Augered through with Geoprobe. No Soil data collected			779.8 10.00					
15	775									
20	770	Boring completed at 19.40 ft			770.4					
25	765									
30	760									
35	755									
40	750									
45	745									

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade
DRILLER: Eladio Gonzalaz

GA INSPECTOR: Heather Brissey
CHECKED BY: Timothy Richards, PG
DATE: 4/28/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

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: 821.24 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 DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES SAMPLE NO.	SAMPLES TYPE	SAMPLES REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0		0.00 - 10.00 Air knife; FILL	FILL						Stick-up	**B-101D** Borehole Diameter: 4" **WELL CASING** Interval: 0-75' Material: Schedule 40 PVC Diameter: 2" Joint Type: Screw fit with rubber seam **WELL SCREEN** Interval: 64.9'-74.9' Material: Schedule 40 PVC Diameter: 2" Slot Size: .010" End Cap: Schedule 40 PVC **FILTER PACK** Interval: 62.5'-75.0' Type: FilterSil Quantity: 4-50 lbs bags **FILTER PACK SEAL** Interval: 59.0'-62.5' Type: 3/8" Uncoated Pel-Plug Quantity: 1-5 gallon bucket **ANNULUS SEAL** Interval: 0'-59.0' Type: AquaGuard Bentonite Grout Quantity: Approximately 80 gallons **NOTES**
5										
10		10.00 - 15.00 (SM), SILTY SAND; tannish brown to reddish brown, low plasticity, w<pl, dry, loose to soft	SM		10.00					
15		15.00 - 16.00 (TWR), TRANSITIONALLY WEATHERED ROCK; dark gray, deeply weathered, fine to medium, poorly jointed	TWR		15.00	1	ROTO SONIC	8.00 / 10.00		
		16.00 - 20.00 (CL), CLAY; some sand, reddish brown, fine to coarse, low plasticity, w<PL, soft, moist to wet	CL		16.00					
20		20.00 - 23.00 (ML), SILT; trace to some gravels, reddish brown, low plasticity, w<PL, very soft, wet	ML		20.00	2	ROTO SONIC	4.00 / 5.00		
		23.00 - 25.00 (SM), SILTY SAND; trace gravels, tannish brown to gray, non-plastic, w<PL, loose, dry, TWR	TWR		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	AquaGuard Bentonite Grout	
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		
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								

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST (2).GPJ PIEDMONT.GDT 2/3/21

RECORD OF BOREHOLE B-101D

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 75.00 ft
LOCATION: Next to DGWC-9

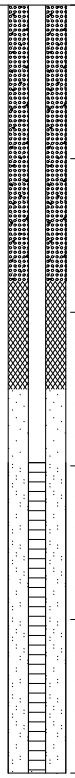
DRILL RIG: Geoprobe 8140LC
DATE STARTED: 11/11/20
DATE COMPLETED: 11/12/20

NORTHING: 1394063.6
EASTING: 2204168.2
GS ELEVATION: 821.24 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: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: 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			
		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			6	ROTO SONIC	9.50 / 10.00
60		60.00 - 70.00 (SCHIST), BEDROCK; well foliated, highly crenulated, poorly jointed, iron staining	BR		60.00	7	ROTO SONIC	2.50 / 10.00
70		70.00 - 72.00 (ML), SANDY SILT; grayish brown, low to medium plasticity, w~PL, soft to firm, moist	ML		70.00	8	ROTO SONIC	3.55 / 5.00
		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								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

B-101D
Borehole Diameter: 4"
WELL CASING
Interval: 0-75'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Screw fit with rubber seam
WELL SCREEN
Interval: 64.9'-74.9'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: .010"
End Cap: Schedule 40 PVC
FILTER PACK
Interval: 62.5'-75.0'
Type: FilterSil
Quantity: 4-50 lbs bags
FILTER PACK SEAL
Interval: 59.0'-62.5'
Type: 3/8" Uncoated Pel-Plug
Quantity: 1-5 gallon bucket
ANNULUS SEAL
Interval: 0'-59.0'
Type: AquaGuard Bentonite Grout
Quantity: Approximately 80 gallons

NOTES

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

GOLDER

RECORD OF BOREHOLE B-102D

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: 820.64 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)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC
0		0.00 - 10.00 Air knife; FILL	FILL					
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			
		17.50 - 20.00 (ML), SILT; tanish-orange brown to silver, nonplastic to low plasticity, soft to loose	ML		17.50			
20		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
25		26.00 - 30.00 (SM), SILTY SAND; gray, some coarse sand, nonplastic, non-cohesive, compact, dry to moist	SM		26.00			
30		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
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	4	ROTO SONIC	7.00 / 10.00
45		44.00 - 46.00 (ML), SILT; gray, non-plastic to lows plasticity, soft, moist,	ML		44.00			
		46.00 - 50.00 (SM), SILTY SAND; reddish brown, non-plastic to low plasticity, very soft, wet	SM		46.00			
50		Log continued on next page						

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

B-102D
Borehole Diameter: 4"
WELL CASING
Interval: 0'-85'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Screw fit with rubber seam
WELL SCREEN
Interval: 74.4'-84.4'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: .010"
End Cap: Schedule 40 PVC
FILTER PACK
Interval: 72.0'-75.4'
Type: FilterSil
Quantity: 4-50 lbs bags
FILTER PACK SEAL
Interval: 67'-72'
Type: 3/8" Uncoated Pel-Plug
Quantity: 1-5 gallon bucket
ANNULUS SEAL
Interval: 0'-67'
Type: AquaGuard Bentonite Grout
Quantity: Approximately 120 gallons

NOTES

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST (2) (3) (1) (2).GPJ PIEDMONT.GDT 7/19/21

RECORD OF BOREHOLE B-102D

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: 820.64 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 DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES SAMPLE NO.	SAMPLES TYPE	SAMPLES REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES
50		50.00 - 51.00 (SM), SILTY SAND; reddish brown, non-plastic to low plasticity, very soft, wet	SM		50.00				
		51.00 - 55.00 (SM), SILTY SAND; gray, w<PL, fine to compact, dry to moist, contains muscovite	SM		51.00	5	ROTO SONIC	5.00 / 5.00	
55		55.00 - 60.00 (SM), SILTY SAND; gray to yellow orange, w<PL, fine to stiff, dry to moist, saprolitic	SM		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		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		65.00	8	ROTO SONIC	5.00 / 5.00	3/8" Uncoated – Pel-Plug
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		70.00	9	ROTO SONIC	5.00 / 5.00	Sand Filter – Pack
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		75.00	10	ROTO SONIC	7.00 / 10.00	U-Pack – Screen
85		Boring completed at 85.00 ft							
90									
95									
100									

B-102D
Borehole Diameter: 4"
WELL CASING
Interval: 0'-85'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Screw fit with rubber seam
WELL SCREEN
Interval: 74.4'-84.4'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: .010"
End Cap: Schedule 40 PVC
FILTER PACK
Interval: 72.0'-75.4'
Type: FilterSil
Quantity: 4-50 lbs bags
FILTER PACK SEAL
Interval: 67'-72'
Type: 3/8" Uncoated Pel-Plug
Quantity: 1-5 gallon bucket
ANNULUS SEAL
Interval: 0'-67'
Type: AquaGuard Bentonite Grout
Quantity: Approximately 120 gallons

NOTES

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

GOLDER

RECORD OF BOREHOLE B-104D

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 60.00 ft
LOCATION: East of DGWC-48

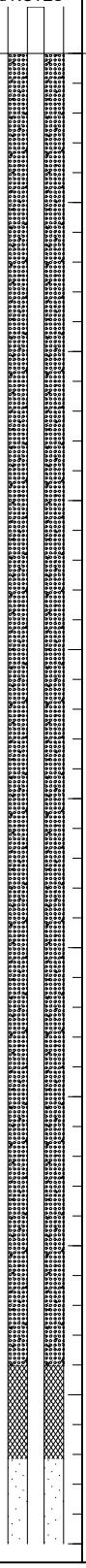
DRILL RIG: Geoprobe 8140LC
DATE STARTED: 10/20/20
DATE COMPLETED: 10/20/20

NORTHING: 1391318.3
EASTING: 2202298.5
GS ELEVATION: 785.31 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)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC
0		0.00 - 10.00 Air knife; FILL	FILL					
10		10.00 - 12.00 (CL), CLAY; red brown; moist, soft, low plasticity, w<PL, FILL	CL		10.00			
		12.00 - 22.00 (ML), SILT; dark brown to gray; non-plasitic 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
		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
30		30.00 - 35.00 (TWR), TRANSITIONALLY WEATHERED ROCK; rust brown to gray; deeply weathered biolite gneiss, poorly foliated, poorly jointed, iron staining	TWR		30.00	4	ROTO SONIC	6.55 / 10.00
40		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	5	ROTO SONIC	2.10 / 5.00
45						6	ROTO SONIC	4.35 / 7.50
50		Log continued on next page						

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

B-104D
Borehole Diameter: 4"
WELL CASING
Interval: 0'-60'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Screw fit with rubber seam
WELL SCREEN
Interval: 50'-60'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: .010"
End Cap: Schedule 40 PVC
FILTER PACK
Interval: 47.15'-60.0'
Type: FilterSil
Quantity: 4-50 lbs bags
FILTER PACK SEAL
Interval: 44'-47.15
Type: 3/8" Uncoated Pel-Plug
Quantity: 1-5 gallon bucket
ANNULUS SEAL
Interval: 0'-44'
Type: AquaGuard Bentonite Grout
Quantity: Approximately 40 gallons

NOTES

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

GOLDER

RECORD OF BOREHOLE B-104D

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: 785.31 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: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
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 *(Continued)*	BR			6		4.35 7.50	Pack	**B-104D** Borehole Diameter: 4" **WELL CASING** Interval: 0'-60' Material: Schedule 40 PVC Diameter: 2" Joint Type: Screw fit with rubber seam **WELL SCREEN** Interval: 50'-60' Material: Schedule 40 PVC Diameter: 2" Slot Size: .010" End Cap: Schedule 40 PVC **FILTER PACK** Interval: 47.15'-60.0' Type: FilterSil Quantity: 4-50 lbs bags **FILTER PACK SEAL** Interval: 44'-47.15 Type: 3/8" Uncoated Pel-Plug Quantity: 1-5 gallon bucket **ANNULUS SEAL** Interval: 0'-44' Type: AquaGuard Bentonite Grout Quantity: Approximately 40 gallons **NOTES**
55		55.50 - 60.00 (SCHIST), BEDROCK; quartz, muscovite, gray to silver, medium grain, medium strong, fresh to moderately weathered	BR		55.50	7	ROTO SONIC	6.15 7.50	U-Pack _ Screen	
60		Boring completed at 60.00 ft								
65										
70										
75										
80										
85										
90										
95										
100										

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST (2).GPJ PIEDMONT.GDT 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: 823.39 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)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES
0		0.00 - 10.00 Air knife; FILL	FILL						Stick-up
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 - 18.10 (ML), SILT; some coarse sand, moist, stiff, w<PL	ML		16.75				
		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	
		28.00 - 30.00 (SP), SAND; uniformly graded, some silt, non-cohesive, loose, moist, non-plastic	SP		28.00				AquaGuard Bentonite Grout
30		30.00 - 32.00 (SM), SILTY SAND; brown, trace gravel, dry to moist, cohesive, firm to stiff, w<PL, low plasticity, some crenulations, saprolitc	SM		30.00	3	ROTO SONIC	5.00 / 5.00	
		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	
		47.00 - 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	
50		Log continued on next page							

WELL CONSTRUCTION DETAILS

B-106D
Borehole Diameter: 4"
WELL CASING
Interval: 0'-80'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Screw fit with rubber seam
WELL SCREEN
Interval: 69.4'-79.4'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: .010"
End Cap: Schedule 40 PVC
FILTER PACK
Interval: 66.61'-80'
Type: FilterSil
Quantity: 4-50 lbs bags
FILTER PACK SEAL
Interval: 62.85'-66.61'
Type: 3/8" Uncoated Pel-Plug
Quantity: 1-5 gallon bucket
ANNULUS SEAL
Interval: 0'-62.85'
Type: AquaGuard Bentonite Grout
Quantity:

NOTES

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

GOLDER

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: 823.39 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 DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES SAMPLE NO.	SAMPLES TYPE	SAMPLES REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
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		
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	3/8" Uncoated Pel-Plug	
65		65.00 - 75.00 (BIOTITE GNEISS), BEDROCK; light gray to dark gray, zones of muscovite schistocity, 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	Sand Filter Pack	
75		75.00 - 80.00 (BIOTITE GNEISS), BEDROCK; light gray to dark gray, zones of muscovite schistocity, 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	U-Pack Screen	
80		Boring completed at 80.00 ft								
85										
90										
95										
100										

B-106D
Borehole Diameter: 4"
WELL CASING
Interval: 0'-80'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Screw fit with rubber seam
WELL SCREEN
Interval: 69.4'-79.4'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: .010"
End Cap: Schedule 40 PVC
FILTER PACK
Interval: 66.61'-80'
Type: FilterSil
Quantity: 4-50 lbs bags
FILTER PACK SEAL
Interval: 62.85'-66.61'
Type: 3/8" Uncoated Pel-Plug
Quantity: 1-5 gallon bucket
ANNULUS SEAL
Interval: 0'-62.85'
Type: AquaGuard Bentonite Grout
Quantity:

NOTES

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST (2).GPJ PIEDMONT.GDT 2/3/21

RECORD OF BOREHOLE B-107D

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: 820.44 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 DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLES SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0		0.00 - 10.00 Air knife; FILL	FILL						Stick-up	**B-107D** Borehole Diameter: 4" **WELL CASING** Interval: 0'-85.1' Material: Schedule 40 PVC Diameter: 2" Joint Type: Screw fit with rubber seam **WELL SCREEN** Interval: 75.1'-85.1' Material: Schedule 40 PVC Diameter: 2" Slot Size: .010" End Cap: Schedule 40 PVC **FILTER PACK** Interval: 72.25'-85.5' Type: FilterSil Quantity: 4.5-50 lbs bags **FILTER PACK SEAL** Interval: 68.8'-72.25' Type: 3/8" Uncoated Pel-Plug Quantity: 1-5 gallon **ANNULUS SEAL** Interval: 0'-68.8' Type: AquaGuard Bentonite Grout Quantity: Approximately 80 gallons **NOTES**
10		10.00 - 20.00 (CL-ML), SILT 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		
30						3	ROTO SONIC	10.00 / 10.00	AquaGuard Bentonite Grout	
40		38.00 - 40.00 (SM), SILTY SAND; black and silverish gray, fine to medium, non-plastic, w<PL, loose sand, moist, 40.00 - 50.00 (SM-ML), SILTY SAND to SILT; brown to silverish brown, moist to wet, w<PL, soft to stiff	SM		38.00 40.00	4	ROTO SONIC	9.00 / 10.00		
50		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

GOLDER

RECORD OF BOREHOLE B-107D

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 85.75 ft
LOCATION: Southwest of DGWC-19

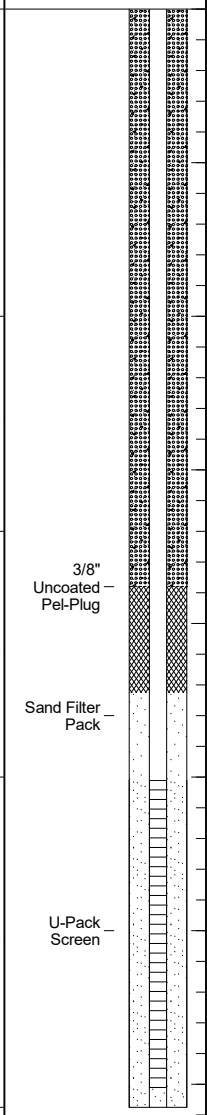
DRILL RIG: Geoprobe 8140LC
DATE STARTED: 10/28/20
DATE COMPLETED: 10/28/20

NORTHING: 1392334.5
EASTING: 2202596.4
GS ELEVATION: 820.44 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: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: 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
60		60.00 - 67.00 NO RECOVERY; material was washed away by coring methods. Material form 63' to 67' is inferred as TWR.	NR		60.00	6	ROTO SONIC	0.00 / 7.00
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
75		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
85		Boring completed at 85.75 ft			85.75			
90								
95								
100								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

B-107D
Borehole Diameter: 4"
WELL CASING
Interval: 0'-85.1'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Screw fit with rubber seam
WELL SCREEN
Interval: 75.1'-85.1'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: .010"
End Cap: Schedule 40 PVC
FILTER PACK
Interval: 72.25'-85.5'
Type: FilterSil
Quantity: 4.5-50 lbs bags
FILTER PACK SEAL
Interval: 68.8'-72.25'
Type: 3/8" Uncoated Pel-Plug
Quantity: 1-5 gallon
ANNULUS SEAL
Interval: 0'-68.8'
Type: AquaGuard Bentonite Grout
Quantity: Approximately 80 gallons

NOTES

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

GOLDER

RECORD OF BOREHOLE B-108D

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 80.00 ft
LOCATION: Next to DGWC-20

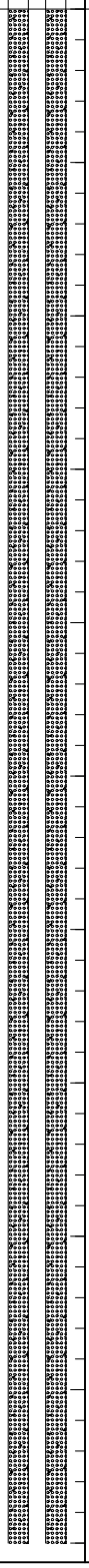
DRILL RIG: Geoprobe 8140LC
DATE STARTED: 10/26/20
DATE COMPLETED: 10/27/20

NORTHING: 1392156.1
EASTING: 2202312.5
GS ELEVATION: 818.33 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)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC
0		0.00 - 10.00 Air knife; FILL	FILL					
10		10.00 - 12.00 (CL), CLAY;w<PL, low plasticity, moist to wet, Fill	CL		10.00			
		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
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						

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

B-108D
Borehole Diameter: 4"
WELL CASING
Interval: 0'-80.0'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Screw fit with rubber seam
WELL SCREEN
Interval: 69'-79'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: .010"
End Cap: Schedule 40 PVC
FILTER PACK
Interval: 65.85'-79'
Type: FilterSil
Quantity: 4-50 lbs bags
FILTER PACK SEAL
Interval: 62.5'-65.85'
Type: 3/8" Uncoated Pel-Plug
Quantity: 1- 5 gallon bucket
ANNULUS SEAL
Interval: 0'-62.5'
Type: AquaGuard Bentonite Grout
Quantity: Approximately 80 gallons

NOTES

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST (2).GPJ PIEDMONT.GDT 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: 818.33 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 DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES SAMPLE NO.	SAMPLES TYPE	SAMPLES REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES
50		50.00 - 51.00 (SP), SAND; black to dark gray, w<PL, non-plastic, firm, loose, wet	SP		50.00				
		51.00 - 57.50 (ML), SILT; gray to brown, w<PL, low plasticity, firm to stiff, moist, saprolite	ML		51.00	5	ROTO SONIC	7.50 / 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
75		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
80		Boring completed at 80.00 ft							

WELL CONSTRUCTION DETAILS

B-108D
Borehole Diameter: 4"
WELL CASING
Interval: 0'-80.0'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Screw fit with rubber seam
WELL SCREEN
Interval: 69'-79'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: .010"
End Cap: Schedule 40 PVC
FILTER PACK
Interval: 65.85'-79'
Type: FilterSil
Quantity: 4-50 lbs bags
FILTER PACK SEAL
Interval: 62.5'-65.85'
Type: 3/8" Uncoated Pel-Plug
Quantity: 1- 5 gallon bucket
ANNULUS SEAL
Interval: 0'-62.5'
Type: AquaGuard Bentonite Grout
Quantity: Approximately 80 gallons

NOTES

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST (2).GPJ PIEDMONT.GDT 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: 1394303.6
EASTING: 2202956.4
GS ELEVATION: 788.99 ft
TOC ELEVATION: 791.84 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)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0		0.00 - 10.00 Air Knife; Fill	FILL						Stick-up	**B-111D** Borehole Diameter: 6" **WELL CASING** Interval: 0'-85' Material: Schedule 40 PVC Diameter: 2" Joint Type: Screw fit with rubber seam **WELL SCREEN** Interval: 74.15'-84.15' Material: Schedule 40 PVC Diameter: 2" Slot Size: .010" End Cap: Schedule 40 PVC **FILTER PACK** Interval: 72.1'-84.15' Type: FilterSil Quantity: 3-50 lbs bags **FILTER PACK SEAL** Interval: 68.7'-72.1' Type: 3/8" Uncoated Pel-Plug Quantity: 1-5 gallon bucket **ANNULUS SEAL** Interval: 0'-68.7' Type: AquaGuard Bentonite Grout Quantity: Approximately 80 gallons **NOTES**
10		10.00 - 15.00 (ML), SILT; tan to brown, trace fine to coarse sand, moist to wet, soft, low plasticity, w<Pl, saprolite	ML		10.00	1	ROTO SONIC	10.00 / 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					
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	2	ROTO SONIC	8.00 / 8.00		
25		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 27.00					
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			3	ROTO SONIC	1.00 / 2.00	AquaGuard Bentonite Grout	
						4	ROTO SONIC	2.20 / 4.00		
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	5	ROTO SONIC	1.70 / 6.00		
40										
45						6	ROTO SONIC	10.00 / 10.00		
50		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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST (2) (3) (1).GPJ PIEDMONT.GDT 2/10/21

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: 1394303.6
EASTING: 2202956.4
GS ELEVATION: 788.99 ft
TOC ELEVATION: 791.84 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: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
50			BR							
		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			51.50					
55			BR			7	ROTO SONIC	7.00 / 10.00		
		58.00 - 85.00 (GNEISS), BEDROCK; biotite, feldspar, quartz, white to light gray, well foliated, poorly jointed, fresh to slightly weathered, medium to strong,			58.00					
60						8	ROTO SONIC	5.00 / 5.00		
65						9	ROTO SONIC	5.00 / 5.00		
70			BR			10	ROTO SONIC	5.00 / 5.00	3/8" Uncoated Pel-Plug	
75									Sand Filter Pack	
80						11	ROTO SONIC	10.00 / 10.00	U-Pack Screen	
85		Boring completed at 85.00 ft								
90										
95										
100										

B-111D
Borehole Diameter: 6"

WELL CASING
Interval: 0'-85'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Screw fit with rubber seam

WELL SCREEN
Interval: 74.15'-84.15'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: .010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 72.1'-84.15'
Type: FilterSil
Quantity: 3-50 lbs bags

FILTER PACK SEAL
Interval: 68.7'-72.1'
Type: 3/8" Uncoated Pel-Plug
Quantity: 1-5 gallon bucket

ANNULUS SEAL
Interval: 0'-68.7'
Type: AquaGuard Bentonite Grout
Quantity: Approximately 80 gallons

NOTES

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST (2) (3) (1).GPJ PIEDMONT.GDT 2/10/21

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: 834.03
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)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	PHOTO	REC	PIEZOMETER DIAGRAM and NOTES
0		0.00 - 10.00 FILL- Backfilled with cuttings from air knife clearance				Air Knife		0.00 / 10.00	
5	830								
10	825				824				
		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		10.00	1		6.80 / 10.00	
15	820								
20	815				814				
		20.00 - 27.00 SM, SILTY SAND with some gravels, non plasticity; light gray to gray; loose, dry to moist, W<PL	SM		20.00	2		10.00 / 10.00	
25	810				807				
		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		27.00				
30	805				804				
		30.00 - 36.00 SM, SILTY SAND with trace fine to coase gravels, non plasticity; tan to brown; compact to dense, dry to moist, W<PL	SM		30.00	3		8.00 / 10.00	AquaGuard Grout
35	800				798				
		36.00 - 40.00 TWR, Transitional Weathered Rock; breaks down to a SM, SILTY SAND with trace fine to coase gravels, non plasticity; olive to tan to brown; compact to dense, dry to moist, W<PL	TWR		36.00				
40	795				794				

Log continued on next page

PIEZOMETER CONSTRUCTION DETAILS

WELL CASING
Interval: 0-59'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 59-69'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: 69.0-69.3'

FILTER PACK
Interval: 56.0-69.3'
Type: #1 Filter Sand
Quantity: 5.5 - 50 lbs bags

FILTER PACK SEAL
Interval: 53-56'
Type: 3/8" Uncoated Pel-Plug
Quantity: 1 - 5 gallon bucket

ANNULUS SEAL
Interval: 0-53'
Type: AquaGuard Bentonite Grout
Quantity: Approximately 80 gallons

WELL COMPLETION
Pad: 4'x4'x4" Concrete
Protective Casing: 4"x4" Aluminium

DRILLING METHODS
Soil Drill: Rotosonic (6 inch casing by 4 inch core barrel)
Rock Drill: Rotosonic
Sample Type: Rotosonic

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

GOLDER
MEMBER OF WSP

BOREHOLE RECORD 166849621.GPJ PIEDMONT.GDT 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

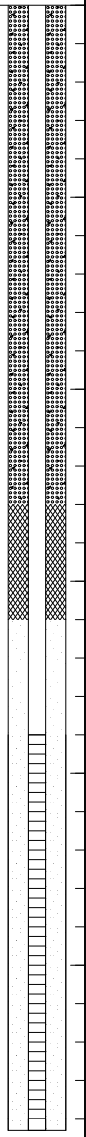
DRILL RIG: TSi 150CC
DATE STARTED: 3/5/21
DATE COMPLETED: 3/6/21

NORTHING: 1,394,047.2
EASTING: 2,202,436.4
GS ELEVATION: 834.03
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)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	PHOTO	REC
40		40.00 - 70.00 Fresh to slightly weatherd, well foliated, poorly jointed, white to dark gray, fine to coarse grained, biotite-feldspar-quartz GNEISS; locally the felspars are augened	BR		40.00	4		7.80/10.00
45	790							
50	785					5		6.20/10.00
55	780							
60	775					6		8.50/10.00
65	770							
70	765	Boring completed at 70.00 ft			764			
75	760							
80	755							

PIEZOMETER DIAGRAM and NOTES



PIEZOMETER CONSTRUCTION DETAILS

WELL CASING
Interval: 0-59'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 59-69'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: 69.0-69.3'

FILTER PACK
Interval: 56.0-69.3'
Type: #1 Filter Sand
Quantity: 5.5 - 50 lbs bags

FILTER PACK SEAL
Interval: 53-56'
Type: 3/8" Uncoated Pel-Plug
Quantity: 1 - 5 gallon bucket

ANNULUS SEAL
Interval: 0-53'
Type: AquaGuard Bentonite Grout
Quantity: Approximately 80 gallons

WELL COMPLETION
Pad: 4'x4'x4" Concrete
Protective Casing: 4"x4" Aluminium

DRILLING METHODS
Soil Drill: Rotosonic (6 inch casing by 4 inch core barrel)
Rock Drill: Rotosonic
Sample Type: Rotosonic

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

GOLDER
MEMBER OF WSP

BOREHOLE RECORD 166849621.GPJ PIEDMONT.GDT 5/24/21

RECORD OF BOREHOLE B-122D

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)	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			767.3	1		NA 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		10.00 757.3	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	SP-SM		20.00 747.3	3		6.50 10.00
30	745	30.00 - 40.00 SP-SM, SAND, moist, dark gray, fine grained, trace of organics, rounded shape	SP-SM		30.00 737.3	4		9.75 10.00
40	735	40.00 - 41.00 SP-SM, SILTY SAND, dark brown, little iron staining, fine, rounded shape 41.00 - 50.00 muscovite biotite SCHIST, strong, fresh to slightly weathered, slightly fractured, fine to coarse grains, little iron staining	SP-SM		736.3 41.00 727.3	5		9.75 10.00
50		Log continued on next page						

MONITORING WELL DIAGRAM and NOTES

Aquaguard Grout

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-69.8'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 69.8'-79.8'
Material: 0.010" Slotted
Diameter: 2"
Slot Size: 0.010"
End Cap: 3"

FILTER PACK
Interval: 67.8'-85'
Type: Filter Sil - Filtration sand and gravel, industrial quartz
Quantity: 5 x 50 lb bag

FILTER PACK SEAL
Interval: 64.2'-67.8'
Type: Pel Plug Bentonite Pellets
Quantity: 1 x 50 lb bucket

ANNULUS SEAL
Interval: 0'-64.2'
Type: Aquaguard bentonite grout
Quantity: 3 batches of 2 bags Aquaguard + 40 gal water

WELL COMPLETION
Pad: 4' x 4'
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic
Sample Type: Sonic

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

WSP GOLDER

RECORD OF BOREHOLE B-122D

PROJECT: SCS Plant McDonough
PROJECT NUMBER: GL166849621
DRILLED DEPTH: 85.00 ft
LOCATION: Smyrna, GA

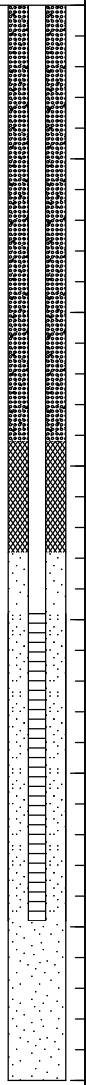
DRILL RIG: Terra Sonic 150T
Truck-Mounted Sonic
DATE STARTED: 3/24/22
DATE COMPLETED: 3/24/22

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)	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			50.00			
	725							
55						6		6.50 10.00
	720							
60					717.3			
		60.00 - 65.00 Same as above			60.00			
	715							
65					712.3	7		9.50 10.00
		65.00 - 70.00 muscovite biotite SCHIST, strong, fresh to slightly weathered, slightly fractured, fine to coarse grained, traces of iron staining			65.00			
	710							
70					707.3			
		70.00 - 73.00 Same as above, some iron staining, slightly to moderately fractured			70.00			
	705				704.3			
		73.00 - 80.00 muscovite biotite SCHIST, strong fresh, unfractured, fine to coarse grained			73.00			
75						8		9.20 10.00
	700							
80					697.3			
		80.00 - 85.00 muscovite biotite SCHIST, strong fresh to slightly weathered, slightly fractured, fine to coarse grained, trace to little iron staining			80.00			
	695					9		5.00 5.00
85					692.3			
		Boring completed at 85.00 ft						
	690							
90								
	685							
95								
	680							
100								

MONITORING WELL DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-69.8'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 69.8'-79.8'
Material: 0.010" Slotted
Diameter: 2"
Slot Size: 0.010"
End Cap: 3"

FILTER PACK
Interval: 67.8'-85'
Type: Filter Sil - Filtration sand and gravel, industrial quartz
Quantity: 5 x 50 lb bag

FILTER PACK SEAL
Interval: 64.2'-67.8'
Type: Pel Plug Bentonite Pellets
Quantity: 1 x 50 lb bucket

ANNULUS SEAL
Interval: 0'-64.2'
Type: Aquaguard bentonite grout
Quantity: 3 batches of 2 bags Aquaguard + 40 gal water

WELL COMPLETION
Pad: 4' x 4'
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic
Sample Type: Sonic

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

WSP GOLDER

BOREHOLE RECORD PLANT MCDONOUGH_DGWC-121, B-122D, B-123D.GPJ PIEDMONT.GDT 5/13/22

RECORD OF BOREHOLE B-125D

PROJECT: SCS Plant McDonough
PROJECT NUMBER: GL166849622
DRILLED DEPTH: 220.00 ft
LOCATION: Smyrna. GA

DRILL RIG: Track Rig PS150
DATE STARTED: 3/14/23
DATE COMPLETED: 3/31/23

NORTHING: 1,394,111.60
EASTING: 2,202,580.70
GS ELEVATION: 819.15 ft
TOC ELEVATION: 821.70 ft

DEPTH W.L.:15.7 ft
ELEVATION W.L.:
DATE W.L.:3/31/23
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	PHOTO	REC	MONITORING WELL DIAGRAM and NOTES
0		0.00 - 10.00 FILL, SC, CLAYEY SAND, some silt, red, trace mica, highly weathered, NC, moist, trending drier downhole, loose to compact; air knifed for utility clearance	SC		809.15	1		4.00 / 10.00	Aquaguard Grout
10	815	10.00 - 20.00 RESIDUUM, SP, fine SAND with trace clay, tan, trace mica, moderately weathered, NC, moist, loose	SP		10.00 799.15	2		4.00 / 10.00	
20	805	20.00 - 22.50 SW, fine to coarse SAND with gravels of schist, saprolitic schist structure observed, tan, highly weathered, NC, dry, very loose	SW		20.00 796.65	3		9.50 / 10.00	
		22.50 - 25.00 TWR, GP, angular GRAVEL with fine to coarse sand; schistic gravels, highly weathered, NC, dry, very loose	GP		22.50 794.15				
30	795	25.00 - 30.00 BEDROCK, highly weathered GNEISS, very rough surface, multiple fractures			25.00 789.15				
		30.00 - 34.00 No Recovery			30.00 785.15	4		6.00 / 10.00	
40	785	34.00 - 68.00 moderately weathered GNEISS, very rough surface, multiple fractures			34.00	5		9.50 / 10.00	
50	775								
	770								

Log continued on next page

WELL CASING
Interval: 0'-135.1'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 135.1'-145.1'
Material: 0.010" Slotted
Diameter: 2"
Slot Size: 0.010"
End Cap: 3"

FILTER PACK
Interval: 132.6'-146.5'
Type: No. 2 Filter Sand
Quantity: 4x15-cu ft bag

FILTER PACK SEAL
Interval: 128'-132.6'
Type: Pel Plug Bentonite Pellets 3/8"
Quantity: 1 x 5 gal bucket

ANNULUS SEAL
Interval: 0'-128'
Type: Aquaguard bentonite grout
Quantity: 8 bags

WELL COMPLETION
Pad: 4'x4'
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic
Sample Type: Sonic

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Brendan Griffin

GA INSPECTOR: Chris Tidwell
CHECKED BY: Rhonda Quinn
DATE: 5/11/2023

RECORD OF BOREHOLE B-125D

PROJECT: SCS Plant McDonough
PROJECT NUMBER: GL166849622
DRILLED DEPTH: 220.00 ft
LOCATION: Smyrna. GA

DRILL RIG: Track Rig PS150
DATE STARTED: 3/14/23
DATE COMPLETED: 3/31/23

NORTHING: 1,394,111.60
EASTING: 2,202,580.70
GS ELEVATION: 819.15 ft
TOC ELEVATION: 821.70 ft

DEPTH W.L.:15.7 ft
ELEVATION W.L.:
DATE W.L.:3/31/23
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	PHOTO	REC	MONITORING WELL DIAGRAM and NOTES
50		34.00 - 68.00 moderately weathered GNEISS, very rough surface, multiple fractures *(Continued)*							
	765								
55						6		8.00 10.00	
	760								
60									
	755								
65						7		6.00 10.00	
					751.15 68.00				
	750	68.00 - 70.00 highly weathered GNEISS, very rough surface, multiple fractures, iron staining			749.15 70.00				
70		70.00 - 150.00 moderately to slightly weathered GNEISS; rough irregular surface, multiple fractures, intermittent quartz lenses, iron staining at 77.5', 130'-140'							
	745								
75						8		5.00 10.00	
	740								
80									
	735								
85						9		7.00 10.00	
	730								
90									
	725								
95						10		5.00 10.00	
	720								
100		Log continued on next page							

WELL CASING
Interval: 0'-135.1'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 135.1'-145.1'
Material: 0.010" Slotted
Diameter: 2"
Slot Size: 0.010"
End Cap: 3"

FILTER PACK
Interval: 132.6'-146.5'
Type: No. 2 Filter Sand
Quantity: 4x15-cu ft bag

FILTER PACK SEAL
Interval: 128'-132.6'
Type: Pel Plug Bentonite Pellets 3/8"
Quantity: 1 x 5 gal bucket

ANNULUS SEAL
Interval: 0'-128'
Type: Aquaguard bentonite grout
Quantity: 8 bags

WELL COMPLETION
Pad: 4'x4'
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic
Sample Type: Sonic

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Brendan Griffin

GA INSPECTOR: Chris Tidwell
CHECKED BY: Rhonda Quinn
DATE: 5/11/2023

RECORD OF BOREHOLE B-125D

PROJECT: SCS Plant McDonough
PROJECT NUMBER: GL166849622
DRILLED DEPTH: 220.00 ft
LOCATION: Smyrna. GA

DRILL RIG: Track Rig PS150
DATE STARTED: 3/14/23
DATE COMPLETED: 3/31/23

NORTHING: 1,394,111.60
EASTING: 2,202,580.70
GS ELEVATION: 819.15 ft
TOC ELEVATION: 821.70 ft

DEPTH W.L.:15.7 ft
ELEVATION W.L.:
DATE W.L.:3/31/23
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	PHOTO	REC	MONITORING WELL DIAGRAM and NOTES
100		70.00 - 150.00 moderately to slightly weathered GNEISS; rough irregular surface, multiple fractures, intermittent quartz lenses, iron staining at 77.5', 130'-140' *(Continued)*							
	715								
105						11		8.00/10.00	
	710								
110									
	705								
115						12		8.00/10.00	
	700								
120									
	695								
125						13		8.00/10.00	
	690								
130									Pel Plug Pellets
	685								
135						14		5.00/10.00	Filter Sil Filtration sand and gravel
	680								0.010" Slotted Schedule 40 PVC U-pack Screen
140									
	675								
145						15		5.00/10.00	3" bottom cap
	670								19 x 50lb bags, Haliburton Bentonite Chips 3/8"
150		Log continued on next page			669.15				

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-135.1'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 135.1'-145.1'
Material: 0.010" Slotted
Diameter: 2"
Slot Size: 0.010"
End Cap: 3"

FILTER PACK
Interval: 132.6'-146.5'
Type: No. 2 Filter Sand
Quantity: 4x15-cu ft bag

FILTER PACK SEAL
Interval: 128'-132.6'
Type: Pel Plug Bentonite Pellets 3/8"
Quantity: 1 x 5 gal bucket

ANNULUS SEAL
Interval: 0'-128'
Type: Aquaguard bentonite grout
Quantity: 8 bags

WELL COMPLETION
Pad: 4'x4'
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic
Sample Type: Sonic

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Brendan Griffin

GA INSPECTOR: Chris Tidwell
CHECKED BY: Rhonda Quinn
DATE: 5/11/2023

RECORD OF BOREHOLE B-125D

PROJECT: SCS Plant McDonough
PROJECT NUMBER: GL166849622
DRILLED DEPTH: 220.00 ft
LOCATION: Smyrna. GA

DRILL RIG: Track Rig PS150
DATE STARTED: 3/14/23
DATE COMPLETED: 3/31/23

NORTHING: 1,394,111.60
EASTING: 2,202,580.70
GS ELEVATION: 819.15 ft
TOC ELEVATION: 821.70 ft

DEPTH W.L.:15.7 ft
ELEVATION W.L.:
DATE W.L.:3/31/23
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	PHOTO	REC	MONITORING WELL DIAGRAM and NOTES
150		150.00 - 220.00 moderately to highly weathered GNEISS; rough irregular surface, muliple fractures, quartz and biotite mica, iron staining at 157'-160'			150.00				
155	665					16		10.00 / 10.00	
160	660								
165	655					17		7.50 / 10.00	
170	650								
175	645					18		10.00 / 10.00	
180	640								
185	635					19		8.00 / 10.00	
190	630								
195	625					20		10.00 / 10.00	
200	620								

Log continued on next page

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-135.1'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 135.1'-145.1'
Material: 0.010" Slotted
Diameter: 2"
Slot Size: 0.010"
End Cap: 3"

FILTER PACK
Interval: 132.6'-146.5'
Type: No. 2 Filter Sand
Quantity: 4x15-cu ft bag

FILTER PACK SEAL
Interval: 128'-132.6'
Type: Pel Plug Bentonite Pellets 3/8"
Quantity: 1 x 5 gal bucket

ANNULUS SEAL
Interval: 0'-128'
Type: Aquaguard bentonite grout
Quantity: 8 bags

WELL COMPLETION
Pad: 4'x4'
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic
Sample Type: Sonic

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Brendan Griffin

GA INSPECTOR: Chris Tidwell
CHECKED BY: Rhonda Quinn
DATE: 5/11/2023

RECORD OF BOREHOLE B-125D

SHEET 5 of 5

PROJECT: SCS Plant McDonough
PROJECT NUMBER: GL166849622
DRILLED DEPTH: 220.00 ft
LOCATION: Smyrna. GA

DRILL RIG: Track Rig PS150
DATE STARTED: 3/14/23
DATE COMPLETED: 3/31/23

NORTHING: 1,394,111.60
EASTING: 2,202,580.70
GS ELEVATION: 819.15 ft
TOC ELEVATION: 821.70 ft

DEPTH W.L.:15.7 ft
ELEVATION W.L.:
DATE W.L.:3/31/23
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	PHOTO	REC	MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
200		150.00 - 220.00 moderately to highly weathered GNEISS; rough irregular surface, muliple fractures, quartz and biotite mica, iron staining at 157'-160' *(Continued)*								
205	615					21		10.00 / 10.00		
210	610									
215	605					22		7.00 / 10.00		
220	600				599.15					
		Boring completed at 220.00 ft								
225	595									
230	590									
235	585									
240	580									
245	575									
250	570									

WELL CASING
Interval: 0'-135.1'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 135.1'-145.1'
Material: 0.010" Slotted
Diameter: 2"
Slot Size: 0.010"
End Cap: 3"

FILTER PACK
Interval: 132.6'-146.5'
Type: No. 2 Filter Sand
Quantity: 4x15-cu ft bag

FILTER PACK SEAL
Interval: 128'-132.6'
Type: Pel Plug Bentonite Pellets 3/8"
Quantity: 1 x 5 gal bucket

ANNULUS SEAL
Interval: 0'-128'
Type: Aquaguard bentonite grout
Quantity: 8 bags

WELL COMPLETION
Pad: 4'x4'
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic
Sample Type: Sonic

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Brendan Griffin

GA INSPECTOR: Chris Tidwell
CHECKED BY: Rhonda Quinn
DATE: 5/11/2023

SOUTHERN COMPANY

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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML) - Grass - brownish yellow, dry, SILT						
5		- brownish yellow, dry, medium stiff, SILT saprolite with relic bedding.		SS -1	4.5	3-2-3 (5)		upper saprolite.
10		- pale brown and white, medium stiff, mottled; SAA with occasional fragments.		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		**Silt (ML)**	810.5	SS	24.5	6-6-8		

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GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:43 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

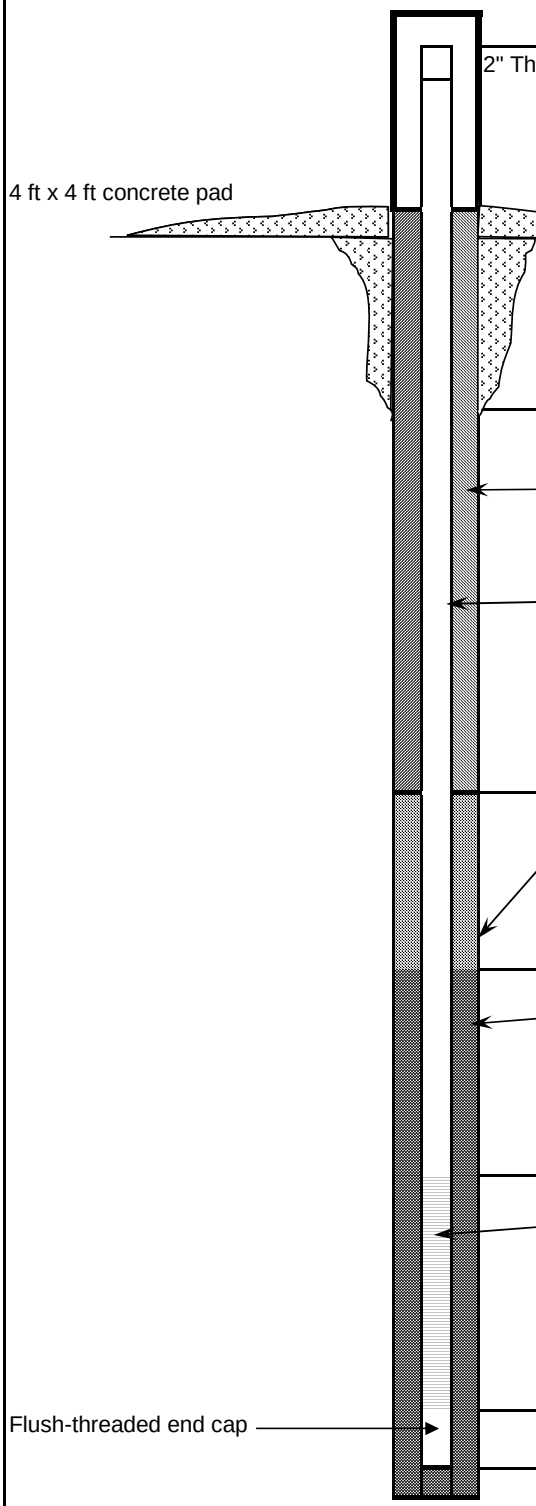
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)*		-5		(14)		good relic banding; lower saprolite.
		- gray and white, stiff, micaceous SILT; weathered; contains fine to coarse-grained quartz and feldspar fragments						
		- SAA						
30				SS -6	29.5	9-7-7 (14)		
		- Refusal @ 32.2'. Start coring @ 32'.	802.8	RC -1	32.0			
		Gneiss						
		- gray and white, hard, slightly weathered, augen gneiss; water (iron, manganese) staining along partings.						
35								
		- Soft weathered zone at bottom of run with some decomposition.						
		- gray and white, hard, slightly weathered, augen gneiss; water (iron, manganese) staining along partings. Approx. 35 to 45 degree angle.		RC -2	37.0			
40								
			793.0					
		Bottom of borehole at 42.0 feet.						
45								
50								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:43 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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-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
GROUND SURFACE	0.0	834.86
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 6 bags cement 9 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	20.0	814.9
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 2.25 buckets PLACEMENT: Poured		
TOP OF FILTER PACK	24.2	810.7
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 2.5 Bags PLACEMENT: Poured		
BOTTOM OF RISER / TOP OF SCREEN	26.7	808.2
SCREEN 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	798.2
BOTTOM OF CASING	37.0	797.9

HOLE DIA: 7 inch (auger)
3.8 inch (HQ core)

SOUTHERN COMPANY

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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Clayey Sand (SC) - 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		**Silt (ML)** - red-tan, damp, clayey SILT with fine-grained sand		SS -1	4.5	4-4-8 (12)		A horizon of residual soil.
		- 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						
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		

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SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

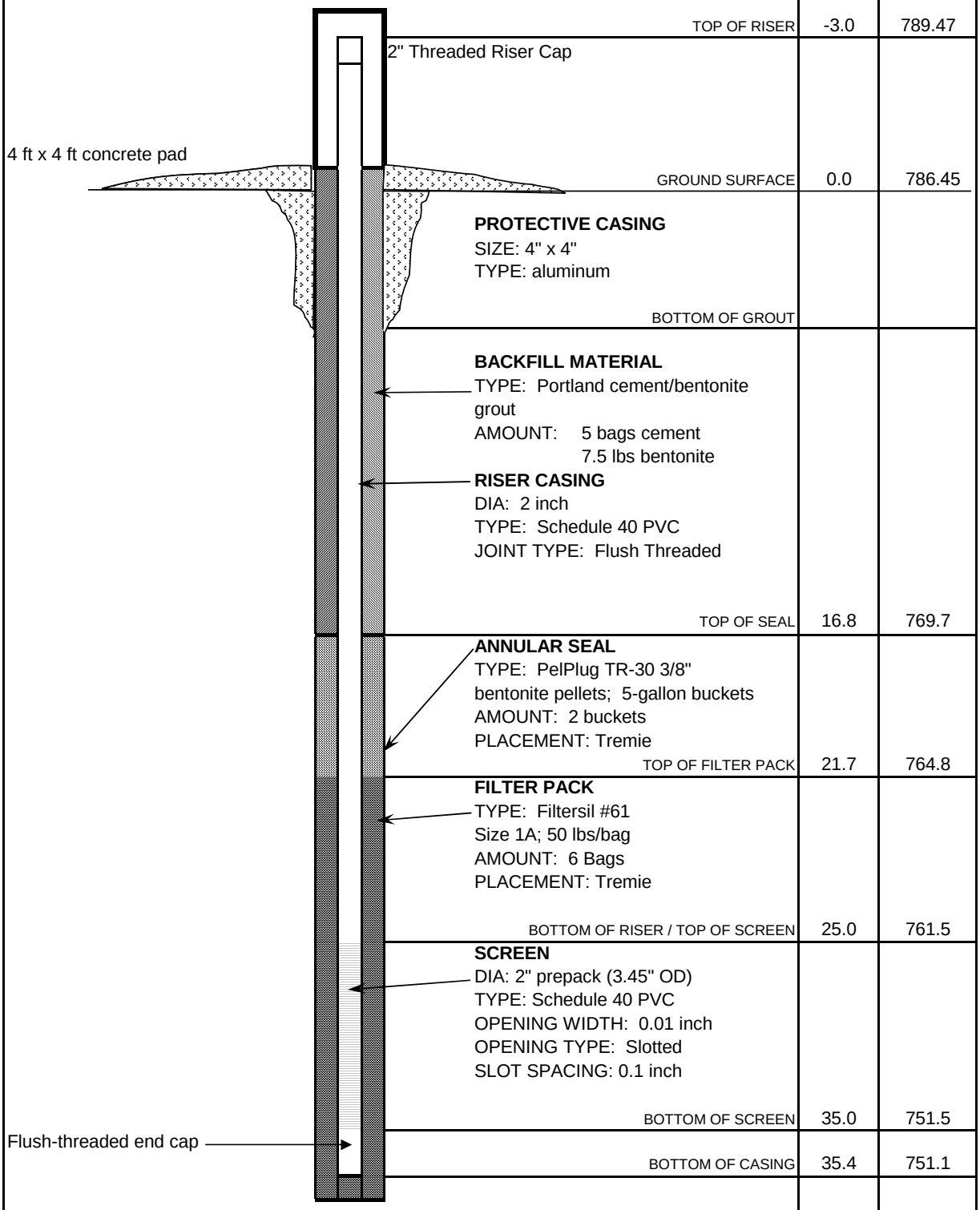
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)* - tan-brown, very hard, clayey SILT with sand and gravel; contains highly weathered schist fragments; micaceous; 50% silt, 30% clay, 20% sand/gravel		-5		(78)		mid-lower saprolite.
30		- tan-brown, damp, very hard, sandy, gravelly, clayey SILT; 50% clayey silt, 50% sandy gravel; gravels are 1 mm to 10 mm in size, angular and gneissic in origin; highly weathered; contains some white leached quartz		SS -6	29.5	50 (0)		lower saprolite.
35		- brown, damp, very hard, clayey SILT; 40% clay, 60% silt; micaceous, contains relic structures	750.7	SS -7	34.5	27-50 (50)		lower saprolite.
		Bottom of borehole at 35.8 feet.						

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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-6
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
GROUND SURFACE	0.0	786.45
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 5 bags cement 7.5 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	16.8	769.7
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 2 buckets PLACEMENT: Tremie		
TOP OF FILTER PACK	21.7	764.8
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 6 Bags PLACEMENT: Tremie		
BOTTOM OF RISER / TOP OF SCREEN	25.0	761.5
SCREEN 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
BOTTOM OF CASING	35.4	751.1

SOUTHERN COMPANY

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** 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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)						
		- brown to red-brown, damp, very soft, clayey SILT with trace sand; organic rich						O Horizon.
		- red to red-tan, damp, soft, clayey SILT						
			801.6	SS -1	4.5	3-3-3 (6)		
5		**Fat Clay (CH)** - tan, brown and orange, damp, medium stiff, silty CLAY; micaceous; relic foliations; 60% clay, 40% silt						A-B Horizon / residual soils.
								becomes very moist at 8.5'.
			796.6	SS -2	9.5	1-1-2 (3)		
10		**Silt (ML)** - red-tan, very moist, soft, clayey SILT with trace fine sand; slightly micaceous; contains manganese						residual soil.
				SS -3	14.5	1-1-3 (4)		
15		- brown-red, very moist, soft, clayey SILT to silty CLAY with trace gravel; micaceous; prevalent manganese staining						residual soil.
								saturated from 18.5 to 19.5'.
				SS -4	19.5	1-1-5 (6)		
20		- olive gray (greenish), wet, medium stiff, clayey SILT; micaceous; contains relic schist fragments						residual soil.
		- olive gray to tan-brown, wet, stiff, clayey, gravelly SILT; contains manganese and moderately		SS	24.5	7-7-8		
25								

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SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

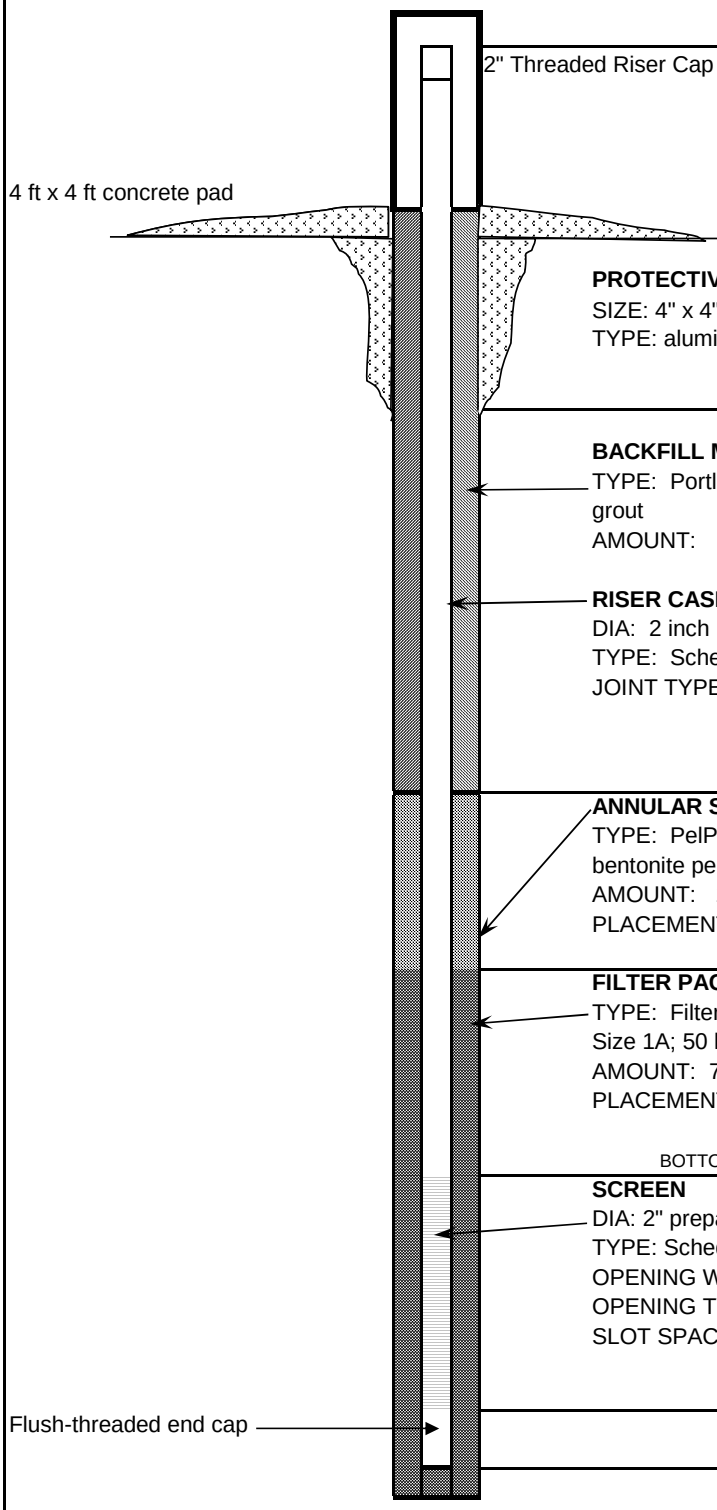
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		weathered gneissic fragments; relic structures preserved insome instances **Silt (ML)***(con't)*	780.1	-5		(15)		upper saprolite.
		Bottom of borehole at 26.0 feet.						

30
35
40
45
50

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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-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
GROUND SURFACE	0.0	806.04
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 3 bags cement 1.75 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	7.6	798.4
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1.75 buckets PLACEMENT: Poured		
TOP OF FILTER PACK	12.7	793.3
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 7 Bags PLACEMENT: Poured		
BOTTOM OF RISER / TOP OF SCREEN	14.8	791.2
SCREEN 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	781.2
BOTTOM OF CASING	25.2	780.8

SOUTHERN COMPANY

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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 9.5 ft						
10		**Silt (ML)** - light gray, very soft, SILT with very fine to fine-grained sand	809.8	SS -1	9.5	WH-1-1 (2)		
15		- stiff, SAA; very micaceous		SS -2	14.5	3-4-6 (10)		
20		- light tan to brown, medium stiff, SILT; very fine to fine-grained; micaceous; 2" quartz		SS -3	19.5	5-4-4 (8)		
25				SS	24.5	19-37-50		

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GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

SOUTHERN COMPANY

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
		Silt (ML)*(con't)* - 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)		

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GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

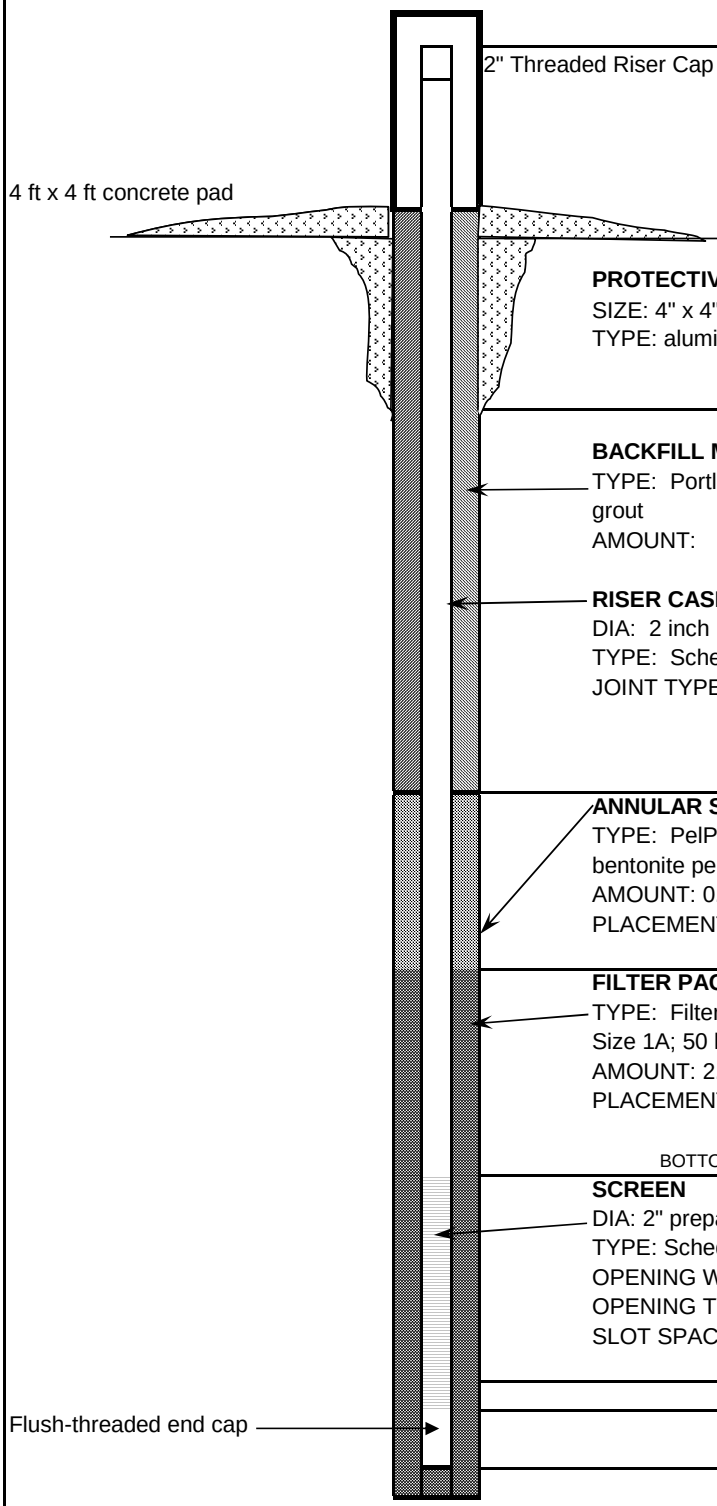
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
55		**Silt (ML)***(con't)*		SS -10	54.5	50 (0)		
		- SAA						
			760.2	RC -1	59.1			
60		**Gneiss**						
		- light gray to orange, highly weathered, GNEISS; highly fractured, vertical and horizontal						
				RC -2	64.1			
65		- light gray with red staining, SAA						
				RC -3	69.1			
70		- SAA						
				RC -4	74.1			
75			740.2					
		Bottom of borehole at 79.1 feet.						
80								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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-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
GROUND SURFACE	0.0	819.19
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 21 bags cement 30 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	60.8	758.4
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 0.25 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	65.9	753.3
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 2.5 Bags PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	68.3	750.9
SCREEN 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	740.9
BOTTOM OF CASING	79.1	740.1

HOLE DIA: 7 inch (auger)
3.8 inch (HQ core)

SOUTHERN COMPANY

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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 9.5 ft						
10		**Silt (ML)**	824.0	SS -1	9.5	1-2-2 (4)		no recovery.
15		- 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)		
20		- black and white, very hard, SAA; weathered gneiss saprolite		SS -3	19.5	18-36-50 (86)		
25				SS	24.5	25		

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SOUTHERN COMPANY

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
		Silt (ML)*(con't)* - black and white, dry, weathered gneiss		-4		(0)		
			806.5	RC -1	27.0			
		Gneiss - black and white, medium hard to hard, slightly weathered - two 1/2"augens and weathered joints at 28.5 ft						
30		- soft, weathered and broken from 29.1 to 30.2 ft - joint filled with secondary minerals form 30.2 to 30.7 ft - slightly weathered joints at 31.0, 31.3, and 31.6 ft - 1/4" augen with four slightly weathered joints across foliation from 32.3 to 33.0 ft		RC -2	29.8			
35		- 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			

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

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SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

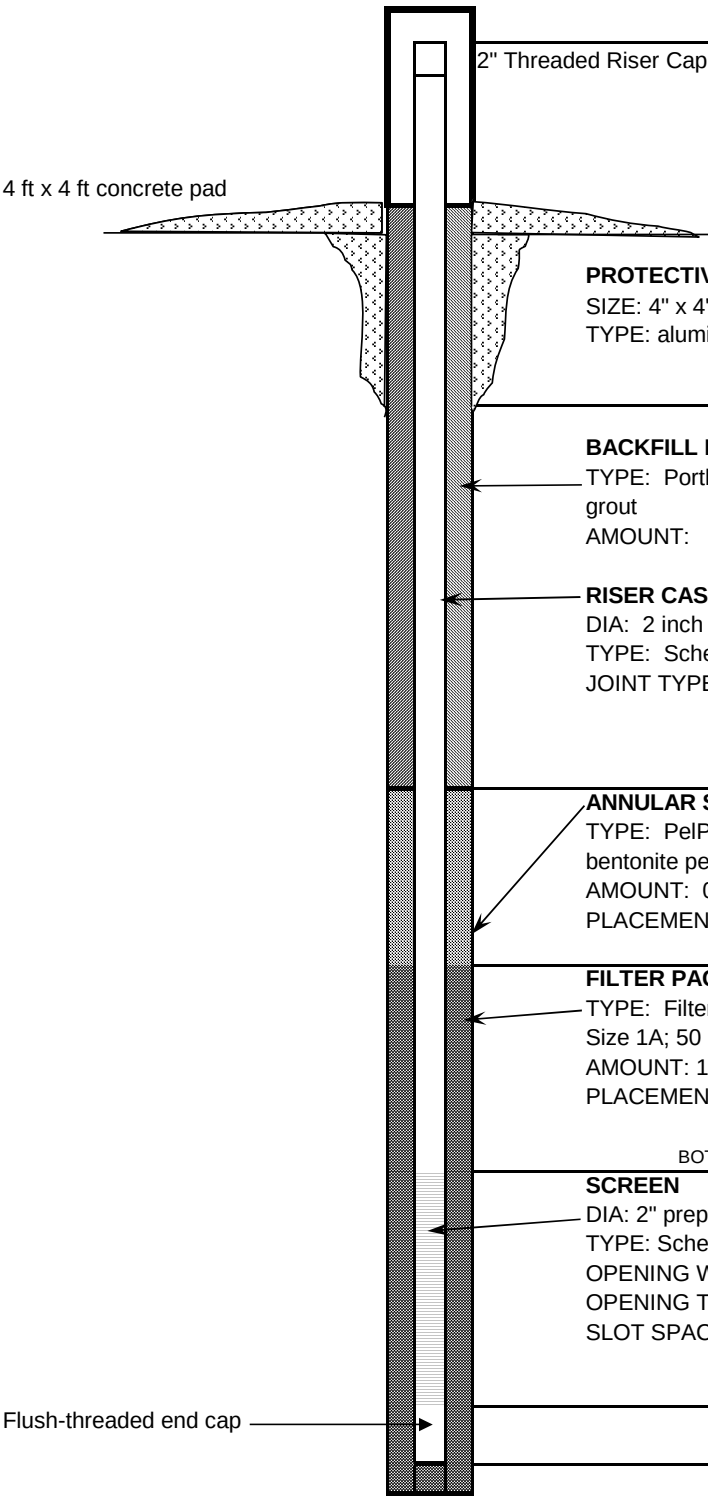
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

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 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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
GROUND SURFACE	0.0	833.41
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 10 bags cement 14 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	40.1	793.3
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 0.25 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	42.4	791.0
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 1 Bag; 50 lbs/bag PLACEMENT: Tremie		
BOTTOM OF RISER / TOP OF SCREEN	44.4	789.0
SCREEN 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	779.0
BOTTOM OF CASING	54.8	778.6

HOLE DIA: 7 inch (auger)
3.8 inch (HQ core)

SOUTHERN COMPANY

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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 9.5 ft						
5								
			841.1	SS -1	9.5	4-4-6 (10)		
10		**Silt (ML)** - tan with white, pink and dark brown layering, stiff, sandy SILT; heavily weathered; micaceous; fine-grained						
				SS -2	14.5	3-5-9 (14)		
15		- stiff, SAA; heavily weathered gneiss						
				SS -3	19.5	17-24-27 (51)		
20		- dry, very hard, SAA; more compact wtih better foliation than previous samples; less sand						
				SS	24.5	50		
25								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

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SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

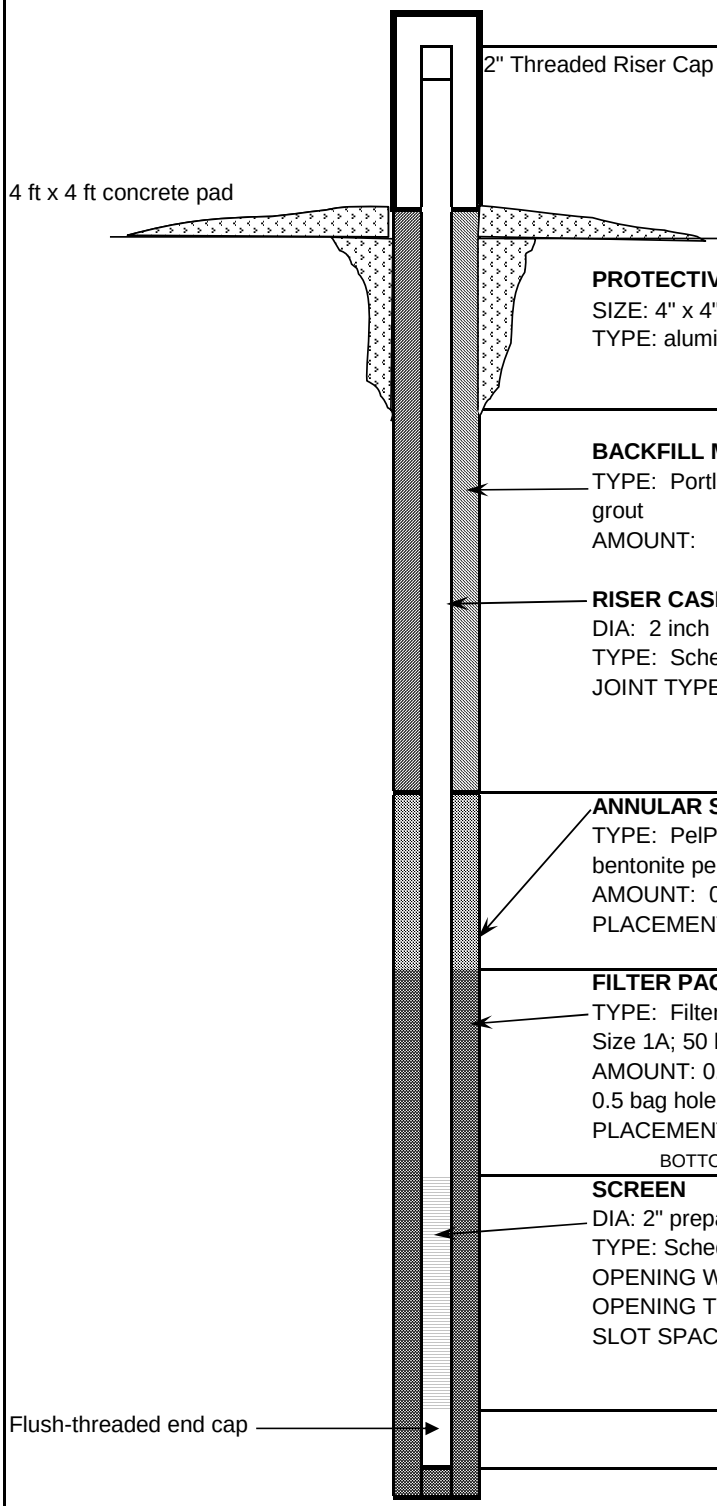
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)*		-4		(0)		
		- dry, very hard, SAA; powdered rock	824.6	RC -1	26.0			
		Gneiss						
		- 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'		RC -2	28.9			
30		- stain on joints, one joint on foliation and one joint across foliation at 29.3' to 29.7'						
		- 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 phenocysts from 35.8' to 36.6'						
		- soft weathered zone with staining from 39.0' to 39.7'		RC -4	39.0			
40		- heavily stained, soft joints across foliation at 41.3'						
		- 1/2" augen at 42.0'						
		- weathered broken zone from 43.6' to 44.1'		RC -5	44.1			
45		- below 44.1' heavily stained with many quartz phenocycts						
		- 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 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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	853.60
2" Threaded Riser Cap		
GROUND SURFACE	0.0	850.61
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 7 bags cement 10 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	30.5	820.1
ANNULAR SEAL 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
FILTER PACK 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
SCREEN 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

HOLE DIA: 7 inch (auger)
3.8 inch (HQ core)

SOUTHERN COMPANY

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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 9.5 ft						
10		**Gneiss** - no recovery; encountered boulder	803.8	SS -1	9.5			
		Silty Sand (SM)	802.3					
15		- green and black, saprolite; relict structure present		SS -2	14.5			
20		- brown and tan, damp, silty SAND; micaceous; fine-grained		SS -3	19.5			
25				SS	24.5	4-5-7		

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

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SOUTHERN COMPANY

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
		Silty Sand (SM)*(con't)* - SC-SM: tan, orange, and black, damp, medium dense, silty, clayey SAND; fine to very fine-grained		-4		(12)		
30		- medium dense, SAA; micaceous; clay content increases		SS -5	29.5	7-7-7 (14)		
			778.8					
35		**Silt (ML)** - green and black, damp, hard, sandy SILT; relict structure present		SS -6	34.5	5-16-23 (39)		
40		- tan, orange, and black, stiff, sandy SILT; micaceous; some relict structure		SS -7	39.5	5-5-6 (11)		
45		- hard, SAA		SS -8	44.5	7-16-20 (36)		
50		- very hard, SAA		SS -9	49.5	20-20 (20)		

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GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

SOUTHERN COMPANY

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		**Silt (ML)***(con't)* - very hard, minimal recovery; partially weathered rock		SS -10	54.5	50 (0)		
			754.1	RC -1	59.2			
60		**Gneiss** - black and gray, mylonite GNEISS (schistic zone); weathering noted along small joints and along foliations (saprock), otherwise fresh; no staining seen						
				RC -2	64.3			
65		- black and gray, hard, mylonite GNEISS; fresh						
				RC -3	69.3			
70		- SAA						
				RC -4	74.3			
75		- SAA						
				RC -5	79.3			
80		- SAA with small iron-stained joint at 83'						

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

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SOUTHERN COMPANY

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SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

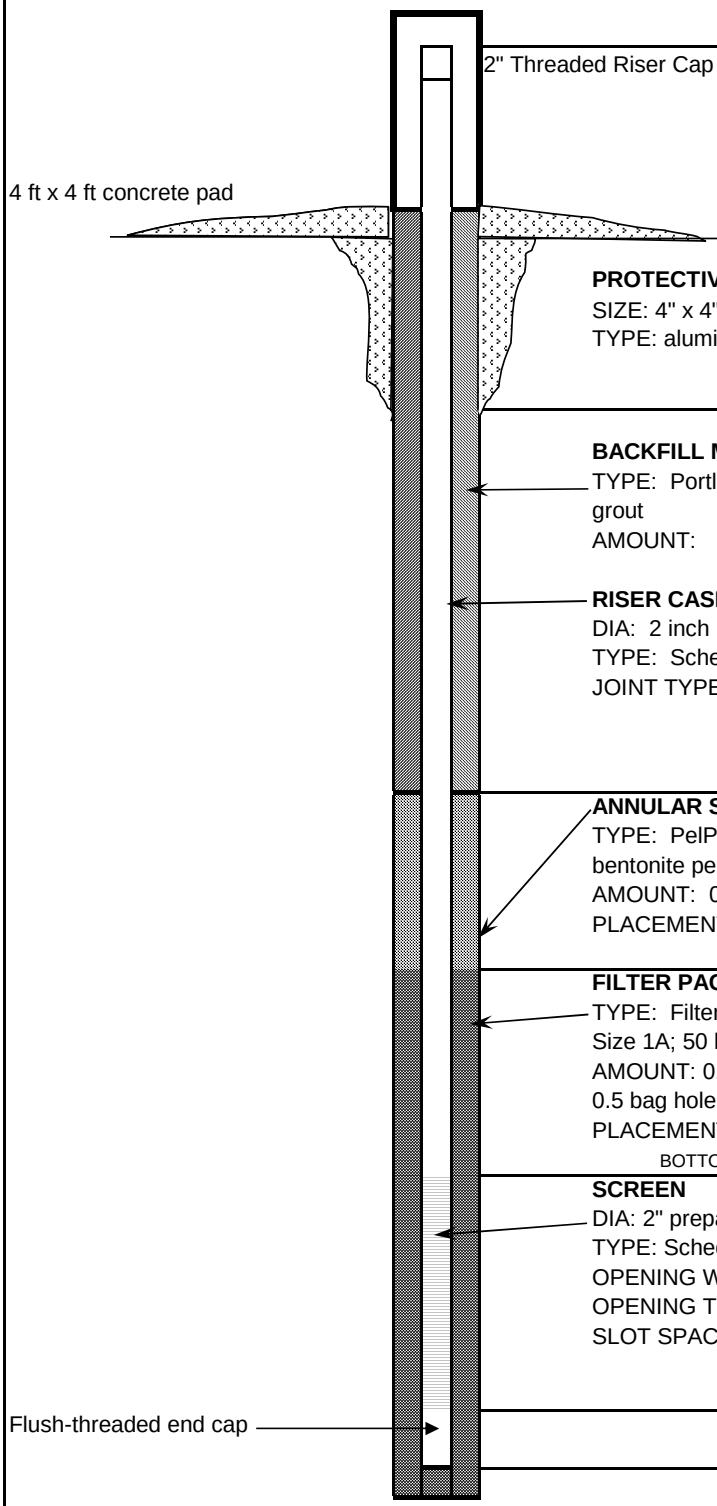
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
85		**Gneiss***(con't)*		RC -6	84.3			
90				RC -7	89.3			
		- black and gray, hard, GNEISS; fresh	719.0					
95		Bottom of borehole at 94.3 feet.						
100								
105								
110								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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-28
LOGGER: Dustin Brooks	DRILLING METHODS: HS Auger/HQ Rock Core	
DATE CONSTRUCTED: 10/31/2012	N: 1391967.4 E: 2201679.2	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.8	816.08
GROUND SURFACE	0.0	813.28
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 14 bags cement 19 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	53.0	760.3
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 0.5 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	55.6	757.7
FILTER PACK 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	59.0	754.3
SCREEN 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	69.0	744.3
BOTTOM OF CASING	69.4	743.9

HOLE DIA: 7 inch (auger)
3.8 inch (HQ core)

SOUTHERN COMPANY

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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 10 ft						
10			803.5					
		Silt (ML)						
		- tan-red, damp, medium stiff, clayey SILT, no structures or staining		SS -1	12.0	2-2-4 (6)		residual soil.
15		- tan, brown, and orange-red, damp, stiff, SILT with clay; vertical manganese oxide bands; highly weathered relict structrure; slightly micaceous		SS -2	14.5	2-5-6 (11)		residual soil - upper saprolite.
20		- 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 -3	19.5	9-28-29 (57)		lower saprolite.
25				SS	24.5	2-11-14		

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

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SOUTHERN COMPANY

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
		Silt (ML)*(con't)* - 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.
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)		noticable sound of water flowing.

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

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SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

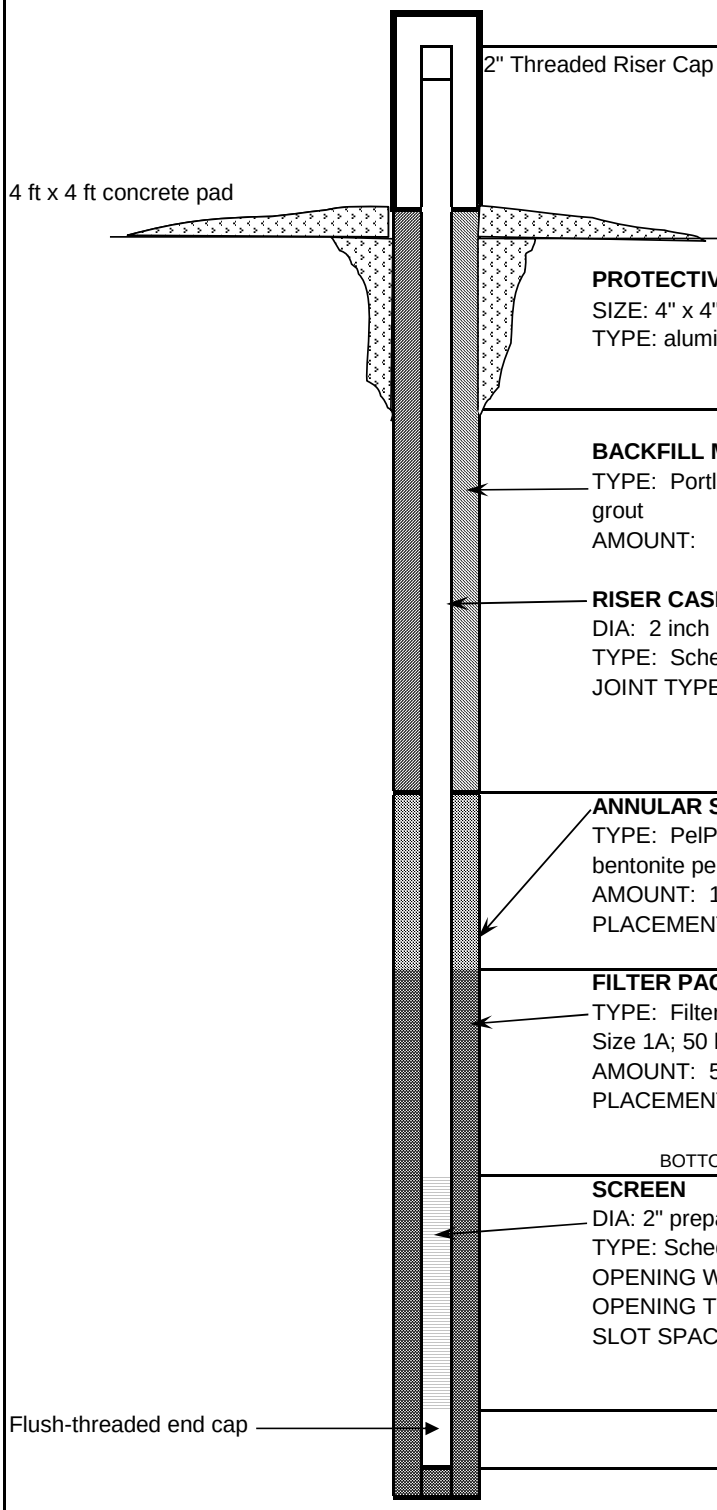
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

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 **Silt (ML)***(con't)*	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 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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
GROUND SURFACE	0.0	813.47
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 10 bags cement 13.5 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	40.0	773.5
ANNULAR SEAL TYPE: PelPlug TR-30 1/4" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	42.0	771.5
FILTER PACK 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
SCREEN 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

SOUTHERN COMPANY

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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)						
								Vacuum excavation from 0 ft to 10 ft.
5								
10				SS -1	10.0	8-7-6 (13)		
		- white and tan, moist, foliated; saprolite						
15				SS -2	14.5	7-8-17 (25)		
20				SS -3	19.5	7-17-12 (29)		
		- tan, damp, stained below 20.5 ft						
25				SS	24.5	3-6-12		

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GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

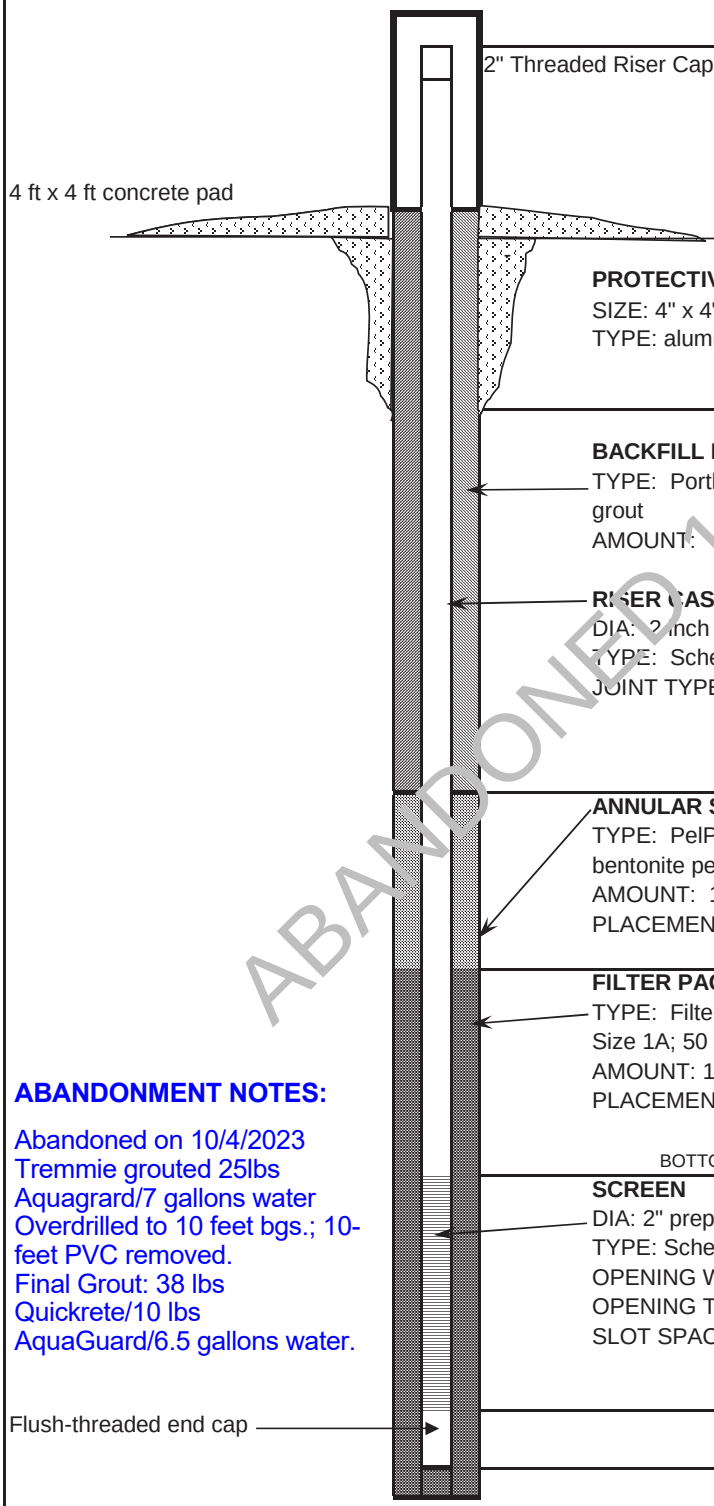
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)*		-4		(18)		
		- wet		RC -1	26.0			
			768.4					
		Gneiss						
		- black and white						
		- slightly weathred to fresh; w/????; hard ???? from 26.5 to 26.6 ft, 27.2 to 27.3 ft, 30.0 to 30.1 ft, and 31.4 to 32.4 ft		RC -2	28.7			
30								
		- soft, highly weathered with sand; stained from 32.4 to 33.5 ft						
		- 3 thick quartz intrusions/secondary fill; hard to soft; weathered; stained from 33.7 to 34.9 ft		RC -3	33.7			
35								
				RC -4	38.7			
40								
				RC -5	43.7			
45			749.8					
		Bottom of borehole at 45.1 feet.						
50								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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 1	RIG TYPE: CME550	B-31
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
GROUND SURFACE	0.0	794.84
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 5 bags cement 3 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded TOP OF SEAL	25.7	769.1
ANNULAR SEAL TYPE: PelPlug TR-30 1/4" bentonite pellets; 5-gallon buckets AMOUNT: 1/4 bucket PLACEMENT: Poured TOP OF FILTER PACK	29.1	765.7
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 1/2 Bags PLACEMENT: Tremie BOTTOM OF RISER / TOP OF SCREEN	34.7	760.1
SCREEN 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	750.1
BOTTOM OF CASING	45.1	749.7

ABANDONED 10/4/2023

ABANDONMENT NOTES:

Abandoned on 10/4/2023
Tremmie grouted 25lbs Aquagrard/7 gallons water
Overdrilled to 10 feet bgs.; 10-feet PVC removed.
Final Grout: 38 lbs Quickrete/10 lbs AquaGuard/6.5 gallons water.

HOLE DIA: 7 inch (auger)
3.8 inch (HQ core)

SOUTHERN COMPANY

BORING LOG

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.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 9.5 ft						
10		**Lean Clay (CL)** - light tan/orange, very soft, silty CLAY (fill for parking lot)	782.9	SS -1	9.5	WH-WH-1 (1)		
15		**Silt (ML)** - no recovery - medium stiff	777.9	SS -2	14.5	3-2-4 (6)		
20		- brownish orange, dry, stiff, clayey SILT with mica		SS -3	19.5	4-4-5 (9)		
25				SS	24.5			

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

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SOUTHERN COMPANY

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
		Silt (ML)*(con't)* - 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)		

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

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SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

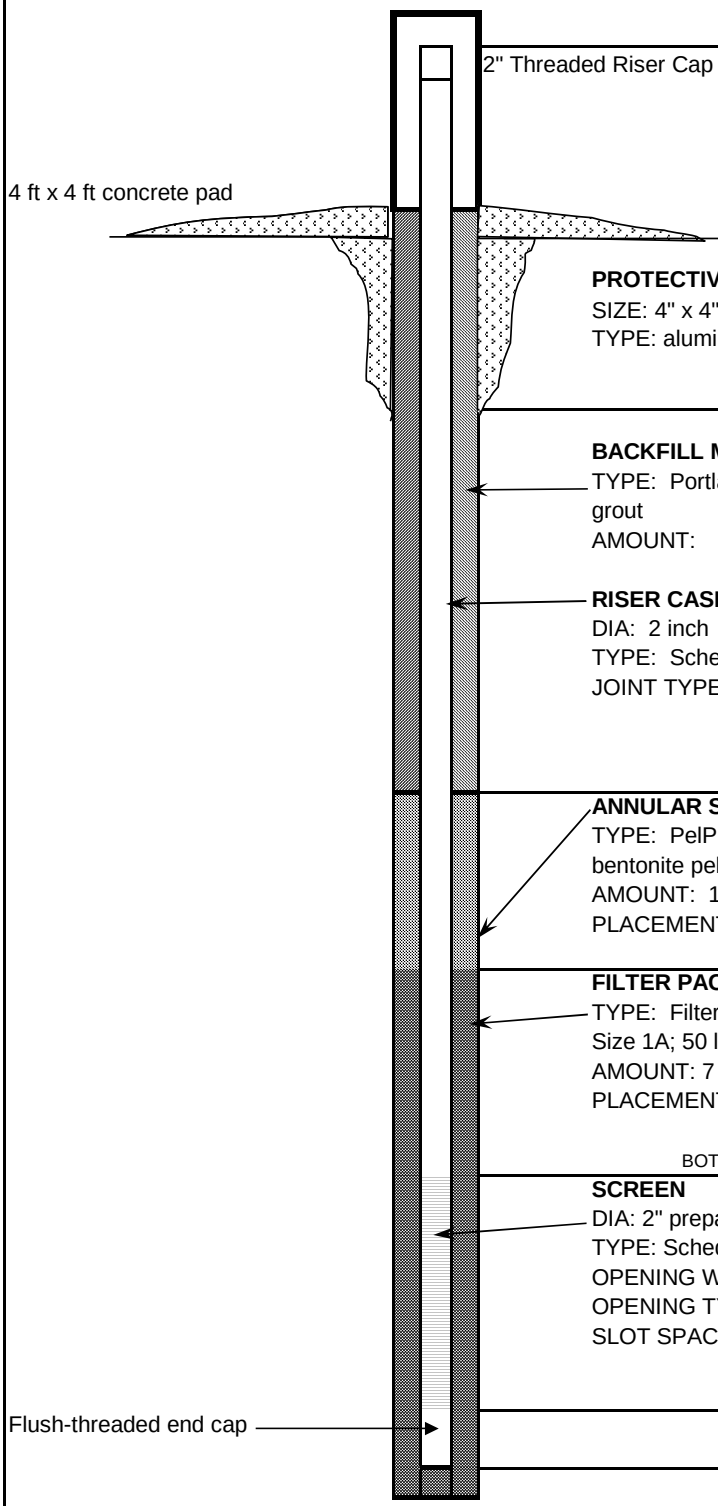
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
55		**Silt (ML)***(con't)*		SS -10	54.5	10-17-26 (43)		
		- light tan, damp, hard, SILT; contains fine to very fine-grained sand and angular quartz gravel						
60		- light tan, damp, saprolite; contains fine to medium-grained sand		SS -11	59.5	11-24-50 (74)		
			731.4					
		Bottom of borehole at 61.0 feet.						
65								
70								
75								
80								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW 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	795.20
GROUND SURFACE	0.0	792.40
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 7 bags cement 10 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	45.2	747.2
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1.25 buckets PLACEMENT: Tremie		
TOP OF FILTER PACK	47.3	745.1
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 7 Bags PLACEMENT: Tremie		
BOTTOM OF RISER / TOP OF SCREEN	49.4	743.0
SCREEN 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	59.4	733.0
BOTTOM OF CASING	60.0	732.4

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

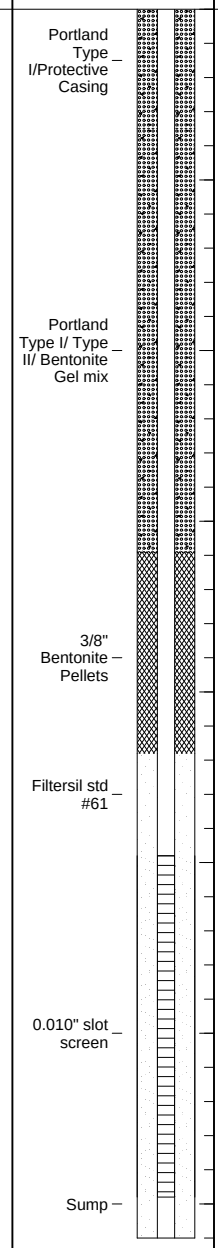
NORTHING: 1,391,657.10
EASTING: 2,201,841.00
GS ELEVATION: 809.20
TOC ELEVATION: 809.67 ft

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)	DESCRIPTION	USCS	ELEV. / DEPTH (ft)
0		0.00 - 12.00 SILT; grayish brown, dry, soft (fill)	ML	
	805			
5				
	800			
10				797.2
		12.00 - 29.50 SILT; organish gray, some fine to coarse sand, micaceous, moist to wet, soft to firm (saprolite)		12.00
	795			
15				
	790			
20			ML	
	785			
25				
	780			779.7
30		29.50 - 36.00 SILTY SAND; brownish gray, fine sand, wet, very soft	SM	29.50
	775			
35				773.2
		Boring completed at 36.00 ft		
	770			
40				
	765			
45				

SAMPLES: SAMPLE NO., TYPE, REC

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-35.2'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush threaded with O-ring

WELL SCREEN
Interval: 24.8'-34.8'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 21.8'-36'
Type: Filtersil std61

FILTER PACK SEAL
Interval: 15.9'-21.8'
Type: 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 3'-15.9'
Type: Portland Type I/Type II/Bentonite Gel Mix

WELL COMPLETION
Pad: 4'x4'x4"
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE B-51

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 66.00 ft
LOCATION: Smyrna, GA

DRILL RIG: 100C Track Mounted Rig
DATE STARTED: 6/27/16
DATE COMPLETED: 6/27/16

NORTHING: 1,390,501.20
EASTING: 2,200,906.50
GS ELEVATION: 763.29
TOC ELEVATION: 765.92 ft

DEPTH W.L.: 8.85
ELEVATION W.L.: 754.45
DATE W.L.: 6/28/2016
TIME W.L.: 13:22

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0	760	0.00 - 3.00 SILT; brown, some fine to coarse sand, dry, soft, micaceous (topsoil)	ML		760.3				Portland Type I/ _ Alumiumum Casing	**WELL CASING** Interval: 0'-65' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush threaded with O-ring
5	755	3.00 - 15.00 SILT; red to reddish brown, some fine to coarse gravel, black, subrounded, some clayey silt, orangish white and balck, dry, soft, micaceous (saprolite)	ML		3.00					**WELL SCREEN** Interval: 55'-65' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC
10	750									**FILTER PACK** Interval: 53'-65.4' Type: Filtersil std61
15	745	15.00 - 58.00 SILT and SAND; orangish brown, brown, and grey, fine to medium sand, some laminations and black mottling, micaceous, some biotite schist gravel, fine to coarse, dry to wet, very soft to very stiff	SP-SM		748.3 15.00				Portland Type I/ Type _ II/ Bentonite Gel mix	**FILTER PACK SEAL** Interval: 47.5'-53' Type: 3/8" Bentonite Pellets **ANNULUS SEAL** Interval: 3'-47.5' Type: Portland Type I/Type II/Gel Mix **WELL COMPLETION** Pad: 4'x4'x4" Protective Casing: Aluminum **DRILLING METHODS** Soil Drill: Sonic Rock Drill: Sonic
20	740									
25	735									
30	730									
35	725									
40	720									
45										

Log continued on next page

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Scotty Vermillion

GA INSPECTOR: K. Jurinko, PG
CHECKED BY: Rachel P. Kirkman, PG
DATE: 12/22/17

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE B-51

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 66.00 ft
LOCATION: Smyrna, GA

DRILL RIG: 100C Track Mounted Rig
DATE STARTED: 6/27/16
DATE COMPLETED: 6/27/16

NORTHING: 1,390,501.20
EASTING: 2,200,906.50
GS ELEVATION: 763.29
TOC ELEVATION: 765.92 ft

DEPTH W.L.: 8.85
ELEVATION W.L.: 754.45
DATE W.L.: 6/28/2016
TIME W.L.: 13:22

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
45		15.00 - 58.00 SILT and SAND; orangish brown, brown, and grey, fine to medium sand, some laminations and black mottling, micaceous, some biotite schist gravel, fine to coarse, dry to wet, very soft to very stiff *(Continued)*	SP-SM		705.3				3/8" Bentonite Pellets Filtersil std #61 0.010" slot screen Sump	**WELL CASING** Interval: 0'-65' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush threaded with O-ring **WELL SCREEN** Interval: 55'-65' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC **FILTER PACK** Interval: 53'-65.4' Type: Filtersil std61 **FILTER PACK SEAL** Interval: 47.5'-53' Type: 3/8" Bentonite Pellets **ANNULUS SEAL** Interval: 3'-47.5' Type: Portland Type I/Type II/Gel Mix **WELL COMPLETION** Pad: 4'x4'x4" Protective Casing: Aluminum **DRILLING METHODS** Soil Drill: Sonic Rock Drill: Sonic
50	715									
55	710									
60	705	58.00 - 66.00 biotite SCHIST; some clayey silt and sand to gravel, coarse-grained, gray, orange staining, micaceous, dry to wet, very stiff (saprock)	PWR		58.00					
65	700				697.3					
		Boring completed at 66.00 ft								
70	695									
75	690									
80	685									
85	680									
90	675									

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Scotty Vermillion

GA INSPECTOR: K. Jurinko, PG
CHECKED BY: Rachel P. Kirkman, PG
DATE: 12/22/17

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE B-52

SHEET 1 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 50.00 ft
LOCATION: Northside of the Lab Parking lot

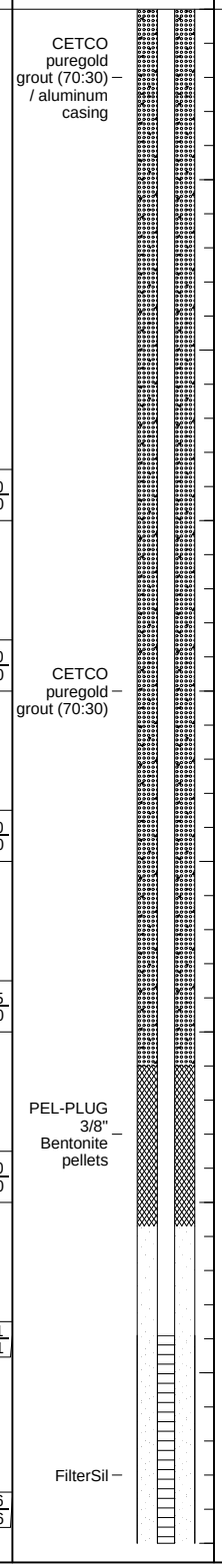
DRILL RIG: CME 55
DATE STARTED: 9/27/16
DATE COMPLETED: 9/28/16

NORTHING: 1,392,308.30
EASTING: 2,201,314.80
GS ELEVATION: 820.18
TOC ELEVATION: 822.89 ft

DEPTH W.L.: 25.72
ELEVATION W.L.: 794.58
DATE W.L.: 10/6/2016
TIME W.L.: 1330

DEPTH (ft)	ELEVATION (ft)	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 - 10.00 Top 10' were Hydrovac for utilities.								
10	810	10.00 - 15.00 SM, silty SAND, fine to medium grained, non to low plasticity, tan, non-cohesive, dry, W<PL, loose	SM		810.2 10.00	1	DO	8-8-4	12	1.50 1.50
15	805	15.00 - 33.50 ML, SILT with some SAND, fine to coarse, non to moderate plasticity, orange-brown to white to silver, slightly weathered, highly micaeous, cohesive, dry to wet (increasing with detpth), W<PL, firm to stiff, PWR.	ML		805.2 15.00	2	DO	7-9-8	17	1.50 1.50
						3	DO	7-13-11	24	1.50 1.50
25	795					4	DO	18-50/3	68/9	0.75 1.50
30	790				786.7					
35	785	33.50 - 50.00 SM, silty SAND, fine to coarse, non to moderate plasticity, trace rock fragments, yellow-orange, non-cohesive, dry to moist, W<PL, compact to very dense, PWR	SM		33.50	5	DO	17-20-50/4	70/10	1.50 1.50
						6	DO	50/5	50/5	0.41 0.41
40	780					7	DO	50/2	50/2	0.16 0.16
45		Log continued on next page								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-38.9
Material: Schedule 40 PVC
Diameter: 2
Joint Type: FLUSH/SCREW

WELL SCREEN
Interval: 38.9'-48.9'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 35.7-50'
Type: FilterSil

FILTER PACK SEAL
Interval: 31.0-35.7
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0-31'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 4"x4"x5' aluminum

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: N/A

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: Shawn Milam

GA INSPECTOR: Michael Boatman, PG
CHECKED BY: Timothy Richards, PG
DATE: 12/22/17

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE B-52

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 50.00 ft
LOCATION: Northside of the Lab Parking lot

DRILL RIG: CME 55
DATE STARTED: 9/27/16
DATE COMPLETED: 9/28/16

NORTHING: 1,392,308.30
EASTING: 2,201,314.80
GS ELEVATION: 820.18
TOC ELEVATION: 822.89 ft

DEPTH W.L.: 25.72
ELEVATION W.L.: 794.58
DATE W.L.: 10/6/2016
TIME W.L.: 1330

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
45	775	33.50 - 50.00 SM, silty SAND, fine to coarse, non to moderate plasticity, trace rock fragments, yellow-orange, non-cohesive, dry to moist, W<PL, compact to very dense, PWR *(Continued)*	SM								0.010 Slotted Screen	
						8	DO	50/3	50/3	0.25 0.25		
50	770	Boring completed at 50.00 ft			770.2							
55	765											
60	760											
65	755											
70	750											
75	745											
80	740											
85	735											
90												

WELL CASING
Interval: 0'-38.9
Material: Schedule 40 PVC
Diameter: 2
Joint Type: FLUSH/SCREW

WELL SCREEN
Interval: 38.9'-48.9'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 35.7-50'
Type: FilterSil

FILTER PACK SEAL
Interval: 31.0-35.7
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0-31'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 4"x4"x5' aluminum

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: N/A

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: Shawn Milam

GA INSPECTOR: Michael Boatman, PG
CHECKED BY: Timothy Richards, PG
DATE: 12/22/17

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE B-54

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 34.20 ft
LOCATION: Eastside of the stream north of AP4

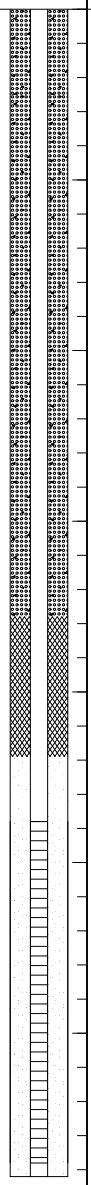
DRILL RIG: CME 55
DATE STARTED: 9/26/16
DATE COMPLETED: 9/26/16

NORTHING: 1,394,423.50
EASTING: 2,203,140.70
GS ELEVATION: 782.54
TOC ELEVATION: 785.46 ft

DEPTH W.L.: 4.56
ELEVATION W.L.: 778.04
DATE W.L.: 10/6/2016
TIME W.L.: 839

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0	780	0.00 - 13.50 Top 10' were Hydrovac for utilities.								
5	775									
10	770				769.0					
15	765	13.50 - 28.50 SM, silty SAND, fine to coarse, non to low plasticity; white to gray, weathered, well foliated gneissic saprolite; cohesive, moist, w<PL, stiff.	SM		13.50	1	DO	6-7-6	13	0.83 1.50
						2	DO	5-9-8	17	1.33 1.50
20	760					3	DO	4-5-11	15	0.00 1.50
25	755				754.0					
30	750	28.50 - 29.00 GPS, poorly-graded sandy GRAVEL, fine to coarse, non plastic, some silt; white to tan to pink, K-spar and Quartz; non-cohesive, wet, w<PL, dense., PWR. Auger Refusal at 29.0	GP-GM		753.5 29.00	4	DO	21-50/1	71/7	0.50 0.58
		29.00 - 34.20 Bedrock; AUGEN GNEISS; fresh to slightly weathered, well foliated, gray, fine grained, medium strong to strong, (locally contains pegamitite zones).	BR		748.3					
35	745	Boring completed at 34.20 ft								
40	740									
45										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-23.8'
Material: Schedule 40 PVC
Diameter: 2
Joint Type: Flush/Screw

WELL SCREEN
Interval: 23.8'-33.8'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 21.9'-34.2'
Type: FilterSil

FILTER PACK SEAL
Interval: 17.8'-21.9'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0-17.8'
Type: Portland Type I/Type II/Gel Mix

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 4"x4"x5' aluminum

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: HQ Core Barrell

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE B-55

SHEET 1 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 52.00 ft
LOCATION: West of the cement plant

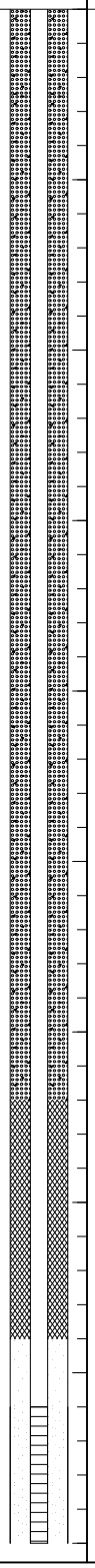
DRILL RIG: CME 55
DATE STARTED: 9/21/16
DATE COMPLETED: 9/22/16

NORTHING: 1,394,142.60
EASTING: 2,204,147.90
GS ELEVATION: 822.86
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)	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 - 3.50 SM, silty SAND, non to low plasticity; red-brown; cohesive, moist, w<PL, soft.	SM			1	DO	4-8-11	19	0.75 1.50
	820				819.4					
		3.50 - 13.50 ML, SILT, trace to some sand and clay, non to low plasticity; light brown to red-brown to silverish gray; cohesive, dry to moist, w<PL, soft to firm.			3.50	2	DO	7-7-9	16	1.00 1.50
5						3	DO	7-11-12	23	1.33 1.50
	815		ML			4	DO	5-8-11	19	1.50 1.50
10										
	810				809.4					
		13.50 - 23.50 ML, SILT, trace fine to coarse sand, non plastic; light brown, deeply weathered, foliated, schist saprolite; cohesive, dry to moist, w<PL, soft to firm.			13.50	5	DO	8-17-24	41	1.50 1.50
15										
	805		ML			6	DO	9-10-11	21	1.50 1.50
20										
	800				799.4					
		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.			23.50	7	DO	5-12-12	24	1.50 1.50
25										
	795					8	DO	8-12-15	27	1.50 1.50
30										
	790									
			ML			9	DO	9-14-17	31	1.50 1.50
35										
	785									
						10	DO	10-12-16	28	1.50 1.50
40										
	780									
						11	DO	7-12-23	35	1.50 1.50
45		Log continued on next page								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'- 41'
Material: Schedule 40 PVC
Diameter: 2
Joint Type: Flush/Screw

WELL SCREEN
Interval: 41' - 51'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 39'-52'
Type: FilterSil

FILTER PACK SEAL
Interval: 32'-39'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0'-32'
Type: Portland Type I/Type II/Gel Mix

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 4"x4"x5' aluminum

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: N/A

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

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE B-55

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: 822.86 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: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
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. *(Continued)*	ML								0.010 Slotted _ Screen	**WELL CASING** Interval: 0'- 41' Material: Schedule 40 PVC Diameter: 2 Joint Type: Flush/Screw **WELL SCREEN** Interval: 41' - 51' Material: Schedule 40 PVC Diameter: 2 Slot Size: 0.010 End Cap: Schedule 40 PVC **FILTER PACK** Interval: 39'-52' Type: FilterSil **FILTER PACK SEAL** Interval: 32'-39' Type: PEL-PLUG 3/8" Bentonite pellets **ANNULUS SEAL** Interval: 0'-32' Type: Portland Type I/Type II/Gel Mix **WELL COMPLETION** Pad: 2' x 2' concrete Protective Casing: 4"x4"x5' aluminum **DRILLING METHODS** Soil Drill: Hollow-stem auger Rock Drill: N/A
50	775											
					770.9							
		Boring completed at 52.00 ft										
55	770											
60	765											
65	760											
70	755											
75	750											
80	745											
85	740											
90	735											

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

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

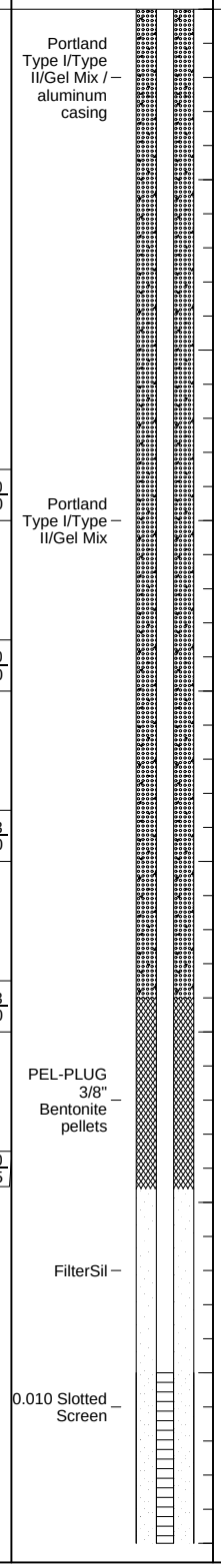
DRILL RIG: CME 55
DATE STARTED: 9/24/16
DATE COMPLETED: 9/24/16

NORTHING: 1,391,396.30
EASTING: 2,202,736.90
GS ELEVATION: 786.03
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)	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							
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 10.00	1	DO	4-10-14	24	1.00 1.50
15	770									
20	765					2	DO	11-24-50/5	74/11	1.00 1.50
25	760					3	DO	4-8-14	22	1.33 1.50
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 30.00	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; sightly weathered top with red oxidation on fractured surfaces to fresh and unfractured at the bottom.	BR		751.5 34.50	5	DO	50/3	50/3	0.00 0.25
40	745									
45		Log continued on next page								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-40'
Material: Schedule 40 PVC
Diameter: 2
Joint Type: Flush/Screw

WELL SCREEN
Interval: 40'-50'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 34.6'-50.5'
Type: FliterSil

FILTER PACK SEAL
Interval: 29'-34.6'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0'-29'
Type: Portland Type I/Type II/Gel Mix

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 4"x4"x5' aluminum

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: HQ Core Barrell

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE B-57

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: 786.03
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: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
45	740	34.50 - 50.50 Bedrock; SCHIST; strong to very strong, light to dark gray with white and black laminations, sub-parallel; sightly weathered top with red oxidation on fractured surfaces to fresh and unfractured at the bottom. *(Continued)*	BR									
50	735				735.5							
		Boring completed at 50.50 ft										
55	730											
60	725											
65	720											
70	715											
75	710											
80	705											
85	700											
90												

WELL CASING
Interval: 0'-40'
Material: Schedule 40 PVC
Diameter: 2
Joint Type: Flush/Screw

WELL SCREEN
Interval: 40'-50'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 34.6'-50.5'
Type: FliterSil

FILTER PACK SEAL
Interval: 29'-34.6'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0'-29'
Type: Portland Type I/Type II/Gel Mix

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 4"x4"x5' aluminum

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: HQ Core Barrell

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

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

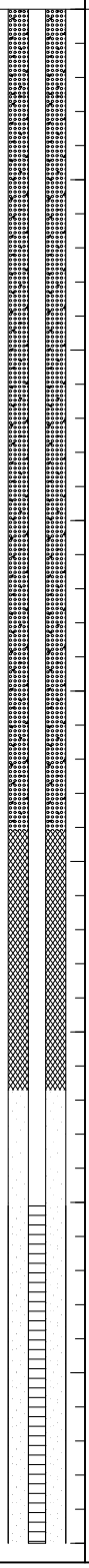
DRILL RIG: CME 55
DATE STARTED: 9/22/16
DATE COMPLETED: 9/23/16

NORTHING: 1,391,125.70
EASTING: 2,202,426.50
GS ELEVATION: 785.20
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: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0	785	0.00 - 13.50 Top 10' were Hydrovac for utilities.								
					771.7					
		13.50 - 18.50 SC-SM, silty SAND/ clayly SAND, fine to coarse, low plasticity; red to red orang, fill; cohesive, moist, w<PL, soft to firm.	SC-SM		13.50	1	DO	5-6-7	13	1.50 / 1.50
15	770				766.7					
		18.50 - 23.50 ML, SILT, trace sand, low to moderate plasticity; red orange, micaceous, fill; cohesive, moist, w<PL, soft to firm.	ML		18.50	2	DO	2-1-2	3	1.50 / 1.50
20	765				761.7					
		23.50 - 28.50 ML, SILT, some fine sand, low plasticity; tan to white; cohesive, wet, w<PL (over saturated), soft.	ML		23.50	3	DO	2-3-3	6	1.50 / 1.50
25	760				756.7					
		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		28.50	4	DO	4-7-9	16	1.50 / 1.50
30	755				751.7					
		33.50 - 45.00 ML, SILT, trace to some sand, low to moderate plasticity; brown to dark brown, micaceous, schistose gneiss/shcist saprolite; cohesive, moist to wet, w<PL, soft to stiff.	ML		33.50	5	DO	1-4-7	11	1.50 / 1.50
35	750					6	DO	3-6-11	17	1.50 / 1.50
40	745					7	DO	3-7-12	19	1.50 / 1.50
					740.2					
45		Boring continued on next page								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'- 34.5'
Material: Schedule 40 PVC
Diameter: 2
Joint Type: Flush/Screw

WELL SCREEN
Interval: 34.5'-44.5'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 31.7'-45.'
Type: FilterSil

FILTER PACK SEAL
Interval: 24.1'-31.7'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0'-24.1'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 4"x4"x5' aluminum

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: N/A

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

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE B-58

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: 785.20
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: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
45	740											
50	735											
55	730											
60	725											
65	720											
70	715											
75	710											
80	705											
85	700											
90												

WELL CASING
Interval: 0'- 34.5'
Material: Schedule 40 PVC
Diameter: 2
Joint Type: Flush/Screw

WELL SCREEN
Interval: 34.5'-44.5'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 31.7'-45.'
Type: FilterSil

FILTER PACK SEAL
Interval: 24.1'-31.7'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0'-24.1'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 4"x4"x5' aluminum

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: N/A

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

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

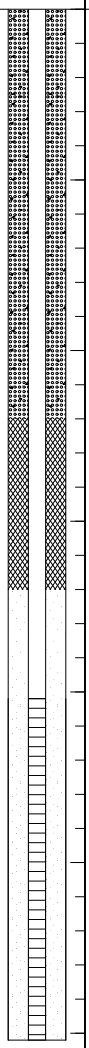
DRILL RIG: CME 55
DATE STARTED: 9/23/16
DATE COMPLETED: 9/23/16

NORTHING: 1,394,349.10
EASTING: 2,203,001.10
GS ELEVATION: 785.41
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)	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		781.9	1	DO	3-5-7	12	1.16 1.50
5	780	3.50 - 9.00 CH, CLAY, moderate to high plasticity; aark brown to red brown, fill; cohesive, moist, w>PL, soft.	CH		3.50 776.4	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		9.00 771.4	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		14.00 766.4	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		19.00 760.9	5	DO	5-4-5	9	1.00 1.50
25	760	24.50 - 30.25 Bedrock; AUGEN GNEISS; slighty weathered, foliated, gray to dark gray, fine to medium grained, medium strong.	BR		24.50 755.2	6	DO	50/4	50/4	0.66 0.33
30	755	Boring completed at 30.25 ft								
35	750									
40	745									
45										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-20.2'
Material: Schedule 40 PVC
Diameter: 2
Joint Type: Flush/Screw

WELL SCREEN
Interval: 20.2'-30.2'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 17'-30.2'
Type: FilterSil

FILTER PACK SEAL
Interval: 12'-17'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0'-12'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 4"x4"x5' aluminum

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: HQ Core Barrell

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE B-60

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: 779.25
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: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES
0		0.00 - 13.50 Top 10' were Hydrovac for utilities.									CETCO puregold grout (70:30) – / aluminum casing
5	775										
10	770										
					765.8						
15	765	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	CETCO puregold – grout (70:30)
20	760					2	DO	3-2-3	5	1.33 1.50	
					755.8						
25	755	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	
					750.8						
30	750	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	
					745.8						
35	745	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	PEL-PLUG 3/8" – Bentonite pellets
40	740					6	DO	50/4	50/4	0.33 0.33	FilterSil –
45	735					7	DO	50/4	50/4	0.25 0.33	

Log continued on next page

WELL CASING
Interval: 0'-39.3'
Material: Schedule 40 PVC
Diameter: 2
Joint Type: Flush/Screw

WELL SCREEN
Interval: 39.3' - 49.3'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 36.9'-50'
Type: FilterSil

FILTER PACK SEAL
Interval: 30.2'-36.9'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0'-30.2'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 4"x4"x5' aluminum

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: N/A

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

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE B-60

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 49.80 ft
LOCATION: Almost due south of B-58 ~ 300 to 400 feet

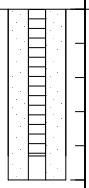
DRILL RIG: CME 55
DATE STARTED: 9/29/16
DATE COMPLETED: 9/29/16

NORTHING: 1,391,100.70
EASTING: 2,202,881.60
GS ELEVATION: 779.25
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)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
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		730.8					
50	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		48.50 729.5	8	DO	50/3	50/3	0.16 0.25
55	725									
60	720									
65	715									
70	710									
75	705									
80	700									
85	695									
90	690									

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-39.3'
Material: Schedule 40 PVC
Diameter: 2
Joint Type: Flush/Screw

WELL SCREEN
Interval: 39.3' - 49.3'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 36.9'-50'
Type: FilterSil

FILTER PACK SEAL
Interval: 30.2'-36.9'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0'-30.2'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 4"x4"x5' aluminum

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: N/A

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE B-61

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

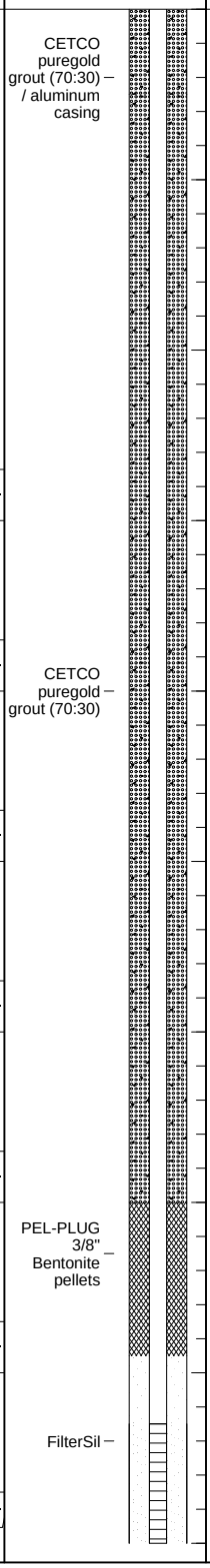
NORTHING: 1,390,957.80
EASTING: 2,202,505.80
GS ELEVATION: 778.95
TOC ELEVATION: 782.09 ft

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: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: 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.								
5	775									
10	770									
15	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 13.50 760.5	1	DO	3-4-6	10	1.50 1.50
20	760	18.50 - 23.50 SM, siltly SAND, fine, non to low plasticity, trace organics (tree root); dark gray to black; cohesive, dry to moist, w<PL, firm	SM		18.50 755.5	2	DO	5-8-13	21	1.50 1.50
25	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		23.50	3	DO	6-8-13	21	1.16 1.50
30	750					4	DO	3-2-5	7	1.16 1.50
35	745					5	DO	3-3-5	8	1.00 1.50
40	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	1.33 1.50
45	735					7	DO	6-19-50/3	69/9	1.25 0.75

Log continued on next page

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-41.5'
Material: Schedule 40 PVC
Diameter: 2
Joint Type: Flush/Screw

WELL SCREEN
Interval: 41.5'-51.5'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 39.5'-51.9'
Type: FilterSil

FILTER PACK SEAL
Interval: 35'-39.5'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0'-35'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 4"x4"x5' aluminum

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: N/A

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE B-61

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: 778.95
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: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
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	**WELL CASING** Interval: 0'-41.5' Material: Schedule 40 PVC Diameter: 2 Joint Type: Flush/Screw
	730					8	DO	14-9-14	23	1.50 / 1.50		**WELL SCREEN** Interval: 41.5'-51.5' Material: Schedule 40 PVC Diameter: 2 Slot Size: 0.010 End Cap: Schedule 40 PVC
50												
					726.6							**FILTER PACK** Interval: 39.5'-51.9' Type: FilterSil
		Boring completed at 52.40 ft										
	725											**FILTER PACK SEAL** Interval: 35'-39.5' Type: PEL-PLUG 3/8" Bentonite pellets
55												
												ANNULUS SEAL Interval: 0'-35' Type: CETCO puregold grout (70:30)
	720											
60												**WELL COMPLETION** Pad: 2' x 2' concrete Protective Casing: 4"x4"x5' aluminum
	715											**DRILLING METHODS** Soil Drill: Hollow-stem auger Rock Drill: N/A
65												
	710											
70												
	705											
75												
	700											
80												
	695											
85												
	690											
90												

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

SOUTHERN COMPANY
Energy to Serve Your World™

DRILLING LOG
GEOLOGICAL SERVICES

Hole No. **B-64**
Sheet 1 of 2

SITE	**Plant McDonough**	HOLE DEPTH	**31'**	SURFELEV	786.10
LOCATION	North of AP-4, near property line at Atkinson Rd	COORDINATES	33.832856		-84.474746
ANGLE		BEARING		CONTRACTOR	SCS
DRILL NO.		DRILLING METHOD	HSA	NO. SAMPLES	
NO. U.D. SAMPLES	0	CASING SIZE	2"	LENGTH	10'
CORE SIZE		TOTAL % REC.		WATER TABLE DEPTH	4.9' BLS
ELEV.	781.20' NAVD88	TIME AFTER COMP.	24 hr	DATE TAKEN	11/3/2016
TYPE GROUT	Bentonite	QUANTITY		MIX	.
DRILLING START DATE	11/2/2016	DRILLER	Milam	RECORDER	Abraham
APPROVED		DRILLING COMP. DATE	11/2/2016		

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	786.10								
1	785.10								
2	784.10								
3	783.10								
4	782.10								
5	781.10	**HYDRO-EXCAVATION** Hydrovac from land surface to 20-feet below land. No samples							
6	780.10								
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	**SANDY SILT SAPROLITE**							
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								

SOUTHERN COMPANY
Energy to Serve Your World™

DRILLING LOG
GEOLOGICAL SERVICES

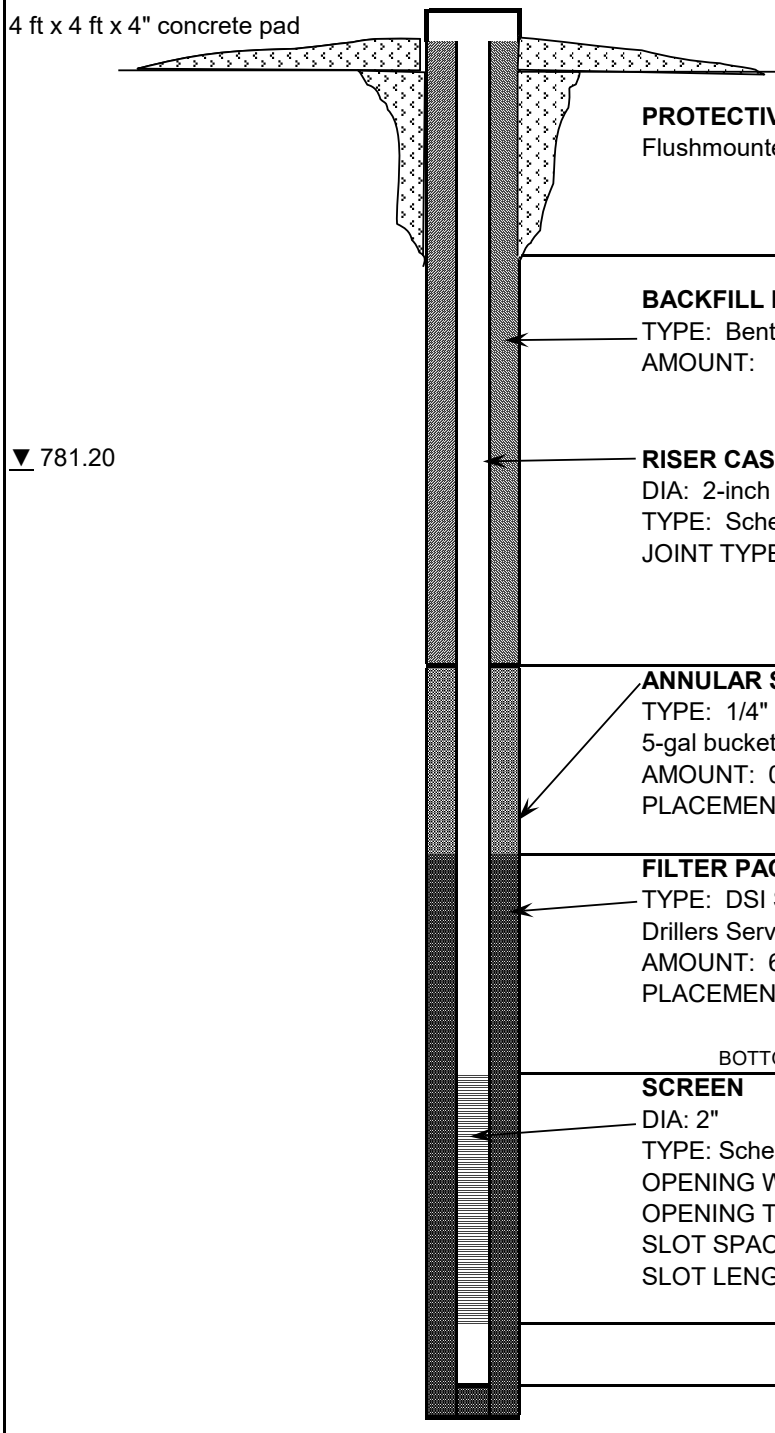
Hole No. **B-64**
Sheet 2 of 2

SITE **Plant McDonough** TOTAL DEPTH **31'** SURF.ELEV. 786.10

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	761.10								
26	760.10	**SANDY SILT SAPROLITE**							
27	759.10								
28	758.10	Light brown sandy silt saprolite; micaceous; highly weathered biotite gneiss; quartz, feldspar, biotite, FeO; 2.5Y/8/1; SM.	S-2	28.5 - 30	1-2-2			90	
29	757.10								
30	756.10								
31	755.10	END OF BORING AT 30.4-FT REGOLITH WELL							
53	733.10								
54	732.10								
55	731.10								
56	730.10								

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS, Inc.	WELL NAME
North of AP-4, at Atkinson Rd	DRILLER: Milam	
LOCATION: 33.832856 / -84.474746	RIG TYPE: CME550	**B-64**
LOGGER: Abraham	DRILLING METHODS: HSA	
DATE CONSTRUCTED: 11/2/2016	Survey Coordinates: N: 1394381.9 E: 2203031.3	



	DEPTH FEET	ELEVATION FT, MSL
	TOC	785.83
GROUND SURFACE	0.0	785.98
PROTECTIVE CASING Flushmounted		
BOTTOM OF GROUT	3.0	783.0
BACKFILL MATERIAL TYPE: Bentonite Grout mix AMOUNT: 1 x 50lbs		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	8.10	777.9
ANNULAR SEAL TYPE: 1/4" coated bentonite pellets 5-gal buckets AMOUNT: 0.5 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	16.50	769.5
FILTER PACK 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	766.0
SCREEN 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	756.0
BOTTOM OF WELL	30.40	755.6

HOLE DIA: 9 inch

SOUTHERN COMPANY
Energy to Serve Your World™

DRILLING LOG
GEOLOGICAL SERVICES

Hole No. **B-65**
Sheet 1 of 2

SITE	**Plant McDonough**	HOLE DEPTH	**50'**	SURFELEV	822.30
LOCATION	North of AP-4, near property line, NW end of parking lot	COORDINATES	33.832862		-84.471389
ANGLE		BEARING		CONTRACTOR	SCS
DRILL NO.		DRILLING METHOD	HSA	NO. SAMPLES	
NO. U.D. SAMPLES	0	CASING SIZE	2"	LENGTH	10'
CORE SIZE		TOTAL % REC.		WATER TABLE DEPTH	10.5' BLS
ELEV.	811.80 NAVD88	TIME AFTER COMP.	24 HR	DATE TAKEN	11/16/2016
TYPE GROUT		QUANTITY		MIX	·
DRILLING START DATE	11/15/2016	DRILLER	Milam	RECORDER	Abraham
APPROVED		DRILLING COMP. DATE	11/15/2016		

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	822.30								
1	821.30								
2	820.30								
3	819.30								
4	818.30								
5	817.30	**HYDRO-EXCAVATION** 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	**SILTY SAND SAPROLITE** 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	**SILTY SAND SAPROLITE** 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	**CLAYEY SILT** 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								

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

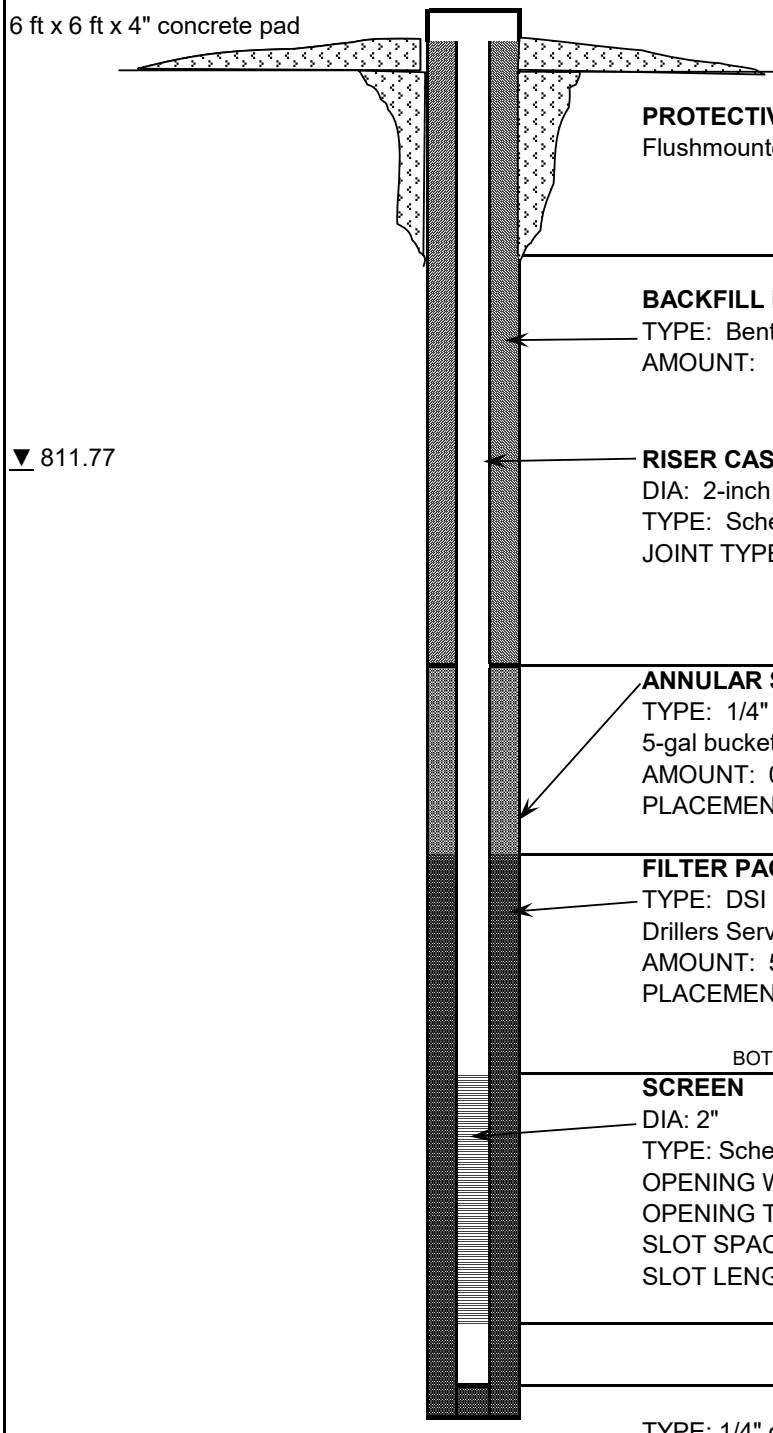
Hole No. **B-65**
Sheet 2 of 2

SITE **Plant McDonough** TOTAL DEPTH **50'** SURF.ELEV. 822.30

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	797.30								
26	796.30	**SILTY SAND SAPROLITE**							
27	795.30								
28	794.30	Dark gray to reddish brown silty sand with minor clay; few structures; 2.5Y/3/2; SM;	S-4	28.5-30	50/2			90	
29	793.30	saturated.							
30	792.30								
31	791.30								
32	790.30	**SILTY SAND SAPROLITE**							
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								
36	786.30								
37	785.30	**SILTY SAND SAPROLITE**							
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		S-7	40 - 42	50/2			90	
41	781.30								
42	780.30	Top of Rock - 42-ft							
43	779.30	MUSCOVITE-BIOTITE SCHIST; minor chlorite;						95	
44	778.30	2 horizontal fractures, non-water bearing, 44' 1 sub-vertical fracture, water-bearing, 46' - 50'		42 - 49.9					
45	777.30	BACKFILLED & SET REGOLITH WELL							
46	776.30								
47	775.30								
48	774.30								
49	773.30								
50	772.30	END OF BORING - 49.9-FT							
51	771.30								
52	770.30								
53	769.30								
54	768.30								
55	767.30								
56	766.30								

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS, Inc.	WELL NAME
NE of AP-4 at Argos, near N corner parking lot	DRILLER: Milam	
LOCATION: 33.832862 / -84.471389	RIG TYPE: CME550	**B-65**
LOGGER: Abraham	DRILLING METHODS: HSA	
DATE CONSTRUCTED: 11/15/2016	Survey Coordinates: N: 1394381.2 E: 2204050.8	



	DEPTH FEET	ELEVATION FT, MSL
TOC		821.95
GROUND SURFACE	0.00	822.30
PROTECTIVE CASING Flushmounted		
BOTTOM OF GROUT	3.00	819.3
BACKFILL MATERIAL TYPE: Bentonite Grout mix AMOUNT: 3 x 50lbs (1.5 bag bentonite; 1.5 bag grout)		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	26.8	795.5
ANNULAR SEAL TYPE: 1/4" coated bentonite pellets 5-gal buckets AMOUNT: 0.5 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	31.8	790.5
FILTER PACK TYPE: DSI Sand - 1A (20/40) Drillers Services, Inc. AMOUNT: 5 Bags PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	34.4	787.9
SCREEN 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	44.4	777.9
BOTTOM OF WELL	45.4	776.9
TYPE: 1/4" coated bentonite pellets between 45.4' and 49.9'		
	49.9	772.4

RECORD OF BOREHOLE B-68 / DGWC-68

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 40.40 ft
LOCATION: West Toe of AP-1

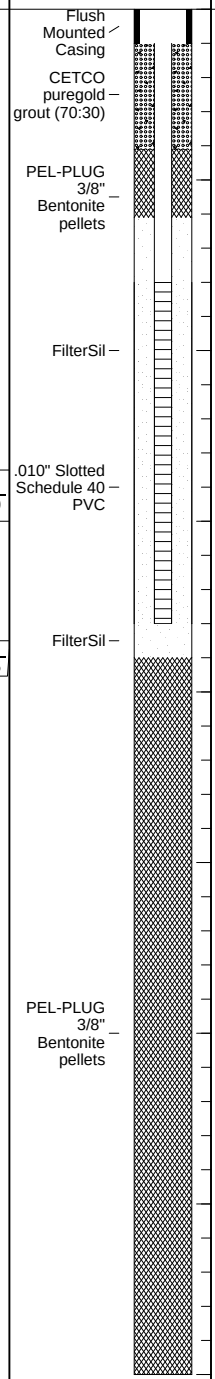
DRILL RIG: Geoprobe
DATE STARTED: 3/16/17
DATE COMPLETED: 3/16/17

NORTHING: 1,391,298.20
EASTING: 2,200,714.20
GS ELEVATION: 759.05
TOC ELEVATION: 758.68 ft

DEPTH W.L.: 3.5
ELEVATION W.L.: 755.06
DATE W.L.: 3/16/17
TIME W.L.: 1700

DEPTH (ft)	ELEVATION (ft)	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 Hydrovac								
	755									
5										
	750				749					
10		10.00 - 15.00 Sandy Silt, fine to medium sand, dark brown, highly weathered, micaceous, cohesive, moist, firm, sample spoon wet	ML		10.00					
	745				744	S1	SPT	5-6-5	11	1.08 1.50
15		15.00 - 18.80 Silty Sand, fine to coarse, trace gravel, greenish grey, weathered, thinly bedded, noncohesive, very dense, (weathered gneiss)	PWR		15.00					
	740		PWR		740.2	S2	SPT	50/3	50/3	0.25 0.25
20		19.20 - 22.80 Slightly weathered to fresh, weakly foliated, light gray to white, fine to very fine grained, medium strong to strong, MYLONITE (White Mylonite).	BR		19.20					
		22.80 - 24.10 Slight to moderately weathered, weakly foliated, dary gray to black , fine to very fine grained, medium strong, MYLONITE (Black Mylonite).	BR		736.2 22.80 734.9					
	735				24.10					
25		24.10 - 28.90 Slightly weathered to fresh, weakly foliated, interlayered with vein quartz (~1"), light grey to white, fine to very fine grained, medium strong to strong, MYLONITE (White Mylonite).	BR							
	730				730.1					
30		28.90 - 38.00 Slightly weathered to fresh, moderate to strongly foliated, interlayered with Black Mylonite (~1") and pegmatites (~1 to 2"), light to dark gray, fine to coarse grained, medium strong to strong, Sheared Gneiss (Long Island Creek).	BR		28.90					
	725									
35										
					721					
		38.00 - 39.20 Slight to moderately weathered, weakly foliated, dary gray to black , fine to very fine grained, medium strong, MYLONITE (Black Mylonite).	BR		38.00 719.8					
	720		BR		39.20					
40		39.20 - 40.40 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).			718.6					
		Boring completed at 40.40 ft								
	715									
45										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-8'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screen

WELL SCREEN
Interval: 8.0'-18.0'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: .010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 6.1'-18.4'
Type: FilterSil

FILTER PACK SEAL
Interval: 4.1'-6.1'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0'-4.1'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 4'x4' Concrete
Protective Casing: 8" Round Flush Mount

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: HQ Core Barrell

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE B-72

SHEET 1 of 1

PROJECT: SCS-Plant McDonough
PROJECT NUMBER: 1779172
DRILLED DEPTH: 21.90 ft
LOCATION: ~50' SSE of B-68

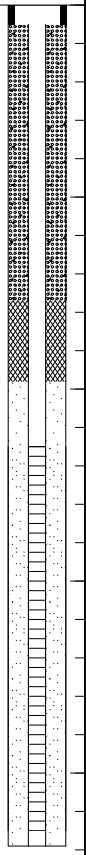
DRILL RIG: Geoprobe 7822DT
DATE STARTED: 4/19/17
DATE COMPLETED: 4/19/17

NORTHING: 1,391,241.4
EASTING: 220,0725.9
GS ELEVATION: 758.45
TOC ELEVATION: 758.46 ft

DEPTH W.L.:2.90
DATE W.L.:5/2/2017
TIME W.L.:09:00

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0	755	0.00 - 5.00 ML, SILT, with trace fine sand and gravels (rock fragments), low plasticity; brown; cohesive, moist, w<PL, soft.	ML		753.5					
5	750	5.00 - 13.50 SP-SM, Poorly-graded SAND with Silt, fine, low plasticity; red-orange brown, relict structure, highly micaceous; cohesive, wet, w<PL, very soft.	SP-SM		5.00 745.0					
10	745	13.50 - 18.50 SM, Silty SAND with trace fine gravels, non-plastic to low plasticity; dark brown to dark gray, highly micaceous; non-cohesive, dry to moist, w<PL, compact.	SM		13.50 740.0	S1	DO	25-50/3	50/3	0.75 1.50
15	740									
20	735	18.50 - 21.50 ML, SILT, with trace sand and large gravels, low plasticity; brown to dark gray black, saprolitic, highly micaceous, gneiss; cohesive, wet, w<PL, soft to firm.	ML		18.50 737.0	S2	DO	17-34-8	42	1.50 1.50
25	730	Boring completed at 21.90 ft			21.50					
30	725									
35	720									
40										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 21.9'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

SURFACE CASING
Interval:
Material:
Diameter:

WELL SCREEN
Interval: 11.5' - 21.5'
Material: Schedule 40 PVC Pre-Pack
Diameter: 2"
Slot Size: 0.010"
End Cap: 21.5' - 21.9'

FILTER PACK
Interval: 9.8' - 21.9'
Type: FilterSil gravel pack

FILTER PACK SEAL
Interval: 7.7' - 9.8'
Type: Pel-Plug 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0' - 7.7'
Type: Pure Gold Grout Mixture

WELL COMPLETION
Pad: 4' x 4' concrete
Protective Casing: 8" Diameter Round Flush Mount

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

NOTES

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: Michael Boatman PG
CHECKED BY: Rachel Kirkman, PG
DATE: 5/17/17

Golder Associates

BOREHOLE RECORD 1779172.GPJ PIEDMONT.GDT 5/18/17

RECORD OF BOREHOLE B-73

SHEET 1 of 1

PROJECT: SCS-Plant McDonough
PROJECT NUMBER: 1779172
DRILLED DEPTH: 15.80 ft
LOCATION: ~50' NNW of B-68

DRILL RIG: Geoprobe 7822DT
DATE STARTED: 4/19/17
DATE COMPLETED: 4/19/17

NORTHING: 1,391,351.8
EASTING: 2,200,699.4
GS ELEVATION: 759.16
TOC ELEVATION: 759.21 ft

DEPTH W.L.:4.11
DATE W.L.:4/26/2017
TIME W.L.:12:00

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES
0		0.00 - 8.50 SP-SM, Poorly-graded SAND with Silt, non-plastic; red-orange brown; non-chesive, dry to moist, w<PL, loose.									8" Diameter Round Flush Mount Pure Gold Grout Mixture Pel-Plug 3/8" Bentonite Pellets
	755		SP-SM								
5											
					750.7						
	750	8.50 - 9.50 CL, CLAY, with some silt, low plasticity; red brown; cohesive, moist, w<PL, soft.	CL		8.50 749.7	S1	DO	1-8-15	23	1.50 1.50	Pre-pack 0.010" Slotted Schedule PVC
10		9.50 - 15.50 SP-SM, Poorly-graded SAND with Silt, non-plastic to low plasticity; white to dark gray, Saprolitic; non-chesive, dry to moist, w<PL, compact to dense.	SP-SM		9.50						
	745					S2	DO	12-29-35	64	1.50 1.50	FilterSil gravel pack
15					743.4						
		Boring completed at 15.80 ft			15.80						
	740										
20											
	735										
25											
	730										
30											
	725										
35											
	720										
40											

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 15. 8'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

SURFACE CASING
Interval:
Material:
Diameter:

WELL SCREEN
Interval: 5.4' -15.4'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: 15.4' -15.8'

FILTER PACK
Interval: 3.2' - 15.8'
Type: FilterSil

FILTER PACK SEAL
Interval: 0.5' - 3.2'
Type: Pel-Plug 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0 -0.5'
Type: Pure Gold Grout Mixture

WELL COMPLETION
Pad: 4' x 4' concrete
Protective Casing: 8" Diameter Round Flush Mount

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

NOTES

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: Michael Boatman PG
CHECKED BY: Rachel Kirkman, PG
DATE: 5/17/17

Golder Associates

BOREHOLE RECORD 1779172.GPJ PIEDMONT.GDT 5/18/17

RECORD OF BOREHOLE B-74

SHEET 1 of 1

PROJECT: SCS-Plant McDonough
PROJECT NUMBER: 1779172
DRILLED DEPTH: 16.50 ft
LOCATION: ~50' West of B-68

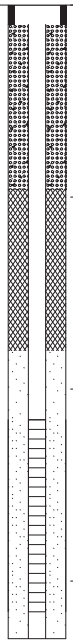
DRILL RIG: Geoprobe 7822DT
DATE STARTED: 4/24/17
DATE COMPLETED: 4/25/17

NORTHING: 1,391,279.9
EASTING: 2,200,666.1
GS ELEVATION: 759.18
TOC ELEVATION: 759.06 ft

DEPTH W.L.:3.3'
DATE W.L.:4/25/2017
TIME W.L.:09:37

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0	759	0.00 - 4.00 CL, CLAY, with some silt, low plasticity; red brown, fill; cohesive, moist, w<PL, soft.	CL		755.2					
5	755	4.00 - 13.50 SP-SM, Poorly-graded SAND with Silt and trace gravel , fine to coarse, non-plastic; white to tan, deeply weathered, granitic; non-cohesive, moist, w<PL, loose/soft.	SP-SM		4.00	S1	DO	3-18-20	38	0.75 1.50
10	750				745.7					
15	745	13.50 - 16.50 SM, Silty SAND, non-plastic; white to light gray; non-cohesive, dry to moist, w<PL, dense.	SM		13.50	S2	DO	50/3	50/3	0.25 1.50
20	740	Boring completed at 16.50 ft			742.7					
25	735									
30	730									
35	725									
40	720									

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 16.2
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

SURFACE CASING
Interval:
Material:
Diameter:

WELL SCREEN
Interval: 10.8' - 15.8'
Material: Pre-pack Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: 15.8' - 16.2'

FILTER PACK
Interval: 9.0' - 16.5'
Type: FilterSil gravel pack

FILTER PACK SEAL
Interval: 4.8' - 9.0'
Type: Pel-Plug 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0' - 4.8'
Type: Pure Gold Grout Mixture

WELL COMPLETION
Pad: 4' x 4' concrete
Protective Casing: 8" Diameter Round Flush Mount

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

NOTES
N/A

ABANDONED 10/4/2023

ABANDONMENT NOTES:

Abandoned on 10/4/2023
Tremmie grouted 17lbs Aquagrard/4 gallons water Overdrilled to 10 feet bgs.; 10-feet PVC removed.
Final Grout: 38 lbs Quickrete/10 lbs AquaGuard/6.5 gallons water.

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: Michael Boatman PG
CHECKED BY: Rachel Kirkman, PG
DATE: 5/17/17

Golder Associates

RECORD OF BOREHOLE B-76

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496-01
DRILLED DEPTH: 37.50 ft
LOCATION: South by river, SE of B-83

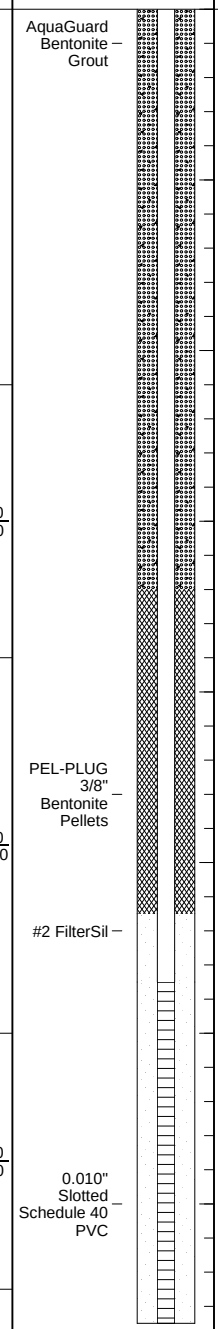
DRILL RIG: Rotosonic 1159
DATE STARTED: 9/16/19
DATE COMPLETED: 9/16/19

NORTHING: 1,390,717.4
EASTING: 2,202,756.9
GS ELEVATION: 760.87 ft
TOC ELEVATION: 760.53 ft

DEPTH W.L.:38.5
DATE W.L.:9/17/2019
TIME W.L.:1300
GW ELEVATION:

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC
0	760	0.00 - 11.00 Hydrovac, no soil recovery due to Hydrovac			749.9			
10	750	11.00 - 19.00 Gravelly SILT, trace clay and sand, cohesive, low plasticity, moist to wet, w<PL, stiff.	ML		11.00 741.9	S1	ROTO SONIC	3.60 / 8.00
20	740	19.00 - 30.00 Gravelly CLAY, some fine sand, trace silt, cohesive, medium to high plasticity, wet, w> PL, soft, brown.	CL-CH		19.00 730.9	S2	ROTO SONIC	7.30 / 11.00
30	730	30.00 - 37.50 Silty CLAY, trace weathered rock, cohesive, moderate plasticity, w~PL, wet, soft to firm, brown. PWR from 37.5 to 38	CL-ML		30.00 723.4	S3	ROTO SONIC	7.00 / 7.50
40	720	Boring completed at 37.50 ft						

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-28.5'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 28.5'-38.5'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 26.5'-38.5'
Type: Filter Media

FILTER PACK SEAL
Interval: 17.0'-26.5'
Type: PEL-PLUG 3/8"

ANNULUS SEAL
Interval: 0'-17.0'
Type: AquaGuard Bentonite Grout

WELL COMPLETION
Pad:
Protective Casing: 4" Stainless Steel

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Jose

GA INSPECTOR: D. Thomas
CHECKED BY: Brian Steele, PG
DATE: 2/10/20

Golder Associates

BOREHOLE RECORD MCDONOUGH MASTER LIST.GPJ PIEDMONT.GDT 2/12/20

RECORD OF BOREHOLE B-78

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 30.00 ft
LOCATION: South of road on north side of plant property

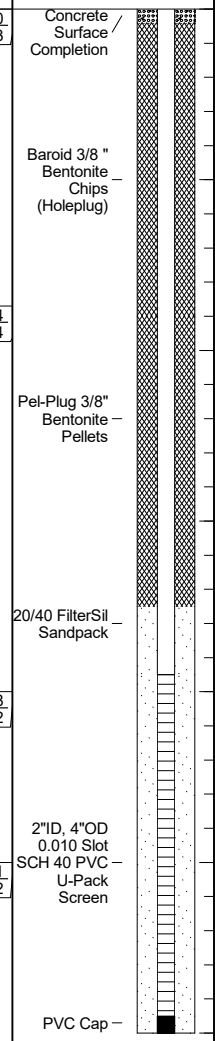
DRILL RIG: Rotosonic 1159
DATE STARTED: 9/22/19
DATE COMPLETED: 9/22/19

NORTHING: 1,394,328.20
EASTING: 2,202,958.20
GS ELEVATION: 787.79
TOC ELEVATION: 790.75 ft

DEPTH W.L.: 9.05
ELEVATION W.L.: 778.95
DATE W.L.: 1/13/2020
TIME W.L.: 13:44

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC
0		0.00 - 8.70 Hydrovac				0		0.00 0.73
	785							
5								
	780				779.1		ROTO SONIC	
		8.70 - 11.20 (MLS) sandy SILT, low plasticity fines, fine to medium sub-angular sand, trace organics (roots); light brown (5YR 5/6) to Pale Brown (5YR 2/2), residual soil with frequent micaceous minerals present; cohesive, w~PL, soft	MLS		8.70 776.6	1	ROTO SONIC	0.94 0.94
10		11.20 - 17.00 (MLS) sandy SILT, non to low plasticity fines, fine sub-angular sand, trace soft (crumbles with pressure from fingers) gravels with relic foliations; pale yellowish brown (10YR 6/2) with light gray (N7) and dark yellowish brown (10YR 4/2) foliations, highl	MLS		11.20 770.8			
	775							
15								
	770	17.00 - 25.10 (SM) SILTY SAND, fine sub-angular to sub-rounded sand, non-plastic fines, trace fine angular soft (crumbles with pressure from fingers) with relic foliations; pale yellowish brown (10YR 6/2) with very pale orange (10YR 8/2) and dark yellowish brown (10YR	SM		17.00 762.7	2	ROTO SONIC	0.18 0.42
20								
	765							
25		25.10 - 30.00 BEDROCK, GNIESS, slightly to moderately weathered (W2 - W3), medium dark gray (N4), with light bluish gray (5B 5/1) and light gray (N7) foliations, fine to medium grained, medium strong rock (R3)	GNIESS		25.10 757.8	3	ROTO SONIC	0.31 0.42
	760							
30		Boring completed at 30.00 ft						
	755							
35								
	750							
40								
	745							
45								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0.0 - 20.0 '
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 20.0-29.5 '
Material: Schedule 40 PVC
Schedule 40 PVC
Diameter: 2" ID 4 " OD
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 17.5 - 30.0
Type: 20/40 FilterSil

FILTER PACK SEAL
Interval: 9.0 - 17.5'
Type: Pel-Plug 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0.4 - 9.0 '
Type: Baroid 3/8" Bentonite Chips (Holeplug)

WELL COMPLETION
Pad: 4' x 4' x 4"
Protective Casing: 4" Stainless Steel

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic

~250 gallons of water used while drilling

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Jose

GA INSPECTOR: Jeff Ingram
CHECKED BY: Timothy Richards, PG
DATE: 2/12/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 9/2/20

RECORD OF BOREHOLE B-79

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 35.00 ft
LOCATION: South of road on north side of plant property

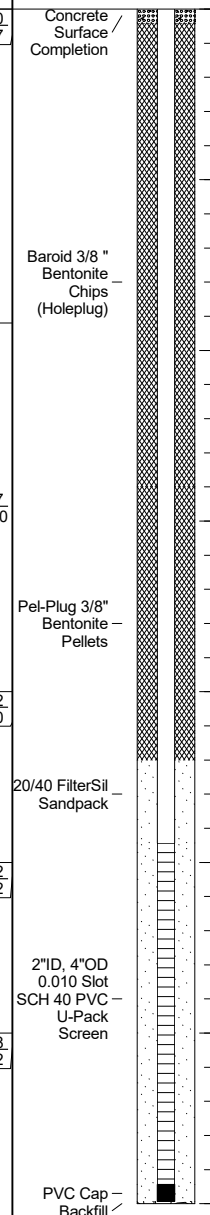
DRILL RIG: Rotosonic 1159
DATE STARTED: 9/20/19
DATE COMPLETED: 9/21/19

NORTHING: 1,394,458.60
EASTING: 2,203,223.00
GS ELEVATION: 785.84
TOC ELEVATION: 788.66 ft

DEPTH W.L.: 5.92
ELEVATION W.L.: 779.98
DATE W.L.: 1/13/2020
TIME W.L.: 14:26

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC
0	785	0.00 - 9.20 Hydrovac	NA		776.6	0		0.00 0.77
10	775	9.20 - 13.70 (ML) sandy SILT, non to low plasticity fines, fine sand; layered light brown (5YR 5/6) with dark yellowish brown (10YR 4/2) and pale yellowish brown (10YR 6/2) layers, some relic curved laminated layers (relic foliations); non-cohesive, wet, loose	ML		9.20 772.1			
15	770	13.70 - 30.00 (SM) silty SAND, fine sub-angular sand, non-plastic fines, some soft (crumbles with pressure from fingers) fine to coarse sub-angular gravels; pale yellowish brown (10YR 6/2) with some light brown (5YR 5/6) iron oxide staining, PWR with frequent micaceous mineral; non-cohesive, wet, loose	SM		13.70	1	ROTO SONIC	0.77 10.80
20	765					2	ROTO SONIC	0.42 0.90
25	760					3	ROTO SONIC	0.42 0.42
30	755	30.00 - 35.00 (SM) SILTY SAND, fine sub-angular sand, non-plastic fines, trace soft (crumbles with pressure from fingers) fine gravels with some relic foliations; pale yellowish brown (10YR 6/2) to dark yellowish brown (10YR 4/2) layers, PWB; non-cohesive, moist, compact	SM		755.8 30.00	4	ROTO SONIC	0.38 0.42
35	750	Boring completed at 35.00 ft			750.8			
40	745							
45								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0.0 - 34.9 '
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 24.93-34.43 '
Material: Schedule 40 PVC
Schedule 40 PVC
Diameter: 2" ID 4 " OD
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 22.0 - 35.0'
Type: 20/40 FilterSil

FILTER PACK SEAL
Interval: 14.0 - 22.0'
Type: Pel-Plug 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0.4 - 14.0 '
Type: Baroid 3/8" Bentonite Chips (Holeplug)

WELL COMPLETION
Pad:
Protective Casing: 4" Stainless Steel

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic

~175 gallons of water used while drilling

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Jose

GA INSPECTOR: Jeff Ingram
CHECKED BY: Timothy Richards, PG
DATE: 2/12/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 9/2/20

RECORD OF BOREHOLE B-80

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 30.00 ft
LOCATION: North to northeast of CCR Unit

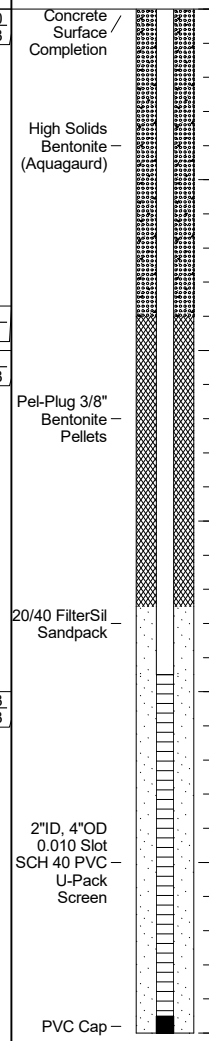
DRILL RIG: Rotosonic 1159
DATE STARTED: 9/20/19
DATE COMPLETED: 9/20/19

NORTHING: 1,394,372.60
EASTING: 2,203,533.90
GS ELEVATION: 801.73
TOC ELEVATION: 804.47 ft

DEPTH W.L.: 16.48
ELEVATION W.L.: 785.32
DATE W.L.: 1/13/2020
TIME W.L.: 14:46

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC
0	800	0.00 - 8.70 Hydrovac	NA		793.0	0		0.00 0.73
5	795							
10	790	8.70 - 10.00 (ML) sandy SILT, non-plastic to low plasticity fines, fine to medium sub-rounded sand, trace organics (roots); moderate brown (5YR 4/4) to pale yellowish brown (10YR 6/2); non-cohesive, dry, loose	ML		8.70 791.7	1	ROTO SONIC	0.11 0.11
		10.00 - 13.20 (ML and SP) SILT and SAND, non-plastic to low plasticity fines, fine sub-angular sand; light brown (5YR 5/6) with some moderate reddish brown (10R 4/6) layers, some laminated layers (relic foliations), SAPROLITE; non-cohesive, moist, loose	ML & SP		10.00 788.5	2		0.81 0.83
15	785	13.20 - 25.90 (SM) SILTY SAND, non-plastic to low plasticity fines, fine sub-angular sand; light brown (5YR 5/6) and pale yellowish brown (10YR 6/2) with trace very pale orange (10YR 8/1) grains, SAPROLITE; non-cohesive, wet, loose	SM		13.20			
20	780	20.00: SAA, with frequent weathered micaceous minerals	SM			3	ROTO SONIC	0.83 0.83
25	775	25.90 - 30.00 (SM-SP) SAND, fine to medium sub-rounded sand, some non-plastic fines, trace angular fine to coarse soft (crumbles with pressure from fingers) gravels; very pale orange (10YR 8/2) with pale yellowish brown (10YR 6/2) mottling, PWR; non-cohesive, moist to wet, compact	SP-SM		775.8 25.90 771.7			
30	770	Boring completed at 30.00 ft						
35	765							
40	760							
45								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0.0 - 19.8'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 19.8-29.3'
Material: Schedule 40 PVC
Schedule 40 PVC
Diameter: 2" ID 4 " OD
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 17.5 - 30.0'
Type: 20/40 FilterSil

FILTER PACK SEAL
Interval: 9.0 - 17.5'
Type: Pel-Plug 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0.4 - 9.0'
Type: High Solids Bentonite (Aquagaurd)

WELL COMPLETION
Pad: 4' x 4' x 4"
Protective Casing: 4" Stainless Steel

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic

~150 gallons of water used while drilling

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Jose

GA INSPECTOR: Jeff Ingram
CHECKED BY: Timothy Richards, PG
DATE: 2/12/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 9/2/20

RECORD OF BOREHOLE B-81

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 50.00 ft
LOCATION: North to northeast of CCR Unit

DRILL RIG: Rotosonic 1159
DATE STARTED: 9/20/19
DATE COMPLETED: 9/22/19

NORTHING: 1,394,364.90
EASTING: 2,203,741.10
GS ELEVATION: 817.64
TOC ELEVATION: 820.56 ft

DEPTH W.L.: 31.39
ELEVATION W.L.: 786.31
DATE W.L.: 1/13/2020
TIME W.L.: 15:06

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES
0		0.00 - 9.00 Hydrovac	NA		808.6	0	ROTO SONIC	0.00 0.75	Concrete Surface Completion
5	815								
10	810	9.00 - 13.10 (SM) SILTY SAND, fine to medium sub-rounded sand, non-plastic fines, trace organics (roots); light brown (5YR 5/6) and moderate reddish brown (10R 4/6), SAPROLITE; non-cohesive, dry, compact	SM		9.00 804.5	1	ROTO SONIC	0.91 0.92	High Solids Bentonite (Aquaguard)
15	805	13.10 - 17.90 (SM) SILTY SAND, fine sub-rounded sand, non-plastic fines; very pale orange (10YR 8/2) to grayish orange (10YR 7/6), PWR with frequent micaceous mineralization; non-cohesive, dry, loose	SM		13.10 799.7				Cave in prior to installing Aquagaurd due to sampling requirements
20	800	17.90 - 19.00 (ML and SP) SILT and SAND, non-plastic fine, fine to medium sub-rounded sand; light brown (5YR 5/6), PWR; non-cohesive, dry, compact.	ML & SP		17.90 798.6 19.00	2	ROTO SONIC	0.83 0.83	
	795	19.00 - 23.50 (SP-SM) SAND, fine to medium sub-rounded sand, some non-plastic fines; grayish orange (10YR 7/4) with light brown (5YR 5/6) and dark yellowish brown (10YR 2/2) grains, PWR; non-cohesive, dry, compact 20.00: SAA with some pale reddish brown (10R 5/6) coloration	SP-SM SP-SM		794.1				
25	790	23.50 - 33.60 (ML) sandy SILT, non-plastic to low plasticity fines, fine sub-angular sand; pale yellowish brown (10YR 6/2) to light brown (5YR 5/6), PWR; non-cohesive, moist, loose	ML		23.50				Pel-Plug 3/8" Bentonite Pellets
30	785	30.00: SAA wit some greenish gray (5G 6/1) layers, trace fine soft angular gravels (crumble with finger pressure).	ML		784.0	3	ROTO SONIC	0.83 0.83	
35	780	33.60 - 40.00 (SM and SP) SILT and SAND, non-plastic to low plasticity fines, fine sub-rounded sand, trace sub-angular soft (crumbles with finger pressure) gravels; yellowish gray (5YR 8/1) to pale pink (5RP 8/2) to greenish gray (5G 6/1), very micaceous, PWR; non-cohesive, moist, loose	ML & SP		33.60 777.6				Backfill 20/40 FilterSil Sandpack
40	775	40.00 - 41.30 (ML and SP) SILT and SAND, non-plastic to low plasticity fines, fine to medium sub-rounded sand; grayish orange (10YR 7/6) to light olive gray (5Y 5/2), highly weathered with some relic foliation layers, PWR; non-cohesive, moist, compact	ML & SP		40.00 776.3 41.30	4	ROTO SONIC	0.83 0.83	
45		41.30 - 45.40 (SP and ML) SAND and SILT, fine sand, non-plastic fines; yellowish gray (5Y 8/1), very micaceous, PWR; non-cohesive, moist, loose	SP & ML						2"ID, 4"OD 0.010 Slot

Log continued on next page

WELL CASING
Interval: 0.0 - 39.17'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 39.17 - 49.17'
Material: 39.17 - 49.17'
Diameter: 2" ID 4 " OD
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 37.0 - 50.0'
Type: 20/40 FilterSil

FILTER PACK SEAL
Interval: 17.0 - 37.0'
Type: Pel-Plug 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0.4 - 17.0'
Type: High Solids Bentonite (Aquagaurd)

WELL COMPLETION
Pad: 4' x 4' x 4"
Protective Casing: 4" Stainless Steel

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic

~150 gallons of water used while drilling

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Jose

GA INSPECTOR: Jeff Ingram
CHECKED BY: Timothy Richards, PG
DATE: 2/12/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 9/2/20

RECORD OF BOREHOLE B-81

SHEET 2 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 50.00 ft
LOCATION: North to northeast of CCR Unit

DRILL RIG: Rotosonic 1159
DATE STARTED: 9/20/19
DATE COMPLETED: 9/22/19

NORTHING: 1,394,364.90
EASTING: 2,203,741.10
GS ELEVATION: 817.64
TOC ELEVATION: 820.56 ft

DEPTH W.L.: 31.39
ELEVATION W.L.: 786.31
DATE W.L.: 1/13/2020
TIME W.L.: 15:06

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
45					772.2				SCH 40 PVC U-Pack Screen	**WELL CASING** Interval: 0.0 - 39.17' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw
		45.40 - 47.50 (SM) SILTY SAND, fine sub-angular sand, non-plastic fines; yellowish gray (5Y 8/1), very micaceous, PWR; non-cohesive, moist, loose	SM		45.40 770.1					
770		47.50 - 50.00 (SM) SILTY SAND, fine to medium sand, non-plastic fines, some weakly cemented some weakly cemented soft (crumbles with finger pressure) gravels; moderate yellowish brown (10YR 5/4) to dark yellowish brown (10YR 4/2), PWR; non-cohesive, moist, loose	SM		47.50 767.6				PVC Cap	**WELL SCREEN** Interval: 39.17 - 49.17' Material: 39.17 - 49.17' Diameter: 2" ID 4 " OD Slot Size: 0.010 End Cap: Schedule 40 PVC
50		Boring completed at 50.00 ft								**FILTER PACK** Interval: 37.0 - 50.0' Type: 20/40 FilterSil
	765									**FILTER PACK SEAL** Interval: 17.0 - 37.0' Type: Pel-Plug 3/8" Bentonite Pellets
55										**ANNULUS SEAL** Interval: 0.4 - 17.0' Type: High Solids Bentonite (Aquagaurd)
	760									**WELL COMPLETION** Pad: 4' x 4' x 4" Protective Casing: 4" Stainless Steel
60										**DRILLING METHODS** Soil Drill: Sonic Rock Drill: Sonic
	755									~150 gallons of water used while drilling
65										
	750									
70										
	745									
75										
	740									
80										
	735									
85										
	730									
90										

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Jose

GA INSPECTOR: Jeff Ingram
CHECKED BY: Timothy Richards, PG
DATE: 2/12/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 9/2/20

RECORD OF BOREHOLE B-84

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: 776.52
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: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES
0		0.00 - 14.50 Hydrovac to 14.5' to for utilites									AquaGuard Bentonite Grout
	775										
5											
	770										
10											
	765										
					762.0						
15		14.50 - 20.00 ML-CL, silty CLAY with some gravel, brown-black, micaceous, W-PL, moist, very soft	CL-ML		14.50						
	760					S1	SS	3-1-2	3	0.75 / 1.50	
20					756.5						
		20.00 - 25.00 ML, sandy SILT with some gravel, brown-black, dry, W<PL, very soft	ML		20.00						
	755					S2	SS	3-2-3	5	0.75 / 1.50	
25					751.5						
		25.00 - 30.00 CL, silty CLAY with some gravel, brown-black, micaceous, W-PL, moist, very soft to soft	CL		25.00						
	750					S3	SS	1-2-3	5	1.50 / 1.50	
30					746.5						
		30.00 - 35.00 CL, silty CLAY with some sand, brown-black with tan, W-PL, moist	CL		30.00						PEL-PLUG 3/8" Bentonite Pellets
	745					S4	SS	2-2-3	5	1.50 / 1.50	
35					741.5						
		35.00 - 39.00 CL, silty CLAY, brown-black, W-PL, wet to moist	CL		35.00						#2 FilterSil
	740				737.5						
		39.00 - 40.00 SM, silty SAND with gravel, black-grey, moist, compact	SM		39.00 736.5	S5	SS	15-18-11	29	1.50 / 1.50	
40		40.00 - 44.00 CL, silty CLAY, brown-black, W-PL, moist, very soft to soft	CL		40.00						
	735				732.5						
		44.00 - 45.00 ML, gravelly SILT with some sand, Log continued on next page	ML		44.00 731.5	S6	SS	7-7-8	17	1.50 / 1.50	0.010" Slotted
45											

WELL ABANDONDED ON 4/28/2022

WELL CASING
Interval: 0'-39.1'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 39.1'-49.1'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 36.0'-49.5'
Type: Filter Media

FILTER PACK SEAL
Interval: 30.6'-36.0'
Type: PEL-PLUG 3/8"

ANNULUS SEAL
Interval: 0'-30.6'
Type: AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round Ground Flush

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Auger
Rock Drill: N/A

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE B-84

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: 776.52
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: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
45		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	**WELL CASING** Interval: 0'-39.1' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw
730												**WELL SCREEN** Interval: 39.1'-49.1' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC
50					726.5	S7	SS	25-33-24	57	1.50 / 1.50		**FILTER PACK** Interval: 36.0'-49.5' Type: Filter Media
		Boring completed at 50.00 ft										**FILTER PACK SEAL** Interval: 30.6'-36.0' Type: PEL-PLUG 3/8"
725												**ANNULUS SEAL** Interval: 0'-30.6' Type: AquaGuard Bentonite Grout
55												**WELL COMPLETION** Pad: 2' x 2' concrete Protective Casing: 8" Round Ground Flush
720												**DRILLING METHODS** Soil Drill: 4.25-inch ID Hollow Stem Auger Rock Drill: N/A
60												
715												
65												
710												
70												
705												
75												
700												
80												
695												
85												
690												
90												

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

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

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

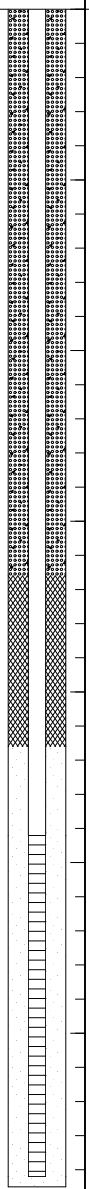
DRILL RIG: CME 550
DATE STARTED: 11/17/19
DATE COMPLETED: 11/18/19

NORTHING: 1,394,433.40
EASTING: 2,203,134.50 GS
ELEVATION: 782.71 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)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0	780	0.00 - 10.00 Hydrovac to 10.0' to for utilites			772.7					
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		10.00 767.7	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		15.00 762.7	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		20.00 757.7	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		25.00 753.2	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 porphyoclasts up to 1 com in diameter, well foliated, strong to medium strong	GNIESS		29.50 748.2	5	CORE			4.80 5.00
35	745	Boring completed at 34.50 ft								
40	740									
45										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-34.2'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screen

WELL SCREEN
Interval: 24.2'-34.2'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 21.6'-34.5'
Type: Filter Media

FILTER PACK SEAL
Interval: 16.6'-21.6'
Type: PEL-PLUG 3/8"

ANNULUS SEAL
Interval: 0'-16.6'
Type: AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round Ground Flush

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Auger
Rock Drill: HQ Core Barrell

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE B-86

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 34.10 ft
LOCATION: North of site along fence adjacent to B-79

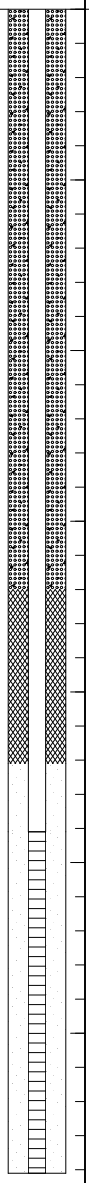
DRILL RIG: CME 550
DATE STARTED: 11/18/19
DATE COMPLETED: 11/18/20

NORTHING: 1,394,480.00
EASTING: 2,203,206.60
GS ELEVATION: 784.52
TOC ELEVATION: 784.29 ft

DEPTH W.L.: 0.91
ELEVATION W.L.: 783.69
DATE W.L.: 1/13/2020
TIME W.L.: 14:54

DEPTH (ft)	ELEVATION (ft)	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 - 7.00 Hydrovac to 7.00' to for utilites								
5	780				777.5					
		7.00 - 18.50 No Recovery			7.00					
10	775									
15	770									
					766.0					
20	765	18.50 - 23.50 SM, silty SAND, white to black and brown, fine to medium sand, saprolite, non-cohesive, wet, compact	SM		18.50	1	SS	5-10-14	24	1.00 / 1.50
					761.0					
25	760	23.50 - 28.00 SW-SM, SAND with some silt and trace gravel, brown and white to black, saprolite, non-cohesive, wet, compact	SM		23.50	2	SS	4-9-17	26	1.00 / 1.50
					756.5					
30	755	28.00 - 34.10 Bedrock, AUGEN GNEISS, white to black, fresh to slightly weathered, strong	GNIESS		28.00	3	CORE			4.00 / 5.00
					750.4					
35	750	Boring completed at 34.10 ft								
40	745									
45	740									

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-34.1'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screen

WELL SCREEN
Interval: 24.1'-34.1'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 22.1'-34.1'
Type: Filter Media

FILTER PACK SEAL
Interval: 17'-22.1'
Type: PEL-PLUG 3/8"

ANNULUS SEAL
Interval: 0.0'-17'
Type: AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round Ground Flush

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Auger
Rock Drill: HQ Core Barrell

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE B-87

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 42.00 ft
LOCATION: North of site along fence, ~25 feet north of B-80

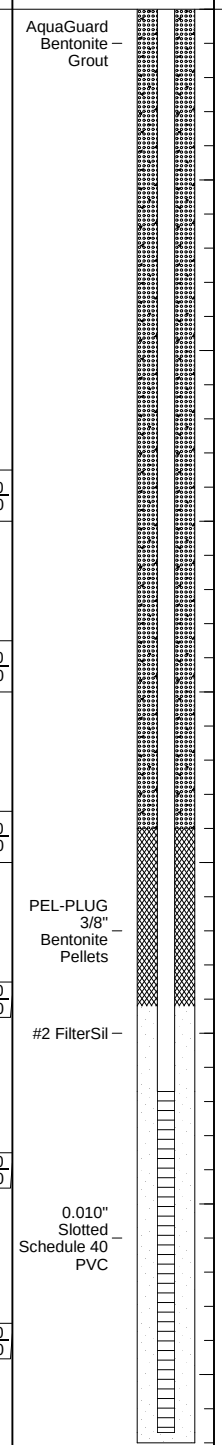
DRILL RIG: CME 550
DATE STARTED: 11/17/19
DATE COMPLETED: 11/17/19

NORTHING: 1,394,401.90
EASTING: 2,203,531.30
GS ELEVATION: 800.32
TOC ELEVATION: 803.37 ft

DEPTH W.L.: 15.56
ELEVATION W.L.: 784.84
DATE W.L.: 1/13/2020
TIME W.L.: 14:54

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0	800	0.00 - 10.00 Hydrovac to 10.00' to for utilites								
10	790	10.00 - 15.00 ML, clayey SILT with trace sand, light orange brown, W<PL, firm, cohesive	ML		790.3 10.00					
					785.3	1	SS	3-4-5	9	1.50 1.50
15	785	15.00 - 20.00 ML, clayey SILT with some sand, orange brown, saprolite, W<PL, soft to firm. cohesive	ML		15.00					
					780.3	2	SS	2-2-9	11	1.50 1.50
20	780	20.00 - 25.00 MLS, sandy SILT with trace gravel, dark brown, saprolite, non-cohesive, moist, very dense	MLS		20.00					
					775.3	3	SS	9-14-44	>50	1.00 1.50
25	775	25.00 - 28.90 SM, silty SAND with some gravel, fine to coarse sand, dark grey, saprolite, moist to wet, very dense	SM		25.00					
					771.4	4	SS	50/5	>50	0.40 0.40
30	770	28.90 - 33.80 SM, silty SAND, dark grey, saprolite, moist to wet, very dense	SM		28.90					
					766.5	5	SS	50/4	>50	0.30 0.30
35	765	33.80 - 38.80 SM, silty SAND with gravel, white and grey, augen gneiss, moist to wet, very dense	SM		33.80					
					761.5	6	SS	50/4	?50	0.30 0.30
40	760	Boring completed at 42.00 ft			38.80					
45										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-42'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screen

WELL SCREEN
Interval: 31.7'-41.7'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 29.2'-42.1'
Type: Filter Media

FILTER PACK SEAL
Interval: 24'-29.2'
Type: PEL-PLUG 3/8"

ANNULUS SEAL
Interval: 0'-24'
Type: AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round Ground Flush

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Auger
Rock Drill: N/A

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

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE B-89

SHEET 1 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 49.50 ft
LOCATION: North of site in cement plant lot, next to retaining wall

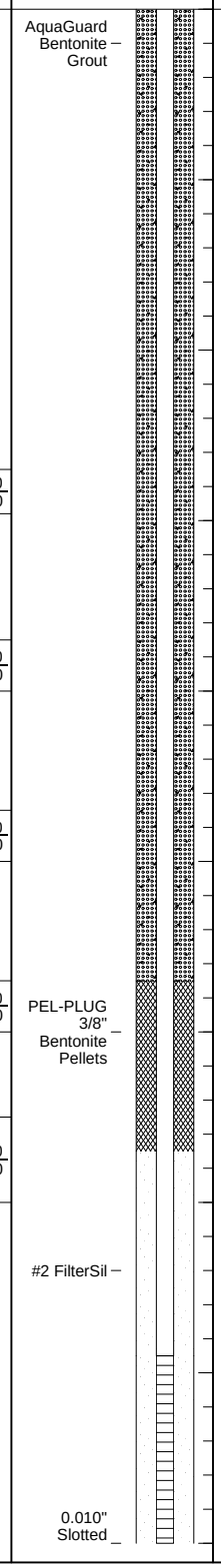
DRILL RIG: CME 550
DATE STARTED: 11/19/19
DATE COMPLETED: 11/19/19

NORTHING: 1,394,398.40
EASTING: 2,204,049.40
GS ELEVATION: 822.53
TOC ELEVATION: 822.36 ft

DEPTH W.L.: 21.78
ELEVATION W.L.: 800.82
DATE W.L.: 1/13/2020
TIME W.L.: 16:36

DEPTH (ft)	ELEVATION (ft)	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 - 10.00 Hydrovac to 10.00' to for utilites			812.5					
10	810	10.00 - 14.80 CL, clayey SILT with some sand and trace gravel, grey brown, cohesive, low to no plasticity, W<PL, firm to stiff	ML		10.00 807.7	1	SS	9-21-50/4	>50	1.20 1.30
15	805	14.80 - 20.00 MLS, sandy SILT with some gravel, brown and dark grey, compact, dry, non cohesive	MLS		14.80 802.5	2	SS	5-10-19	29	1.30 1.50
20	800	20.00 - 25.00 CL, clayey SILT with some sand, grey and brown, saprolite, cohesive, W<PL, firm	ML		20.00 797.5	3	SS	9-17-18	35	1.30 1.50
25	795	25.00 - 29.00 CL, clayey SILT with some sand and trace gravel, grey and brown, highly weathered, saprolite, cohesive, W<PL, firm	ML		25.00 793.5					
30	790	29.00 - 32.50 SP, gravelly SAND with some silt, grey to brown, PWR, non-cohesive, dense, dry	SP		29.00 790.0	4	SS	10-19-23	42	1.50 1.50
35	785	32.50 - 35.00 Bedrock, SCHIST, light grey to dark grey, fresh to slightly weathered, strong to very strong			32.50 787.5	5	CORE			2.50 2.50
40	780	35.00 - 40.00 Bedrock, SCHIST, light grey to dark grey, fresh to slightly weathered, strong to very strong			35.00 782.5					
45		40.00 - 44.00 Bedrock, SCHIST, light grey to dark grey, fresh to slightly weathered, strong to very strong			40.00 778.5					
		Log continued on next page			44.00					

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-49.5'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screen

WELL SCREEN
Interval: 39.5'-49.5'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 33.5'-49.5'
Type: Filter Media

FILTER PACK SEAL
Interval: 28.5'-33.5'
Type: PEL-PLUG 3/8"

ANNULUS SEAL
Interval: 0'-28.5'
Type: AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round Ground Flush

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Auger
Rock Drill: HQ Core Barrell

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE B-89

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 49.50 ft
LOCATION: North of site in cement plant lot, next to retaining wall

DRILL RIG: CME 550
DATE STARTED: 11/19/19
DATE COMPLETED: 11/19/19

NORTHING: 1,394,398.40
EASTING: 2,204,049.40
GS ELEVATION: 822.53
TOC ELEVATION: 822.36 ft

DEPTH W.L.: 21.78
ELEVATION W.L.: 800.82
DATE W.L.: 1/13/2020
TIME W.L.: 16:36

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
45		44.00 - 49.50 Bedrock, SCHIST, light grey to dark grey, fresh to slightly weathered, strong to very strong *(Continued)*									Schedule 40 PVC	**WELL CASING** Interval: 0'-49.5' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screen **WELL SCREEN** Interval: 39.5'-49.5' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC **FILTER PACK** Interval: 33.5'-49.5' Type: Filter Media **FILTER PACK SEAL** Interval: 28.5'-33.5' Type: PEL-PLUG 3/8" **ANNULUS SEAL** Interval: 0'-28.5' Type: AquaGuard Bentonite Grout **WELL COMPLETION** Pad: 2' x 2' concrete Protective Casing: 8" Round Ground Flush **DRILLING METHODS** Soil Drill: 4.25-inch ID Hollow Stem Auger Rock Drill: HQ Core Barrell
50	775				773.0							
55	770	Boring completed at 49.50 ft										
60	765											
65	760											
70	755											
75	750											
80	745											
85	740											
90	735											

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE B-90

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 33.40 ft
LOCATION: North of site along Plant Atkinson Road

DRILL RIG: CME 550
DATE STARTED: 12/10/19
DATE COMPLETED: 12/10/19

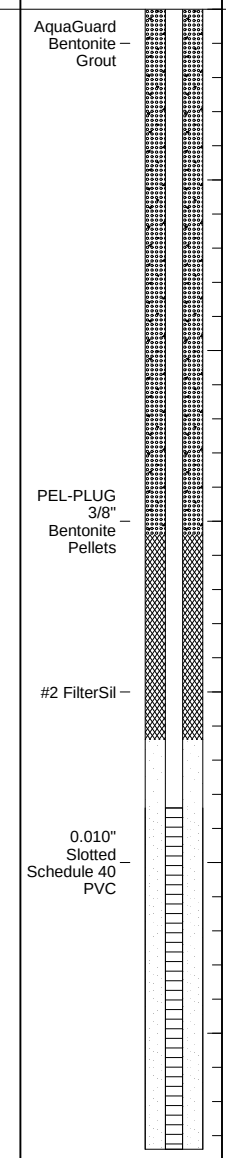
NORTHING: 1,394,501.00
EASTING: 2,203,212.60
GS ELEVATION: 784.16
TOC ELEVATION: 784.00 ft

DEPTH W.L.: 0.88
ELEVATION W.L.: 783.32
DATE W.L.: 1/14/2020
TIME W.L.: 12:32

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	ELEV. / DEPTH (ft)
0		0.00 - 6.00 CL, sandy CLAY, some gravel; gray to dark gray, cohesive, w > PL, wet	CLS	778.2
5	780			
		6.00 - 10.00 ML, sandy SILT, medium to coarse sand, some clay, trace gravel; light brown, cohesive, w ~ PL, wet	MLS	6.00 774.2
10	775	10.00 - 15.00 CL, sandy CLAY, medium to coarse sand; light brown, w ~ PL	CLS	10.00 769.2
15	770	15.00 - 23.00 SM, silty SAND, medium to coarse, some clay; light brown, wet	SM	15.00 761.2
20	765			
25	760	23.00 - 33.00 SM, silty SAND, medium to coarse, some clay, some subround to subangular gravel as feldspar and quartz; light brown to brown, wet, flowing	SM	23.00 750.8
30	755			
		Boring completed at 33.40 ft		33.40
35	750			
40	745			
45	740			

SAMPLES: SAMPLE NO., TYPE, REC

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-33.4'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screen

WELL SCREEN
Interval: 23.4'-33.4'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 21.4'-33.4'
Type: #2 FilterSil

FILTER PACK SEAL
Interval: 15.4'-21.4'
Type: PEL-PLUG 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0'-15.4'
Type: AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round Ground Flush

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Auger
Rock Drill: N/A

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

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

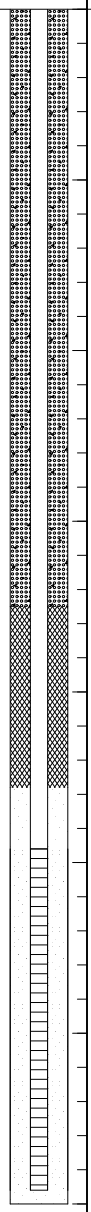
NORTHING: 1,394,447.10
EASTING: 2,203,123.90
GS ELEVATION: 783.10
TOC ELEVATION: 782.98 ft

DEPTH W.L.: 2.90
ELEVATION W.L.: 780.2
DATE W.L.: 1/14/2020
TIME W.L.: 12:34

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	ELEV. / DEPTH (ft)
0		0.00 - 5.00 Fill, gravel		
	780			
				778.1 / 5.00
5		5.00 - 10.00 ML, SILT, some fine to medium sand, trace gravel; brown and gray, cohesive, w ~ PL	ML	
	775			
				773.1 / 10.00
10		10.00 - 25.00 SP, SAND, medium to coarse, some angular gravel, some clay; gray, noncohesive, wet	SP	
	770			
15				
	765			
20				
	760			
				758.1 / 25.00
25		25.00 - 35.00 SM, silty SAND, fine to coarse, trace gravel; light brown, wet	SM	
	755			
30				
	750			
				748.1
35		Boring completed at 35.00 ft		
	745			
40				
	740			
45				

SAMPLES: SAMPLE NO. | TYPE | REC

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-35'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screen

WELL SCREEN
Interval: 24.6'-34.6'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 22.8'-35'
Type: #2 FilterSil

FILTER PACK SEAL
Interval: 17.5'-22.5'
Type: PEL-PLUG 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0'-17.5'
Type: Portland Cement, AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round Ground Flush

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Auger
Rock Drill: N/A

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE B-94

SHEET 1 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 45.24 ft
LOCATION: Northeast side, on property line

DRILL RIG: CME 550
DATE STARTED: 1/21/20
DATE COMPLETED: 1/23/20

NORTHING: 1,394,402.00
EASTING: 2,203,513.70
GS ELEVATION: 799.12
TOC ELEVATION: 801.74 ft

DEPTH W.L.: 13.81 ft bTOC
ELEVATION W.L.: 770.49
DATE W.L.: 1/28/2020
TIME W.L.: 16:44

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES
0		0.00 - 9.00 CL, silty CLAY, medium plasticity, some sand; reddish brown, cohesive, w > PL, soft				S-01	GRAB			0.00 0.75	
5	795		CL								Bentonite Grout
					790.1						
10	790	9.00 - 13.50 ML, SILT, non-plastic, trace sand; orange-brown, micaceous, non-cohesive, moist, firm to stiff	ML		9.00	S-02	DO	2-2-4	6	1.50 1.50	
					785.6						
15	785	13.50 - 45.24 SM, silty SAND, fine; mottled tan-brown and white, micaceous, saprolitic, non-cohesive, dry to moist, very dense			13.50	S-03	DO	18-24-33	57	1.50 1.50	
		18.50: Compact				S-04	DO	6-10-20	30	1.50 1.50	
20	780										
25	775		SM			S-05	DO	4-5-16	21	1.42 1.50	
		28.50: Trace quartz gravel from pegmatitic vein, dense				S-06	DO	21-24-22	46	1.08 1.50	Bentonite Pellets
30	770	30.00: Trace quartz gravel, very dense				S-07	DO	10-50	50/4	0.83 0.83	
						S-08	DO	50	50/3	0.25 0.25	
						S-09	DO	50	50/5	0.42 0.42	Sand Filter Pack
35	765					S-10	DO	50	50/4	0.33	3" PVC 0.010 Slot U-Pack Screen
						S-11	DO	50	50/3	0.33 0.58 0.25	
		37.50: 1.0" pegmatitic vein consisting of potassium feldspar and plagioclase feldspar				S-12	DO	50	50/4	0.83 0.83	
40	760					S-13	DO	19-50	50/2	0.17 0.17	

Log continued on next page

WELL CASING
Interval: 0 ft-bgs - 45 ft-bgs
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush

WELL SCREEN
Interval: 34.6 ft-bgs - 44.6 ft-bgs
Material: Schedule 40 PVC
Diameter: 3"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 32.5 ft-bgs - 44.6 ft-bgs
Type: FilterSII Sand

FILTER PACK SEAL
Interval: 28 ft-bgs - 32.5 ft-bgs
Type: PEL-PLUG 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0 ft-bgs - 28 ft-bgs
Type: Portland Cement, AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 4' x 4' Concrete Pad
Protective Casing: Aluminum Riser

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Augers
Rock Drill: N/A

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: Heather Brissey & Michael Boatman PG
CHECKED BY: Timothy Richards, PG
DATE: 2/11/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 9/2/20

RECORD OF BOREHOLE B-94

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 45.24 ft
LOCATION: Northeast side, on property line

DRILL RIG: CME 550
DATE STARTED: 1/21/20
DATE COMPLETED: 1/23/20

NORTHING: 1,394,402.00
EASTING: 2,203,513.70
GS ELEVATION: 799.12
TOC ELEVATION: 801.74 ft

DEPTH W.L.: 13.81 ft bTOC
ELEVATION W.L.: 770.49
DATE W.L.: 1/28/2020
TIME W.L.: 16:44

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES
40		13.50 - 45.24 SM, silty SAND, fine; mottled tan-brown and white, micaceous, saprolitic, non-cohesive, dry to moist, very dense *(Continued)*				S-14	DO	50	50/2	0.17 0.17	
		42.00: Trace gravel	SM			S-15	DO	8-26-50	76/10	0.83 0.83	
	755					S-16	DO	50	50/4	0.33 0.33	
45					753.9						
		Boring completed at 45.24 ft									
	750										
50											
	745										
55											
	740										
60											
	735										
65											
	730										
70											
	725										
75											
	720										
80											

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0 ft-bgs - 45 ft-bgs
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush

WELL SCREEN
Interval: 34.6 ft-bgs - 44.6 ft-bgs
Material: Schedule 40 PVC
Diameter: 3"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 32.5 ft-bgs - 44.6 ft-bgs
Type: FilterSII Sand

FILTER PACK SEAL
Interval: 28 ft-bgs - 32.5 ft-bgs
Type: PEL-PLUG 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0 ft-bgs - 28 ft-bgs
Type: Portland Cement, AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 4' x 4' Concrete Pad
Protective Casing: Aluminum Riser

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Augers
Rock Drill: N/A

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: Heather Brissey & Michael Boatman PG
CHECKED BY: Timothy Richards, PG
DATE: 2/11/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 9/2/20

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

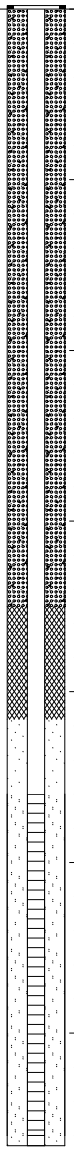
DRILL RIG: CME 550
DATE STARTED: 2/11/20
DATE COMPLETED: 2/11/20

NORTHING: 1,394,518.60
EASTING: 2,203,167.70
GS ELEVATION: 784.18
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: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: 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								
5	780									
10	775				774.2 10.00					
					770.7					
15	770	13.50 - 33.30 SANDY SILT, low plasticity, fine grained sand; brown; non-cohesive, wet, loose	ML		13.50	S-01	DO	3-3-4	7	N/A 1.50
20	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
25	760	23.50: Trace fine gravel				S-03	DO	8-50	50/5	N/A 0.92
30	755	28.50: Compact				S-04	DO	3-2-8	10	N/A 1.50
					750.9					
35	750	Boring completed at 33.30 ft								
40	745									
45	740									

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0 ft-bgs - 33.3 ft-bgs
Material: PVC
Diameter: 2"
Joint Type: Flush

WELL SCREEN
Interval: 23 ft-bgs - 33 ft-bgs
Material: Schedule 40 PVC
Diameter: 3"
Slot Size: 0.010"
End Cap: 4"

FILTER PACK
Interval: 20.8 ft-bgs - 33.3 ft-bgs
Type: FilterSil Sand

FILTER PACK SEAL
Interval: 17.5 ft-bgs - 20.5 ft-bgs
Type: PEL-PLUG 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0 ft-bgs - 17.5 ft-bgs
Type: Portland Cement, AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 2'x2' Concrete Pad
Protective Casing: 8" Round Flush Mount

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Augers
Rock Drill: N/A

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 9/2/20

RECORD OF BOREHOLE B-96

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 33.10 ft
LOCATION: North side of AP4

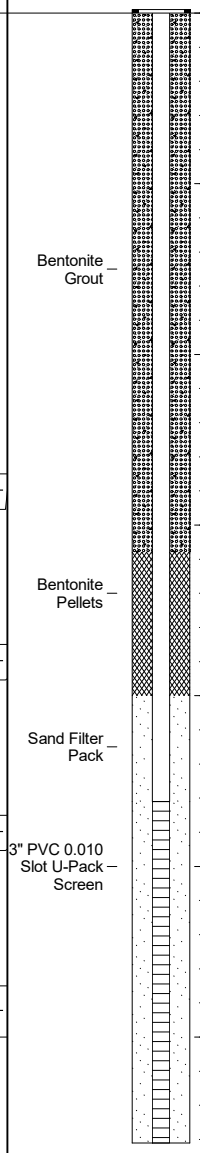
DRILL RIG: CME 550
DATE STARTED: 2/10/20
DATE COMPLETED: 2/10/20

NORTHING: 1,394,478.70
EASTING: 2,203,099.30
GS ELEVATION: 785.19
TOC ELEVATION: 784.92 ft

DEPTH W.L.: 4.31 ft bTOC
ELEVATION W.L.: 780.61
DATE W.L.: 2/26/2020
TIME W.L.: 15:14

DEPTH (ft)	ELEVATION (ft)	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 Hydro Vac'd for utilities clearance								
5	780									
10	775				775.2 10.00					
					771.7					
		13.50 - 33.10 SILTY SAND, low to no plasticity; light grey, saprolitic (gneiss parent rock); non-cohesive, dry to moist, very dense			13.50	S-01	DO	50	50/5	0.17 0.50
15	770									
						S-02	DO	4-50	50/3	0.50 1.00
20	765		SM							
		23.50: grey to tan				S-03	DO	17-50	50/5	1.00 1.00
25	760									
		28.50: Iron staining				S-04	DO	5-26-50	76/11	1.30 1.50
30	755				752.1					
		Boring completed at 33.10 ft								
35	750									
40	745									
45										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0 ft-bgs - 33.1 ft-bgs
Material: PVC
Diameter: 2"
Joint Type: Flush

WELL SCREEN
Interval: 23.1 ft-bgs - 33.1 ft-bgs
Material: Schedule 40 PVC
Diameter: 3"
Slot Size: 0.010"
End Cap: 4"

FILTER PACK
Interval: 20 ft-bgs - 33.1 ft-bgs
Type: FilterSil Sand

FILTER PACK SEAL
Interval: 15.8 ft-bgs - 20 ft-bgs
Type: PEL-PLUG 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0 ft-bgs - 15.8 ft-bgs
Type: Portland Cement, AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 2'x2' Concrete Pad
Protective Casing: 8" Round Flush Mount

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Augers
Rock Drill: N/A

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: 4/28/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 9/2/20

RECORD OF BOREHOLE B-99

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 12.30 ft
LOCATION: Smyrna, GA

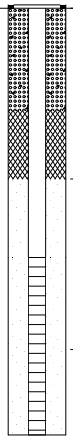
DRILL RIG: CME 550X
DATE STARTED: 7/7/20
DATE COMPLETED: 7/7/20

NORTHING: 1,394,524.20
EASTING: 2,203,084.50
GS ELEVATION: 782.57
TOC ELEVATION: 782.39 ft

DEPTH W.L.: 5.93
ELEVATION W.L.: 776.46
DATE W.L.: 7/7/20
TIME W.L.: 16:10

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	REC
0	780	0.00 - 5.00 GRAVEL WITH SILT; non-native, brown to brown-tan with some red, silty, poorly graded gravel with some concrete fill, some organics, slightly weathered, non-cohesive, moist to wet, loose to compact (fill)	GW-GM		777.6			
5	775	5.00 - 9.00 GRAVEL WITH SILT; non-native, brown to brown tan with red, silty, poorly graded gravel with some comcrete fill, some organics, slightly weathered, non-cohesive, wet, loose to compact (fill)	GW-GM		5.00 773.6	R1		12.30
10	770	9.00 - 12.30 SILTY GRAVEL; brown, tan and red, non-cohesive, wet, loose to compact (mix of fill and saprolite)	GM		9.00 770.3			
15	765	Boring completed at 12.30 ft						
20	760							
25	755							
30	750							
35	745							
40	740							
45								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-12'3"
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Screw fit with rubber seam

WELL SCREEN
Interval: 7'3"-12'3"
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 5"-12'3"
Type: Filtersil std61

FILTER PACK SEAL
Interval: 3'-5'
Type: 3/8" Coated Pel-Plug

ANNULUS SEAL
Interval: 0'-3'
Type: Aquagaurd Bentonite Grout

WELL COMPLETION
Pad: 4'x4'x4"
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: Auger
Rock Drill:

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: SCS CFS
DRILLER: S. Deuty

GA INSPECTOR: Chris Tidwell
CHECKED BY: Brian Steele, PG
DATE: 8/24/2020

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

RECORD OF BOREHOLE B-103D

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: 793.77 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)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC
0		0.00 - 5.00 (SM), SILTY SAND; red brown; low plasticity, moist, w<PL, loose, contains muscovite, FILL	SM			1	ROTO SONIC	2.50 5.00
5		5.00 - 15.00 (ML), SILT; tan to gray-brown; low plasticity, moist, fine, w<PL, loose	ML		5.00	2	ROTO SONIC	6.50 10.00
15		15.00 - 18.00 (SM), SILTY SAND; dark brown, gravel; moist, non to low plasticity, w<PL	SM		15.00	3	ROTO SONIC	5.50 5.00
		18.00 - 20.00 (SCHIST), BEDROCK; feldspar, biotite, muscovite, moderate to well foliated, fresh, rock	BR		18.00			
20		20.00 - 23.00 (SCHIST), BEDROCK; well foliated, poorly jointed, feldspar, quartz, muscovite	BR		20.00	4	ROTO SONIC	10.00 12.00
25		23.00 - 40.00 (GNEISS), BEDROCK; light to dark gray; partially foliated, poorly jointed, biotite, feldspar, quartz, locally contains garnet	BR		23.00			
30								
35						5	ROTO SONIC	5.60 8.00
40		40.00 - 70.00 (GNEISS), BEDROCK; light gray-green to dark gray; well foliated, poorly jointed, muscovite, biotite, feldspar, quartz	BR		40.00	6	ROTO SONIC	9.00 10.00
45								
50								

Log continued on next page

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

B-103D
Borehole Diameter: 4"
WELL CASING
Interval: 0'-70'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Screw fit with rubber seam
WELL SCREEN
Interval: 60'-70'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: .010"
End Cap: Schedule 40 PVC
FILTER PACK
Interval: 57.9'-70.0'
Type: FilterSil
Quantity: 3.5-50 lbs bags
FILTER PACK SEAL
Interval: 53.5'-57.9'
Type: 3/8" Uncoated Pel-Plug
Quantity: 1-5 gallon bucket
ANNULUS SEAL
Interval: 0'-53.5'
Type: AquaGuard Bentonite Grout
Quantity: Approximately 40 gallons

NOTES

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

GOLDER

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: 793.77 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: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
50		40.00 - 70.00 (GNEISS), BEDROCK; light gray-green to dark gray; well foliated, poorly jointed, muscovite, biotite, feldspar, quartz *(Continued)*	BR			7	ROTO SONIC	7.50 10.00	3/8" Uncoated – Pel-Plug Sand Filter – Pack	**B-103D** Borehole Diameter: 4" **WELL CASING** Interval: 0'-70' Material: Schedule 40 PVC Diameter: 2" Joint Type: Screw fit with rubber seam **WELL SCREEN** Interval: 60'-70' Material: Schedule 40 PVC Diameter: 2" Slot Size: .010" End Cap: Schedule 40 PVC **FILTER PACK** Interval: 57.9'-70.0' Type: FilterSil Quantity: 3.5-50 lbs bags **FILTER PACK SEAL** Interval: 53.5'-57.9' Type: 3/8" Uncoated Pel-Plug Quantity: 1-5 gallon bucket **ANNULUS SEAL** Interval: 0'-53.5' Type: AquaGuard Bentonite Grout Quantity: Approximately 40 gallons **NOTES**
55										
60						8	ROTO SONIC	9.65 10.00	U-Pack – Screen	
65										
70		Boring completed at 70.00 ft								
75										
80										
85										
90										
95										
100										

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST (2).GPJ PIEDMONT.GDT 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: 847.78 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)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC
0		0.00 - 10.00 Air knife; FILL	FILL					
10		10.00 - 13.50 (ML). SILT; brown, soft,	ML		10.00			
15		13.50 - 20.00 (CL), CLAY; red to red brown, trace sand, medium plasticity, w<PL, firm, moist to dry,	CL		13.50	1	ROTO SONIC	10.00 / 10.00
20		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		20.00	2	ROTO SONIC	3.70 / 10.00
30		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		30.00	3	ROTO SONIC	6.00 / 6.00
35		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		36.00	4	ROTO SONIC	4.00 / 4.00
40		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		40.00	5	ROTO SONIC	2.20 / 5.00
45		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		45.00	6	ROTO SONIC	4.20 / 10.00
		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		46.00			
50		Log continued on next page						

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

B-109D
Borehole Diameter: 4"
WELL CASING
Interval: 0'-100'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Screw fit with rubber seam
WELL SCREEN
Interval: 89.4'-99.4'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: .010"
End Cap: Schedule 40 PVC
FILTER PACK
Interval: 86.5'-99.4'
Type: FilterSil
Quantity: 4-50 lbs bags
FILTER PACK SEAL
Interval: 83.9'-86.5'
Type: 3/8" Uncoated Pel-Plug
Quantity: 1-5 gallon bucket
ANNULUS SEAL
Interval: 0'-83.9'
Type: AquaGuard Bentonite Grout
Quantity: Approximately 80 gallons

NOTES

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST (2) (3) (1) (2).GPJ PIEDMONT.GDT 7/19/21

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: 847.78 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: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES
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 *(Continued)*	BR			6	ROTO SONIC	4.20 / 10.00	
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		55.00	7	ROTO SONIC	8.25 / 10.00	
60									
65		65.00 - 80.00 (GNEISS), BEDROCK; quatz, feldspar, biotite, black to dark gray, well foliated, poorly jointed fresh to slightly weathered, medium strong to weak, iron staining.	BR		65.00	8	ROTO SONIC	10.00 / 10.00	
70									
75						9	ROTO SONIC	5.00 / 5.00	
80		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		80.00	10	ROTO SONIC	4.25 / 5.00	3/8" Uncoated Pel-Plug
85		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		85.00	11	ROTO SONIC	5.00 / 5.00	Sand Filter Pack
90									
95						12	ROTO SONIC	8.40 / 10.00	U-Pack Screen
100		Boring completed at 100.00 ft							

WELL CONSTRUCTION DETAILS

B-109D
Borehole Diameter: 4"

WELL CASING
Interval: 0'-100'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Screw fit with rubber seam

WELL SCREEN
Interval: 89.4'-99.4'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: .010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 86.5'-99.4'
Type: FilterSil
Quantity: 4-50 lbs bags

FILTER PACK SEAL
Interval: 83.9'-86.5'
Type: 3/8" Uncoated Pel-Plug
Quantity: 1-5 gallon bucket

ANNULUS SEAL
Interval: 0'-83.9'
Type: AquaGuard Bentonite Grout
Quantity: Approximately 80 gallons

NOTES

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST (2) (3) (1) (2).GPJ PIEDMONT.GDT 7/19/21

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: 764.55 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 DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLES SAMPLE NO.	SAMPLES TYPE	SAMPLES REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES
0		0.00 - 5.00 Hand Auger 0'-10'; core loss from 0'-5',	NR						Flush mount
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	
30									
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	
40									
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							

B-110D
Borehole Diameter: 4"
WELL CASING
Interval: 0'-65'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Screw fit with rubber seam
WELL SCREEN
Interval: 53'-63'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: .010"
End Cap: Schedule 40 PVC
FILTER PACK
Interval: 50.5'-63'
Type: FilterSil
Quantity: 3.5-50 lbs bags
FILTER PACK SEAL
Interval: 46'-50.5'
Type: 3/8" Uncoated Pel-Plug
Quantity: 1-5 gallon bucket
ANNULUS SEAL
Interval: 0'-46'
Type: AquaGuard Bentonite Grout
Quantity: Approximately 85 gallons

NOTES

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

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST (2).GPJ PIEDMONT.GDT 2/3/21

RECORD OF BOREHOLE B-110D

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: 764.55 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: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
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 *(Continued)*	BR			6	ROTO SONIC	8.70 / 10.00	Sand Filter Pack	
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	U-Pack Screen	
65		Boring completed at 65.00 ft								
70										
75										
80										
85										
90										
95										
100										

B-110D
Borehole Diameter: 4"
WELL CASING
Interval: 0'-65'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Screw fit with rubber seam
WELL SCREEN
Interval: 53'-63'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: .010"
End Cap: Schedule 40 PVC
FILTER PACK
Interval: 50.5'-63'
Type: FilterSil
Quantity: 3.5-50 lbs bags
FILTER PACK SEAL
Interval: 46'-50.5'
Type: 3/8" Uncoated Pel-Plug
Quantity: 1-5 gallon bucket
ANNULUS SEAL
Interval: 0'-46'
Type: AquaGuard Bentonite Grout
Quantity: Approximately 85 gallons

NOTES

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

GOLDER

RECORD OF BOREHOLE B-113D

PROJECT: Plant McDonough
PROJECT NUMBER: 166849621
DRILLED DEPTH: 85.00 ft
LOCATION: Offset of B-72

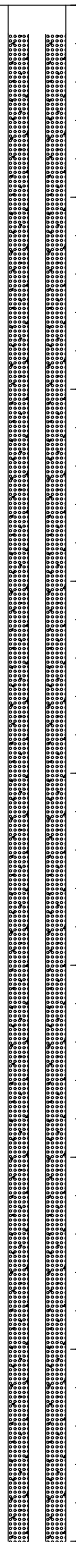
DRILL RIG: TSi 150CC
DATE STARTED: 3/22/21
DATE COMPLETED: 3/30/21

NORTHING: 1,391,264.6
EASTING: 2,200,719.2
GS ELEVATION: 758.87
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)	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		755.9			
5	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		3.00 748.9	Hand Auger		0.00 10.00
10	750	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		10.00 743.4	1		7.60 10.00
15	745	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		15.50 738.9			
20	740	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 contians vein quartz and water staining	BR		20.00 728.9	2		3.80 10.00
25	735							
30	730	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 contians vein quartz, water staining, and garnets	BR		30.00 723.7	3		7.00 10.00
35	725	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		35.15			
40	720	Log continued on next page						

PIEZOMETER DIAGRAM and NOTES



PIEZOMETER CONSTRUCTION DETAILS

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'x4" Concrete
Protective Casing: 8" Flush Mount

DRILLING METHODS
Soil Drill: Rotosonic (6 inch casing by 4 inch core barrel)
Rock Drill: Rotosonic
Sample Type: Rotosonic

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

GOLDER
MEMBER OF WSP

RECORD OF BOREHOLE B-113D

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: 758.87
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: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	PHOTO	REC	PIEZOMETER DIAGRAM and NOTES	PIEZOMETER CONSTRUCTION DETAILS
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 *(Continued)*								
45	715		BR			4		6.50 10.00		
50	710				708.9 50.00					
		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.								
55	705		BR			5		10.00 10.00		
60	700				698.9 60.00					
		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								
65	695					6		7.50 10.00		
70	690		BR						Bentonite Seal	
75	685					7		8.70 10.00	#1 Filter Sand	
		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		682.9 76.00					
80	680									

Log continued on next page

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'x4" Concrete
Protective Casing: 8" Flush Mount

DRILLING METHODS
Soil Drill: Rotosonic (6 inch casing by 4 inch core barrel)
Rock Drill: Rotosonic
Sample Type: Rotosonic

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

GOLDER
MEMBER OF WSP

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: 758.87
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: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	PHOTO	REC	PIEZOMETER DIAGRAM and NOTES	PIEZOMETER CONSTRUCTION DETAILS
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. *(Continued)*	BR			8		4.50 5.00	0.010" Slotted Schedule 40 PVC Sump	**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'x4" Concrete Protective Casing: 8" Flush Mount **DRILLING METHODS** Soil Drill: Rotosonic (6 inch casing by 4 inch core barrel) Rock Drill: Rotosonic Sample Type: Rotosonic
675					673.9					
85		Boring completed at 85.00 ft								
670										
90										
665										
95										
660										
100										
655										
105										
650										
110										
645										
115										
640										
120										

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

GOLDER
MEMBER OF WSP

BOREHOLE RECORD 166849621.GPJ PIEDMONT.GDT 5/24/21

RECORD OF BOREHOLE B-115D

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: 786.43
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)	DESCRIPTION	USCS	ELEV. / DEPTH (ft)	SAMPLE NO.	REC	PIEZOMETER DIAGRAM and NOTES
0	785	0.00 - 10.00 FILL- Backfilled with cuttings from air knife clearance			Air Knife	0.00 10.00	
10	775	10.00 - 13.00 CL, Silty CLAY with tace organics, low to moderate plasticity; dark brown; fill; soft to firm, moist, W<PL	CL	776.4 10.00 773.4			
15	770	13.00 - 18.00 SC, Clayey SAND, low plasticity, fine to coase; dark red brown to red brown; fill; soft/loose, dry to moist, W<PL	SC	13.00 768.4	1	10.00 10.00	
		18.00 - 20.00 ML, Clayey SILT, low plasticity; tan; soft, moist, W<PL	ML	18.00 766.4			
20	765	20.00 - 25.00 TWR, Transitional Weathered Rock; breaks down to a ML, Sandy SILT with trace coobles, non to low plasticity; light brown to brown; soft/loose, moist, W<PL	TWR	20.00 761.4	2	8.50 10.00	
25	760	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	25.00 756.4			
30	755	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 a epidote-quartz-muscovite schistose GNEISS	BR	30.00	3	7.50 10.00	AquaGuard Grout
40	750	Log continued on next page					

PIEZOMETER CONSTRUCTION DETAILS

WELL CASING
Interval: 0-69.2'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 69.2-79.2'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: 79.2-79.5'

FILTER PACK
Interval: 66.7-79.5'
Type: #1 Fliter Sand
Quantity: 4 - 50 lbs bags

FILTER PACK SEAL
Interval: 62.5-66.7'
Type: 3/8" Uncoated Pel-Plug
Quantity: 1 - 5 gallon bucket

ANNULUS SEAL
Interval: 0-62.5'
Type: AquaGuard Bentonite Grout
Quantity: Approximately 100 gallons

WELL COMPLETION
Pad: 4'x4'x4" Concrete
Protective Casing: 4"x4" Aluminium

DRILLING METHODS
Soil Drill: Rotosonic (6 inch casing by 4 inch core barrel)
Rock Drill: Rotosonic
Sample Type: Rotosonic

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

GOLDER
MEMBER OF WSP

RECORD OF BOREHOLE B-115D

SHEET 2 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 166849621
DRILLED DEPTH: 80.00 ft
LOCATION: South of overflow parking

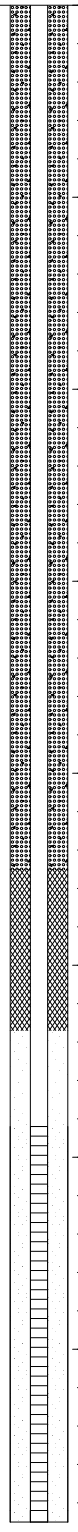
DRILL RIG: TSi 150CC
DATE STARTED: 3/19/21
DATE COMPLETED: 3/20/21

NORTHING: 1,391,265.3
EASTING: 2,202,580.7
GS ELEVATION: 786.43
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)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	PHOTO	REC
40		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 a epidote-quartz-muscovite schistose GNEISS *(Continued)*						
45	745		BR			4		6.50 10.00
50	740				736.4 50.00			
	735	50.00 - 70.00 Fresh to slightly weathered, well foliated, well jointed, light gray to green, fine to medium grained, weak to strong, chlorite-quartz-muscovite SCHIST				5		6.50 10.00
55	730							
60	725		BR					
65	720					6		8.00 10.00
70	715	70.00 - 80.00 Fresh to Slightly weathered, weak to moderately foliated, poorly jointed, gray to black, fine grained, medium strong to strong, quartz-biotite-muscovite SCHIST; locally contains pyrite and garnets			716.4 70.00			
75	710		BR			7		10.00 10.00
80		Boring completed at 80.00 ft			706.4			

PIEZOMETER DIAGRAM and NOTES



PIEZOMETER CONSTRUCTION DETAILS

WELL CASING
Interval: 0-69.2'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 69.2-79.2'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: 79.2-79.5'

FILTER PACK
Interval: 66.7-79.5'
Type: #1 Fliter Sand
Quantity: 4 - 50 lbs bags

FILTER PACK SEAL
Interval: 62.5-66.7'
Type: 3/8" Uncoated Pel-Plug
Quantity: 1 - 5 gallon bucket

ANNULUS SEAL
Interval: 0-62.5'
Type: AquaGuard Bentonite Grout
Quantity: Approximately 100 gallons

WELL COMPLETION
Pad: 4'x4'x4" Concrete
Protective Casing: 4"x4" Aluminium

DRILLING METHODS
Soil Drill: Rotosonic (6 inch casing by 4 inch core barrel)
Rock Drill: Rotosonic
Sample Type: Rotosonic

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

GOLDER
MEMBER OF WSP

BOREHOLE RECORD 166849621.GPJ PIEDMONT.GDT 5/24/21

RECORD OF BOREHOLE B-116D

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: 805.31
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)	DESCRIPTION	USCS	ELEV. / DEPTH (ft)	SAMPLE NO.	REC	PIEZOMETER DIAGRAM and NOTES
0	805	0.00 - 3.00 CL, Silty CLAY, low plasticity; red brown; soft to firm, moist, W<PL	CL	802.3			
		3.00 - 6.00 ML, Clayey SILT with trace to some fine to coase sand, non plasticity; brown; soft/ loose, dry to moist, W<PL	ML	3.00	Hand Auger	0.00 10.00	
5	800			799.3			
		6.00 - 10.00 SM, SILTY SAND, non to low plasticity; yellow-brown to tan; loose, dry, W<PL	SM	6.00			
10	795			795.3			
		10.00 - 11.00 CL, Silty CLAY with some silt, low plasticity; red brown to brown; soft, moist, W<PL	CL	10.00 794.3			
		11.00 - 20.00 ML, Clayey SILT, non plasticity; brown to gray-brown; soft/ loose, moist, W<PL; locally contains books of muscovite	ML	11.00	1	13.50 10.00	
15	790						
20	785	20.00 - 21.50 CL, Silty CLAY with some fine sand, low plasticity; orange brown; soft, moist, W~PL	CL	20.00 783.8			
		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	21.50	2	15.00 10.00	
25	780						
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 30.00	3	12.00 10.00	AquaGuard Grout
35	770						
40				765.3			

Log continued on next page

PIEZOMETER CONSTRUCTION DETAILS

WELL CASING
Interval: 0-79.2'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 79.2-89.2'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: 89.2-89.5'

FILTER PACK
Interval: 75.5-89.5'
Type: #1 Filter Sand
Quantity: 4.5 - 50 lbs bag

FILTER PACK SEAL
Interval: 70.6-75.5'
Type: 3/8" Uncoated Pel-Plug
Quantity: 1 - 5 gallon bucket

ANNULUS SEAL
Interval: 0-70.6'
Type: AquaGuard Bentonite Grout
Quantity: Approximately 120 gallons

WELL COMPLETION
Pad: 4'x4'x4" Concrete
Protective Casing: 4"x4" Aluminium

DRILLING METHODS
Soil Drill: Rotosonic (6 inch casing by 4 inch core barrel)
Rock Drill: Rotosonic
Sample Type: Rotosonic

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

GOLDER
MEMBER OF WSP

RECORD OF BOREHOLE B-116D

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: 805.31
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)	DESCRIPTION	USCS	ELEV. / DEPTH (ft)	SAMPLE NO.	REC
40	765	40.00 - 50.00 ML, Clayey SILT with some fine to coase 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
50	755	50.00 - 54.90 TWR, Transitional Weathered Rock; breaks down to a ML, Clayey SILT with some fine to coase sand, non to low plasticity; gray to gray-brown; soft (becoming firm to stiff with depth), moist to wet, W<PL	TWR	755.3 50.00	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	BR	750.4 54.90	6	7.00 / 10.00
60	745				7	8.00 / 10.00
65	740					
70	735					
75	730					
80		Log continued on next page				

PHOTO

PIEZOMETER DIAGRAM and NOTES

Bentonite Seal

PIEZOMETER CONSTRUCTION DETAILS

WELL CASING
Interval: 0-79.2'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 79.2-89.2'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: 89.2-89.5'

FILTER PACK
Interval: 75.5-89.5'
Type: #1 Filter Sand
Quantity: 4.5 - 50 lbs bag

FILTER PACK SEAL
Interval: 70.6-75.5'
Type: 3/8" Uncoated Pel-Plug
Quantity: 1 - 5 gallon bucket

ANNULUS SEAL
Interval: 0-70.6'
Type: AquaGuard Bentonite Grout
Quantity: Approximately 120 gallons

WELL COMPLETION
Pad: 4'x4'x4" Concrete
Protective Casing: 4"x4" Aluminium

DRILLING METHODS
Soil Drill: Rotosonic (6 inch casing by 4 inch core barrel)
Rock Drill: Rotosonic
Sample Type: Rotosonic

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

GOLDER
MEMBER OF WSP

RECORD OF BOREHOLE B-116D

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: 805.31
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: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	PHOTO	REC	PIEZOMETER DIAGRAM and NOTES	PIEZOMETER CONSTRUCTION DETAILS
80	725	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 *(Continued)*	BR			8		9.00 / 10.00	0.010" Slotted Schedule 40 PVC #1 Filter Sand Sump	**WELL CASING** Interval: 0-79.2' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw **WELL SCREEN** Interval: 79.2-89.2' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 89.2-89.5' **FILTER PACK** Interval: 75.5-89.5' Type: #1 Filter Sand Quantity: 4.5 - 50 lbs bag **FILTER PACK SEAL** Interval: 70.6-75.5' Type: 3/8" Uncoated Pel-Plug Quantity: 1 - 5 gallon bucket **ANNULUS SEAL** Interval: 0-70.6' Type: AquaGuard Bentonite Grout Quantity: Approximately 120 gallons **WELL COMPLETION** Pad: 4'x4'x4" Concrete Protective Casing: 4"x4" Aluminium **DRILLING METHODS** Soil Drill: Rotosonic (6 inch casing by 4 inch core barrel) Rock Drill: Rotosonic Sample Type: Rotosonic
		715.3								
90	715	Boring completed at 90.00 ft								
95	710									
100	705									
105	700									
110	695									
115	690									
120										

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

GOLDER
MEMBER OF WSP

RECORD OF BOREHOLE B-117D

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: 861.23
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)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	PHOTO	REC
0	860	0.00 - 10.00 FILL- Backfilled with cuttings from air knife clearance			851.2	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		10.00 845.2	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		16.00 842.2			
20	840	19.00 - 29.00 SM, SILTY SAND, low plasticity, very fine; light gray to tannish white; soft, moist, W<PL	SM		19.00 832.2	2		9.50 / 10.00
25	835							
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		29.00 822.2	3		10.00 / 10.00
35	825							
40		Log continued on next page	SM		39.00	4		9.00 / 10.00

PIEZOMETER DIAGRAM and NOTES: AquaGuard Grout

PIEZOMETER CONSTRUCTION DETAILS

WELL CASING
Interval: 0-64.7'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 64.7-74.7'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: 74.7-75'

FILTER PACK
Interval: 62.5- 75'
Type: #1 Filter Sand
Quantity: 4 - 50 lbs bags

FILTER PACK SEAL
Interval: 58.5-62.5'
Type: 3/8" Uncoated Pel-Plug
Quantity: 1 - 5 gallon bucket

ANNULUS SEAL
Interval: 0-58.5'
Type: AquaGuard Bentonite Grout
Quantity: Approximately 80 gallons

WELL COMPLETION
Pad: 4'x4'x4" Concrete
Protective Casing: 4'x4' Aluminium

DRILLING METHODS
Soil Drill: Rotosonic (6 inch casing by 4 inch core barrel)
Rock Drill: Rotosonic
Sample Type: Rotosonic

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

GOLDER
MEMBER OF WSP

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: 861.23
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)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	PHOTO	REC	PIEZOMETER DIAGRAM and NOTES	PIEZOMETER CONSTRUCTION DETAILS
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		820.2 41.00					
		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			4		9.00 10.00		
45	815				812.2					
		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		49.00	5		7.50 10.00		
50	810									
55	805									
60	800					6		8.50 10.00	Bentonite Seal	
65	795								#1 Filter Sand	
70	790					7		4.50 6.00	0.010" Slotted Schedule 40 PVC	
75	785	Boring completed at 75.00 ft			786.2					
80										

WELL CASING
Interval: 0-64.7'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 64.7-74.7'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: 74.7-75'

FILTER PACK
Interval: 62.5- 75'
Type: #1 Filter Sand
Quantity: 4 - 50 lbs bags

FILTER PACK SEAL
Interval: 58.5-62.5'
Type: 3/8" Uncoated Pel-Plug
Quantity: 1 - 5 gallon bucket

ANNULUS SEAL
Interval: 0-58.5'
Type: AquaGuard Bentonite Grout
Quantity: Approximately 80 gallons

WELL COMPLETION
Pad: 4'x4'x4" Concrete
Protective Casing: 4'x4' Aluminium

DRILLING METHODS
Soil Drill: Rotosonic (6 inch casing by 4 inch core barrel)
Rock Drill: Rotosonic
Sample Type: Rotosonic

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

GOLDER
MEMBER OF WSP

BOREHOLE RECORD 166849621.GPJ PIEDMONT.GDT 5/24/21

RECORD OF BOREHOLE B-118

PROJECT: Plant McDonough
PROJECT NUMBER: 166849621
DRILLED DEPTH: 75.00 ft
LOCATION: West of gas pipline

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: 804.99
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)	DESCRIPTION	USCS	ELEV. / DEPTH (ft)	SAMPLE NO.	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 - 10.00 SP, SAND, non plasticity, uniformly graded; yellow-orange; loose, dry to moist, W<PL	SP	3.00	Hand Auger	0.00 / 10.00
5	800					
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					
		18.50 - 20.00 ML, Clayey SILT with trace sand and fine gravels, non plasiticity; 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	2	7.50 / 10.00
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		
30	775	30.00 - 32.00 ML, Sandy SILT, non plasiticity; brown to dark brown; soft, moist, W<PL	ML	775 30.00	3	2.50 / 2.00
		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
35	770					
					5	1.50 / 2.00
40	765			765		

Log continued on next page

PIEZOMETER DIAGRAM and NOTES: AquaGuard Grout

PIEZOMETER CONSTRUCTION DETAILS

WELL CASING
Interval: 0-64.85'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 64.85-74.85'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: 74.85-75.15'

FILTER PACK
Interval: 61.8-75.15
Type: #1 Filter Sand
Quantity: 4 - 50 lbs bags

FILTER PACK SEAL
Interval: 56.6-61.8'
Type: 3/8" Uncoated Pel-Plug
Quantity: 1 - 5 gallon bucket

ANNULUS SEAL
Interval: 0-56.6'
Type: AquaGuard Bentonite Grout
Quantity: Approximately 80 gallons

WELL COMPLETION
Pad: 4'x4'x4" Concrete
Protective Casing: 4"x4" Aluminium

DRILLING METHODS
Soil Drill: Rotosonic (6 inch casing by 4 inch core barrel)
Rock Drill: Rotosonic
Sample Type: Rotosonic

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

GOLDER
MEMBER OF WSP

RECORD OF BOREHOLE B-118

PROJECT: Plant McDonough
PROJECT NUMBER: 166849621
DRILLED DEPTH: 75.00 ft
LOCATION: West of gas pipline

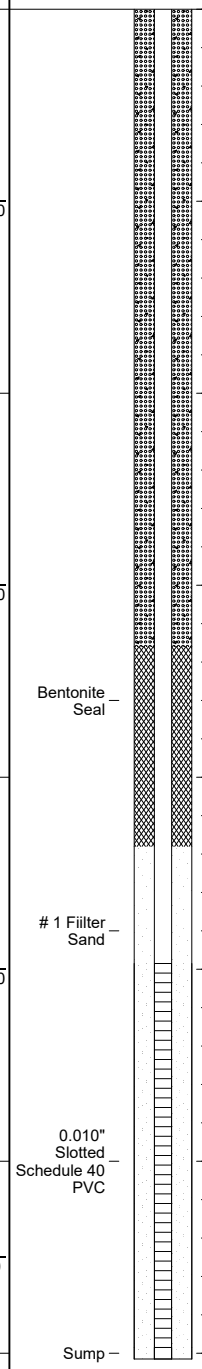
DRILL RIG: TSi 150CC
DATE STARTED: 3/8/21
DATE COMPLETED: 3/9/21

NORTHING: 1,391,219.3
EASTING: 2,200,449.7
GS ELEVATION: 804.99
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)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	PHOTO	REC
40	765	40.00 - 50.00 Slightly to moderately weathered, well folitated, 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
45	760							
50	755	50.00 - 60.00 Moderately weathered, well folitated, well jointed, tan to white to brown, fine to medium grained, weak to medium strong, plagioclase-K-spar-biotite-quartz GNEISS			755 50.00	7		2.50 / 10.00
55	750							
60	745	60.00 - 75.00 Fresh to slightly weathered, well folitated, poorly jointed, greenish gray to gray, fine to medium grained, medium strong, epidote-biotite-fledspar-quartz GNEISS			745 60.00	8		0.00 / 10.00
65	740		BR					
70	735					9		2.50 / 5.00
75	730	Boring completed at 75.00 ft			730			
80	725							

PIEZOMETER DIAGRAM and NOTES



PIEZOMETER CONSTRUCTION DETAILS

WELL CASING
Interval: 0-64.85'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 64.85-74.85'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: 74.85-75.15'

FILTER PACK
Interval: 61.8-75.15
Type: #1 Filter Sand
Quantity: 4 - 50 lbs bags

FILTER PACK SEAL
Interval: 56.6-61.8'
Type: 3/8" Uncoated Pel-Plug
Quantity: 1 - 5 gallon bucket

ANNULUS SEAL
Interval: 0-56.6'
Type: AquaGuard Bentonite Grout
Quantity: Approximately 80 gallons

WELL COMPLETION
Pad: 4'x4'x4" Concrete
Protective Casing: 4"x4" Aluminium

DRILLING METHODS
Soil Drill: Rotosonic (6 inch casing by 4 inch core barrel)
Rock Drill: Rotosonic
Sample Type: Rotosonic

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

GOLDER
MEMBER OF WSP

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: 804.53
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)	DESCRIPTION	USCS	ELEV. / DEPTH (ft)	SAMPLE NO.	REC
0	804	0.00 - 12.50 CL, Sandy CLAY, low plasticity, fine to coarse; red to red-orange; soft/loose, dry to moist, W<PL	CL		Hand Auger	0.00 10.00
5	800					
10	795			792		
		12.50 - 18.00 ML, Clayey SILT with some fine sand, low plasticity; pink-brown to tan; loose, dry to moist, W<PL	ML	12.50	1	7.50 9.00
15	790					
				786.5		
		18.00 - 19.00 SP, SAND with trace to some silt, low plasticity, uniformly graded; white to tan; loose, dry, W<PL	SP	18.00 785.5		
20	785	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	2	9.50 10.00
				777		
		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
35	770					
				765.5		
40	765		ML	39.00	4	4.50 6.00

Log continued on next page

PIEZOMETER DIAGRAM and NOTES

AquaGuard Grout

PIEZOMETER CONSTRUCTION DETAILS

WELL CASING
Interval: 0-94.7'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 94.7-104.7'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: 104.7-105'

FILTER PACK
Interval: 91.5-105'
Type: #1 Filter Sand
Quantity: 4.5 - 50 lbs bags

FILTER PACK SEAL
Interval: 86.5-91.5'
Type: 3/8" Uncoated Pel-Plug
Quantity: 1 - 5 gallon bucket

ANNULUS SEAL
Interval: 0-86.5'
Type: AquaGuard Bentonite Grout
Quantity: Approximately 160 gallons

WELL COMPLETION
Pad: 4'x4'x4" Concrete
Protective Casing: 4"x4" Aluminium

DRILLING METHODS
Soil Drill: Rotosonic (6 inch casing by 4 inch core barrel)
Rock Drill: Rotosonic
Sample Type: Rotosonic

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

GOLDER
MEMBER OF WSP

BOREHOLE RECORD 166849621.GPJ PIEDMONT.GDT 5/24/21

RECORD OF BOREHOLE B-119D

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: 804.53
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)	DESCRIPTION	USCS	ELEV. / DEPTH (ft)	SAMPLE NO.	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 *(Continued)*	ML		4	4.50 / 6.00
45	760			759.5 45.00		
		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		5	6.00 / 5.00
50	755			754.5 50.00		
		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		
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		6	6.20 / 10.00
60	745			744.5 60.00		
		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		7	4.00 / 10.00
65	740			737.5 67.00		
		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			
70	735					
75	730				8	8.50 / 10.00
80	725					

Log continued on next page

PIEZOMETER DIAGRAM and NOTES

PIEZOMETER CONSTRUCTION DETAILS

WELL CASING
Interval: 0-94.7'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 94.7-104.7'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: 104.7-105'

FILTER PACK
Interval: 91.5-105'
Type: #1 Filter Sand
Quantity: 4.5 - 50 lbs bags

FILTER PACK SEAL
Interval: 86.5-91.5'
Type: 3/8" Uncoated Pel-Plug
Quantity: 1 - 5 gallon bucket

ANNULUS SEAL
Interval: 0-86.5'
Type: AquaGuard Bentonite Grout
Quantity: Approximately 160 gallons

WELL COMPLETION
Pad: 4'x4'x4" Concrete
Protective Casing: 4"x4" Aluminium

DRILLING METHODS
Soil Drill: Rotosonic (6 inch casing by 4 inch core barrel)
Rock Drill: Rotosonic
Sample Type: Rotosonic

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

GOLDER
MEMBER OF WSP

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

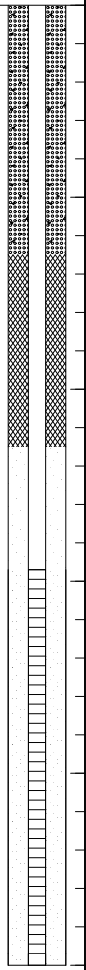
DRILL RIG: TSi 150CC
DATE STARTED: 3/10/21
DATE COMPLETED: 3/16/21

NORTHING: 1,391,236.4
EASTING: 2,200,446.6
GS ELEVATION: 804.53
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)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	PHOTO	REC
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			9		7.00 / 10.00
85	720				717.5 87.00			
		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					
90	715				714.5 90.00			
		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				10		9.00 / 10.00
95	710		BR					
100	705					11		4.90 / 5.00
105	700				699.5			
		Boring completed at 105.00 ft						
110	695							
115	690							
120	685							

PIEZOMETER DIAGRAM and NOTES



PIEZOMETER CONSTRUCTION DETAILS

WELL CASING
Interval: 0-94.7'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 94.7-104.7'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: 104.7-105'

FILTER PACK
Interval: 91.5-105'
Type: #1 Filter Sand
Quantity: 4.5 - 50 lbs bags

FILTER PACK SEAL
Interval: 86.5-91.5'
Type: 3/8" Uncoated Pel-Plug
Quantity: 1 - 5 gallon bucket

ANNULUS SEAL
Interval: 0-86.5'
Type: AquaGuard Bentonite Grout
Quantity: Approximately 160 gallons

WELL COMPLETION
Pad: 4'x4'x4" Concrete
Protective Casing: 4"x4" Aluminium

DRILLING METHODS
Soil Drill: Rotosonic (6 inch casing by 4 inch core barrel)
Rock Drill: Rotosonic
Sample Type: Rotosonic

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

GOLDER
MEMBER OF WSP

BOREHOLE RECORD 166849621.GPJ PIEDMONT.GDT 5/24/21

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: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	PHOTO	REC	MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0		0.00 - 10.00 FILL, CL, SILTY CLAY, moist, micaceous, trace of organics; Air knifed for utility clearance							Aquaguard _ Grout	**WELL CASING** Interval: 0'-110' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded
	775									**WELL SCREEN** Interval: 110'-160' Material: 0.010" Slotted Diameter: 2" Slot Size: 0.010" End Cap: 3"
5			CL			1		NA / 10.00		
	770				768.9					**FILTER PACK** Interval: 107.3'-160' Type: Filter Sil - Filtration sand and gravel, industrial quartz Quantity: 16 x 50 lb bag
10		10.00 - 20.00 ML-CH, SILT and CLAY, moist, red, orange, brown, some fine sand, trace of fine schist gravel, micaceous			10.00					
	765									**FILTER PACK SEAL** Interval: 62.5'-107.3' Type: Pel Plug Bentonite Pellets / Haliburton Bentonite Chips 3/8" Quantity: 3 x 50 lb bucket, 10 bags chips
15			ML-CH			2		9.75 / 10.00		
	760				758.9					**ANNULUS SEAL** Interval: 0'-55.5' Type: Aquaguard bentonite grout Quantity: 2.5 batches of 2 bags Aquaguard + 40 gal water
20		20.00 - 28.00 Same as above			20.00					
	755		ML-CH							**WELL COMPLETION** Pad: 4' x 4' Protective Casing: Aluminum
25						3		8.50 / 10.00		**DRILLING METHODS** Soil Drill: Sonic Rock Drill: Sonic Sample Type: Sonic
	750				750.9					
		28.00 - 30.00 ML, sandy SILT, moist, gray, fine, trace of coarse gravel	ML		28.00 748.9					
30		30.00 - 31.50 Same as above	ML		30.00 747.4					
		31.50 - 40.00 muscovite biotite SCHIST, fine grained, strong, slightly to moderately weathered, slight, fractured, some iron staining			31.50					
	745									
35						4		9.75 / 10.00		
	740				738.9					
40		40.00 - 50.00 muscovite biotite garnet SCHIST, fine to coarse grained, strong, fresh to slightly weathered, slightly fractured, traces iron staining			40.00					
	735									
45						5		7.50 / 10.00		
	730				728.9					
50		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

GOLDER

BOREHOLE RECORD PLANT MCDONOUGH_DGWC-121, B-122D, B-123D.GPJ PIEDMONT.GDT 5/13/22

RECORD OF BOREHOLE B-123D

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: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	PHOTO	REC	MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
50		50.00 - 60.00 muscovite biotite SCHIST, fine to coarse grained, strong, fresh to slightly weathered, slightly fractured, traces of iron staining			50.00					
	725									
55						6		9.30 10.00	Pel Plug – Pellets	
	720				718.9					
60		60.00 - 70.00 muscovite biotite chlorite SCHIST, fine to coarse grained, strong, fresh, unfractured to slightly fractured, trace of iron staining			60.00					
	715								Haliburton Bentonite – Chips 3/8"	
65						7		9.50 10.00		
	710				708.9					
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			70.00					
	705									
75						8		9.50 10.00		
	700				698.9					
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			80.00					
	695									
85						9		7.50 10.00		
	690				688.9					
90		90.00 - 100.00 muscovite biotite SCHIST, fine to coarse grained, strong, fresh, fresh to slightly weathered, unfractured to slightly fractured			90.00					
	685									
95						10		8.00 10.00		
	680				678.9					
100		Log continued on next page								

WELL CASING
Interval: 0'-110'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 110'-160'
Material: 0.010" Slotted
Diameter: 2"
Slot Size: 0.010"
End Cap: 3"

FILTER PACK
Interval: 107.3'-160'
Type: Filter Sil - Filtration sand and gravel, industrial quartz
Quantity: 16 x 50 lb bag

FILTER PACK SEAL
Interval: 62.5'-107.3'
Type: Pel Plug Bentonite Pellets / Haliburton Bentonite Chips 3/8"
Quantity: 3 x 50 lb bucket, 10 bags chips

ANNULUS SEAL
Interval: 0'-55.5'
Type: Aquaguard bentonite grout
Quantity: 2.5 batches of 2 bags Aquaguard + 40 gal water

WELL COMPLETION
Pad: 4' x 4'
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic
Sample Type: Sonic

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

WSP GOLDER

RECORD OF BOREHOLE B-123D

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: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	PHOTO	REC	MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
100		100.00 - 110.00 muscovite biotite SCHIST, fine to coarse grained, strong, fresh, fresh to slightly weathered, unfractured to slightly fractured			100.00				Pel Plug – Pellets	**WELL CASING** Interval: 0'-110' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded
675										
105						11		9.75/10.00		
670									Filter Sil Filtration – sand and gravel	**WELL SCREEN** Interval: 110'-160' Material: 0.010" Slotted Diameter: 2" Slot Size: 0.010" End Cap: 3"
110					668.9				0.010" Slotted Schedule 40 – PVC U-pack Screen	**FILTER PACK** Interval: 107.3'-160' Type: Filter Sil - Filtration sand and gravel, industrial quartz Quantity: 16 x 50 lb bag
		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			110.00					**FILTER PACK SEAL** Interval: 62.5'-107.3' Type: Pel Plug Bentonite Pellets / Haliburton Bentonite Chips 3/8" Quantity: 3 x 50 lb bucket, 10 bags chips
665										
115						12		8.25/10.00		
660										**ANNULUS SEAL** Interval: 0'-55.5' Type: Aquaguard bentonite grout Quantity: 2.5 batches of 2 bags Aquaguard + 40 gal water
120					658.9					
		120.00 - 130.00 Same as above. Water producing fracture at 129.5' identified using borehole geophysics			120.00					**WELL COMPLETION** Pad: 4' x 4' Protective Casing: Aluminum
655										
125						13		9.75/10.00		**DRILLING METHODS** Soil Drill: Sonic Rock Drill: Sonic Sample Type: Sonic
650										
130					648.9					
		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			130.00					
645										
135						14	Image Not Obtained	9.00/10.00		
640										
140					638.9					
		140.00 - 150.00 muscovite biotite, garnet SCHIST, fine to coarse grained, strong, fresh to slightly weathered, slightly fractured, calcite precipitation @ 145' bgs			140.00					
635										
145						15		9.00/10.00		
630										
150					628.9					

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

WSP GOLDER

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: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	PHOTO	REC	MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
150		150.00 - 160.00 Same as above; calcite @ 157.5' bgs			150.00					
155	625					16		9.75 10.00		
160	620				618.9					
		Boring completed at 160.00 ft								
165	615									
170	610									
175	605									
180	600									
185	595									
190	590									
195	585									
200	580									

WELL CASING
Interval: 0'-110'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 110'-160'
Material: 0.010" Slotted
Diameter: 2"
Slot Size: 0.010"
End Cap: 3"

FILTER PACK
Interval: 107.3'-160'
Type: Filter Sil - Filtration sand and gravel, industrial quartz
Quantity: 16 x 50 lb bag

FILTER PACK SEAL
Interval: 62.5'-107.3'
Type: Pel Plug Bentonite Pellets / Haliburton Bentonite Chips 3/8"
Quantity: 3 x 50 lb bucket, 10 bags chips

ANNULUS SEAL
Interval: 0'-55.5'
Type: Aquaguard bentonite grout
Quantity: 2.5 batches of 2 bags Aquaguard + 40 gal water

WELL COMPLETION
Pad: 4' x 4'
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic
Sample Type: Sonic

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

WSP GOLDER

BOREHOLE RECORD PLANT MCDONOUGH_DGWC-121, B-122D, B-123D.GPJ PIEDMONT.GDT 5/13/22

APPENDIX D

Golder 2020 Borings

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: Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES: SAMPLE TYPE & NUMBER	BLOWS per 6 in (ASTM D1586, 140 lb hammer, 30 inch drop, Automatic)	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft; WATER CONTENT (%)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		0.0	Hydrovac.	792.0							Hydrovac. 0 to 10 ft	
10		10.0		782.0								
			No recovery				TP ST-01		0/24		Shelby Tube pushed at 10'. No Recovery	
		12.0		780.0							Collected B-01 bucket sample from 12 to 15 ft	
			(ML), CLAYEY SILT AND SAND, low to medium plasticity, and sand, trace gravel, grayish-brown; soft to firm, w ~ PL		ML							
15							TP ST-02		0/24		Shelby Tube pushed at 15'. No Recovery	
		17.0		775.0								
			RESIDUUM, (SM), SILTY SAND, fine to coarse, and low plasticity fines, some fine gravel, brown to blue-gray; non-cohesive, loose, wet, saprolitic				DO S-01	WH-3-2-4 **(5)**	10/24	5		
20					SM		DO S-02	3-4-4-7 **(8)**	24/24	8		
		23.0		769.0								
			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									
25					ML		DO S-03	4-12-16-20 **(28)**	24/24	28		
30												

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

GOLDER
MEMBER OF WSP

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:58
\\GOLDERASSOCIATES.SHAREPOINT.COM@SSL\DAV\WWWROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109_AP1 MCDONOUGH_LOGS_COMBINED.GPJ

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

DEPTH (ft)	BORING METHOD	SOIL PROFILE Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft 20 40 60 80 / WATER CONTENT (%) W_p W W_l 20 40 60 80	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
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)*				DO S-04	4-10-19-19 **(29)**	18/24	29		
35					ML		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	752.2 / 752.0	GP		DO S-06	50/2" **(50/2")**	2/2	100		
			Refusal at 40.0 ft.									
			Bottom of borehole at 40.0 ft.									
			Backfilled with soil cuttings									
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

GOLDER
MEMBER OF WSP

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:58
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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 Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES SAMPLE TYPE & NUMBER	BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft (20 40 60 80)	WATER CONTENT (%) (W_p W W_l) (20 40 60 80)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		0.0	Hydrovac.	791.0								Hydrovac. 0 to 10 ft	
10		10.0	(ML), SANDY CLAYEY SILT, non plastic, fine to coarse sand, trace fine gravel; non-cohesive, loose to compact, w < PL, weathered schist	781.0	ML		DO S-01	3-3-4-6 **(7)**	24/24	7		Bulk sample 10 to 15 ft	
15							DO S-02	2-2-4-10 **(6)**	24/24	6			
20							DO TP S-03 ST-01	6-8-11-16 **(19)**	12/24 19/24	19		Shelby Tube pushed at 20'. Only pushed for 1 ft due to flexing roots	
25		25.0	RESIDUUM, (SM), SILTY SAND, fine, low to non plastic plasticity fines, dark gray to black; dense to very dense, dry to moist, relict structure	766.0	SM		DO S-04	5-18-24-26 **(42)**	18/24	42			
30							DO S-05	31-28-51-37 **(79)**	18/24	79			
35		33.0	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	758.0	ML		DO S-06	12-30-50/5" **(80/11")**	16/17	100			
40			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

GOLDER
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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

DEPTH (ft)	BORING METHOD	SOIL PROFILE Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft 20 40 60 80 / WATER CONTENT (%) W_p W W_l 20 40 60 80	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
40		40.0	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 *(continued)*	751.0	ML		DO S-07	18-50/5" **(50/5")**	11/11	100		
45		46.0	Refusal at 46.0 ft. Bottom of borehole at 46.0 ft. Backfilled with soil cuttings	745.0			DO S-08	14-50 **(50/")**	12/12	100		
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

GOLDER
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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 Depth	SOIL PROFILE DESCRIPTION	SOIL PROFILE Elev	USCS	GRAPHIC LOG	SAMPLES SAMPLE TYPE & NUMBER	SAMPLES BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	SAMPLES REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft (20 40 60 80)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		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	801.0	ML							
5							DO S-01	9-4-3 **(7)**	0/18	7		
10							DO S-02	6-4-7 **(11)**	6/18	11		
15							DO S-03	11-21-27 **(48)**	18/18	48	▼ 13.5 ft, 08/14/2020 14:40	
20							DO S-04	6-20-15 **(35)**	18/18	35	▼ 20.0 ft, 08/17/2020 14:40	
25							DO S-05	4-5-6 **(11)**	18/18	11		
30							DO S-06	2-3-5 **(8)**	18/18	8		
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

PENETRATION RESISTANCE BLOWS / ft (20 40 60 80)
WATER CONTENT (%) W_p W W_l (20 40 60 80)

DRILLING CO.: Betts Environmental Drilling
DRILLER: Cliff Lackey
DRILL RIG: CME 75

LOGGED: Qian Zhao
CHECKED: K. Gray
REVIEWED: Pieter DePree

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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

DEPTH (ft)	BORING METHOD	SOIL PROFILE Depth	SOIL PROFILE DESCRIPTION	SOIL PROFILE Elev	USCS	GRAPHIC LOG	SAMPLES SAMPLE TYPE & NUMBER	SAMPLES BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	SAMPLES REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft; WATER CONTENT (%)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
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								
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		ML		DO S-11	5-12-14 **(26)**	18/18	26		
60							DO S-12	5-7-14 **(21)**	18/18	21 DH		
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

GOLDER MEMBER OF WSP

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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: Depth	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: Elev	USCS	GRAPHIC LOG	SAMPLES: SAMPLE TYPE & NUMBER	SAMPLES: BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	SAMPLES: REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft	WATER CONTENT (%)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		0.0	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	797.0	ML		DO S-01	1-0-0 **(0)**	2/18	0			
5													
10							DO S-02	4-4-6 **(10)**	18/18	10			
15							DO S-03	3-3-5 **(8)**	18/18	8			
20							DO S-04	4-7-9 **(16)**	18/18	16			
25							DO S-05	4-8-9 **(17)**	18/18	17			
30							DO S-06	5-7-9 **(16)**	18/18	16			
35							DO S-07	5-5-10 **(15)**	18/18	15			
40							DO S-08	6-11-15 **(26)**	18/18	26			

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

GOLDER
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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

DEPTH (ft)	BORING METHOD	SOIL PROFILE Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES SAMPLE TYPE & NUMBER	BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft (20 40 60 80) / WATER CONTENT (%) (W_p W W_l)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
40		40.0	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 *(continued)*	757.0								
45					ML		DO S-09	4-8-14 **(22)**	18/18	22		
50							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		735.0								
		63.5	RESIDUUM, (SM), SILTY SAND, fine to medium, non plastic fines, brown with gray; micaceous, non-cohesive, very dense, wet	733.5	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		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

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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: Depth	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: Elev	USCS	GRAPHIC LOG	SAMPLES: SAMPLE TYPE & NUMBER	SAMPLES: BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	SAMPLES: REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft (20 40 60 80)	WATER CONTENT (%) (W_p W W_l)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		0.0	RESIDUUM, (ML), SANDY CLAYEY SILT, low plasticity, fine to coarse sand, trace fine gravel, brown; non-cohesive, loose to compact, dry, tree roots	782.0	ML							Hand auger utility clearance 0 to 10 feet.	
5													
10							DO S-01	6-6-7-11 **(13)**	19/24	13		Collected B-01 bucket sample of auger cuttings from 10 to 20 feet	
15							DO S-02	4-6-7-11 **(13)**	22/24	13		Tree roots	
20							DO S-03	4-4-5-7 **(9)**	22/24	9		▼ 18.0 ft, 07/29/2020 07:43 ▼ 20.0 ft, 07/28/2020 18:15	
25							DO S-04	4-9-12-15 **(21)**	22/24	21			
30		28.0	RESIDUUM, (SM), SILTY SAND, fine, brown; micaceous, non-cohesive, compact to dense, wet	754.0	SM		TP ST-01		24/24			Shelby Tube pushed at 28'	
							DO S-05	9-10-15-20 **(25)**	24/24	25			
35							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

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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 Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft (20 40 60 80) WATER CONTENT (%) W_p W W_l (20 40 60 80)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
40		40.0		742.0								
			RESIDUUM, (SM), SILTY SAND, fine, brown; micaceous, non-cohesive, compact to dense, wet *(continued)*		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				DO S-09	5-12-19-25 **(31)**	22/24	31		
55					SM		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								
			Refusal at 62.0 ft. Bottom of borehole at 62.0 ft. Backfilled with soil cuttings									
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

GOLDER
MEMBER OF WSP

B-05
2 of 2

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59
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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 Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft (20 40 60 80) / WATER CONTENT (%) W_p W W_l (20 40 60 80)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		0.0	FILL, (ML), SANDY CLAYEY SILT, fine to coarse sand, trace fine to coarse gravel, brown; micaceous, non-cohesive, loose to compact, dry	790.0							Hand augered utility clearance from 0 to 10 feet.	
10							DO S-01	6-6-8-9 **(14)**	22/24	14	Collected B-01 bucket sample of auger cuttings from 10-20 feet	
15					ML		DO S-02	6-8-12-13 **(20)**	24/24	20		
20							DO S-03	6-8-9-12 **(17)**	24/24	17		
25							DO S-04	8-9-11-13 **(20)**	22/24	20		
30		32.0		758.0			DO S-05	9-11-15-12 **(26)**	13/24	26		
			RESIDUUM, (CL), SILTY CLAY AND SAND, medium plasticity, and fine to coarse sand, red-brown; micaceous, cohesive, soft, w < PL				TP ST-01		24		▼ 32.0 ft, 07/31/2020 08:30 Shelby Tube pushed at 32' ▼ 33.0 ft, 07/30/2020 13:00	
35					CL		DO S-06	3-4-4-5 **(8)**	18/24	8		
		37.0		753.0			TP ST-02		24			
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

GOLDER
MEMBER OF WSP

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59
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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

DEPTH (ft)	BORING METHOD	SOIL PROFILE Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES SAMPLE TYPE & NUMBER	BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft (20 40 60 80) WATER CONTENT (%) (W_p W W_l) (20 40 60 80)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
40		40.0		750.0								
			RESIDUUM, (SC), GRAVELLY CLAYEY SAND, fine to coarse, fine gravel, brown with gray; micaceous, non-cohesive, loose, wet *(continued)*		SC		DO S-07	2-2-4-11 **(6)**	24/24	6		
		43.0		747.0								
45			RESIDUUM, (SM), SILTY SAND, fine to coarse, non plastic fines, trace fine gravel, brown with black; micaceous, non-cohesive, loose to compact, wet				DO S-08	2-2-5-11 **(7)**	24/24	7		
50							DO S-09	9-8-12-13 **(20)**	15/24	20		
					SM							
55							DO S-10	6-7-11-12 **(18)**	16/24	18		
60							DO S-11	7-10-16-18 **(26)**	13/24	26		
		63.0		727.0								
65			PARTIALLY WEATHERED ROCK, SAMPLED AS, (ML), GRAVELLY SILT, non plastic, some fine sand, brown with black; micaceous, non-cohesive, very dense, wet				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							DO S-14	19-50/5" **(50/5")**	11/11		100	
		77.0		713.0								
80			Refusal at 77.0 ft. Bottom of borehole at 77.0 ft. Backfilled with soil cuttings									

DRILLING CO.: Betts Environmental Drilling
DRILLER: Cliff Lackey
DRILL RIG: CME 75
LOGGED: Ayushi Tiwari
CHECKED: K. Gray
REVIEWED: Pieter DePree

GOLDER
MEMBER OF WSP

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59
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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: Depth	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: Elev	USCS	GRAPHIC LOG	SAMPLES: SAMPLE TYPE & NUMBER	SAMPLES: BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	SAMPLES: REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft; WATER CONTENT (%)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
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						Hydrovac. from 0 to 10 ft. Soil description is based on observation	
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	▼ 13.5 ft, 08/17/2020 14:40	
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		▼ 20.0 ft, 08/14/2020 14:40 Shelby tube pushed at 20'. Bottom of tube was bent because of gravels (Assumed)	
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	Augers stuck at 25' Bulk sample 20 to 30 ft	
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

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MEMBER OF WSP

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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

DEPTH (ft)	BORING METHOD	SOIL PROFILE Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES SAMPLE TYPE & NUMBER	BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft; WATER CONTENT (%)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
40		40.0		715.0								
		41.0	RESIDUUM, (ML), GRAVELLY SANDY SILT, non plastic, fine to coarse sand, fine subangular gravel, brown to black; non-cohesive, dense, wet *(continued)*	714.0	ML		DO S-06			27		
			Refusal at 39.0 ft.									
			Bottom of borehole at 41.0 ft.									
			Backfilled with soil cuttings									
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

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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 Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES SAMPLE TYPE & NUMBER	BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft (20 40 60 80)	WATER CONTENT (%) (W_p W W_l) (20 40 60 80)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		0.0	FILL, (ML), CLAYEY SILT AND SAND, non plastic, and fine to coarse sand, trace fine to coarse subangular gravel, brown; non-cohesive, compact, moist	758.0	ML								
5												▼ 4.5 ft, 08/17/2020 15:00 Grab sample from Hand Auger at 5 feet. Bulk Sample B-01 collected from 0 to 10 ft	
10							DO S-01	6-7-12-12 **(19)**	22/24	19			
		13.0	RESIDUUM, (SM), SILTY SAND, fine to coarse, and non plastic fines, trace fine subangular gravel, brown; non-cohesive, compact to very dense, moist	745.0									
15							DO S-02	10-11-16-35 **(27)**	24/24	27			
20							DO S-03	19-25-30-23 **(55)**	24/24	55			
25					SM		DO S-04	6-8-12-10 **(20)**	22/24	20		▼ 25.0 ft, 08/17/2020 12:20	
30							DO S-05	8-9-10-10 **(19)**	20/24	19			
		34.0	RESIDUUM, (ML), SILT AND SAND, non plastic, and fine to coarse sand, trace fine subangular gravel, brown; non-cohesive, dense, moist to wet	724.0									
35					ML		DO S-06	11-10-25-45 **(35)**	22/24	35			
							DO S-07	20-14-20-22 **(34)**	20/24	34			
		39.0		719.0									
40			Refusal at 37.0 ft. Bottom of borehole at 39.0 ft.										

DRILLING CO.: Betts Environmental Drilling
DRILLER: Scott Sanders
DRILL RIG: Geoprobe 7822
LOGGED: Nick Moran
CHECKED: K. Gray
REVIEWED: Pieter DePree

GOLDER
MEMBER OF WSP

B-08
1 of 1

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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: Depth	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: Elev	USCS	GRAPHIC LOG	SAMPLES: SAMPLE TYPE & NUMBER	SAMPLES: BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	SAMPLES: REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft; WATER CONTENT (%)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
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						Hand augered utility clearance from 0 to 10 feet.	
5												
10							DO S-01	4-3-3-3 **(6)**	7/24	6	▼ 7.0 ft, 08/05/2020 00:00 Collected B-01 bucket sample from 10-15 feet	
		13.0		751.0								
15			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				DO S-02	3-5-6-8 **(11)**	24/24	11		
20							DO S-03	5-9-15-21 **(24)**	20/24	24		
25					ML		DO S-04	6-8-8-9 **(16)**	12/24	16		
30							TP ST-01		24/24		Shelby Tube pushed at 30'	
35							DO S-05	6-10-16-23 **(26)**	24/24	26		
		38.0		726.0								
40					SM							

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

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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

DEPTH (ft)	BORING METHOD	SOIL PROFILE Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft; WATER CONTENT (%)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
40		40.0	PARTIALLY WEATHERED ROCK, SAMPLED AS, (SM), SILTY SAND, fine to medium, non plastic fines, red-brown to olive-gray; dense to very dense, dry *(continued)*	724.0	SM		DO S-06	17-33-50/5" **(83/11")**	17/17	100		
45							DO S-07	28-50/4" **(50/4")**	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									
50							DO S-08	50/5" **(50/5")**	5/5	100		
					ML							
55							DO S-09	50/5" **(50/5")**	5/5	100		
		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

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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

DEPTH (ft)	BORING METHOD	SOIL PROFILE Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft (20 40 60 80) / WATER CONTENT (%) W_p W W_l (20 40 60 80)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		0.0	(SM), SILTY SAND, fine, non plastic fines; non-cohesive, loose, dry to moist	767.0	SM						Hand augered utility clearance from 0 to 10 ft	
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			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					ML		DO S-02	15-17-20-24 **(37)**	21/24	37		
20		20.0		747.0			DO S-03			100		
		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	746.5	SM			50/2" **(50/2")**	2/2			
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

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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 Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES SAMPLE TYPE & NUMBER	BLOWS per 6 in (ASTM D1586, 140 lb hammer, 30 inch drop, Automatic)	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft (20 40 60 80) / WATER CONTENT (%) (W_p W W_l)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		0.0	(SP), SAND, fine to coarse, poorly graded; non-cohesive, dry to moist	768.0	SP							
5		5.0		763.0							Hand Augered straight utility clearanc 0 to 10 feet	
			(SC), CLAYEY SAND, fine to coarse, low to medium plasticity fines, yellow-tan to white; cohesive, w ~ PL		SC							
10		10.0		758.0			DO S-01	32-50/3" **(50/3")**	9/9	H	10.0 ft, 08/05/2020 00:00 Collected B-01 bucket sample from 10-15 feet	
			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-02	11-28-50/4" **(78/10")**	16/16			
20		23.0	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	745.0	SM		DO S-03	5-10-10-25 **(20)**	21/24	20 NP		
25			Refusal at 23.0 ft. Bottom of borehole at 23.0 ft. Backfilled with soil cuttings									
30												
35												
40												

DRILLING CO.: Betts Environmental Drilling
DRILLER: Cliff Lackey
DRILL RIG: CME 75

LOGGED: Michael Boatman
CHECKED: K. Gray
REVIEWED: Pieter DePree

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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 Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES SAMPLE TYPE & NUMBER	BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft; WATER CONTENT (%)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		0.0	RESIDUUM, (ML), SANDY CLAYEY SILT, non plastic, fine to coarse sand, trace fine subrounded gravel; non-cohesive, moist to wet	770.0	ML							
5											Bulk sample collected 0 to 10 feet	
											▼ 6.5 ft, 08/19/2020 10:00	
10		10.0		760.0							▼ 10.0 ft, 08/18/2020 10:00	
			RESIDUUM, (SM), GRAVELLY SILTY SAND, fine to coarse, fine subrounded to subangular gravel, red-brown to gray; non-cohesive, compact, moist to wet		SM		DO S-02	4-5-10-32 **(15)**	18/24	15		
15		15.0		755.0								
			RESIDUUM, (SW), SAND, fine to coarse, well graded, some fine subrounded gravel, trace non plastic fines, gray; non-cohesive, dense to very dense, dry		SW		DO S-02	11-13-25-17 **(38)**	9/24	38		
		18.0		752.0								
		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	751.8	SW		DO S-03	50/2" **(50/2")**	2/2	100		
20			Refusal at 18.2 ft.									
			Bottom of borehole at 18.2 ft.									
			Backfilled with soil cuttings									
25												
30												
35												
40												

DRILLING CO.: Betts Environmental Drilling
DRILLER: Scott Sanders
DRILL RIG: Geoprobe 7822

LOGGED: Nick Moran
CHECKED: K. Gray
REVIEWED: Pieter DePree

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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 Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES SAMPLE TYPE & NUMBER	BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft; WATER CONTENT (%)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		0.0	RESIDUUM, (ML), SANDY SILT, non plastic, fine to medium sand, trace fine subangular gravel, red-brown; non-cohesive, compact, dry to moist	794.0	ML						No Groundwater encountered	
5											5: Bulk sample collected 0 to 10 feet	
10		10.0		784.0								
			RESIDUUM, (SM), SILTY SAND, fine to coarse, brown-red; non-cohesive, compact, dry to moist		SM		DO S-02	4-4-7-10 **(11)**	22/24	11		
15		15.0		779.0								
			RESIDUUM, (SM), SILTY SAND, fine to coarse, non plastic fines, trace fine subangular gravel, gray; non-cohesive, dense, moist		SM		DO S-02	11-24-21-20 **(45)**	20/24	45		
20							DO S-03	19-28-22-28 **(50)**	24/24	50		
25		25.0		769.0								
		25.8	PARTIALLY WEATHERED ROCK, SAMPLED AS; Fractured rock	768.3			DO S-04	25-50/3" **(50/3")**	9/9	100		
			Refusal at 25.8 ft. Bottom of borehole at 25.8 ft. Backfilled with soil cuttings									
30												
35												
40												

DRILLING CO.: Betts Environmental Drilling
DRILLER: Scott Sanders
DRILL RIG: Geoprobe 7822
LOGGED: Nick Moran
CHECKED: K. Gray
REVIEWED: Pieter DePree

GOLDER
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B-13
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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 Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft (20 40 60 80) WATER CONTENT (%) W_p W W_l (20 40 60 80)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		0.0	RESIDUUM, (SM), SILTY SAND, fine to coarse, non plastic fines, trace fine angular gravel, white to gray; non-cohesive, compact, dry to moist	792.0	SM						No Groundwater encountered Hand Auger utilitiy clearance 0 to 10 feet	
10							DO S-02	6-10-10-10 **(20)**	22/24	20		
15							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.	
		18.0 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	774.0 773.7	SM		DO S-03	50/4" **(50/4")**	4/4	100		
20												
25												
30												
35												
40												

DRILLING CO.: Betts Environmental Drilling
DRILLER: Scott Sanders
DRILL RIG: Geoprobe 7822

LOGGED: Nick Moran
CHECKED: K. Gray
REVIEWED: Pieter DePree

GOLDER
MEMBER OF WSP

B-14
1 of 1

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59
\\GOLDERASSOCIATES.SHAREPOINT.COM@SSL\DAV\WWWROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109_AP1 MCDONOUGH_LOGS_COMBINED.GPJ

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

DEPTH (ft)	BORING METHOD	SOIL PROFILE Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES SAMPLE TYPE & NUMBER	BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft (20 40 60 80) WATER CONTENT (%) (W_p W W_l)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		0.0	(ML), SANDY SILT, non plastic, fine to coarse sand, trace fine subangular gravel, yellow brown; Bulk Sample	787.0	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	SM		DO S-01	3-6-8-6 **(14)**	20/24	14		
15							DO S-02	8-10-10-11 **(20)**	0/24	20	▼ 14.5 ft, 08/19/2020 22:30	
20							DO S-03	15-13-14-13 **(27)**	20/24	27		
25		26.0		761.0			DO S-04	5-5-12-25 **(17)**	24/24	17	▼ 27.0 ft, 08/18/2020 18:00	
30		26.5	RESIDUUM, (ML), SANDY SILT, non plastic, fine to medium sand, red-orange; non-cohesive, compact, moist	760.5	ML							
			RESIDUUM, (SM), SILTY SAND, fine to coarse, non plastic fines, trace fine subangular gravel, gray; non-cohesive, compact, moist		SM							
		30.5		756.5			DO S-05	12-50/5" **(50/5")**	11/11	100		
35		31.0	PARTIALLY WEATHERED ROCK, SAMPLED AS, (SM), SILTY SAND, fine to coarse, non plastic fines, trace fine subangular gravel, gray; non-cohesive, very dense, moist Refusal at 31.0 ft. Bottom of borehole at 31.0 ft. Backfilled with soil cuttings	756.0	SM							
40												

DRILLING CO.: Betts Environmental Drilling
DRILLER: Scott Sanders
DRILL RIG: Geoprobe 7822
LOGGED: Nick Moran
CHECKED: K. Gray
REVIEWED: Pieter DePree

GOLDER
MEMBER OF WSP

B-15
1 of 1

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59
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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 Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft (20 40 60 80) WATER CONTENT (%) W_p W W_l (20 40 60 80)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		0.0	(SP), GRAVELLY SAND, coarse, poorly graded, coarse gravel, brown to gray; non-cohesive, very loose to compact, wet	753.0	SP						Hand Augered utility clearance 0 to 10 feet 2.5 ft, 07/31/2020 14:40	
10							DO S-01	1-1-1-5 **(2)**	6/24	2		
15							DO S-02	3-7-11-13 **(18)**	6/24	18	Collected B-01 bucket sample from 10-20 feet	
		18.0	RESIDUUM, (ML), GRAVELLY SANDY SILT, non plastic, fine sand, brown with gray; micaceous, non-cohesive, loose, wet	735.0								
20							DO S-03	2-2-3-7 **(5)**	12/24	5		
25					ML		DO S-04	2-3-7-13 **(10)**	20/24	10		
30							DO S-05	1-3-5-6 **(8)**	16/24	8		
		33.0	RESIDUUM, (ML), GRAVELLY SANDY SILT, non plastic, fine to medium sand, coarse gravel, brown to tan; non-cohesive, dense to very dense, wet	720.0								
35					ML		DO S-06	23-27-33-45 **(60)**	14/24	60	Shelby Tube pushed at 35'. No Recovery	
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

GOLDER
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01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59
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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

DEPTH (ft)	BORING METHOD	SOIL PROFILE Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft (20 40 60 80) / WATER CONTENT (%) (W_p W W_l) (20 40 60 80)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
40		40.0		713.0								
		41.5		711.5	ML		DO S-07	4-18-29-50/4" **(47)**	18/22	47		
		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	711.0	ML							
45			Refusal at 42.0 ft. Bottom of borehole at 42.0 ft. Backfilled with soil cuttings									
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

GOLDER
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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 Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES SAMPLE TYPE & NUMBER	BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft (20 40 60 80)	WATER CONTENT (%) (W_p W W_l) (20 40 60 80)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		0.0	(SP), GRAVELLY SAND, coarse, poorly graded, medium to coarse gravel, brown to tan; non-cohesive, loose, wet	754.0									
												▼ 4.0 ft, 07/31/2020 10:10	
5												Hand Augered utility clearance 0 to 10 feet	
10					SP		DO S-01	3-4-5-2 **(9)**	8/24	9			
15							DO S-02	12-13-7-7 **(20)**	19/24	20		Collected B-01 bucket sample from 10-20 feet	
20							DO S-03	8-7-7-8 **(14)**	11/24	14			
		23.0		731.0									
25			RESIDUUM, (ML), GRAVELLY SANDY SILT WITH SLIGHT PLASTICITY, coarse sand, brown to tan; micaceous, non-cohesive, compact, wet				DO S-04	3-3-8-15 **(11)**	10/24	11			
30					ML		DO S-05	3-5-6-8 **(11)**	16/24	11			
35							DO S-06	4-5-7-12 **(12)**	20/24	12			
							TP ST-01		24			Shelby Tube pushed at 37'	
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

GOLDER
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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

DEPTH (ft)	BORING METHOD	SOIL PROFILE Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft; WATER CONTENT (%)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
40		40.0	RESIDUUM, (ML), GRAVELLY SANDY SILT WITH SLIGHT PLASTICITY, coarse sand, brown to tan; micaceous, non-cohesive, compact, wet *(continued)* Sandy CLAYEY SILT, tan to brown	714.0	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								
50			RESIDUUM, (ML), GRAVELLY SANDY SILT WITH SLIGHT PLASTICITY, tan to black; micaceous, non-cohesive, dense, wet		ML		DO S-09	33-37-50 **(87)**	17/18	87		
		51.5		702.5								
		53.0	PARTIALLY WEATHERED ROCK, SAMPLED AS, (ML), GRAVELLY SANDY SILT WITH SLIGHT PLASTICITY, tan to black; micaceous, non-cohesive, very dense, wet	701.0	ML							
55			Refusal at 53.0 ft. Bottom of borehole at 53.0 ft. Backfilled with soil cuttings									
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

GOLDER
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SC-02
2 of 2

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59
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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: Depth	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: Elev	USCS	GRAPHIC LOG	SAMPLES: SAMPLE TYPE & NUMBER	SAMPLES: BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	SAMPLES: REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft	WATER CONTENT (%)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		0.0	RESIDUUM, (ML), SANDY SILT, non plastic, fine sand, some fine gravel, brown; micaceous, non-cohesive, loose to compact, dry to wet	782.0	ML							Hand Augered utility clearance 0 to 10 feet	
10							DO S-01	7-7-9-11 **(16)**	16/24	16			
15							DO S-02	7-5-4-5 **(9)**	18/24	9		Collected B-01 bucket sample from 10 to 20 feet.	
20							DO S-03	3-3-6-9 **(9)**	24/24	9		▼ 19.0 ft, 07/31/2020 08:30 ▼ 21.0 ft, 07/29/2020 13:05	
25							TP ST-01		24/24			Shelby Tube pushed at 22'	
30							DO S-04	7-7-8-11 **(15)**	24/24	15			
		31.0		751.0			DO S-05	7-11-16-18 **(27)**	24/24	27			
35			RESIDUUM, (SM), SILTY SAND, some gravel, orange with brown; micaceous, non-cohesive, compact, wet		SM		DO S-06	5-7-18-35 **(25)**	24/24	25			
		39.0		743.0									
40					ML								

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

GOLDER
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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 Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES SAMPLE TYPE & NUMBER	BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft (20 40 60 80) / WATER CONTENT (%) (W_p W W_l)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
40		40.0	RESIDUUM, (ML), GRAVELLY SANDY SILT, non plastic, orange with brown; micaceous, non-cohesive, compact to dense, wet *(continued)*	742.0			DO S-07	7-11-14-19 **(25)**	24/24	25		
45							DO S-08	7-8-12-15 **(20)**	24/24	20		
50					ML		DO S-09	9-18-26-33 **(44)**	24/24	44		
55							DO S-10	8-16-26-28 **(42)**	18/24	42		
60		61.5		720.5			DO S-11	19-32-50 **(82)**	18/18	82		
65			PARTIALLY WEATHERED ROCK, SAMPLED AS, (ML), GRAVELLY SANDY SILT, non plastic, orange with brown; micaceous, non-cohesive, compact to very dense, wet		ML		DO S-12	13-50/4" **(50/4")**	10/10	100		
70		68.0	Refusal at 68.0 ft. Bottom of borehole at 68.0 ft. Backfilled with soil cuttings	714.0								
75												
80												

DRILLING CO.: Betts Environmental Drilling
DRILLER: Cliff Lackey
DRILL RIG: CME 75
LOGGED: Ayushi Tiwari
CHECKED: K. Gray
REVIEWED: Pieter DePree

GOLDER
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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: Depth	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: Elev	USCS	GRAPHIC LOG	SAMPLES: SAMPLE TYPE & NUMBER	SAMPLES: BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	SAMPLES: REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft (20 40 60 80)	WATER CONTENT (%) (W_p W W_l)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		0.0	RESIDUUM, (ML), SANDY GRAVELLY SILT, non plastic, brown to tan; non-cohesive, compact, dry to wet	774.0	ML							Hand Augered utility clearance 0 to 10 feet	
10							DO S-01	5-8-9-10 **(17)**	17/24	17		▼ 11.0 ft, 07/31/2020 08:30	
15							DO S-02	5-5-9-11 **(14)**	18/24	14		Collected B-01 bucket sample from 10-20 feet	
20							DO S-03	4-8-11-13 **(19)**	18/24	19		▼ 17.5 ft, 07/30/2020 07:30	
25							TP ST-01		24/24			Shelby Tube pushed at 23'	
							DO S-04	5-5-5 **(10)**	18/18	10			
30							DO S-05	4-4-9-11 **(13)**	20/24	13			
35							DO S-06	4-7-13-15 **(20)**	22/24	20			
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

GOLDER
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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

DEPTH (ft)	BORING METHOD	SOIL PROFILE Depth	DESCRIPTION	SOIL PROFILE Elev	USCS	GRAPHIC LOG	SAMPLES SAMPLE TYPE & NUMBER	SAMPLES BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	SAMPLES REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft (20 40 60 80) / WATER CONTENT (%) (W_p W W_l) (20 40 60 80)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
40		40.0		734.0								
		41.5		732.5	ML		DO S-07	17-28-50/5" **(78/11")**	6 / 17	100		
		43.0	PARTIALLY WEATHERED ROCK, SAMPLED AS, (GM), SANDY SILTY GRAVEL, coarse, brown; non-cohesive, very dense, wet	731.0	GM							
45			Refusal at 43.0 ft.									
			Bottom of borehole at 43.0 ft.									
50			Backfilled with soil cuttings									
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

GOLDER
MEMBER OF WSP

SP-02
2 of 2

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59
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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: Depth	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: Elev	USCS	GRAPHIC LOG	SAMPLES: SAMPLE TYPE & NUMBER	SAMPLES: BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	SAMPLES: REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft (20 40 60 80)	WATER CONTENT (%) (W_p W W_l) (20 40 60 80)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		0.0	(ML), SANDY SILT, non plastic, fine to coarse sand, trace fine subangular gravel, brown; cohesive, w ~ PL	756.0	ML								
5												▼ 5.0 ft, 08/18/2020 18:30	
		8.0		748.0								Grab sample from Hand Auger between 8 to 10 feet	
10			(ML), SANDY SILT, non plastic, fine to coarse sand, trace fine subangular gravel, brown to gray; non-cohesive, loose to compact, moist to wet				DO S-01	2-2-3-3 **(5)**	18/24	5			
15					ML		DO S-02	12-14-17-18 **(31)**	16/24	31			
20							DO S-03	14-15-21-22 **(36)**	24/24	36		▼ 20.0 ft, 08/17/2020 18:30	
		22.0		734.0									
25			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				DO S-04	8-7-7-8 **(14)**	17/24	14			
30					ML		DO S-05	7-11-9-12 **(20)**	13/24	20			
35							DO S-06	2-2-5-6 **(7)**	14/24	7			
40			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

GOLDER
MEMBER OF WSP

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59
\\GOLDERASSOCIATES.SHAREPOINT.COM@SSL\DAV\WWWROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109_AP1 MCDONOUGH_LOGS_COMBINED.GPJ

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 Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES SAMPLE TYPE & NUMBER	BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft (20 40 60 80) / WATER CONTENT (%) (W_p W W_l) (20 40 60 80)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
40		40.0		716.0								
		41.0		715.0	ML		DO S-07	24-27-20-27 **(47)**	24/24	47		
			Transitions to partially weathered rock									
			Refusal at 42.0 ft. Bottom of borehole at 42.0 ft.									
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

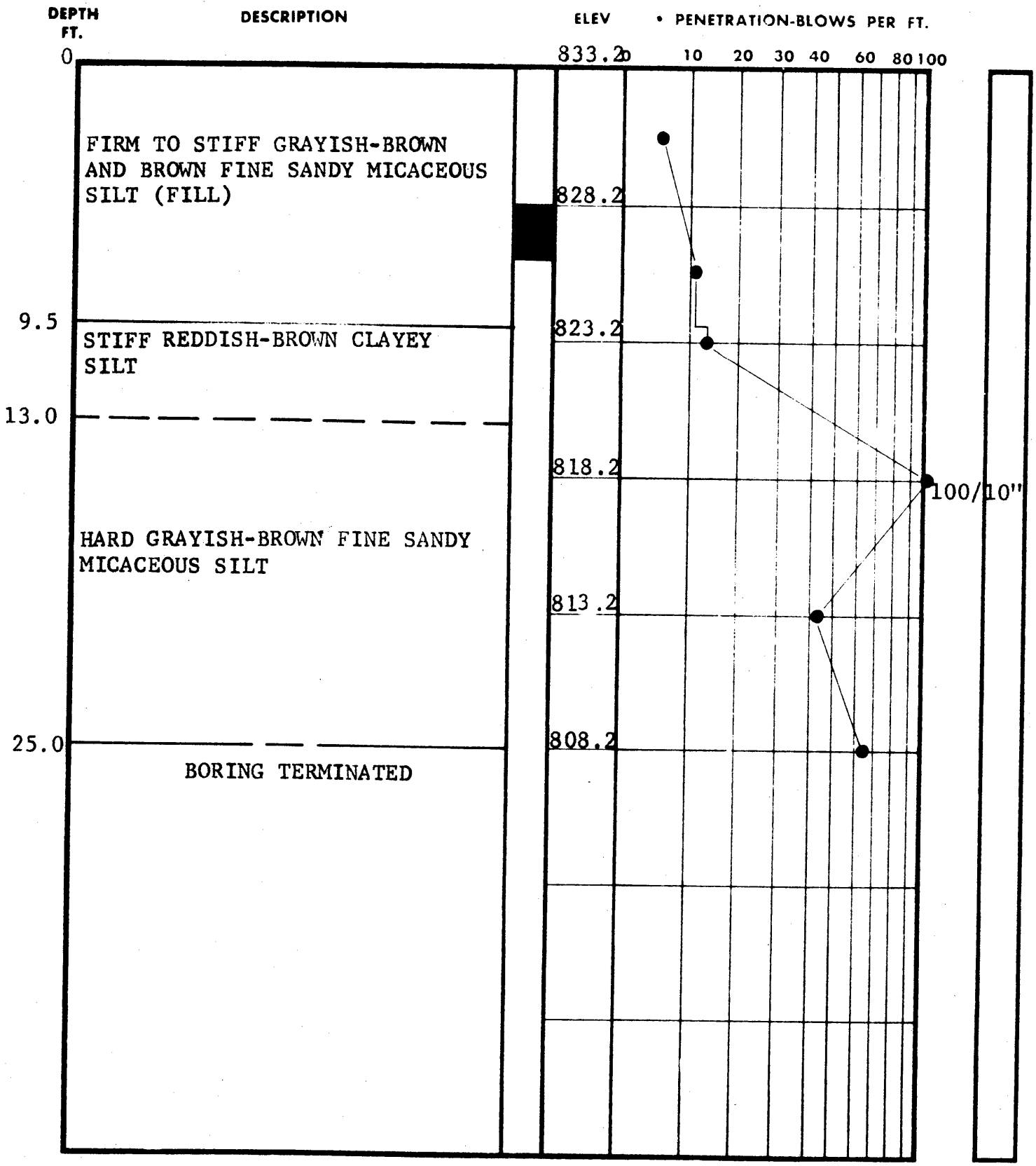
GOLDER
MEMBER OF WSP

SP-03
2 of 2

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59
\\GOLDERASSOCIATES.SHAREPOINT.COM@SSL\DAV\WWWROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109_AP1 MCDONOUGH_LOGS_COMBINED.GPJ

APPENDIX D

Law 1968 Borings



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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

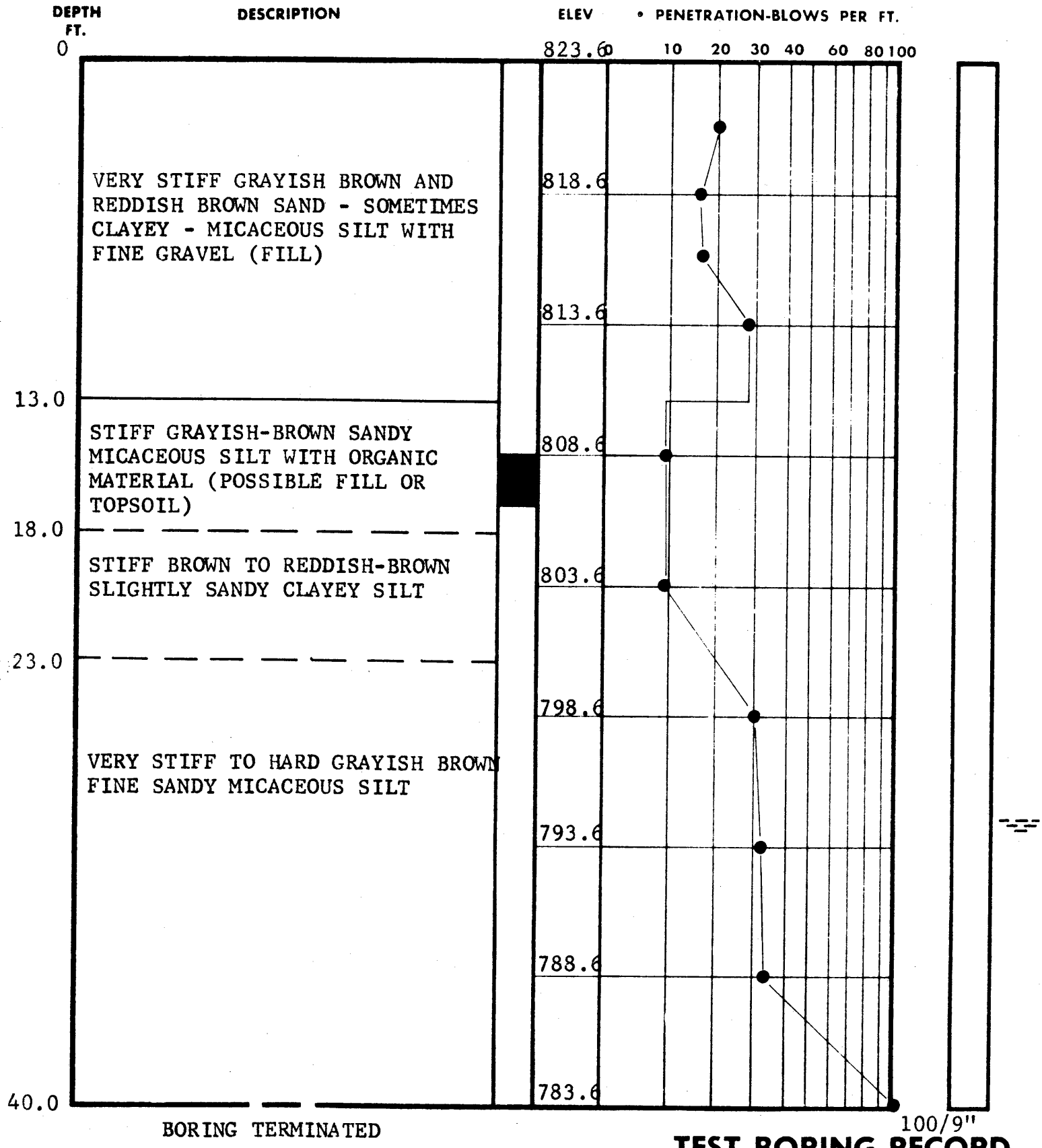
LOSS OF DRILLING WATER

BORING NO. B-101

DATE DRILLED 3/5/68

JOB NO. 5862

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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

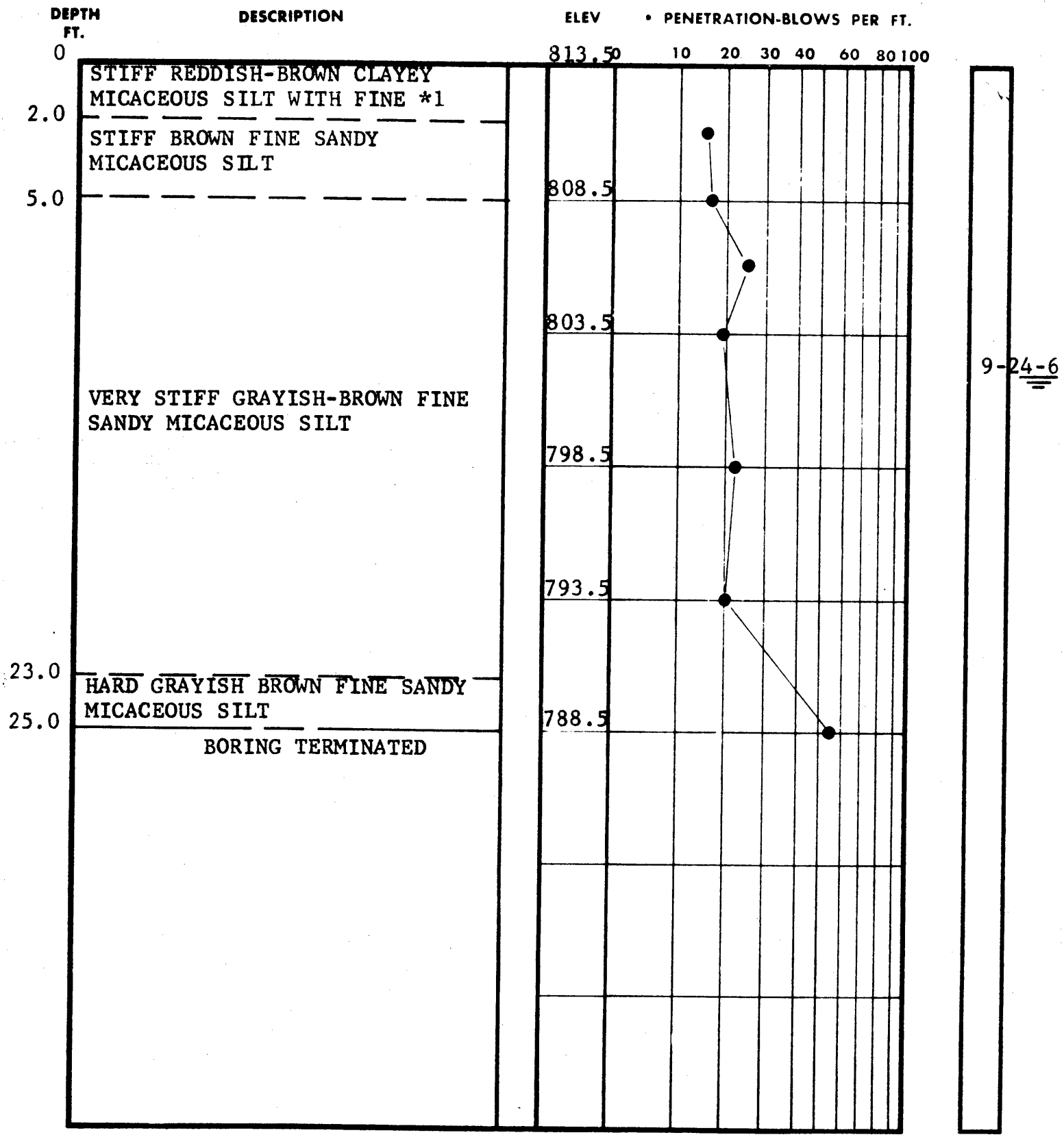
LOSS OF DRILLING WATER

BORING NO. B-102

DATE DRILLED 8/2/68

JOB NO. 5862

LAW ENGINEERING TESTING CO.



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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

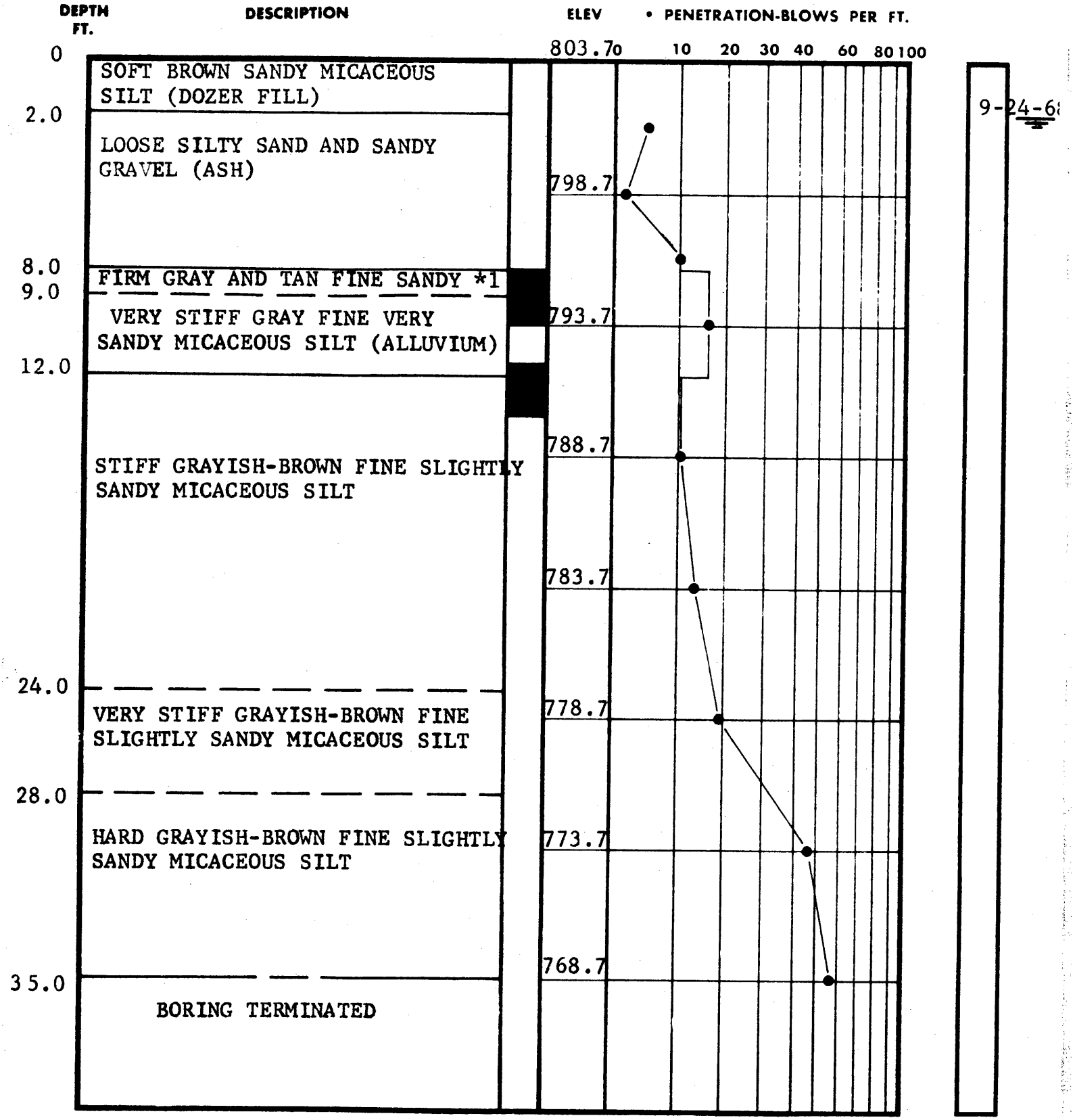
LOSS OF DRILLING WATER

BORING NO. B-103

DATE DRILLED 8/2/68

JOB NO. 5862

LAW ENGINEERING TESTING CO.



*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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

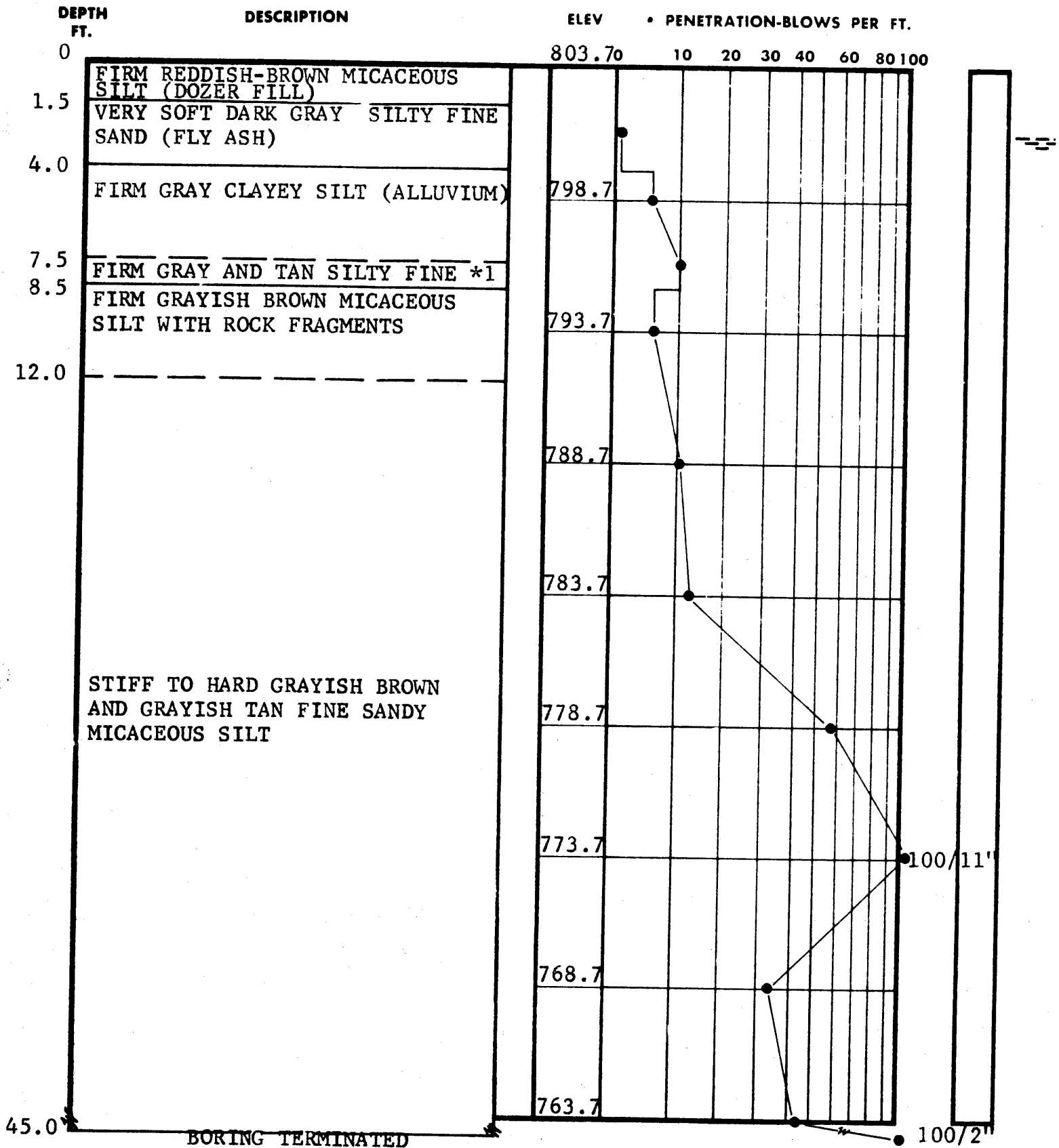
LOSS OF DRILLING WATER

BORING NO. B-104

DATE DRILLED 8/2/68

JOB NO. 5862

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.

UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

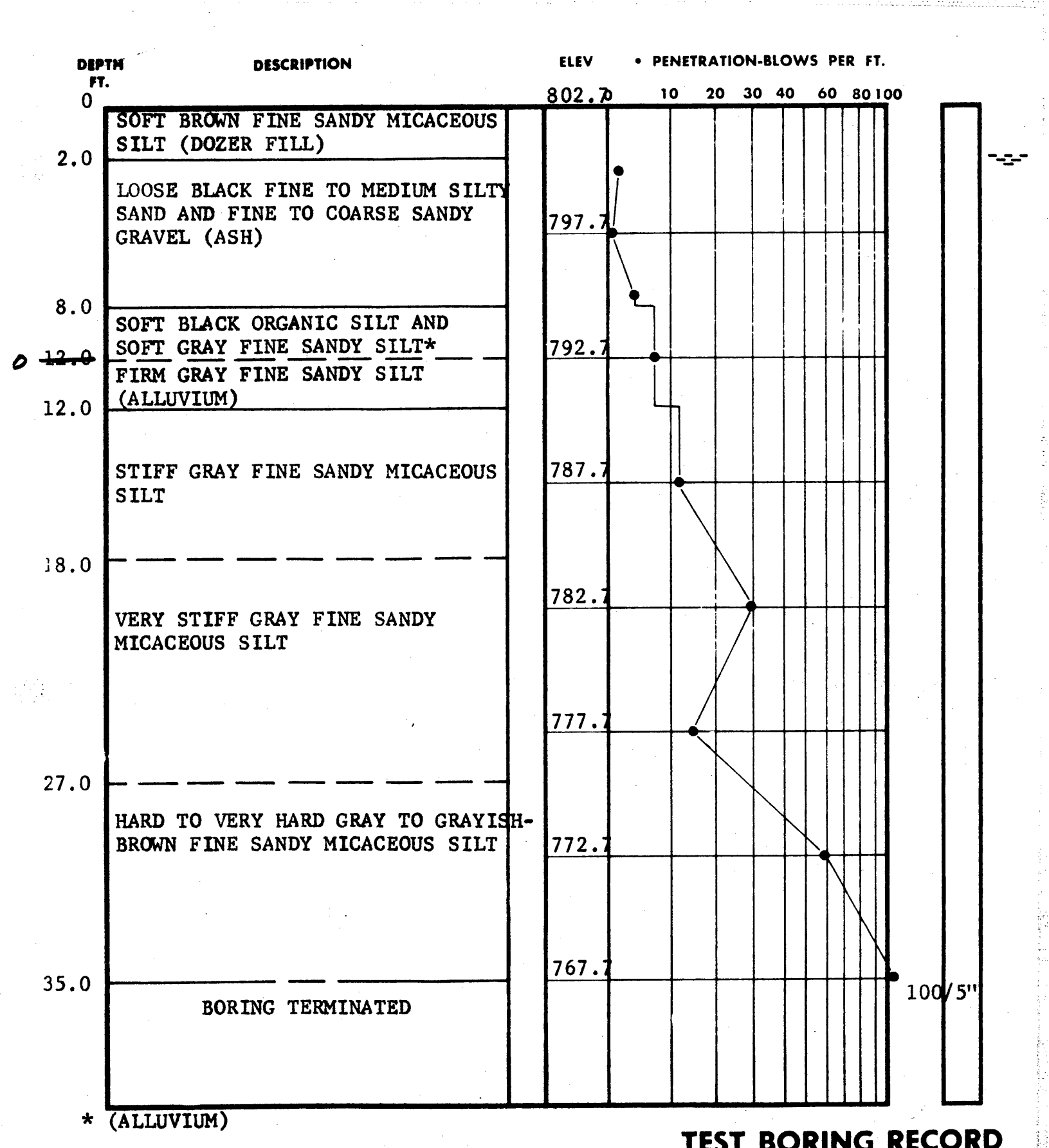
◀ LOSS OF DRILLING WATER

BORING NO. B-105

DATE DRILLED 8/1/68

JOB NO. 5862

LAW ENGINEERING TESTING CO.



TEST BORING RECORD

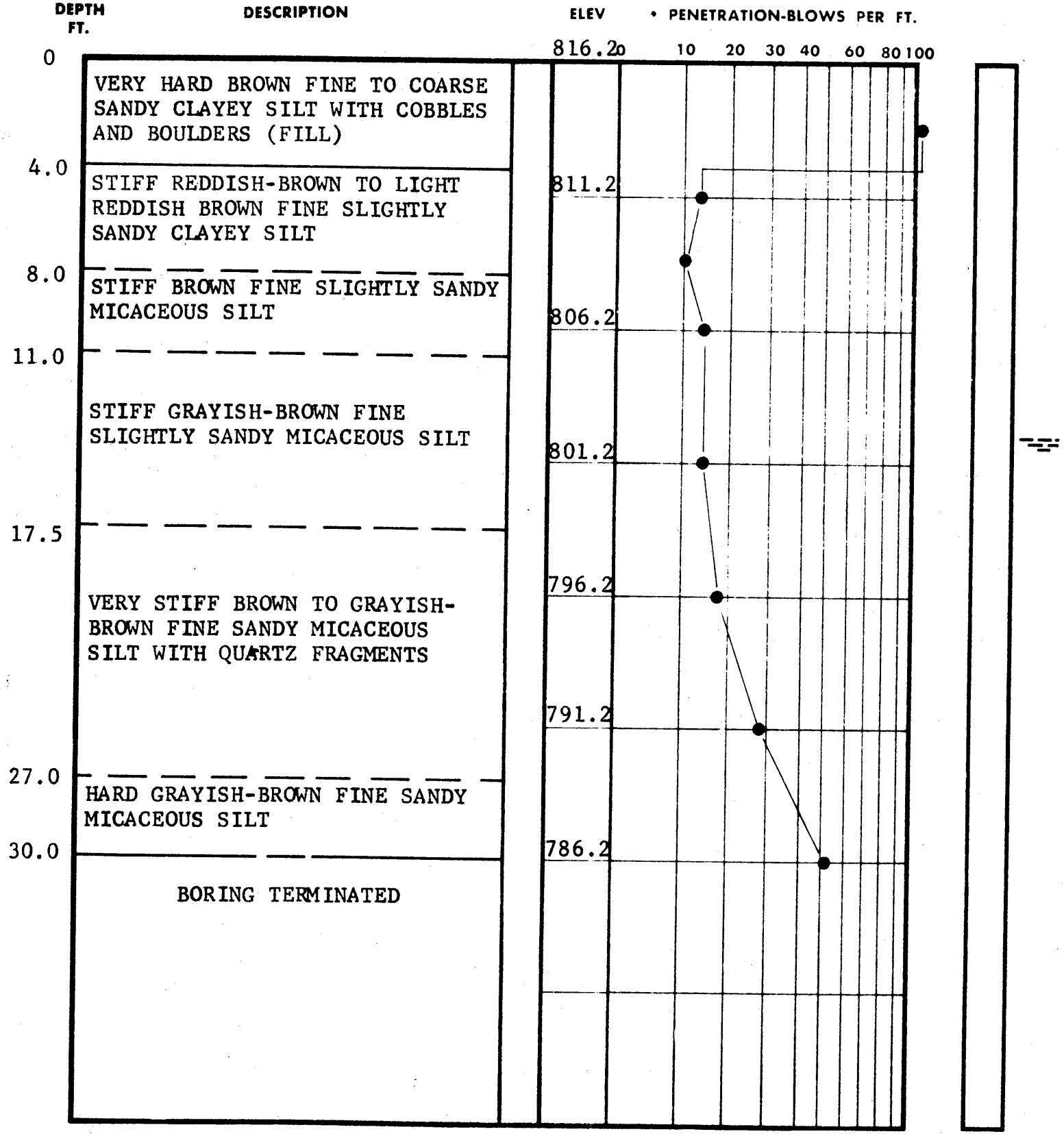
BORING AND SAMPLING MEETS ASTM D-1586
CORE DRILLING MEETS ASTM D-2113
PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

WATER TABLE, 24 HR.
WATER TABLE, 1 HR.
UNDISTURBED SAMPLE
|50| % ROCK CORE RECOVERY
LOSS OF DRILLING WATER

BORING NO. B-106
DATE DRILLED 8/1/68
JOB NO. 5862

LAW ENGINEERING TESTING CO.

jj



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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

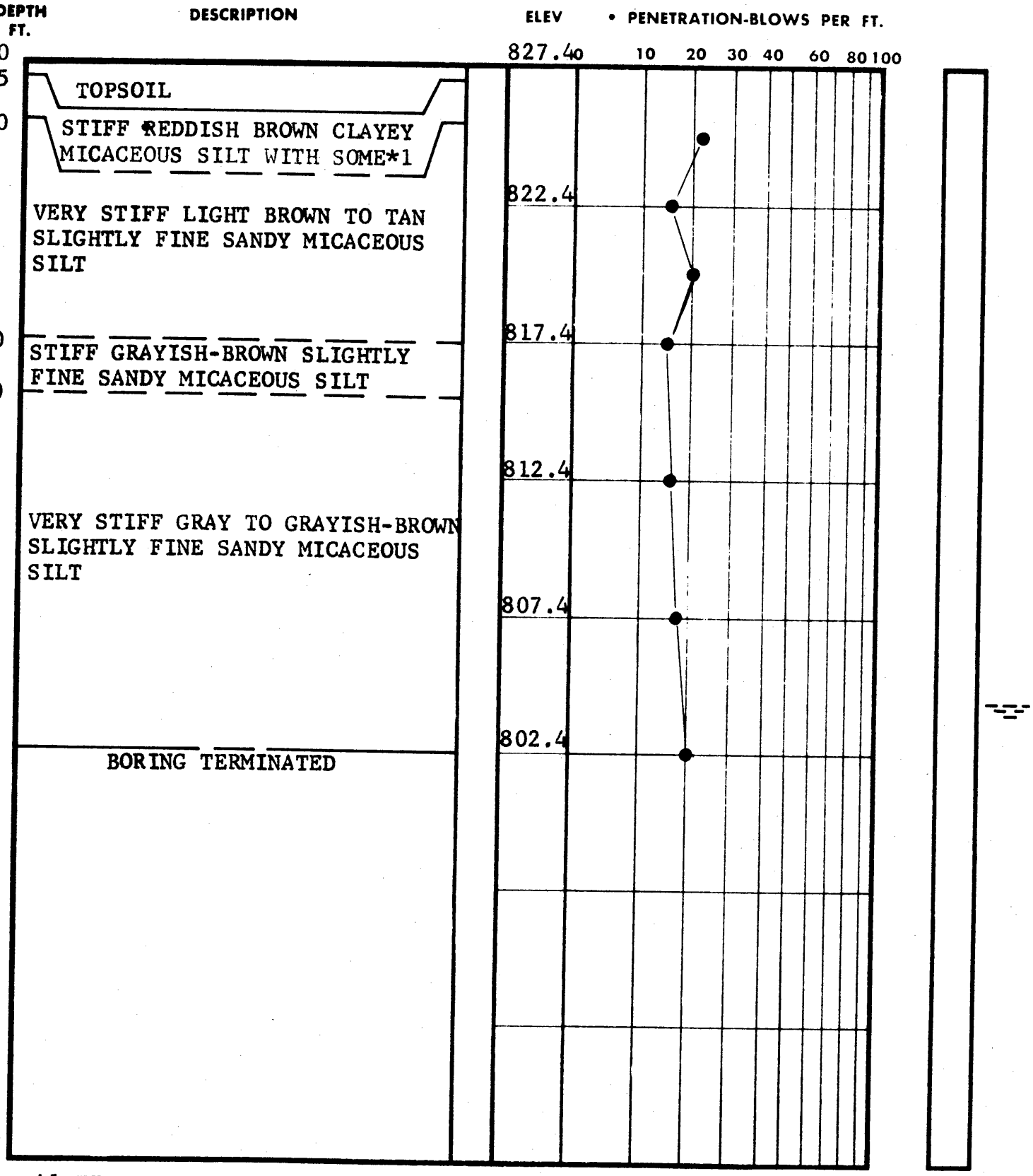
◀ LOSS OF DRILLING WATER

BORING NO. B-107

DATE DRILLED 8/1/68

JOB NO. 5862

LAW ENGINEERING TESTING CO.



*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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

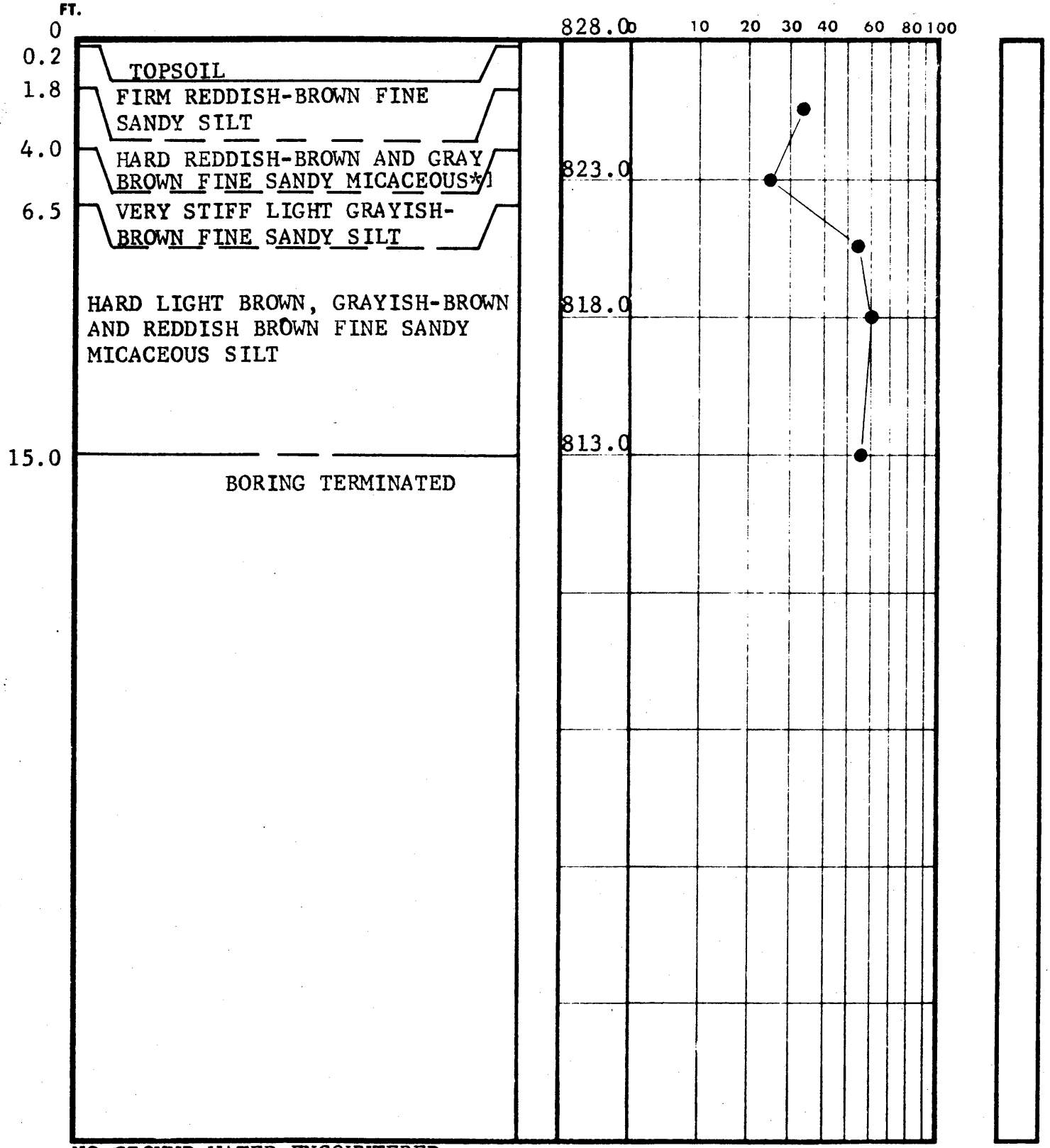
◀ LOSS OF DRILLING WATER

BORING NO. B-108

DATE DRILLED 8/1/68

JOB NO. 5862

LAW ENGINEERING TESTING CO.



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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

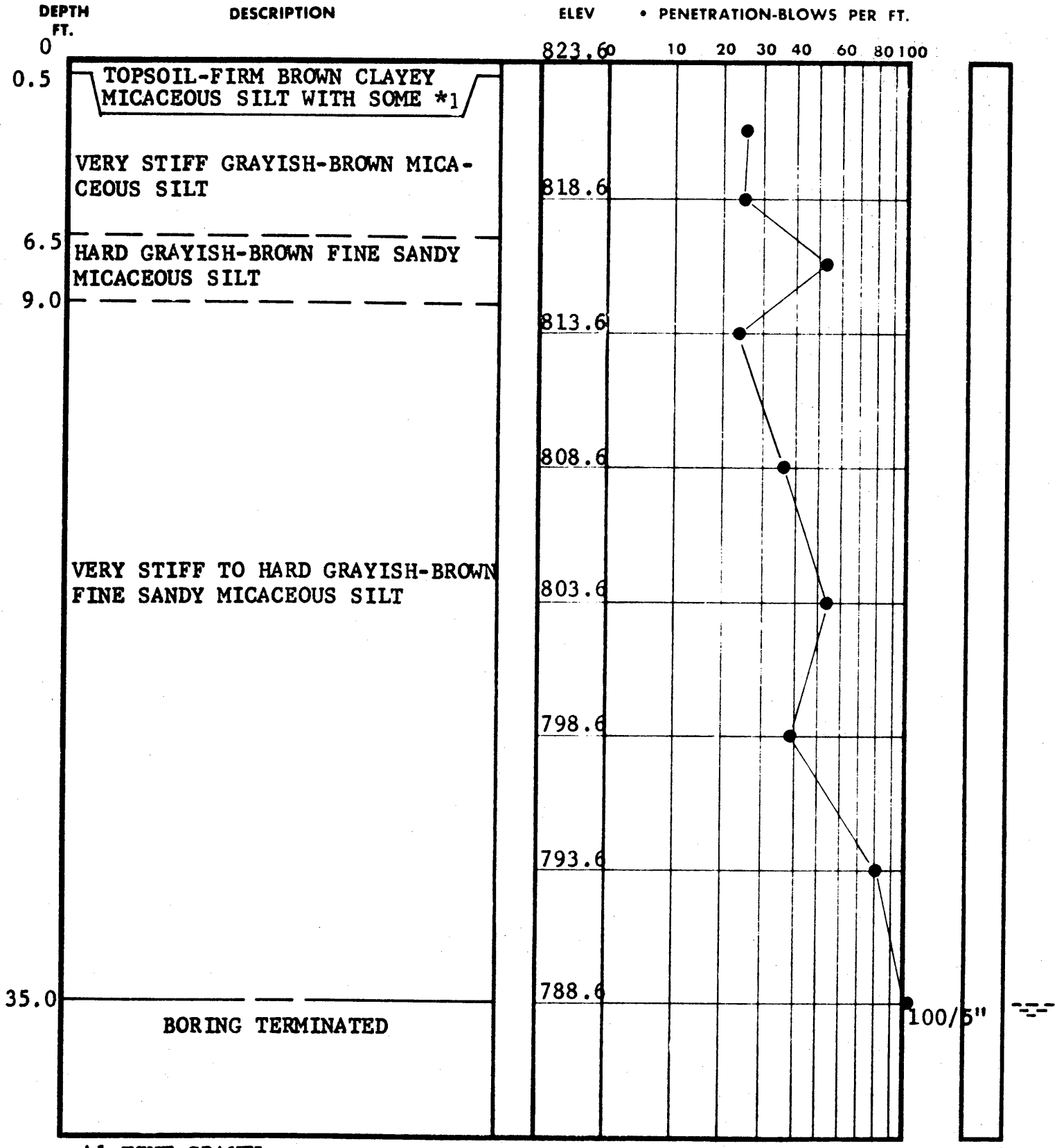
LOSS OF DRILLING WATER

BORING NO. B-109

DATE DRILLED 7/25/68

JOB NO. 5862

LAW ENGINEERING TESTING CO.



*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.

jj

UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

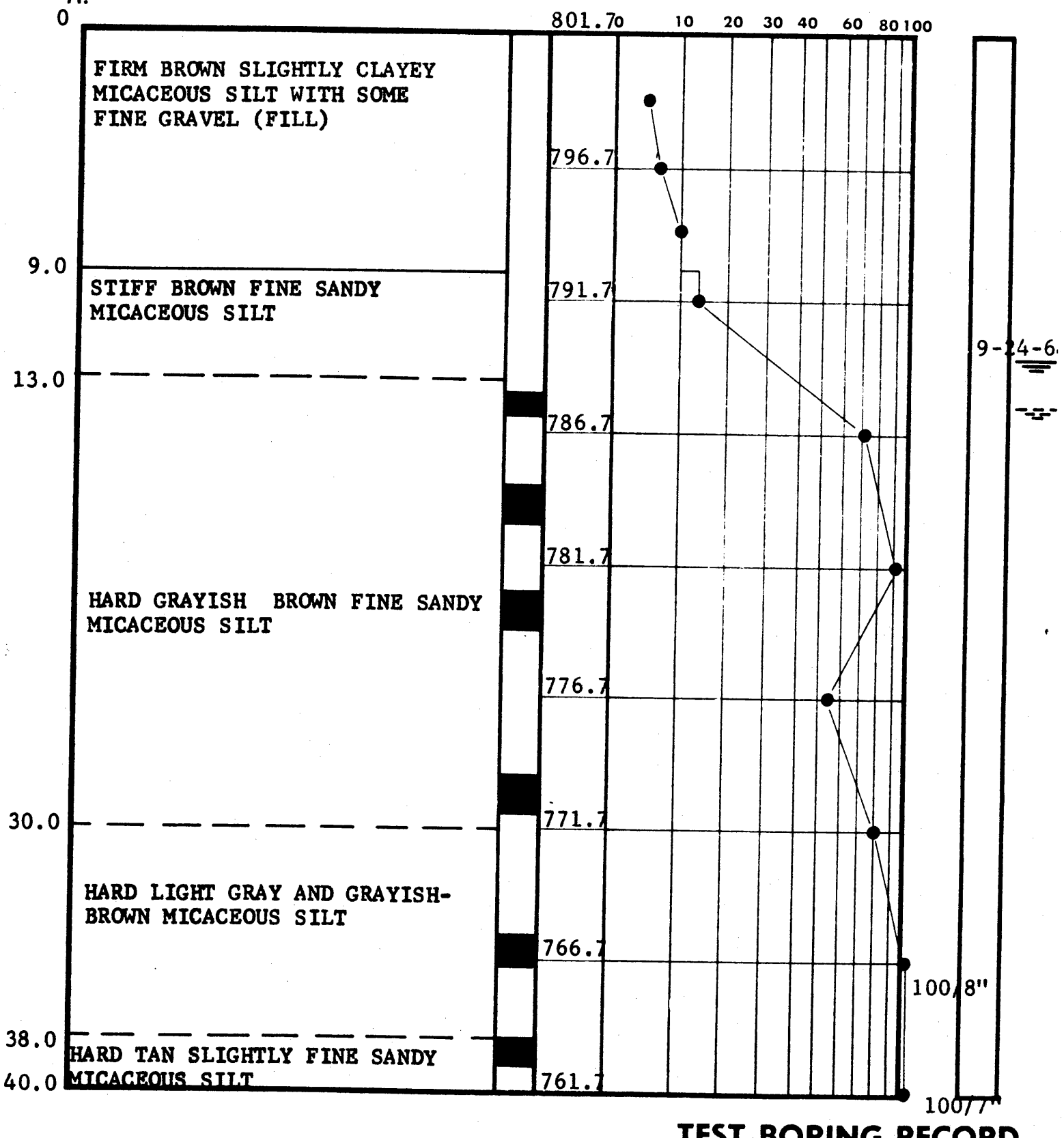
LOSS OF DRILLING WATER

BORING NO. B-110

DATE DRILLED 7/30/68

JOB NO. 5862

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.

UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

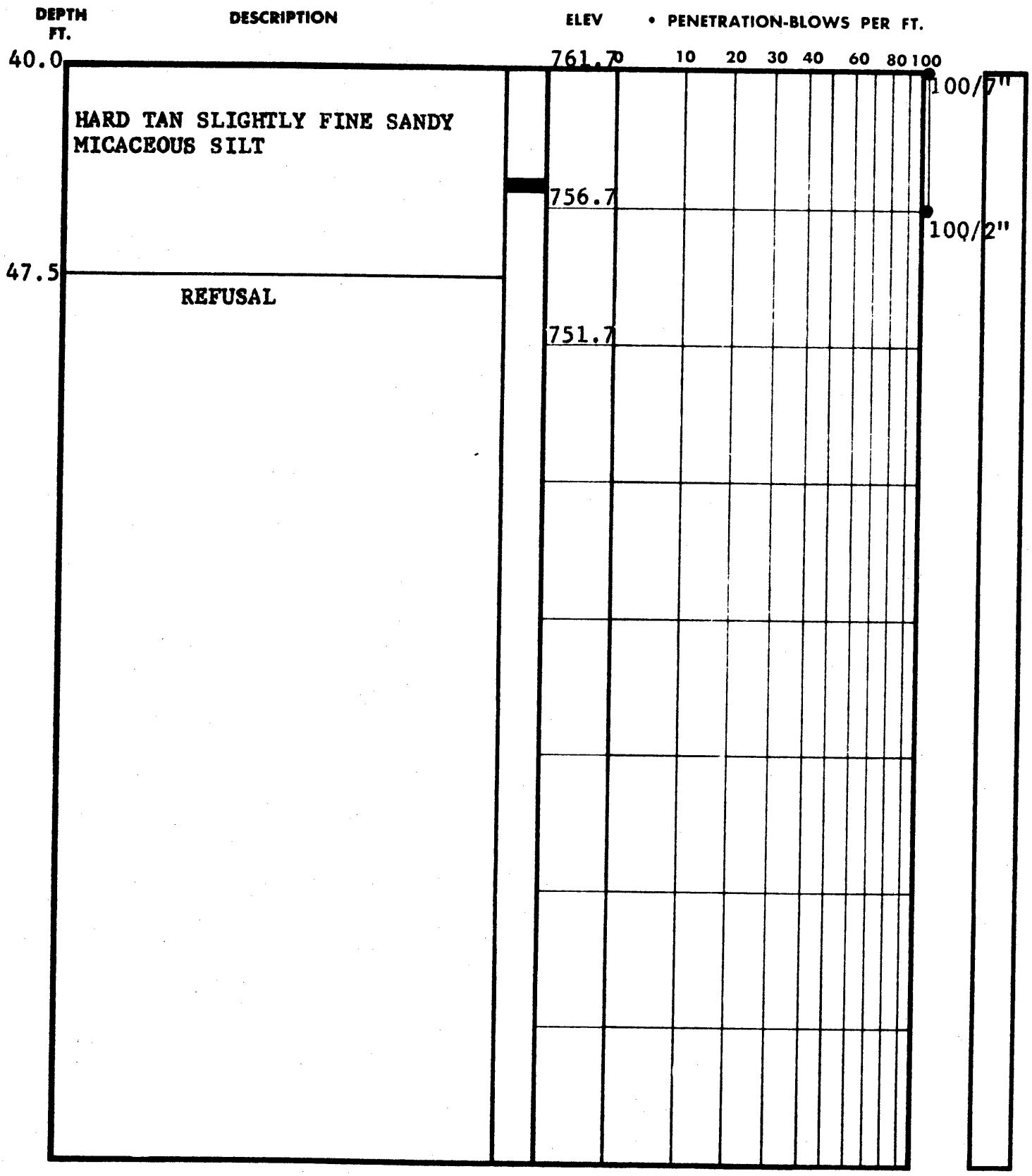
LOSS OF DRILLING WATER

BORING NO. B-111

DATE DRILLED 7/30/68

JOB NO. 5862

LAW ENGINEERING TESTING CO.



TEST BORING RECORD

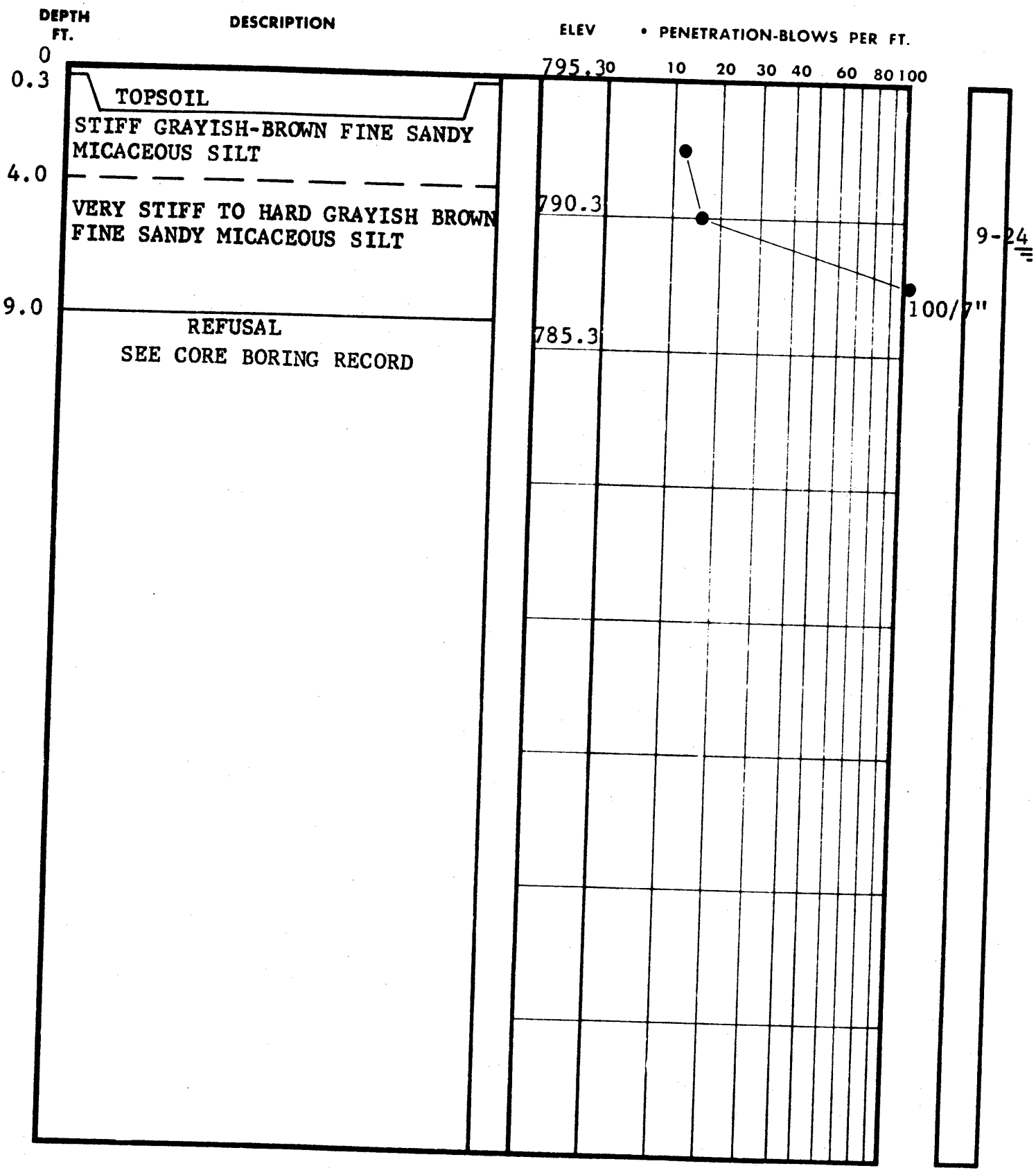
BORING AND SAMPLING MEETS ASTM D-1586
CORE DRILLING MEETS ASTM D-2113

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

WATER TABLE, 24 HR.
WATER TABLE, 1 HR.
UNDISTURBED SAMPLE
% 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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

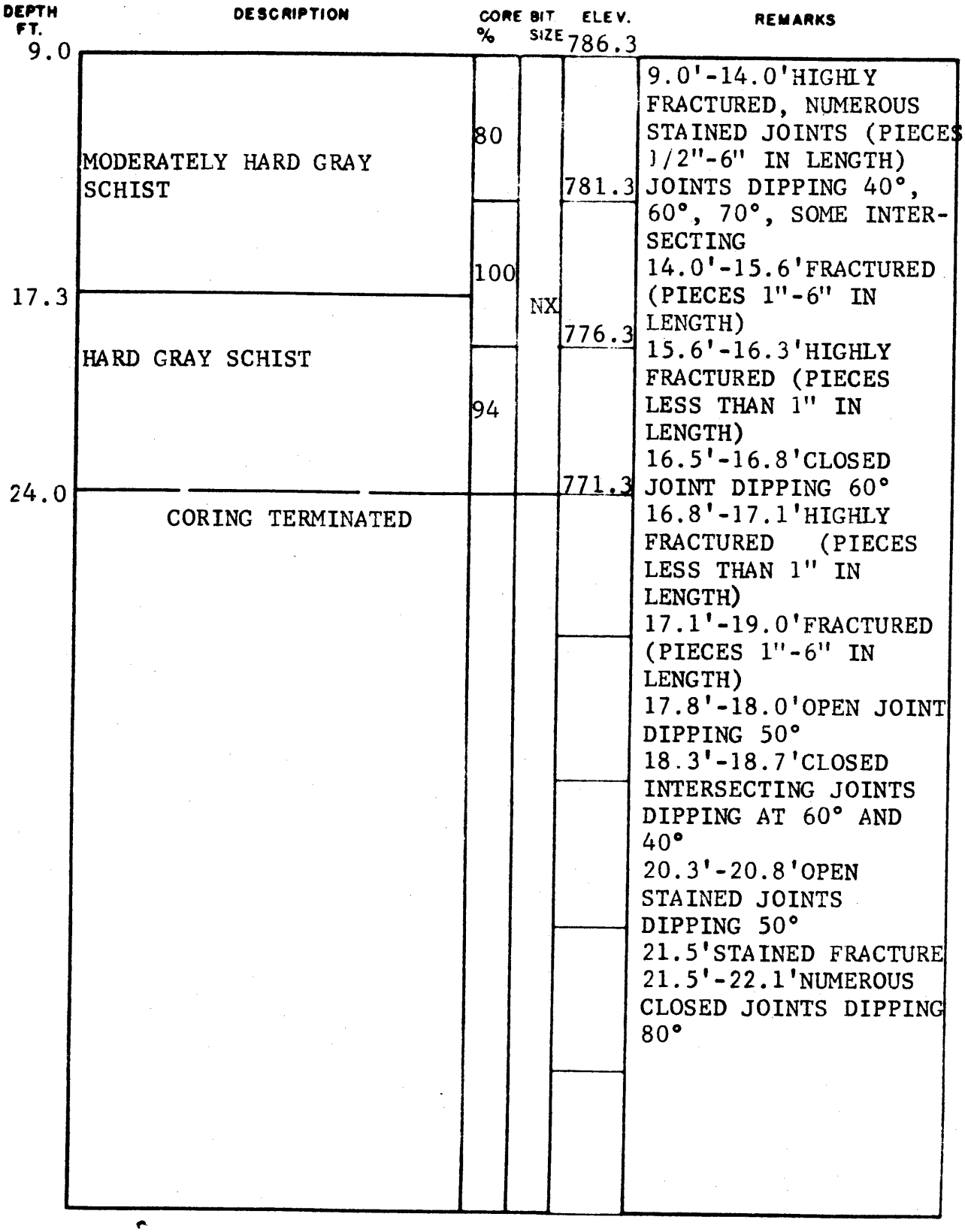
◀ LOSS OF DRILLING WATER

BORING NO. B-112

DATE DRILLED 7/25/68

JOB NO. 5862

LAW ENGINEERING TESTING CO.



LOST 50% OF DRILLING WATER AT 12 FEET

CORE BORING RECORD

BORING NO. 112
JOB NO. 5862

jj

WATER TABLE

LAW ENGINEERING TESTING CO.

DEPTH FT.	DESCRIPTION	ELEV	• PENETRATION-BLOWS PER FT.
0		787.9	10 20 30 40 60 80 100
0.8	TOPSOIL-STIFF DARK BROWN CLAYEY MICACEOUS SILT WITH SOME FINE GRAVEL		
3.5	HARD WEATHERED SCHIST (NO SPOON SAMPLE RECOVERED)	782.9	100/4"
	HARD GRAYISH BROWN FINE SANDY MICACEOUS SILT		9-24-6
8.5	REFUSAL	777.9	100/6"
	SEE CORE BORING RECORD		

NO GROUND WATER ENCOUNTERED AT TIME OF BORING

TEST BORING RECORD

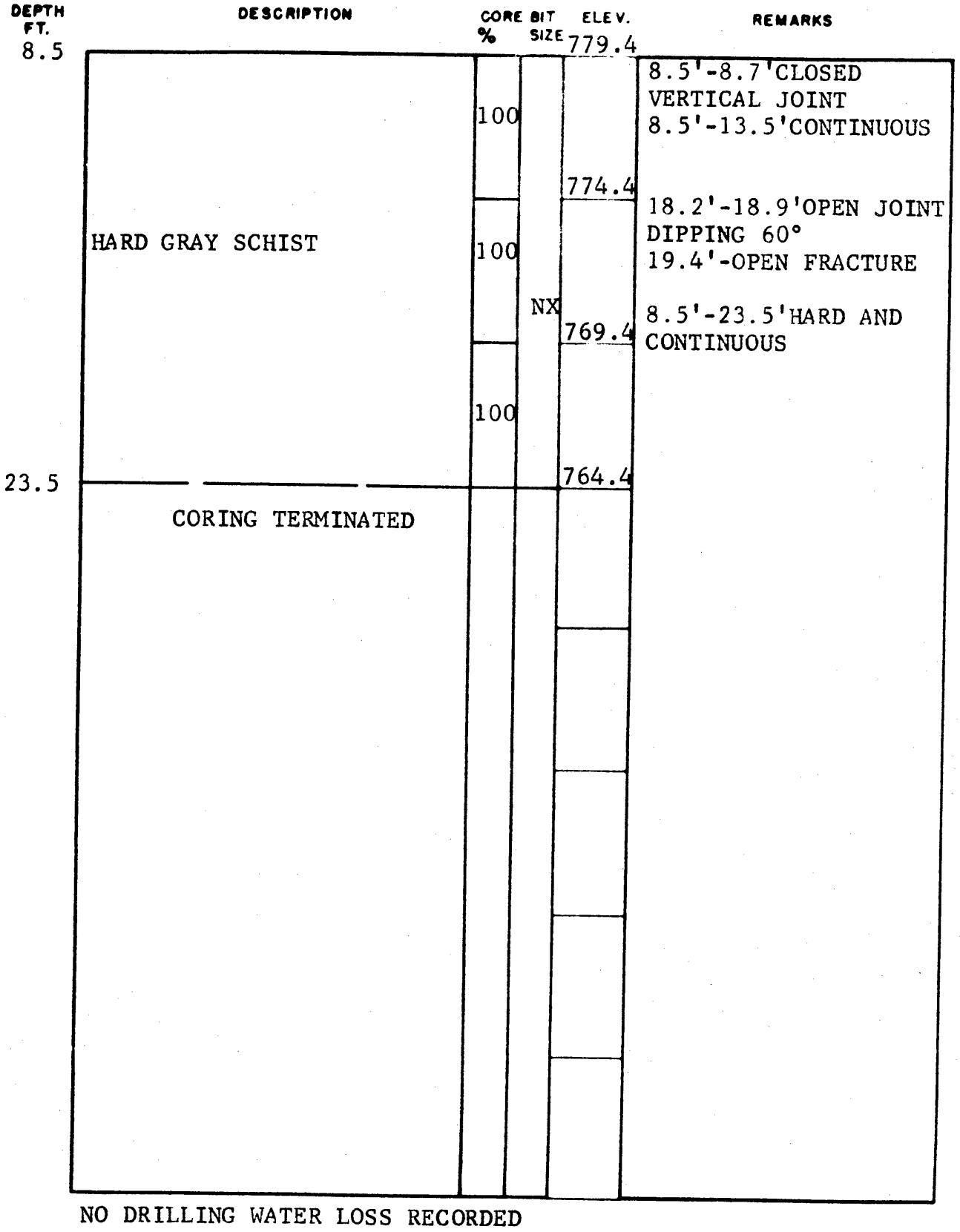
BORING AND SAMPLING MEETS ASTM D-1586
CORE DRILLING MEETS ASTM D-2113

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-113
DATE DRILLED 7/29/68
JOB NO. 5862

jj UNDISTURBED SAMPLE
|50| % ROCK CORE RECOVERY
WATER TABLE, 24 HR.
WATER TABLE, 1 HR.
LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.



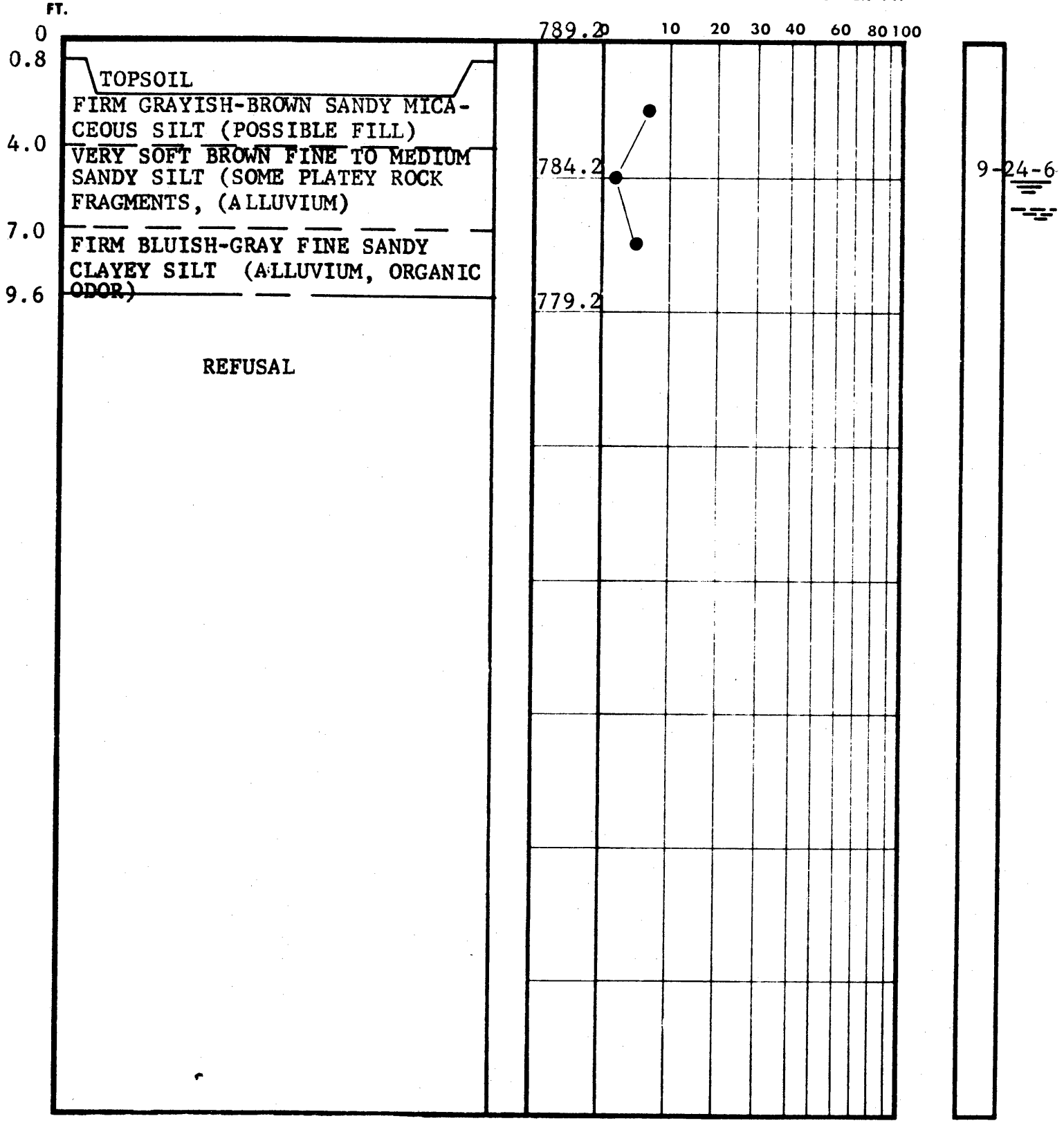
CORE BORING RECORD

BORING NO. 113
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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

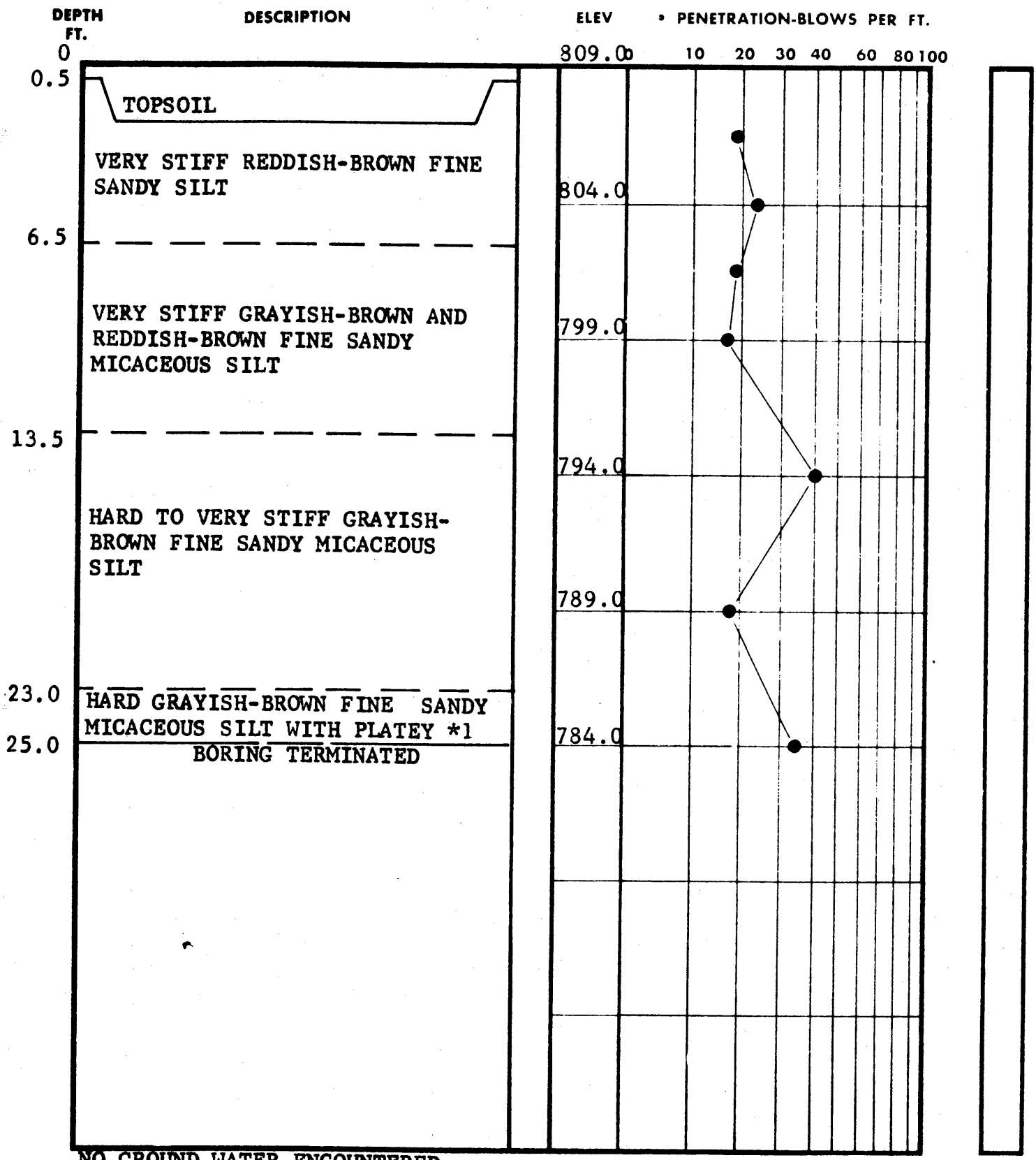
LOSS OF DRILLING WATER

BORING NO. B-114

DATE DRILLED 7/25/68

JOB NO. 5862

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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

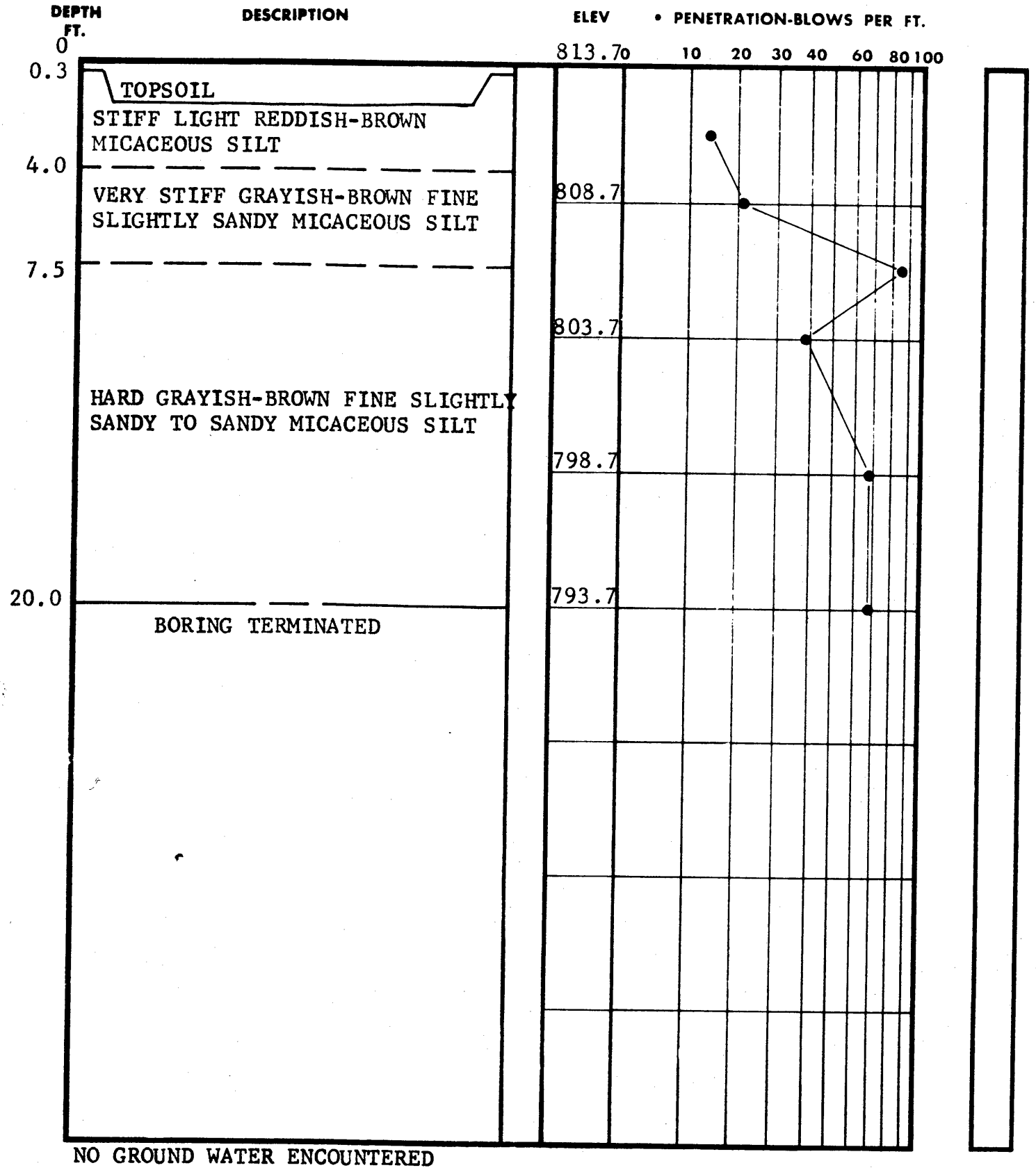
LOSS OF DRILLING WATER

BORING NO. B-115

DATE DRILLED 7/25/68

JOB NO. 5862

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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

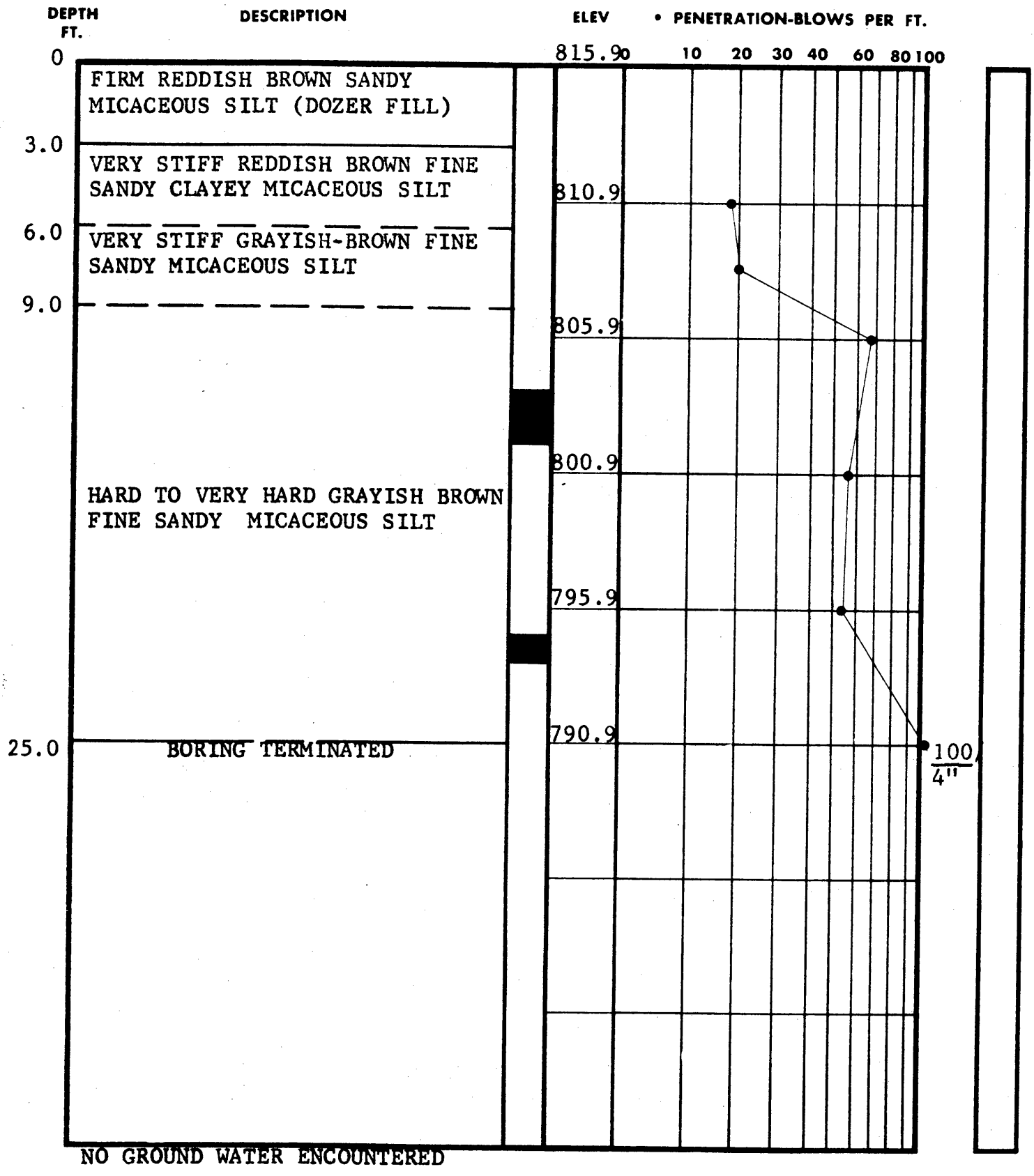
LOSS OF DRILLING WATER

BORING NO. B-116

DATE DRILLED 8/5/68

JOB NO. 5862

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.

UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

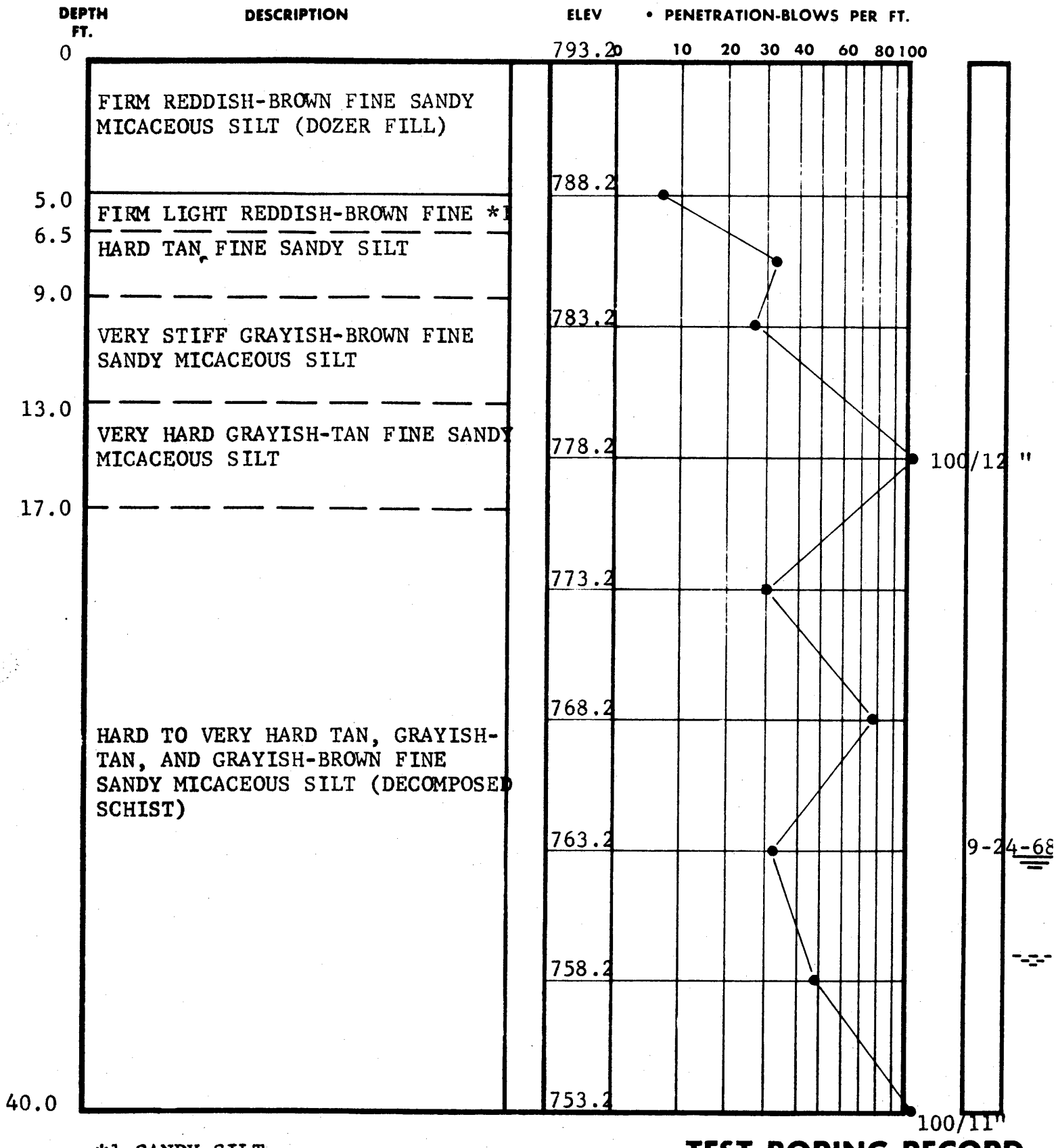
BORING NO. B-117

DATE DRILLED 8/5/68

JOB NO. 5862

LAW ENGINEERING TESTING CO.

jj



*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.

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

LOSS OF DRILLING WATER

BORING NO. B-118

DATE DRILLED 8/5/68

JOB NO. 5862

LAW ENGINEERING TESTING CO.

jj

DEPTH FT.	DESCRIPTION	ELEV	• PENETRATION-BLOWS PER FT. 10 20 30 40 60 80 100
		753.20	
40.0	HARD TO VERY HARD TAN, GRAYISH TAN, AND GRAYISH-BROWN FINE SANDY MICACEOUS SILT (DECOMPOSED SCHIST)	748.2	100/11"
		743.2	100/6"
		738.2	100/4"
55.0	BORING TERMINATED		100/1½"

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.

WATER TABLE, 24 HR.

jj UNDISTURBED SAMPLE

WATER TABLE, 1 HR.

|50| % ROCK CORE RECOVERY

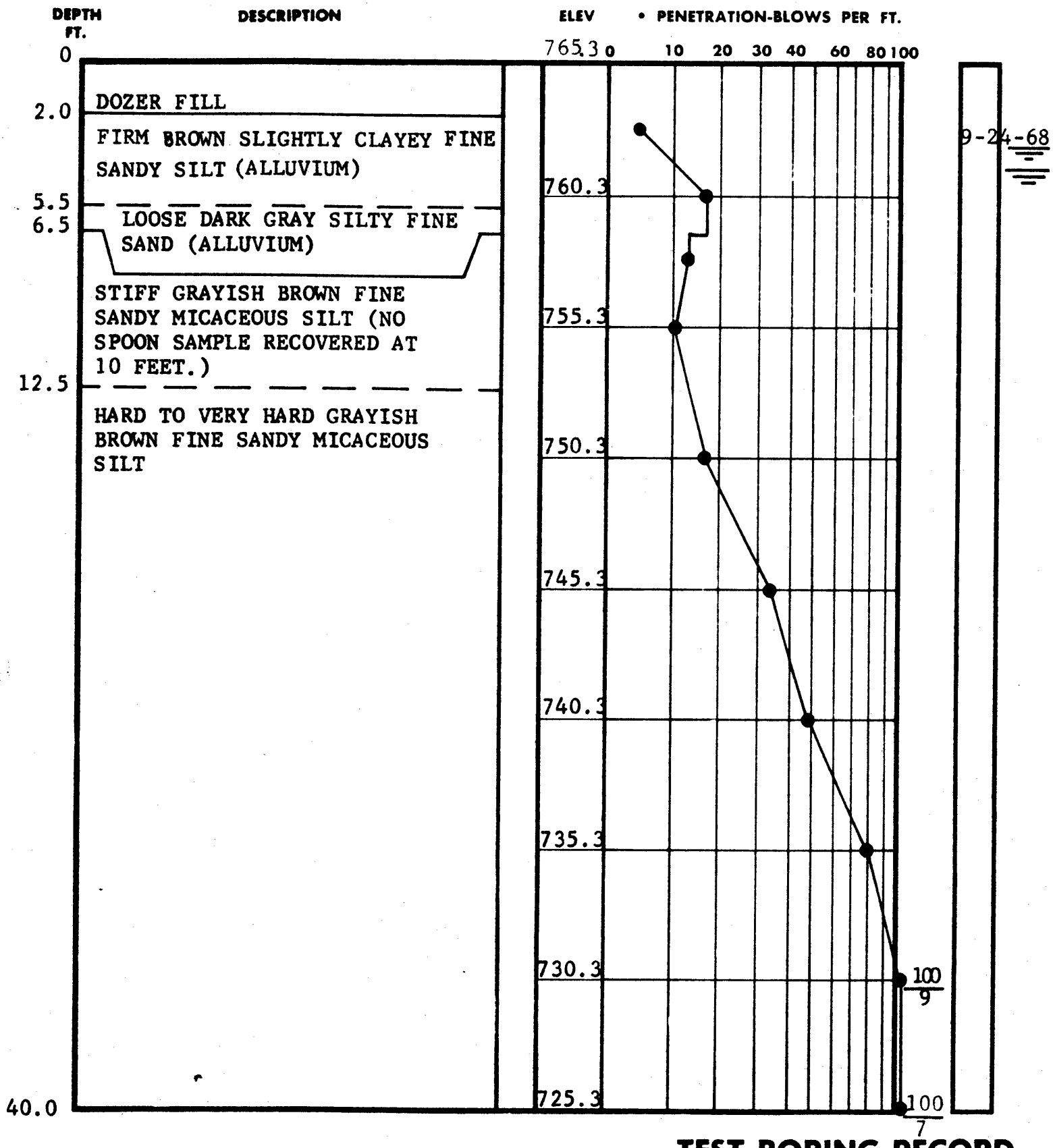
LOSS OF DRILLING WATER

BORING NO. B-118

DATE DRILLED 8/5/68

JOB NO. 5862

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-119
DATE DRILLED 8-19-68
JOB NO. 5862

WATER TABLE, 24 HR.
WATER TABLE, 1 HR.
UNDISTURBED SAMPLE
|50| % ROCK CORE RECOVERY
LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.

DEPTH FT.	DESCRIPTION	ELEV	• PENETRATION-BLOWS PER FT.
		725.3	0 10 20 30 40 60 80 100 100/7
40.0	HARD TO VERY HARD GRAYISH BROWN FINE SANDY MICACEOUS SILT		
44.0		720.3	100/0
	REFUSAL SEE 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.

UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

BORING NO. B-119

DATE DRILLED 8-19-68

JOB NO. 5862

LAW ENGINEERING TESTING CO.

DEPTH FT.	DESCRIPTION	CORE %	BIT SIZE	ELEV.	REMARKS
44.0				721.3	
	SOFT GRAYISH TAN SCHIST				47.0'-49.0'FRACTURED AND NUMEROUS OPEN JOINTS DIPPING 60° AND NEARLY VERTICAL
46.3		83			
47.0	VERY SOFT GRAYISH TAN SCHIST			716.3	49.0'-51.2'NUMEROUS FRACTURES, CLOSED AND OPEN JOINTS DIPPING 45°, 70° AND VERTICAL
	MODERATELY HARD GRAY SCHIST	94			
51.2	SOFT GRAYISH TAN SCHIST				
53.5	MODERATELY HARD GRAY SCHIST		NX	711.3	54.8'-55.2'CLOSED INTERSECTING JOINTS DIPPING 70° AND 50°
55.4		100			55.4'-56.5'HIGHLY FRACTURED, OPEN VERTICAL JOINT
55.9	SOFT GRAYISH TAN *1				
	SOFT AND MODERATELY HARD GRAYISH TAN SCHIST	98		706.3	56.5'-56.7'STAINED JOINT DIPPING 70°
59.9	MODERATELY HARD GRAY SCHIST				58.3'-59.5'HIGHLY FRACTURED
62.0					59.6'-59.8'CLOSED JOINT DIPPING 75°
	HARD, MODERATELY HARD AND SOFT GRAY SCHIST	45		701.3	61.5'-66.5'VERY BROKEN (PIECES MOSTLY LESS THAN 1", SOME 3" IN LENGTH)
		63	BX	696.3	66.5'-71.5'FRACTURED AND BROKEN (PIECES 6"-1/2" IN LENGTH)
71.5	HARD GRAY SCHIST	86		691.3	71.5'-76.5'BROKEN (PIECES 4"-1" IN LENGTH)
76.5	CORING TERMINATED			686.3	

NO DRILLING WATER LOSS RECORDED

*1 SCHIST

CORE BORING RECORD

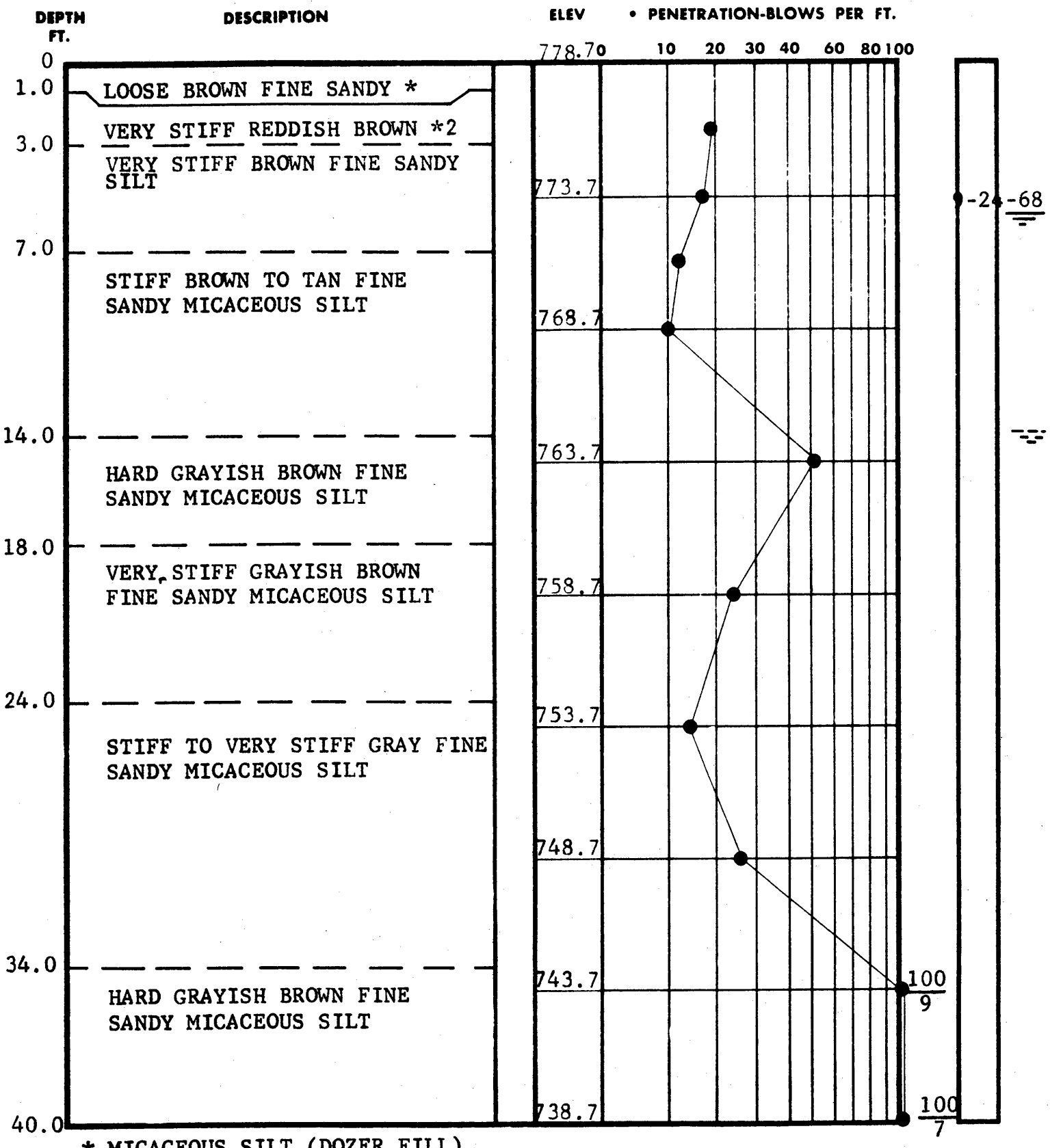
BORING NO. 119

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.

BORING NO. B-120

DATE DRILLED 8-22-68

JOB NO. 5862

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.

DEPTH FT.	DESCRIPTION	ELEV	• PENETRATION-BLOWS PER FT. 0 10 20 30 40 60 80 100
		738.7	100/7
	HARD GRAYISH BROWN FINE SANDY MICACEOUS SILT	733.7	100/2½
		728.7	100/2
40.0			
51.5	REFUSAL SEE CORE BORING RECORD	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.

UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

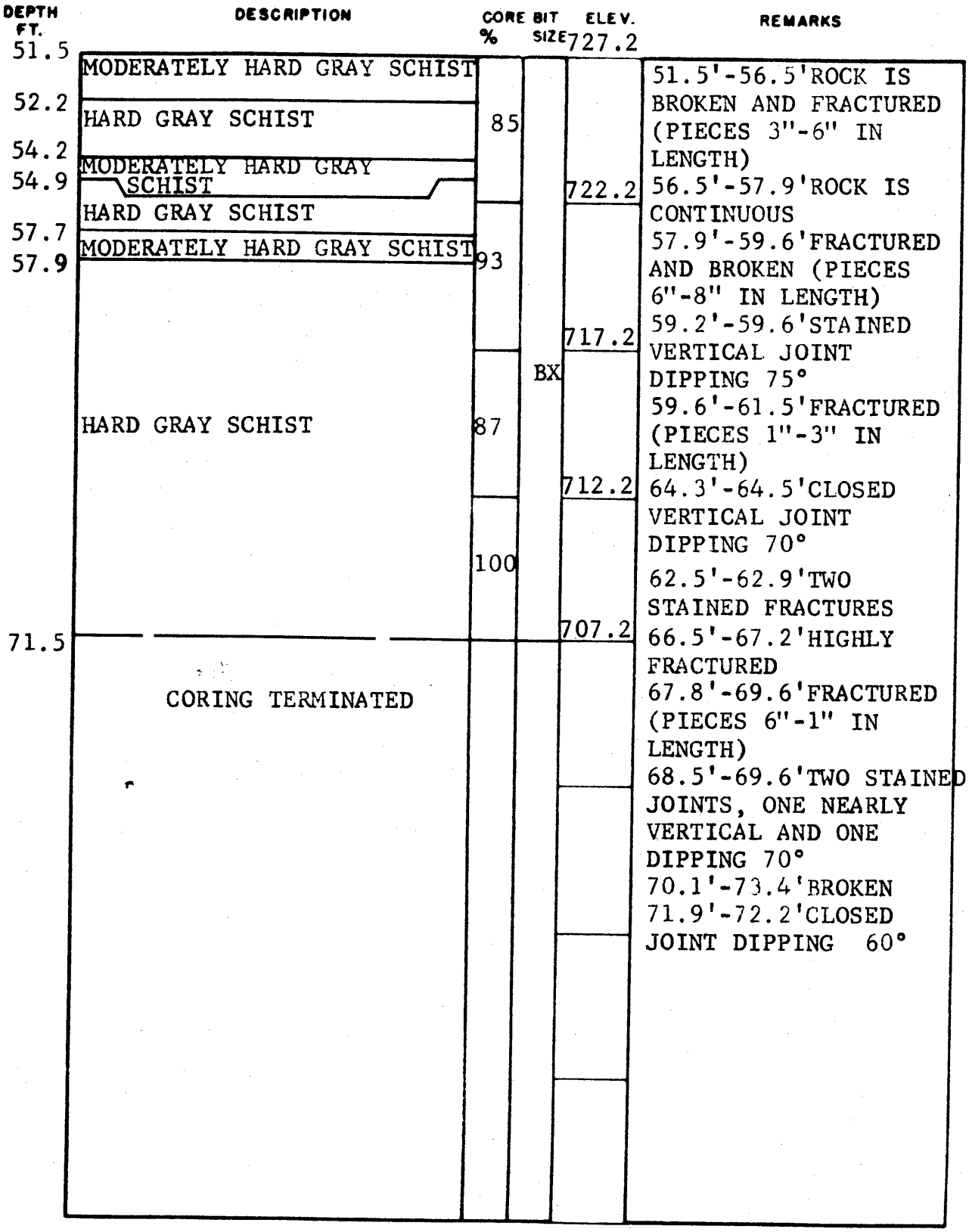
LOSS OF DRILLING WATER

BORING NO. B-120

DATE DRILLED 8-22-68

JOB NO. 5862

LAW ENGINEERING TESTING CO.



NO DRILLING WATER LOSSES RECORDED

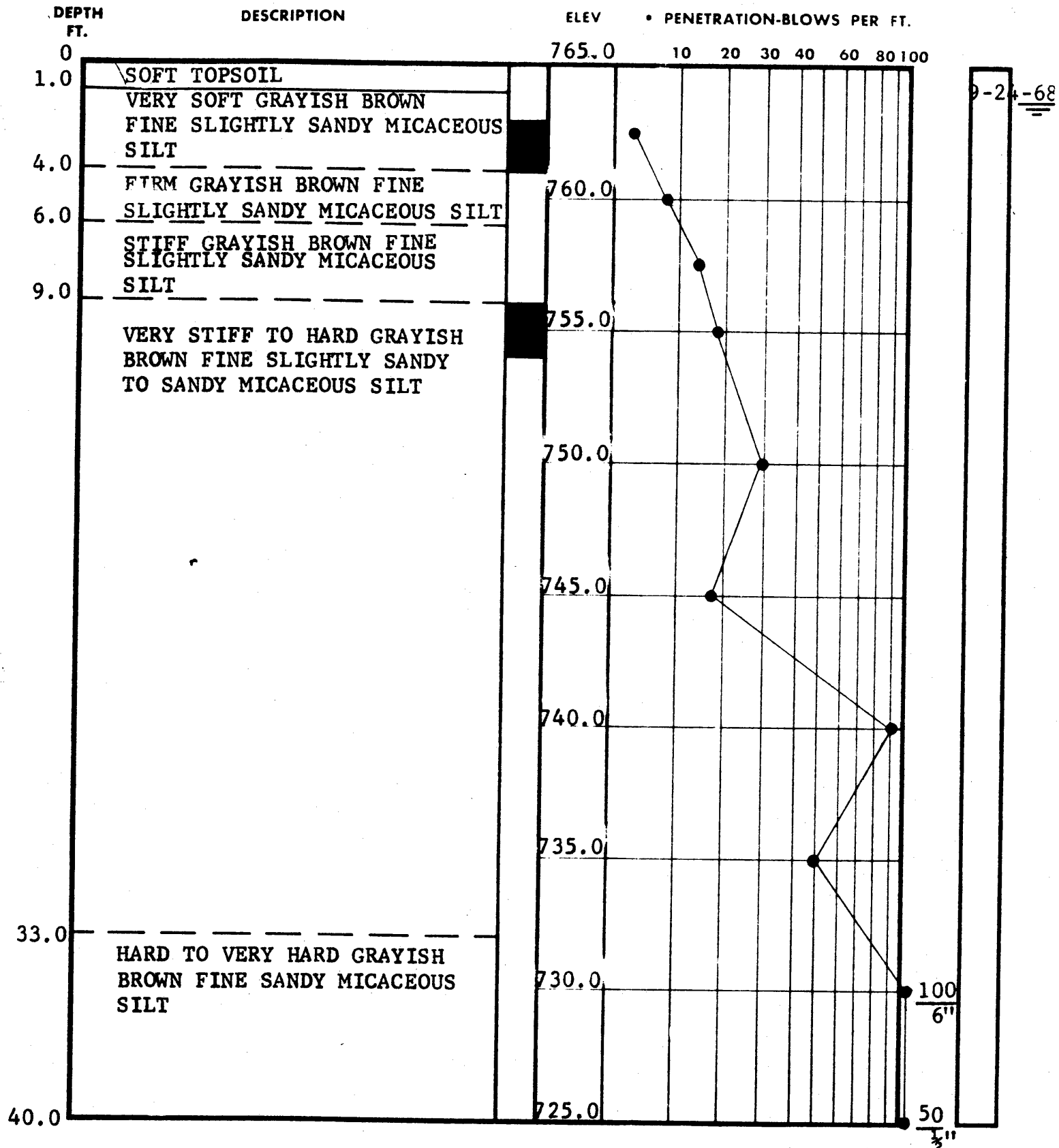
CORE BORING RECORD

BORING NO. 120
JOB NO. 5862

jj

WATER TABLE

LAW ENGINEERING TESTING CO.



TEST BORING RECORD

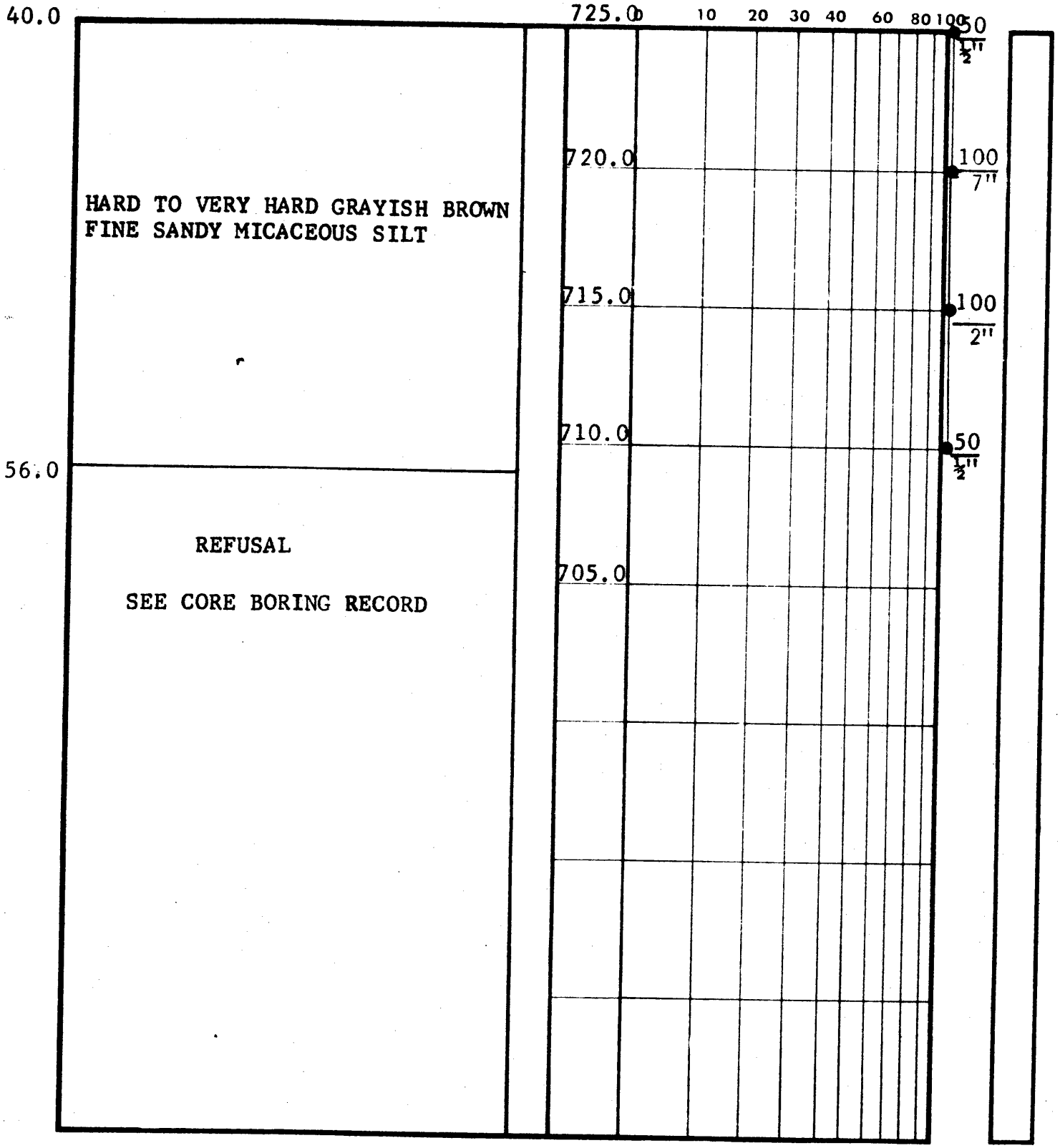
BORING AND SAMPLING MEETS ASTM D-1586
CORE DRILLING MEETS ASTM D-2113

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-121
DATE DRILLED 8-6-68
JOB NO. 5862

UNDISTURBED SAMPLE
|50| % ROCK CORE RECOVERY
WATER TABLE, 24 HR.
WATER TABLE, 1 HR.
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-121
DATE DRILLED 8-6-68
JOB NO. 5862

UNDISTURBED SAMPLE
|50| % ROCK CORE RECOVERY
WATER TABLE, 24 HR.
WATER TABLE, 1 HR.
LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO

DEPTH FT.	DESCRIPTION	CORE %	BIT SIZE	ELEV. 709.0	REMARKS
56.0	SOFT AND MODERATELY HARD GRAYISH TAN SCHIST	48	BX		56.0'-60.5' HIGHLY FRACTURED AND BROKEN, SOME STAINED FRACTURES AND ONE JOINT DIPPING ABOUT 70°
60.5				704.0	
	CORING TERMINATED				

NO DRILLING WATER LOSS RECORDED

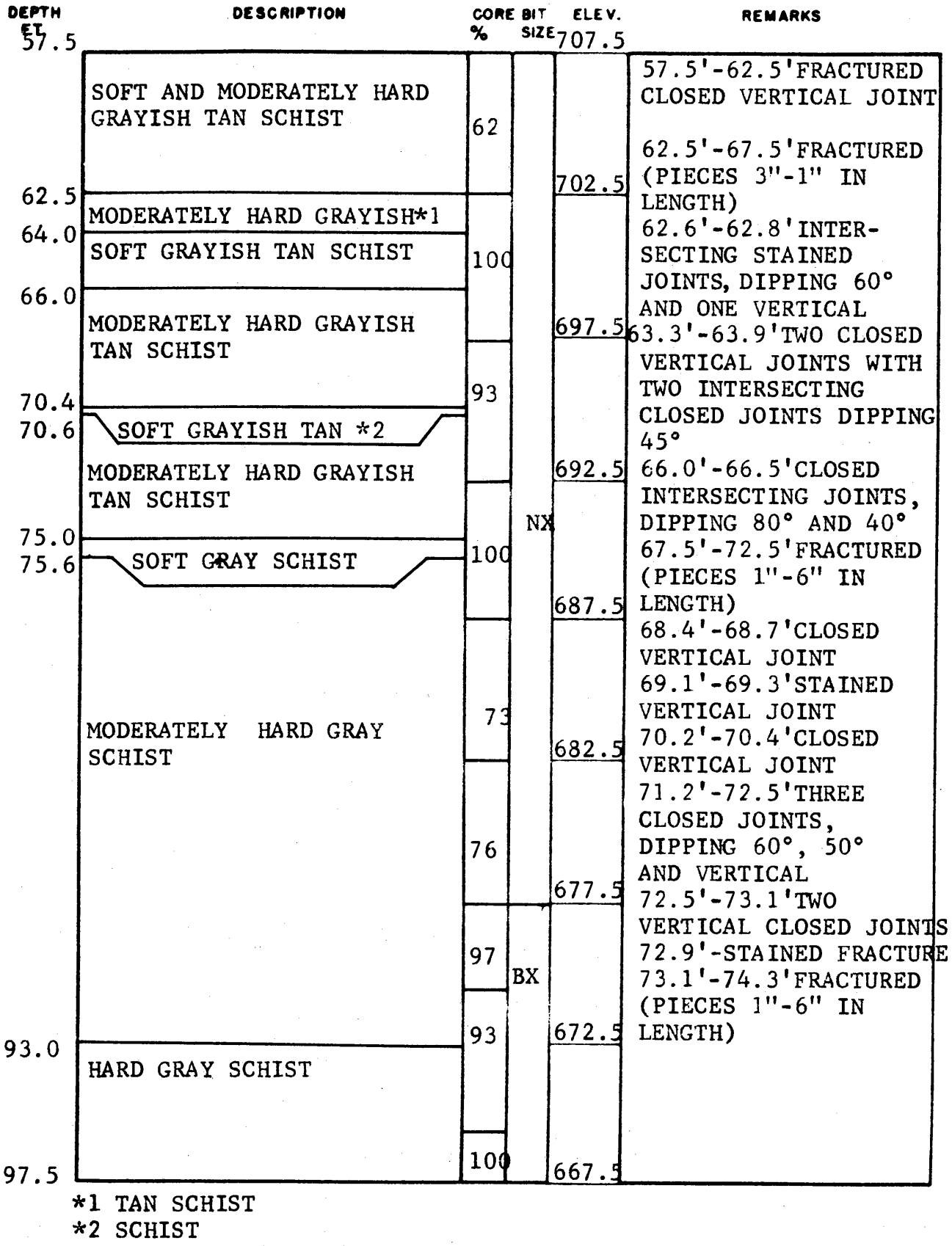
CORE BORING RECORD

BORING NO. 121
JOB NO. 5862

jj

WATER TABLE

LAW ENGINEERING TESTING CO.



*1 TAN SCHIST
*2 SCHIST

CORE BORING RECORD

BORING NO. 121A
JOB NO. 5862

jj

WATER TABLE

LAW ENGINEERING TESTING CO.

DEPTH FT.	DESCRIPTION	CORE %	BIT SIZE	ELEV.	REMARKS
97.5				667.5	
	HARD GRAY SCHIST				74.1'-74.3'TWO STAINED JOINTS, DIPPING 40° AND VERTICAL
	VERY SOFT GRAYISH-TAN SCHIST				
			BX	662.5	75.6'-75.9'CLOSED JOINT DIPPING 65°
	HARD GRAY SCHIST	100			76.2'-76.4'FRACTURED AND SOFT SEAM
105.5					76.7'-77.2'TWO OPEN JOINTS DIPPING 40°
	CORING TERMINATED			657.5	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

BORING NO. 121A
JOB NO. 5862

jj

WATER TABLE

LAW ENGINEERING TESTING CO.

DEPTH FT.	DESCRIPTION	CORE %	BIT SIZE	ELEV.	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

BORING NO. 121-A

JOB NO. 5862

jj

WATER TABLE

LAW ENGINEERING TESTING CO.

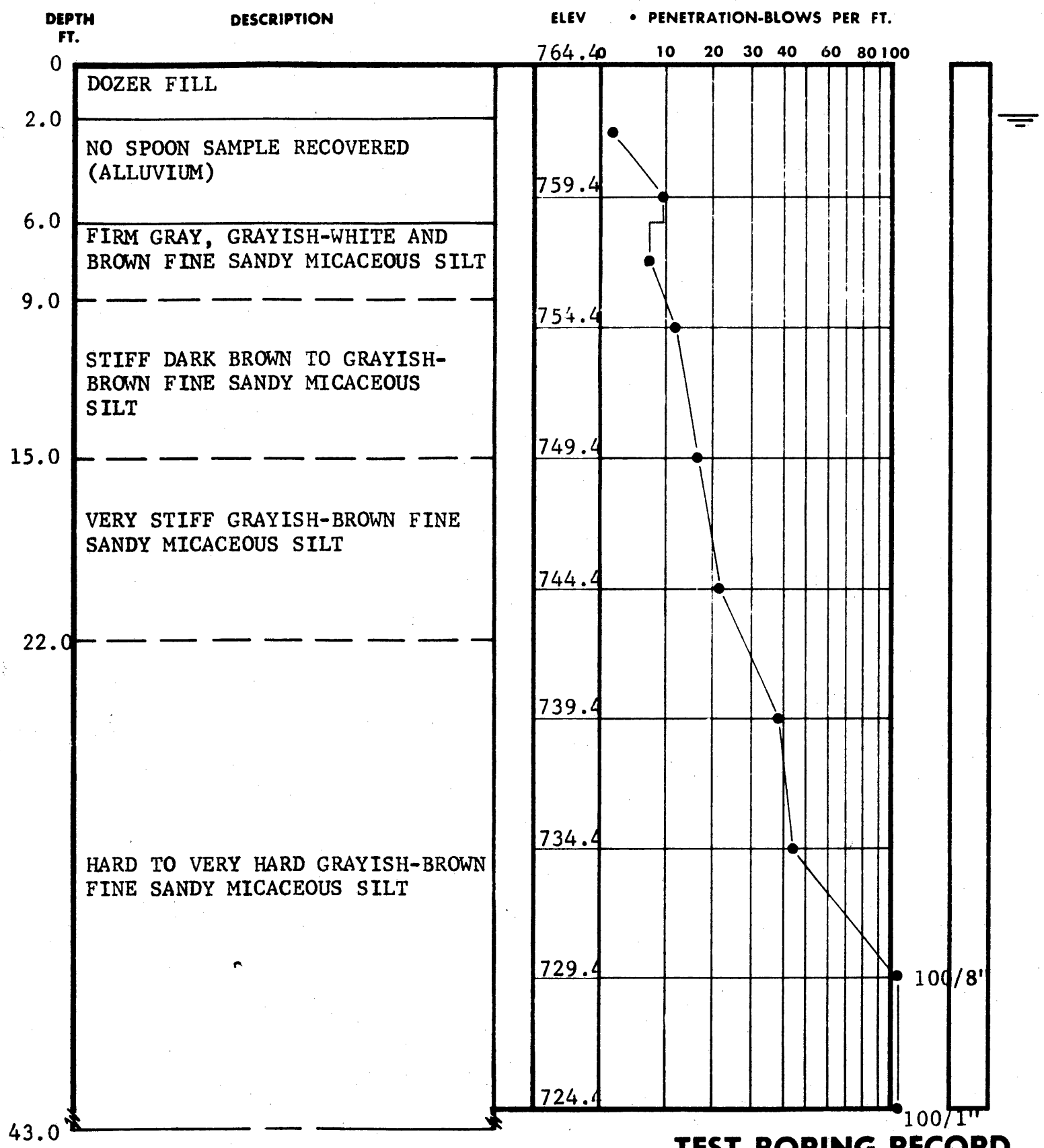
DEPTH FT.	DESCRIPTION	CORE %	BIT SIZE	ELEV.	REMARKS
					102.2'-105.5' BROKEN (PIECES 6" - 8" IN LENGTH)

CORE BORING RECORD

BORING NO. 121A
JOB NO. 5862

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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

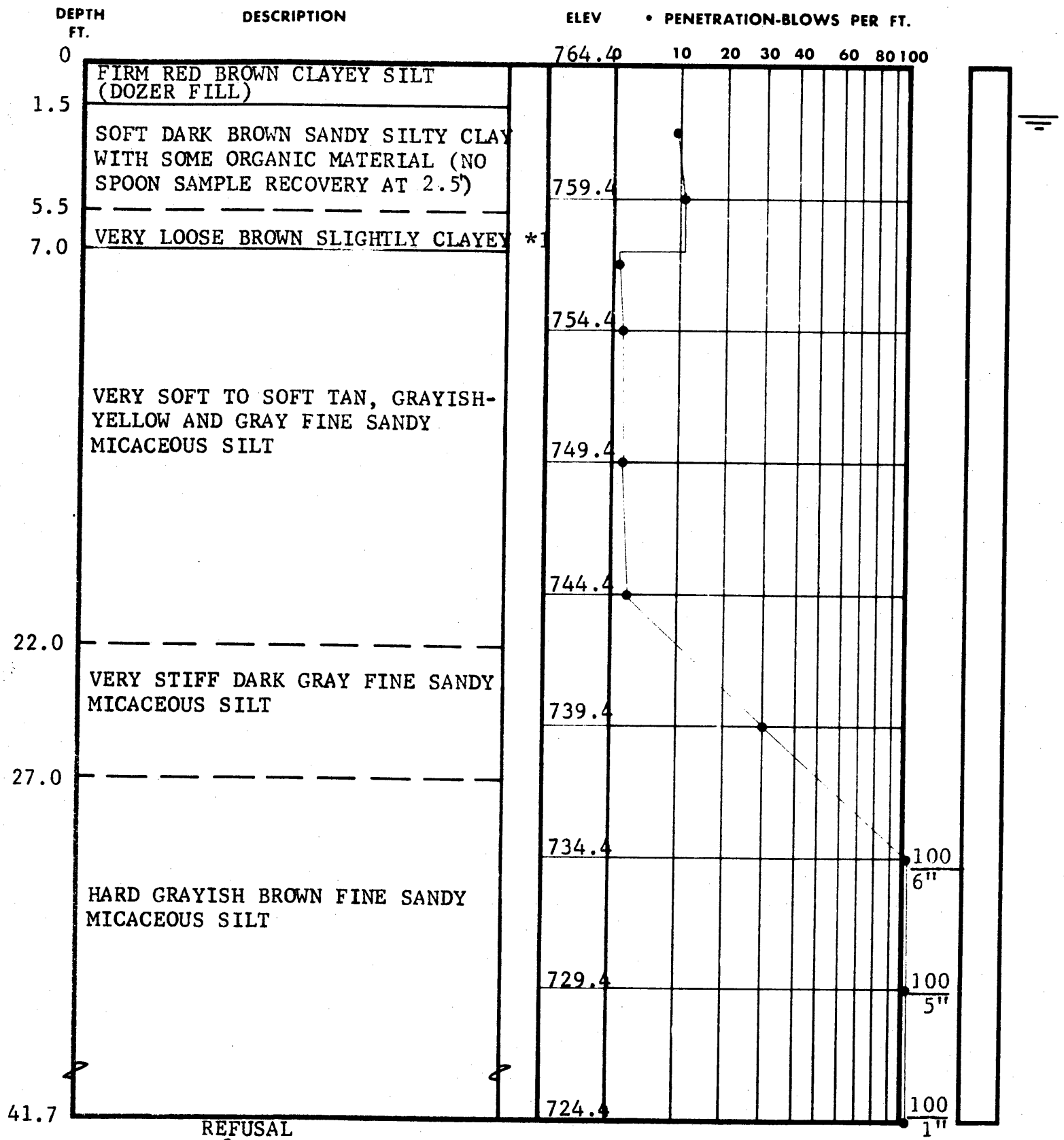
◀ LOSS OF DRILLING WATER

BORING NO. B-122

DATE DRILLED 8/19/68

JOB NO. 5862

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-123
DATE DRILLED 8/14/68
JOB NO. 5862

jj UNDISTURBED SAMPLE
|50| % ROCK CORE RECOVERY
WATER TABLE, 24 HR.
WATER TABLE, 1 HR.
LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.

DEPTH FT.	DESCRIPTION	CORE %	BIT SIZE	ELEV. 722.7	REMARKS
41.7					
42.5	MODERATELY HARD GRAYISH TAN SCHIST	100	NX	717.7	41.9'-42.1' SOFT AND HIGHLY FRACTURED (PIECES LESS THAN 1/2" IN LENGTH)
43.0	SOFT TO VERY SOFT GRAYISH TAN SCHIST				43.0'-46.7' NUMEROUS CLOSED JOINTS DIPPING 45°
	MODERATELY HARD GRAYISH TAN SCHIST WITH SOFT SEAMS				
46.7	HARD GRAY SCHIST	88		712.7	49.2'-50.3' SOFT AND FRACTURED
		100			54.0' SOFT AND FRACTURED
				707.7	
57.0					
57.6	SOFT AND MODERATELY HARD GRAYISH TAN *1				
	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		100			66.1'-66.7' FRACTURED AND JOINTED
64.9	MODERATELY HARD *2				
66.1	HARD GRAY SCHIST			697.7	66.8'-66.9' CLOSED VERTICAL JOINT
66.7	SOFT GRAY SCHIST				67.3'-67.6' CLOSED VERTICAL JOINT
	HARD GRAY SCHIST	100			69.2'-70.2' FRACTURED (PIECES 1"-4" IN LENGTH)
71.7				692.7	
	CORING TERMINATED				70.8'-71.3' FRACTURED CLOSED JOINT DIPPING 45°

*1 SCHIST
*2 GRAY SCHIST

NO DRILLING WATER LOSS RECORDED

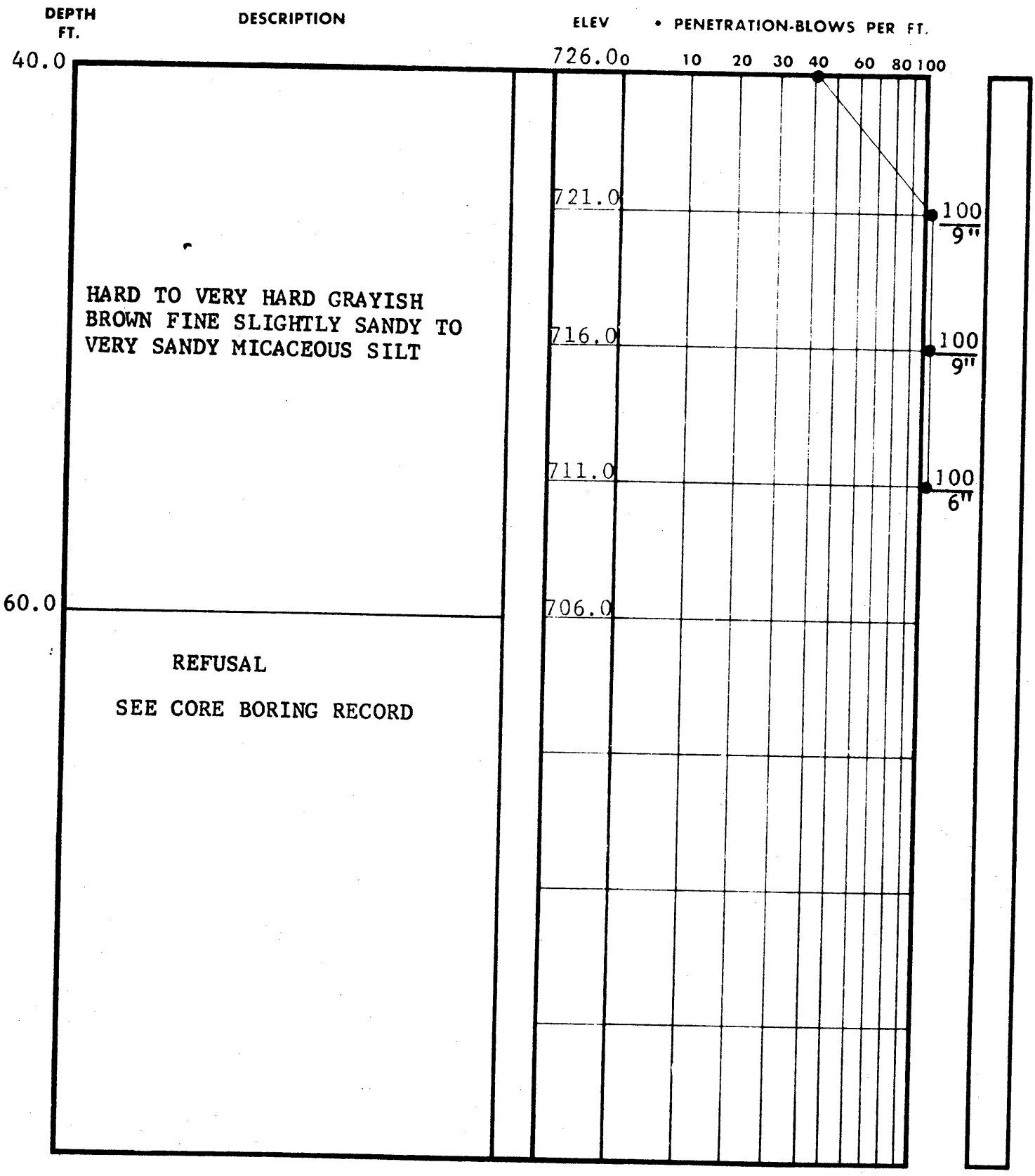
CORE BORING RECORD

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.

UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

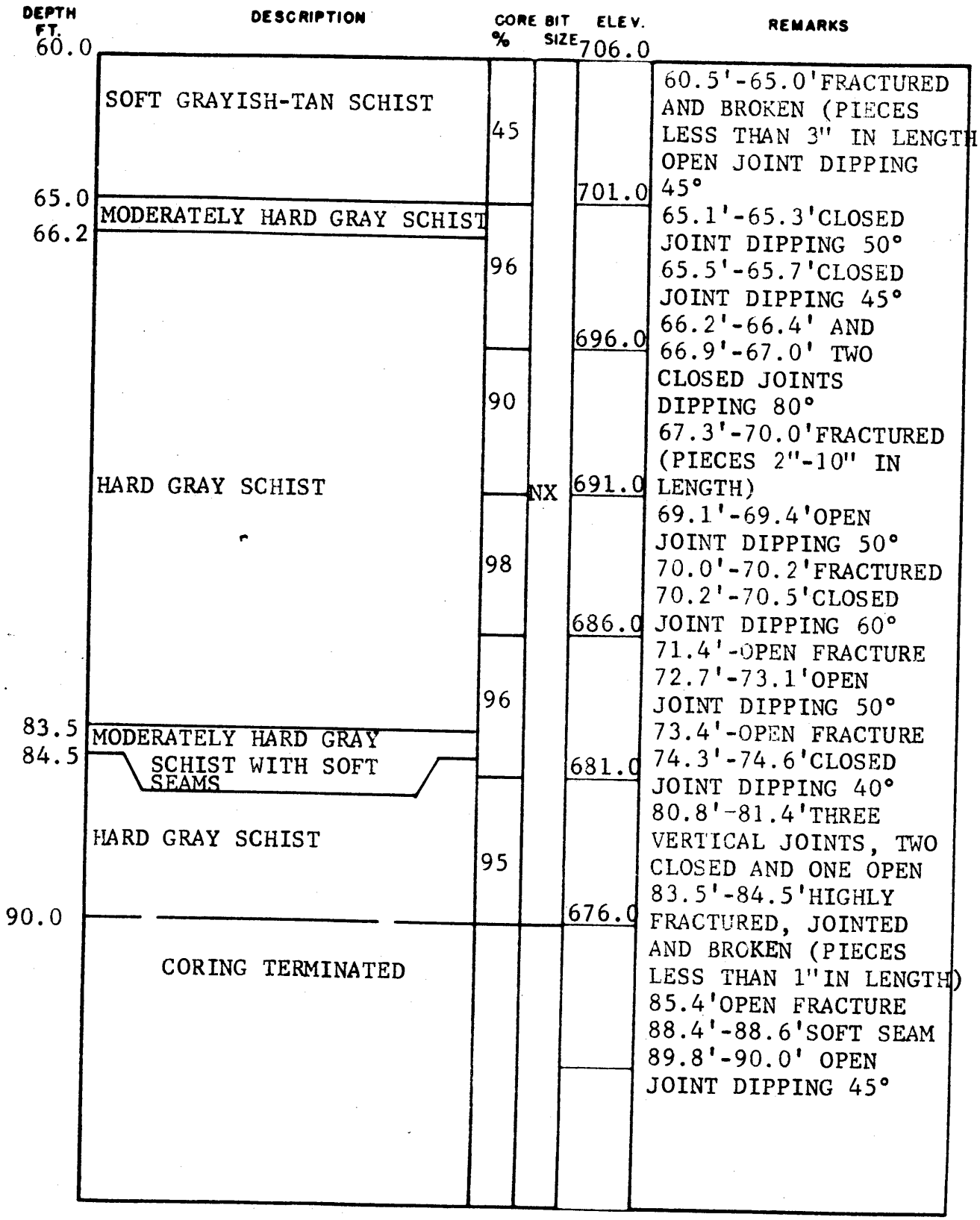
LOSS OF DRILLING WATER

BORING NO. B-124

DATE DRILLED 8-9-68

JOB NO. 5862

LAW ENGINEERING TESTING CO



NO DRILLING WATER LOSS RECORDED

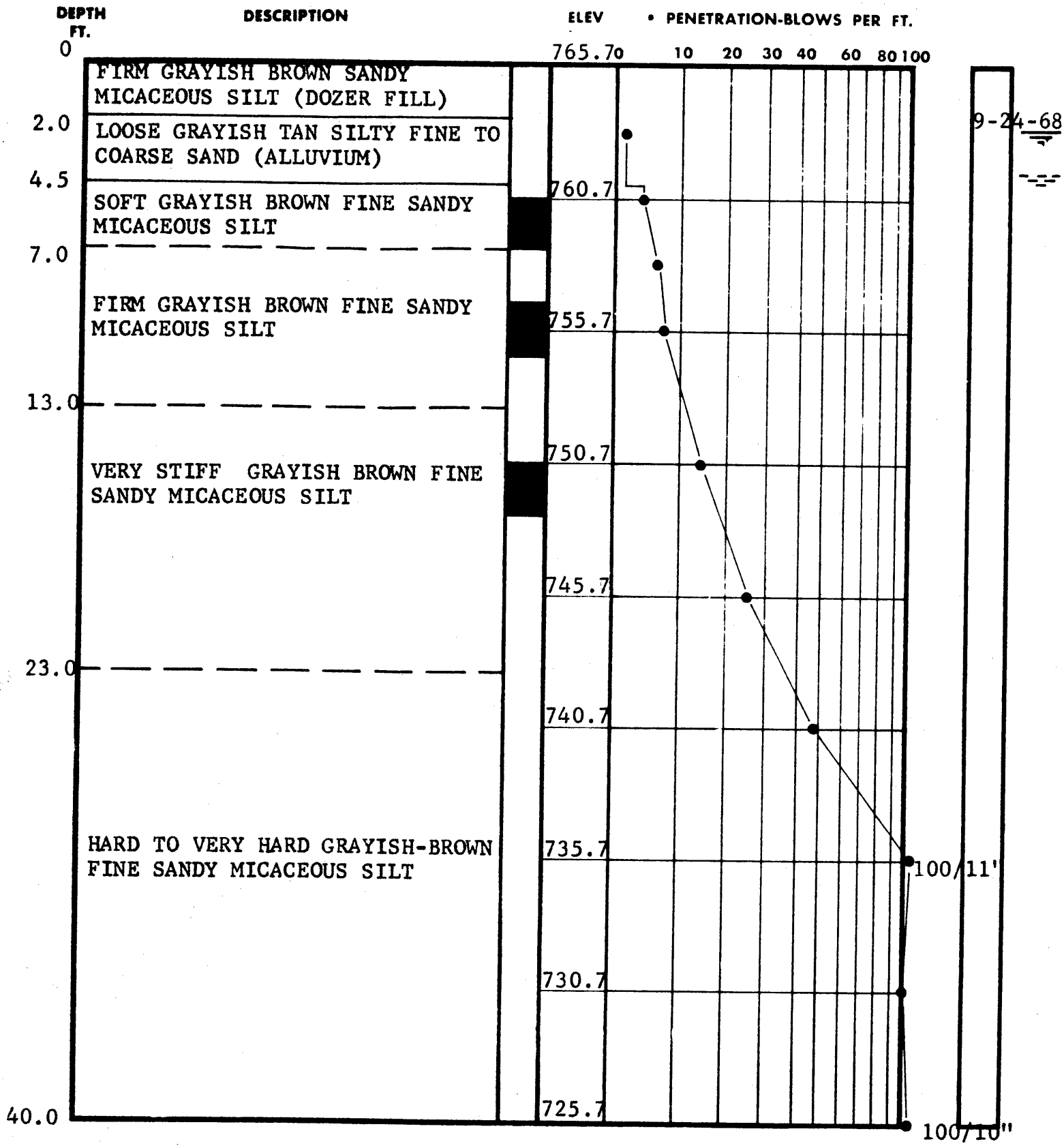
CORE BORING RECORD

BORING NO. 124
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.

jj

UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

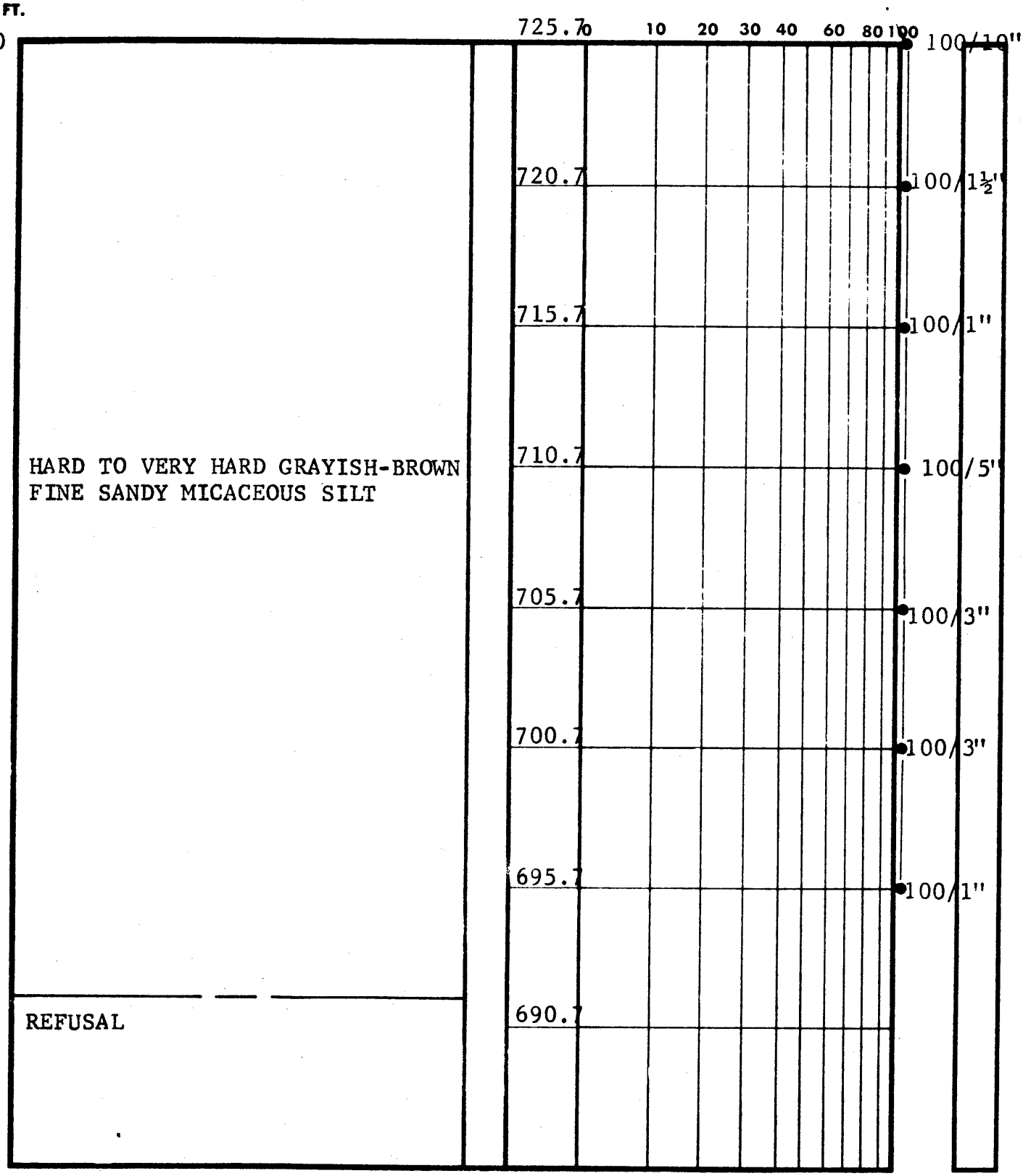
LOSS OF DRILLING WATER

BORING NO. B-125

DATE DRILLED 8/7/68

JOB NO. 5862

LAW ENGINEERING TESTING CO.



TEST BORING RECORD

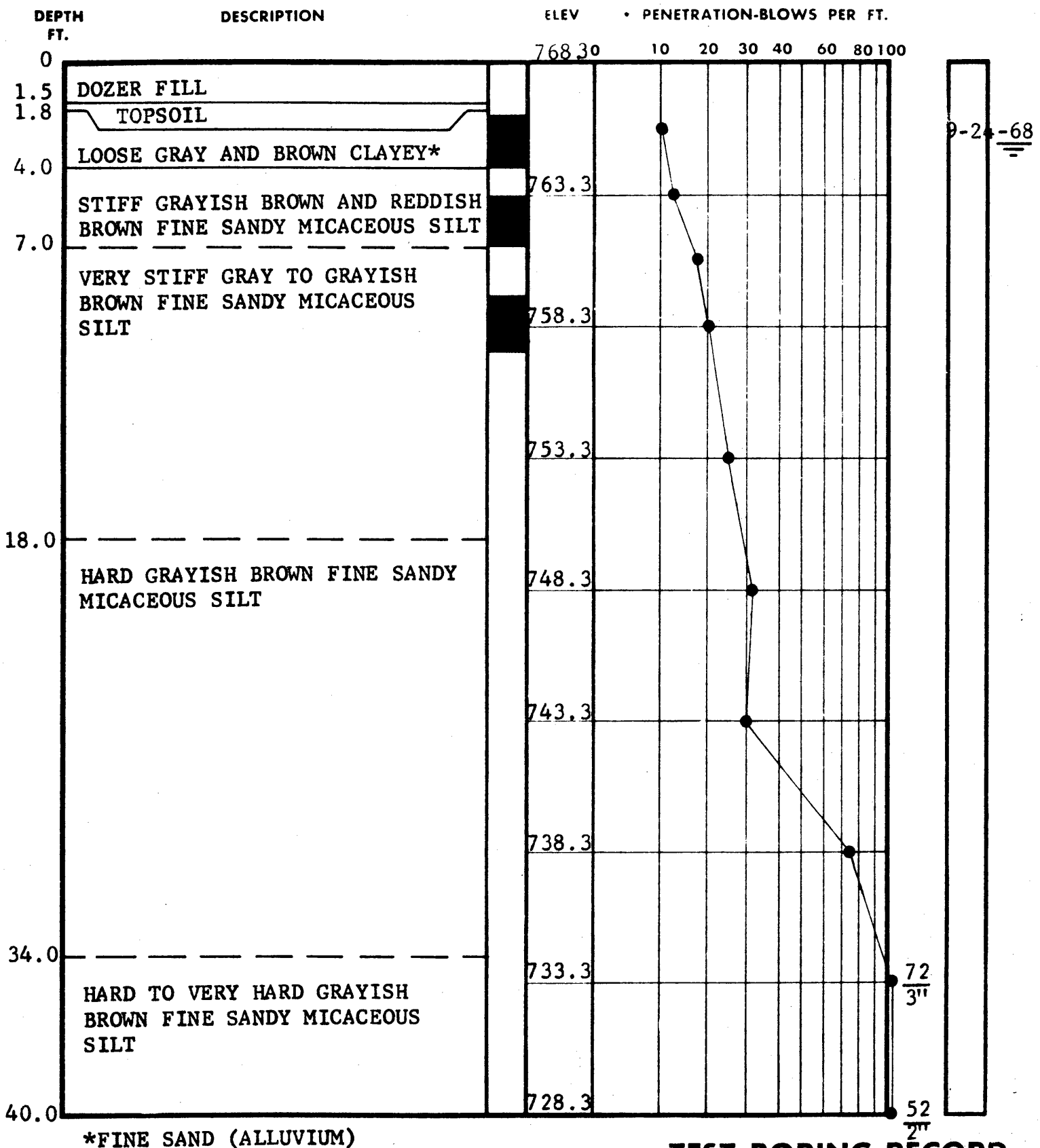
BORING AND SAMPLING MEETS ASTM D-1586
CORE DRILLING MEETS ASTM D-2113

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-125
DATE DRILLED 8/7/68
JOB NO. 5862

jj UNDISTURBED SAMPLE
|50| % ROCK CORE RECOVERY
WATER TABLE, 24 HR.
WATER TABLE, 1 HR.
LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO.



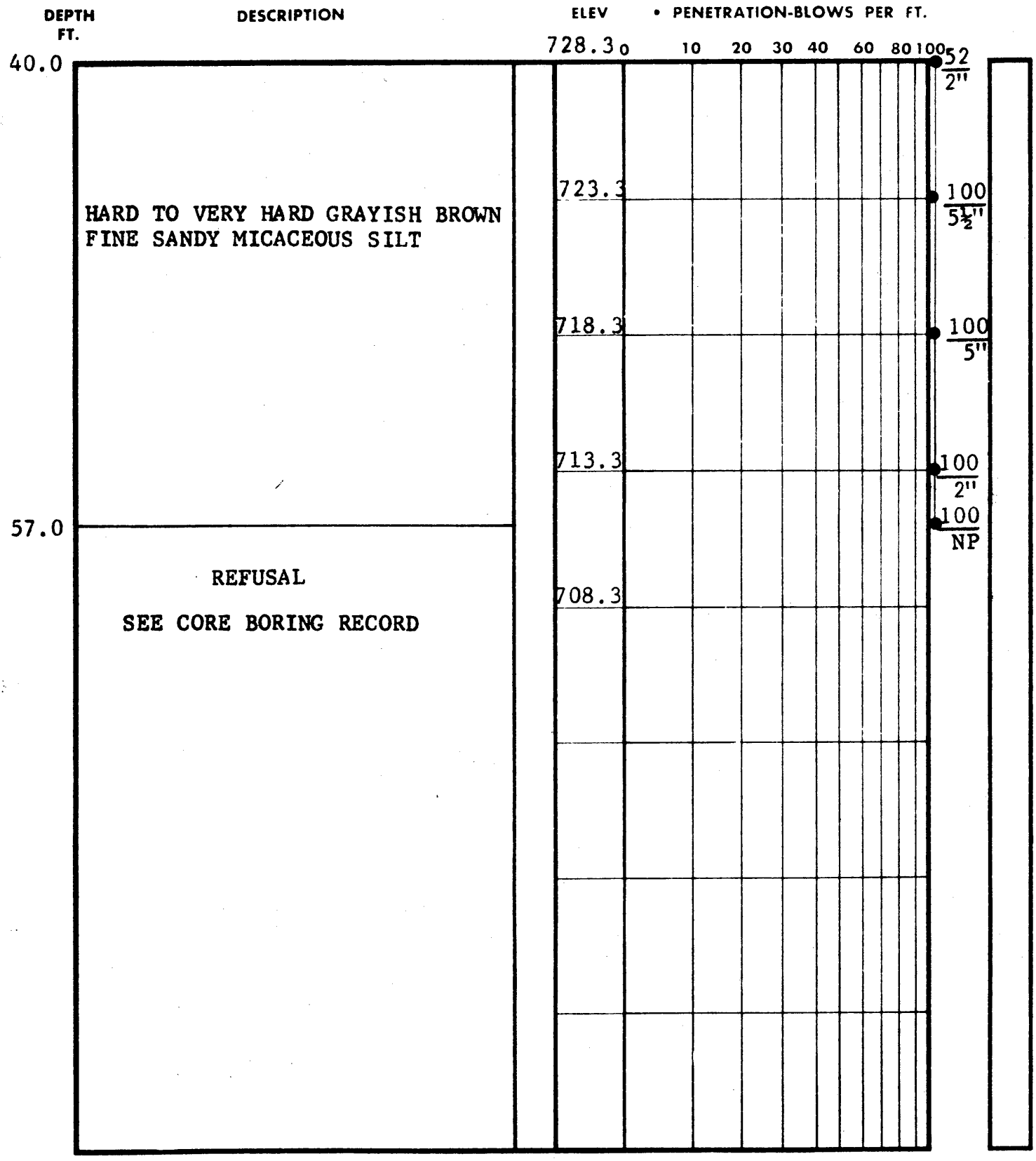
TEST BORING RECORD

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-126
DATE DRILLED 8-6-68
JOB NO. 5862

WATER TABLE, 24 HR.
WATER TABLE, 1 HR.
UNDISTURBED SAMPLE
|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.

UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

◀ LOSS OF DRILLING WATER

BORING NO. B-126

DATE DRILLED 8-6-68

JOB NO. 5862

LAW ENGINEERING TESTING CO.

DEPTH FT.	DESCRIPTION	CORE %	BIT SIZE	ELEV.	REMARKS
				711.3	
57.0	VERY SOFT, SOFT AND MODERATELY HARD GRAYISH TAN SCHIST	55	BX	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 INTERSECTING NEARLY VERTICAL JOINTS
		35		696.3	67.0'-72.0'HIGHLY FRACTURED AND BROKEN
		70		691.3	72.0'-77.0'HIGHLY FRACTURED AND BROKEN, SOME STAINED JOINTS AND FRACTURES
		50		686.3	77.0'-82.0'HIGHLY FRACTURED, SOME STAINED JOINTS AND FRACTURES (PIECES 4" TO LESS THAN 1" IN LENGTH)
		57		681.3	
87.0	CORING TERMINATED				

NO DRILLING WATER LOSS RECORDED

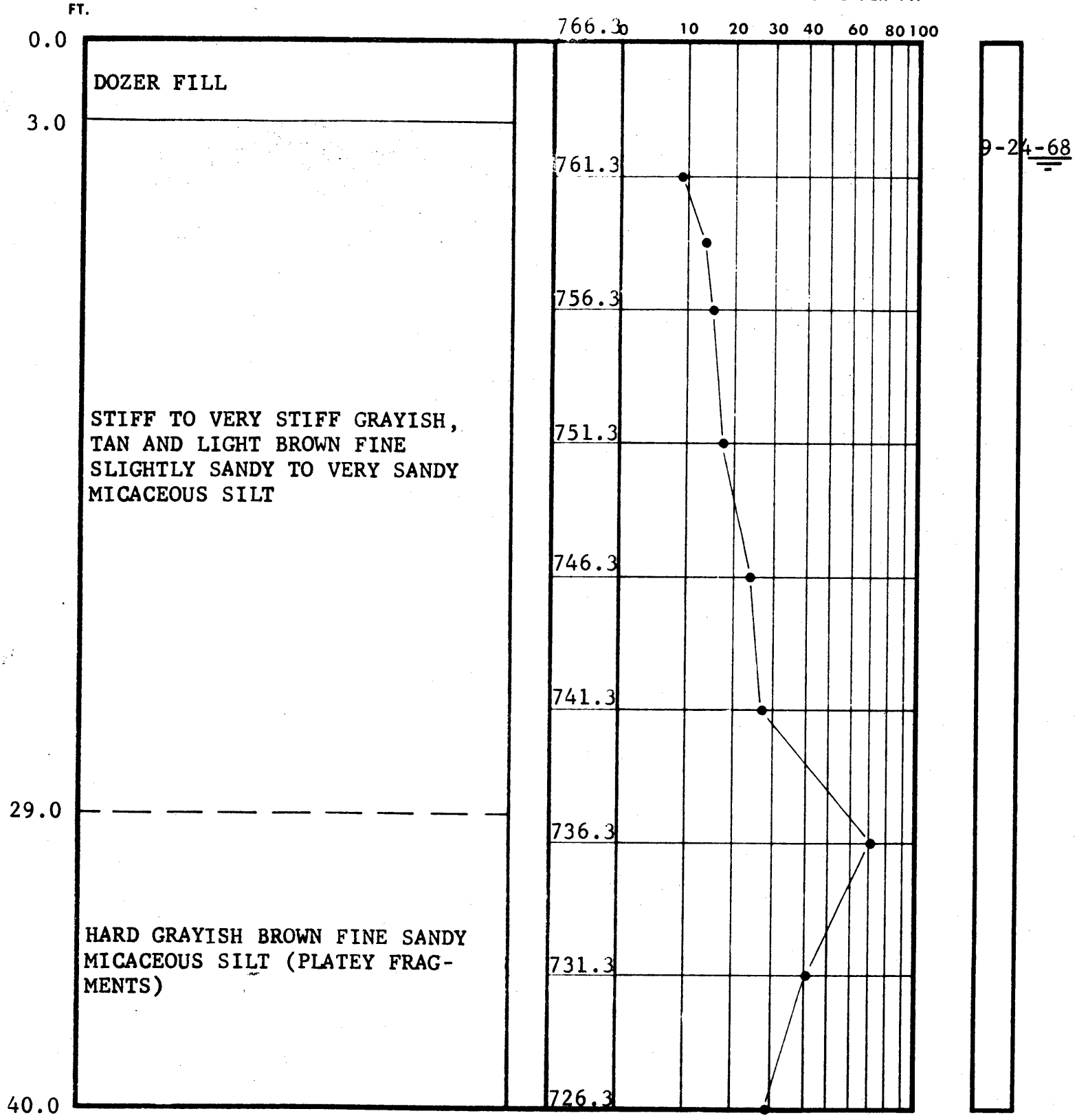
CORE BORING RECORD

BORING NO. 126
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.

abc UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

BORING NO. B-127

DATE DRILLED 8-13-68

JOB NO. 5862

LAW ENGINEERING TESTING CO.

DEPTH FT.	DESCRIPTION	ELEV	• PENETRATION-BLOWS PER FT. 10 20 30 40 60 80 100
40.0		726.3	
41.0	HARD GRAYISH BROWN FINE SANDY*		
	VERY DENSE LIGHT BROWN SILTY FINE TO MEDIUM SAND (NO SPOON SAMPLE RECOVERED AT 50.0 FEET)	721.3	100/4"
50.0		716.3	100/1"
	REFUSAL SEE CORE BORING RECORD		

* 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.

sn / abc — UNDISTURBED SAMPLE
|50| — % ROCK CORE RECOVERY
WATER TABLE, 24 HR.
WATER TABLE, 1 HR.
◀ LOSS OF DRILLING WATER

BORING NO. B-127
DATE DRILLED 8-13-68
JOB NO. 5862

LAW ENGINEERING TESTING CO.

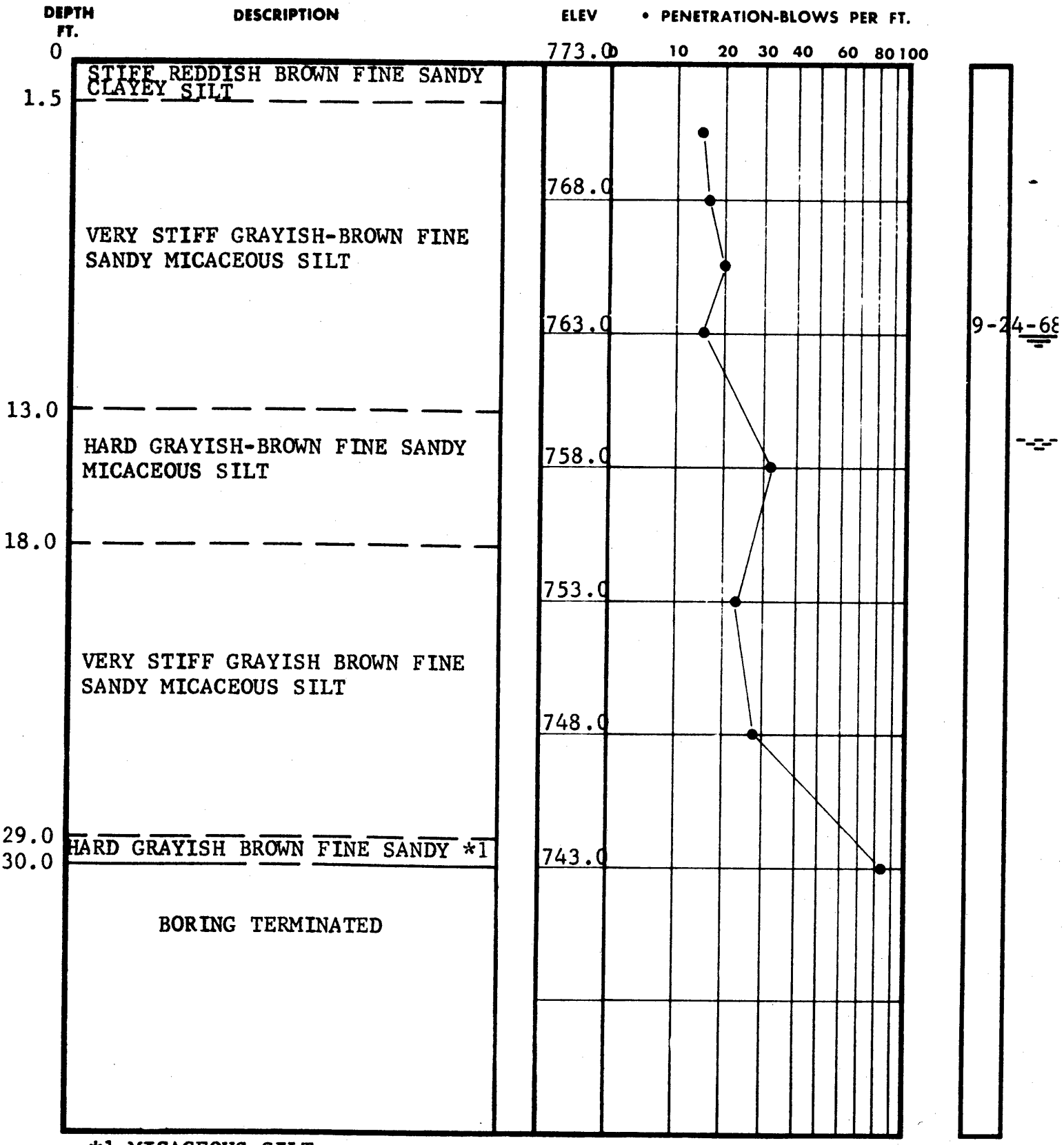
DEPTH FT.	DESCRIPTION	CORE %	BIT SIZE	ELEV.	REMARKS
50.0				716.3	
	VERY SOFT GRAY BROWN SCHIST	73			50.0' - 52.2' ROCK IS FRACTURED AND THINLY FOLIATED; ALSO, SEVERAL STAINED FRACTURED FOLIATION PLANES AND STAINED JOINTS DIPPING ABOUT 80°
52.2	MODERATELY HARD GRAY SCHIST				
53.2		25		711.3	
		51		706.3	52.2' - 53.2' TWO INTERSECTING OPEN STAINED JOINTS, ONE NEARLY VERTICAL AND ONE DIPPING ABOUT 80°
	MODERATELY HARD DARK GRAY SCHIST WITH OCCASIONAL THIN SOFT SEAMS	90	NX	701.3	53.2' - 65.0' HIGHLY FRACTURED (PIECES UP TO 1" IN LENGTH)
		94		696.3	61.0' - 65.0' (CLOSED JOINT DIPPING 80°, OPEN STAINED JOINT DIPPING 80°)
		97		691.3	68.0' - 68.3' OPEN STAINED JOINT DIPPING 45°
					68.8'- 68.9' OPEN STAINED JOINT DIPPING 40°
80.0	CORING TERMINATED			686.3	

CORE BORING RECORD

BORING NO. B-127
JOB NO. 5862

WATER TABLE

LAW ENGINEERING TESTING CO



*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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

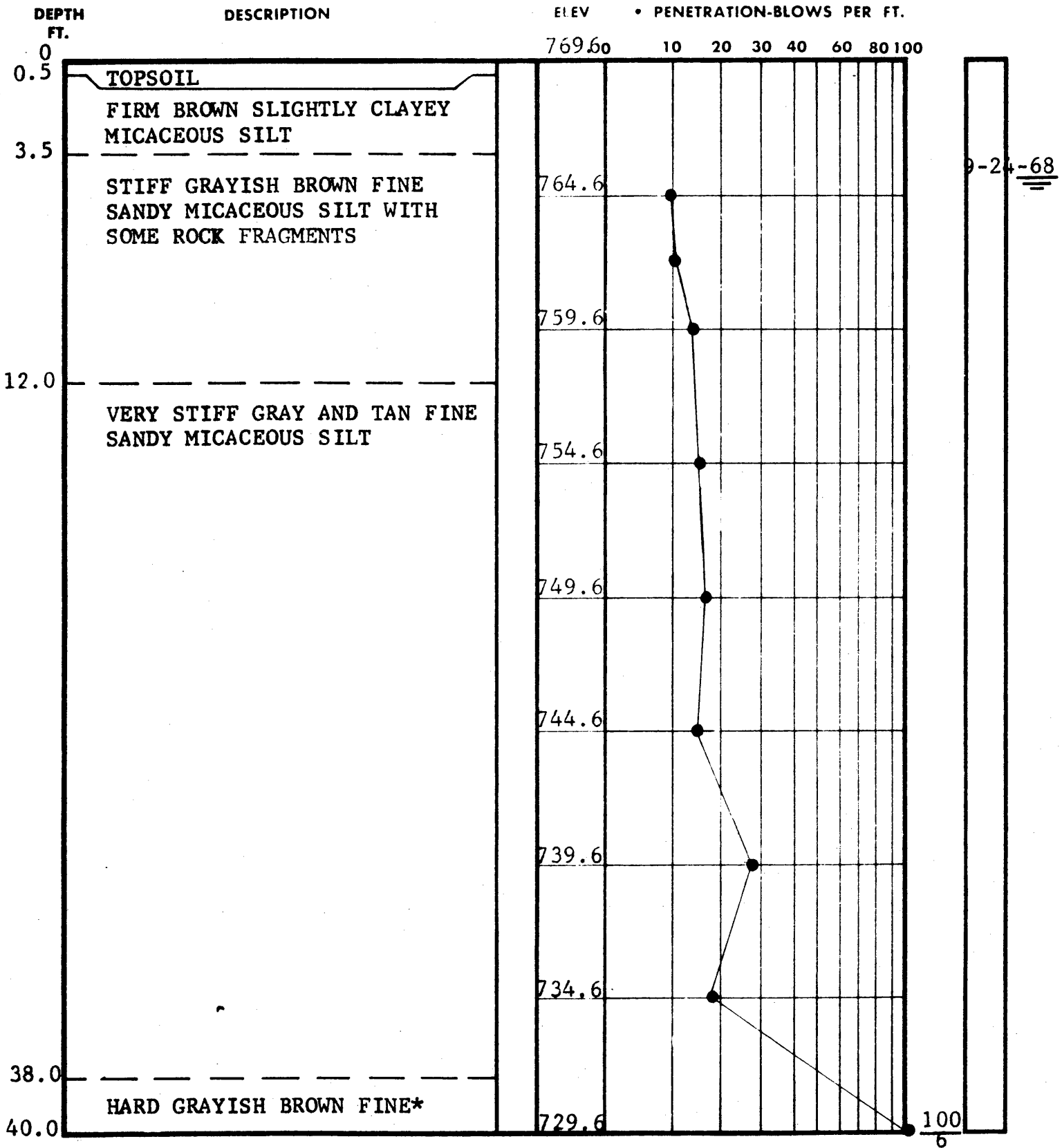
LOSS OF DRILLING WATER

BORING NO. B-128

DATE DRILLED 8/6/68

JOB NO. 5862

LAW ENGINEERING TESTING CO.



* 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.

WATER TABLE, 24 HR.

UNDISTURBED SAMPLE

WATER TABLE, 1 HR.

|50| % ROCK CORE RECOVERY

LOSS OF DRILLING WATER

BORING NO. B-129

DATE DRILLED 8-19-68

JOB NO. 5862

LAW ENGINEERING TESTING CO.

DEPTH FT.	DESCRIPTION	ELEV	• PENETRATION-BLOWS PER FT. 10 20 30 40 60 80 100
40.0		729.6	100/6"
	HARD GRAYISH BROWN FINE SANDY MICACEOUS SILT WITH SOME ROCK FRAGMENTS	724.6	100/12"
		719.6	50/1"
		714.6	50/½"
59.5		709.6	
	REFUSAL SEE 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.

WATER TABLE, 24 HR.

UNDISTURBED SAMPLE

WATER TABLE, 1 HR.

|50| % ROCK CORE RECOVERY

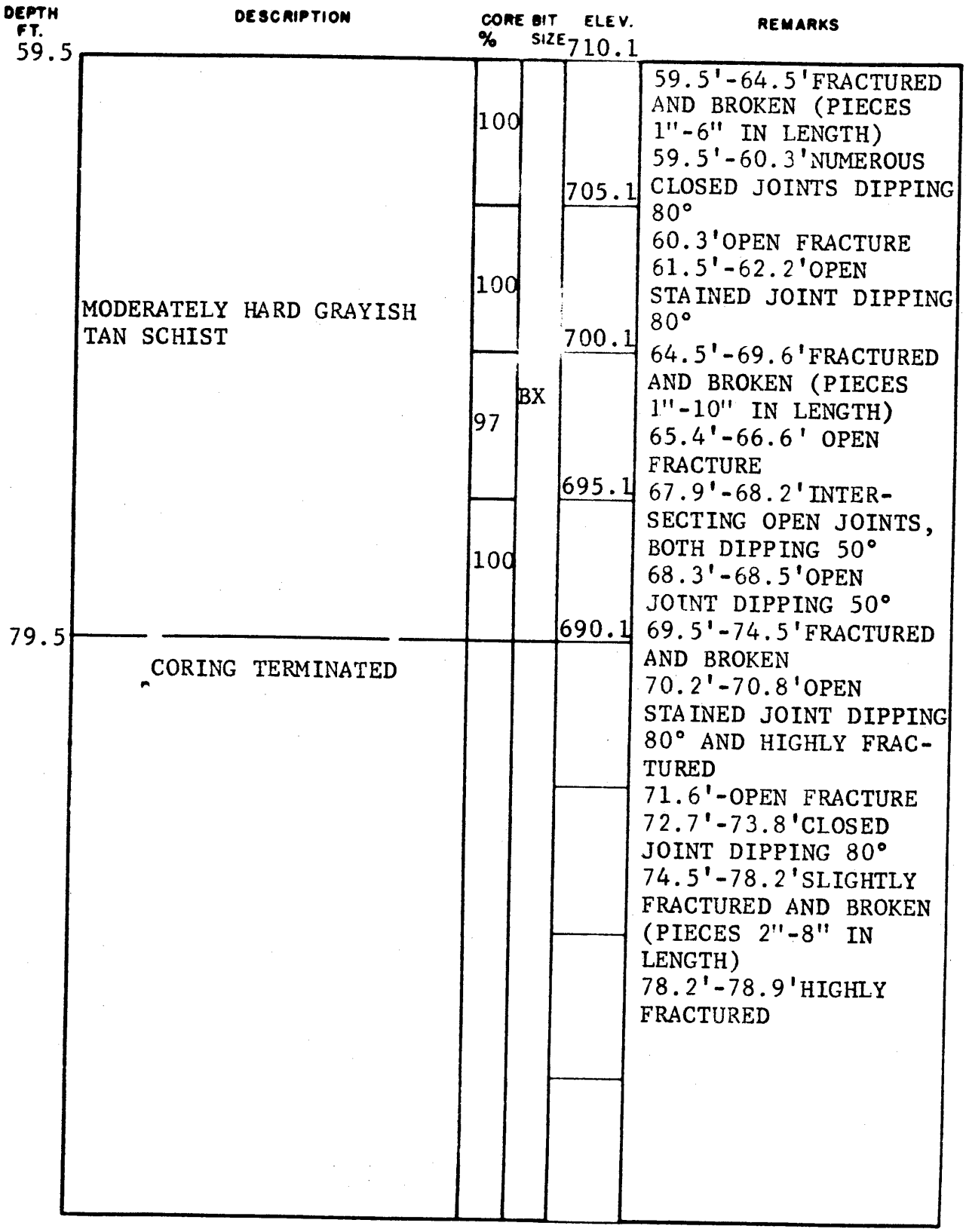
LOSS OF DRILLING WATER

BORING NO. B-129

DATE DRILLED 8-19-68

JOB NO. 5862

LAW ENGINEERING TESTING CO.



NO DRILLING WATER LOSS RECORDED

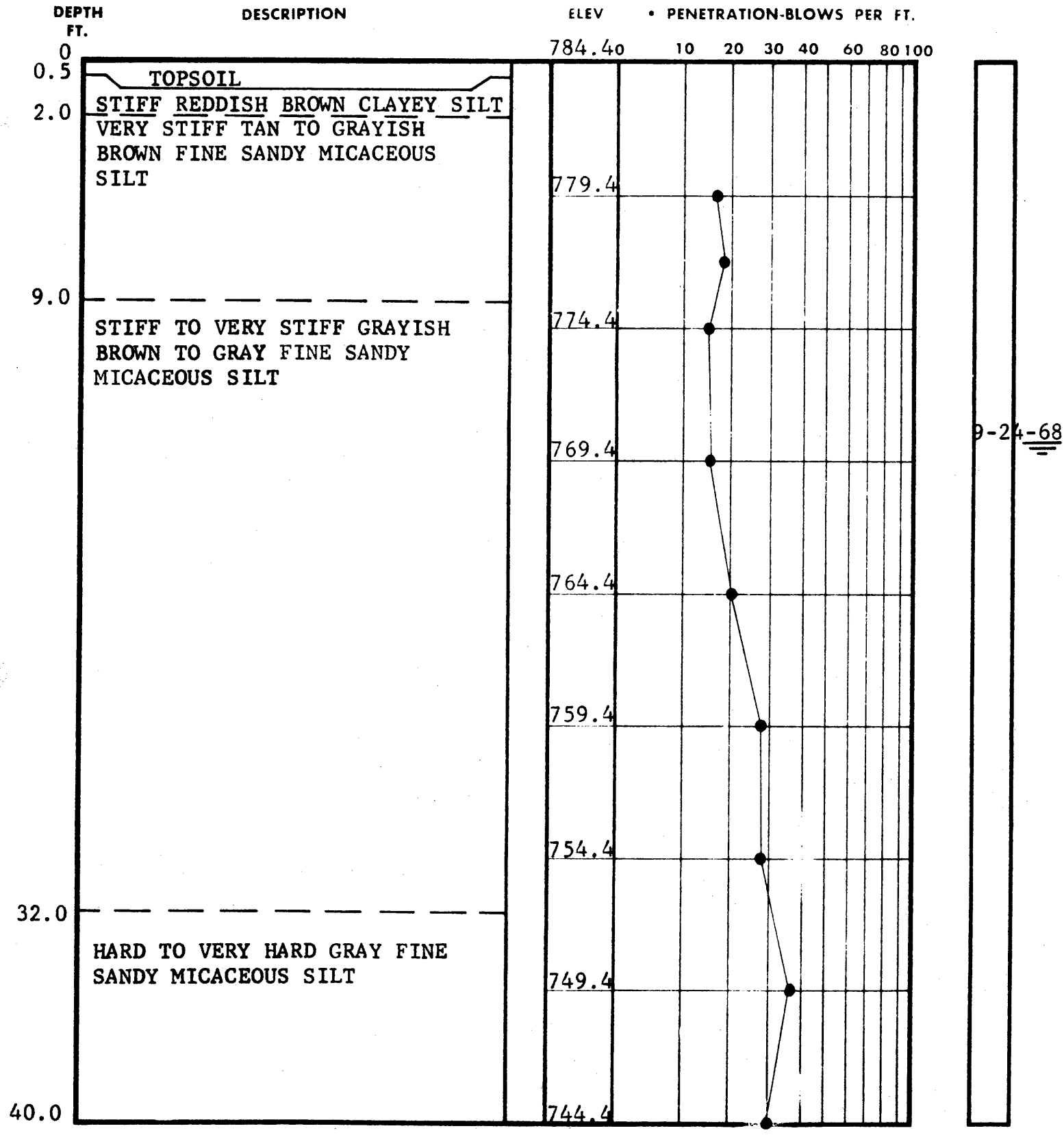
CORE BORING RECORD

BORING NO. 129
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.

UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

BORING NO. B-131

DATE DRILLED 8-21-68

JOB NO. 5862

LAW ENGINEERING TESTING CO.

DEPTH FT.	DESCRIPTION	ELEV	• PENETRATION-BLOWS PER FT. 0 10 20 30 40 60 80 100
40.0		744.4	
	HARD TO VERY HARD GRAY FINE SANDY MICACEOUS SILT	739.4	
		734.4	100/5"
		729.4	100/2"
		724.4	100/4"
		719.4	100/1"
68.3	REFUSAL SEE CORE BORING RECORD	714.4	

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.

UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

BORING NO. B-131

DATE DRILLED 8-21-68

JOB NO. 5862

LAW ENGINEERING TESTING CO.

DEPTH FT.	DESCRIPTION	CORE %	BIT SIZE	ELEV.	REMARKS
68.3				716.1	
	MODERATELY HARD GRAY SCHIST	98	NX	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) 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 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°
78.3		98		706.1	
	HARD GRAY SCHIST	93		701.1	
88.3		98		696.1	
	CORING TERMINATED				

NO DRILLING WATER LOSS RECORDED

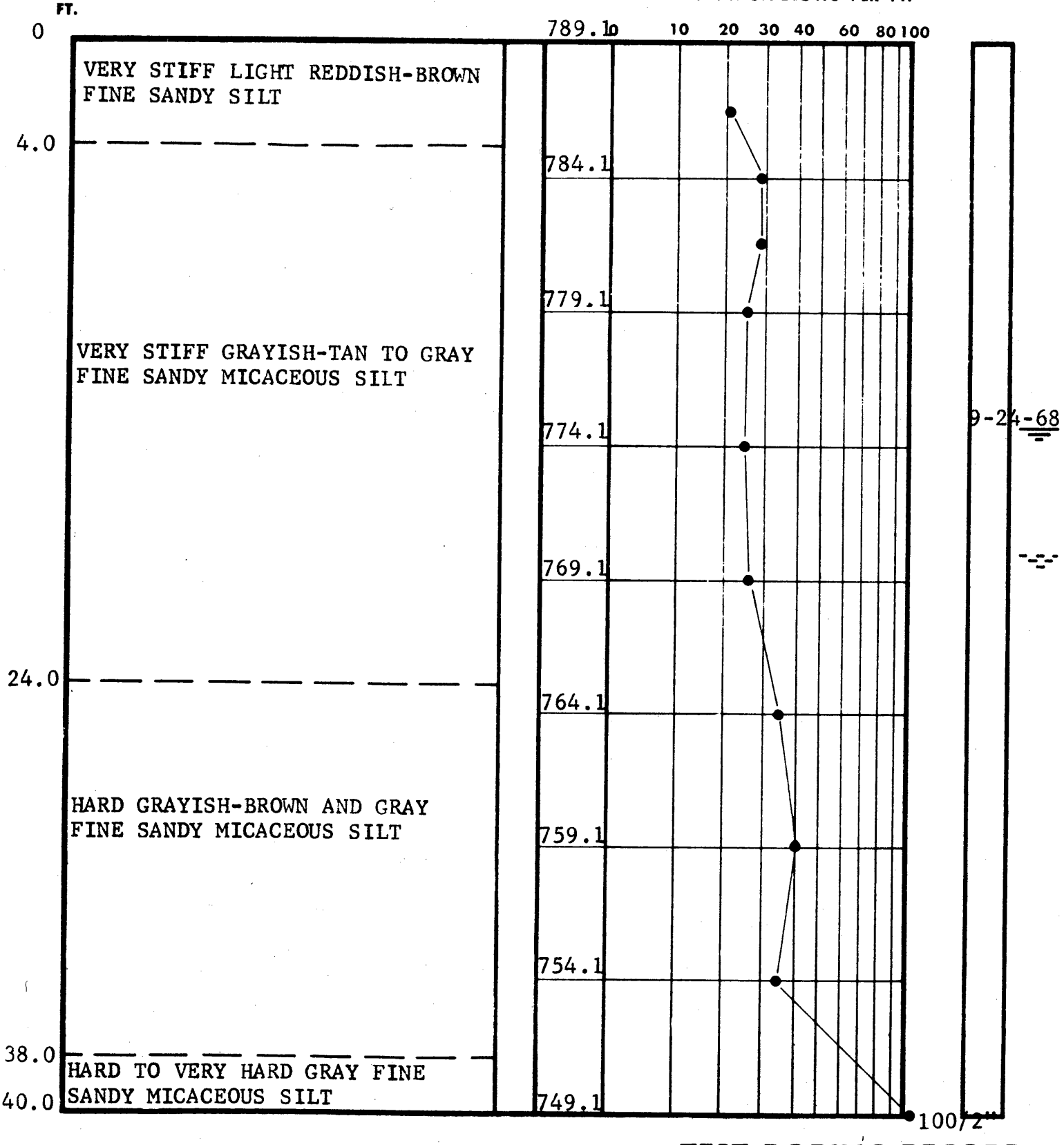
CORE BORING RECORD

BORING NO. 131
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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

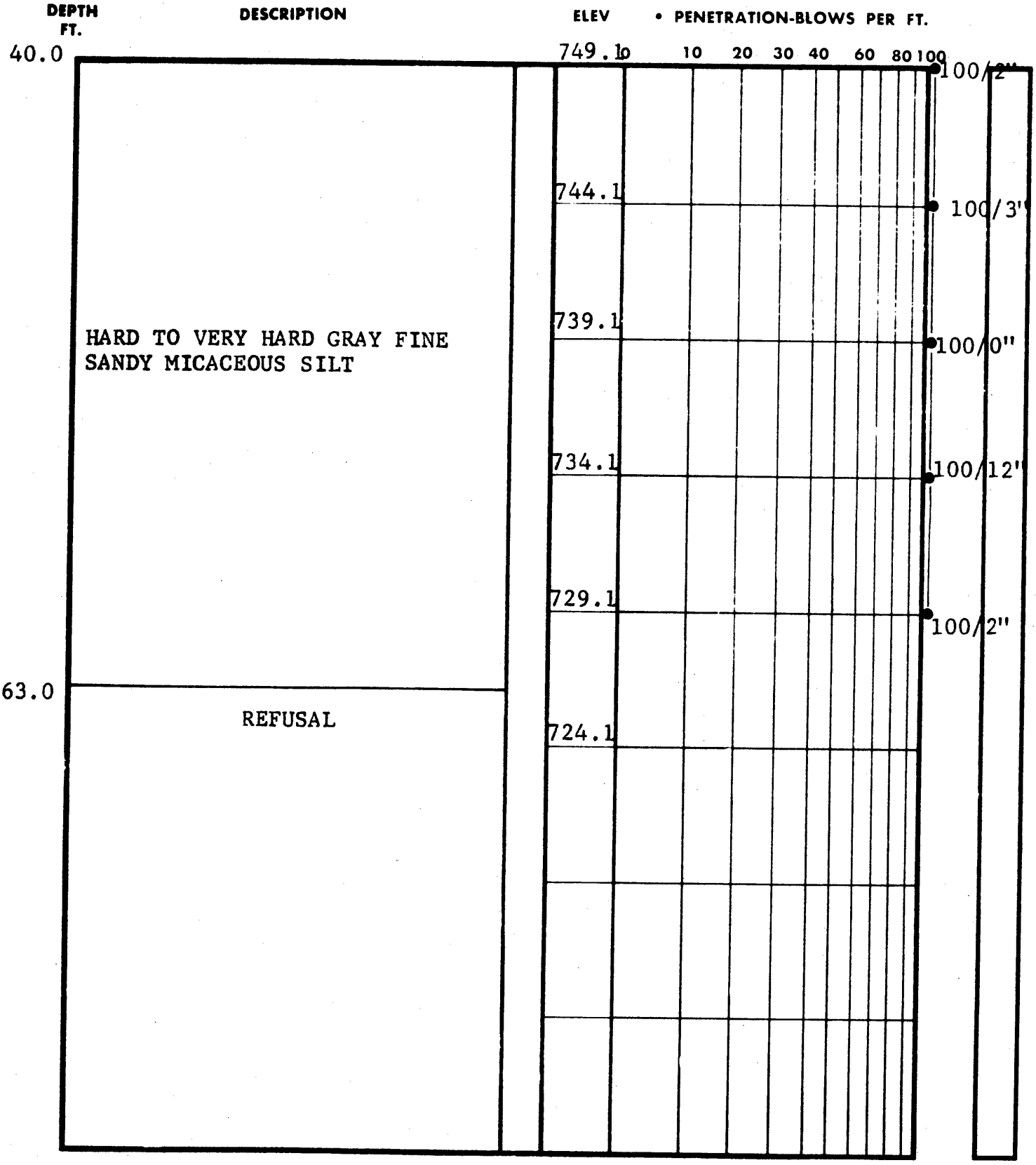
LOSS OF DRILLING WATER

BORING NO. B-132

DATE DRILLED 8/26/68

JOB NO. 5862

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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

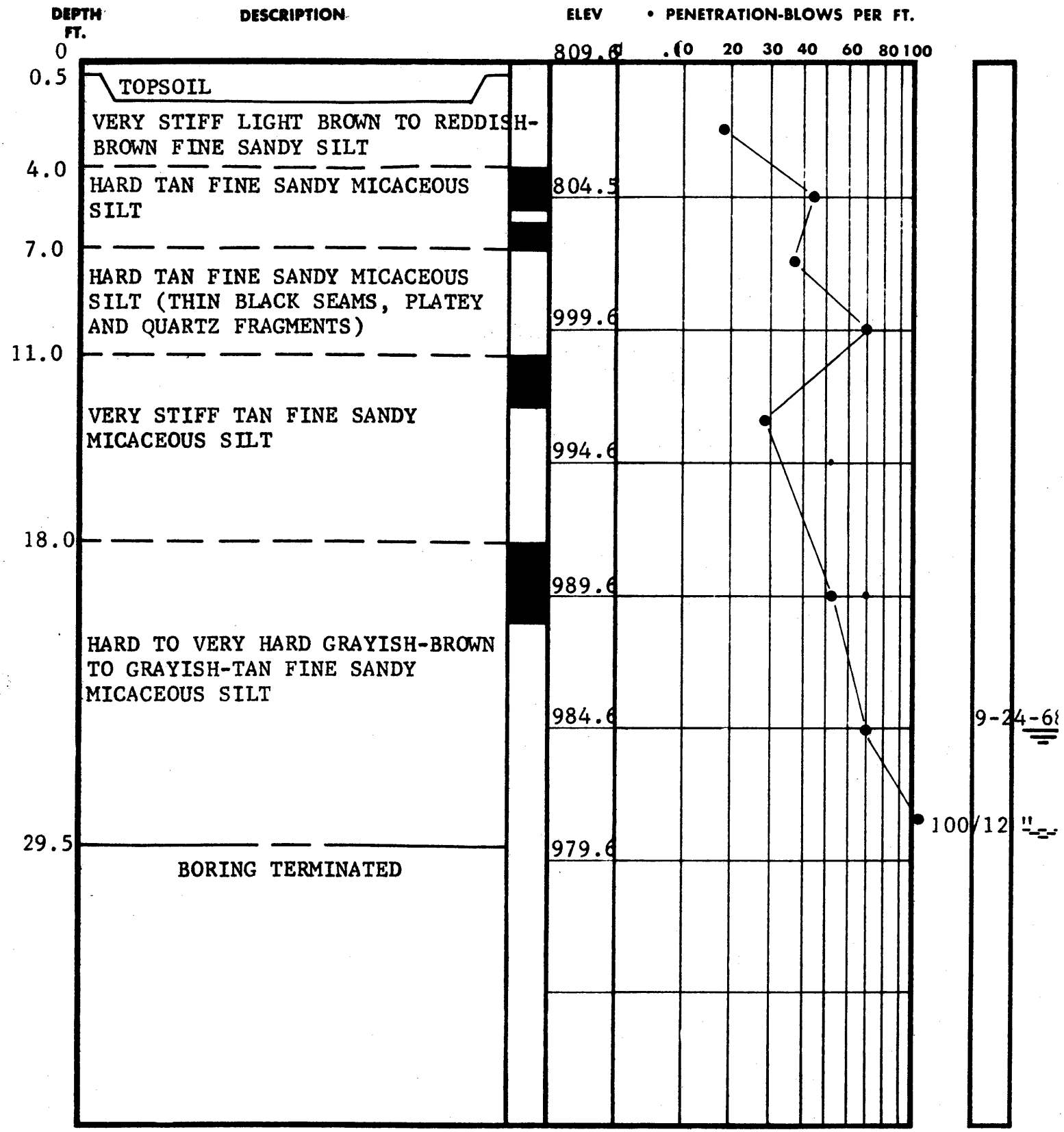
LOSS OF DRILLING WATER

BORING NO. B-132

DATE DRILLED 8/26/68

JOB NO. 5862

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.

jj

UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

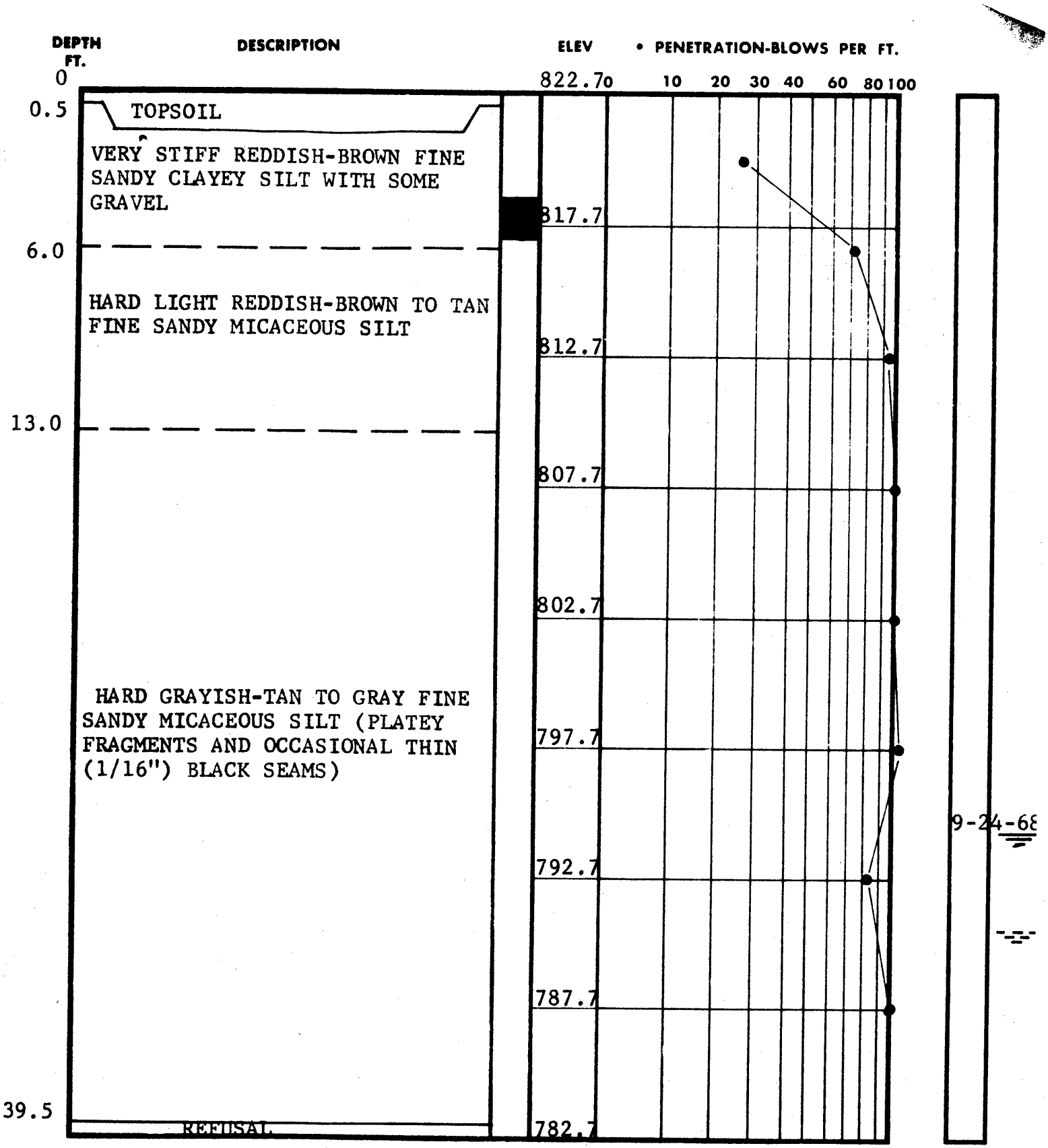
LOSS OF DRILLING WATER

BORING NO. B-133

DATE DRILLED 8/26/68

JOB NO. 5862

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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

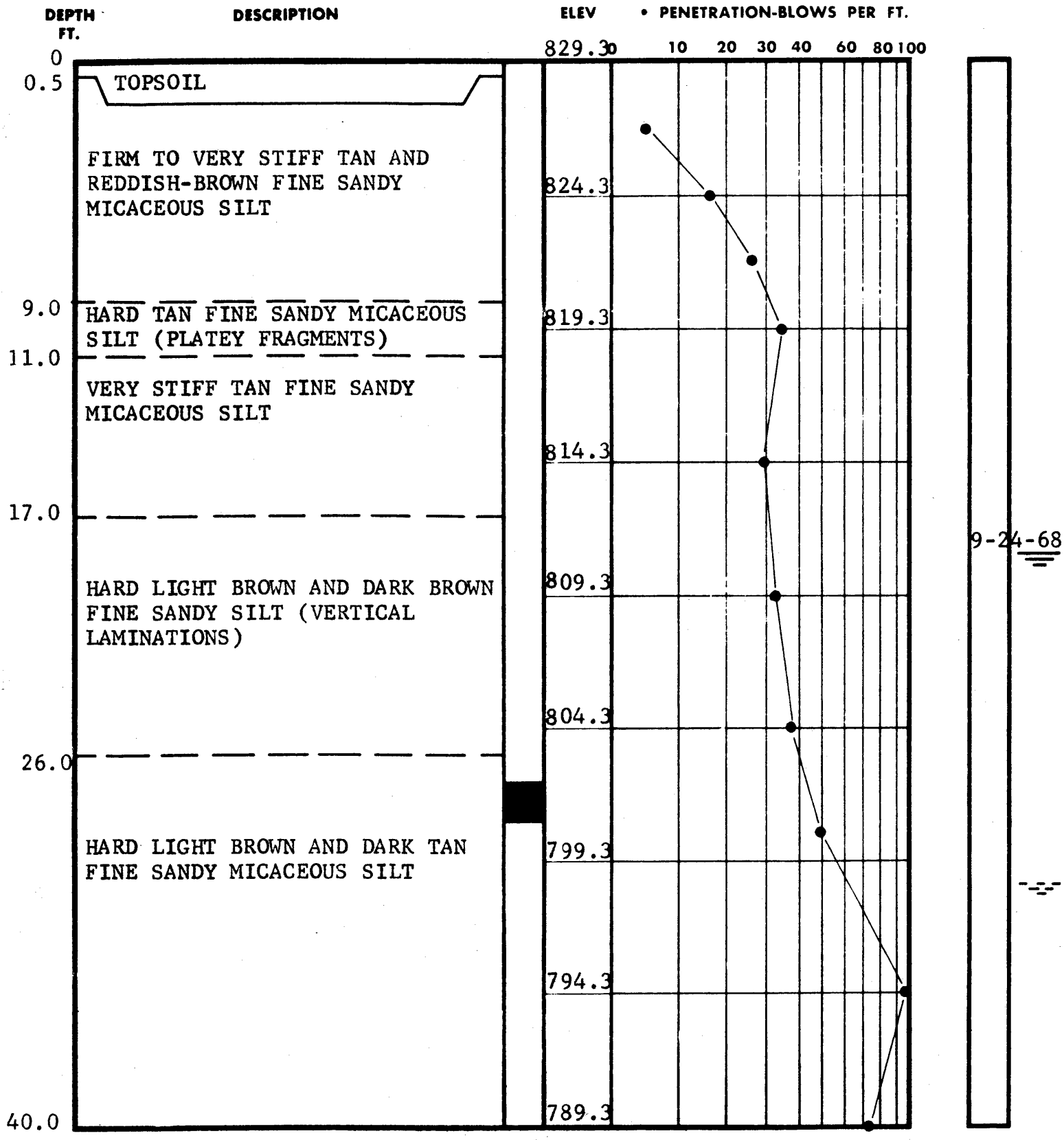
LOSS OF DRILLING WATER

BORING NO. B-134

DATE DRILLED 8/26/68

JOB NO. 5862

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-135
DATE DRILLED 8/26/68
JOB NO. 5862

jj UNDISTURBED SAMPLE

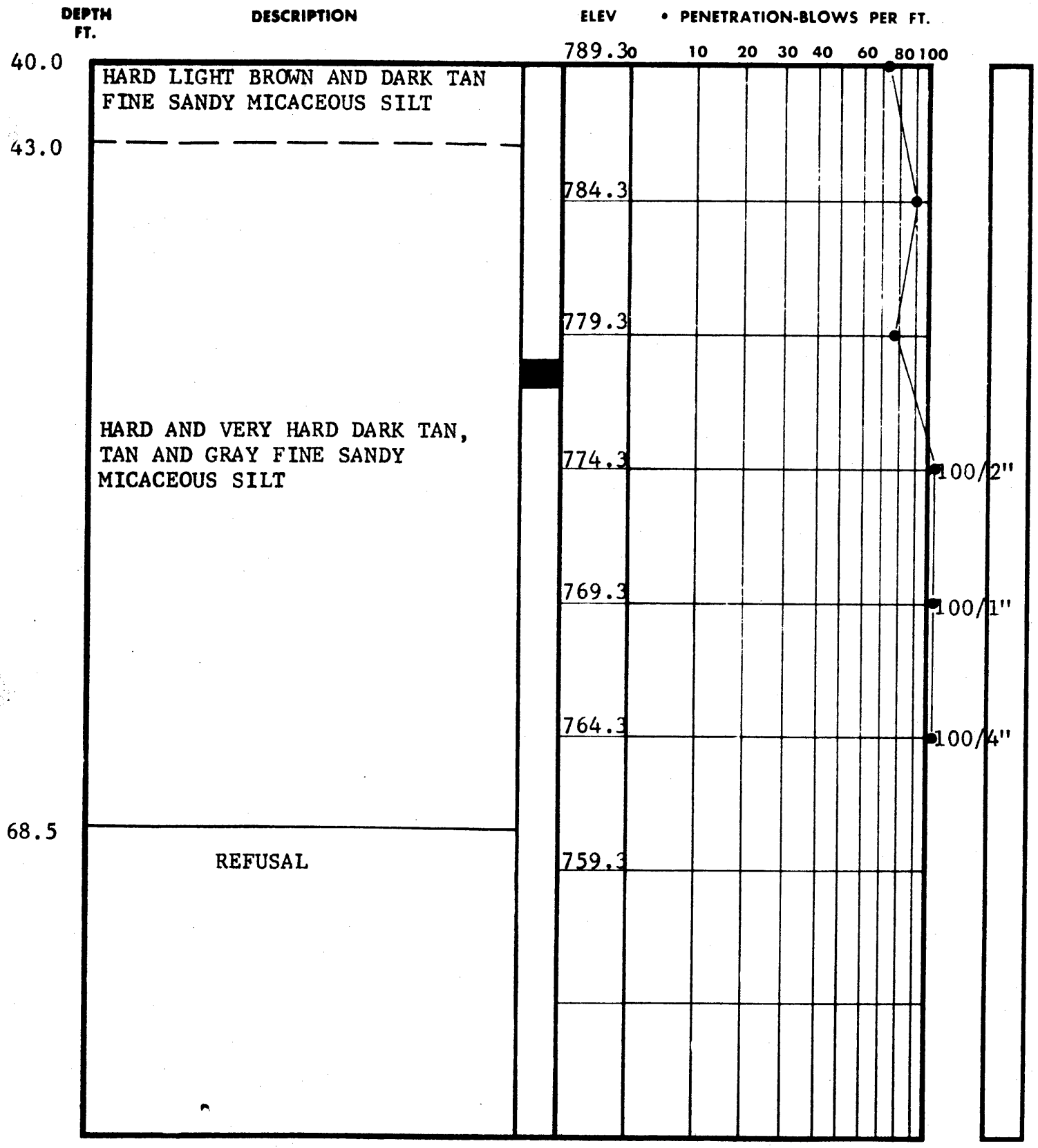
|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

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.

kk
jj

UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

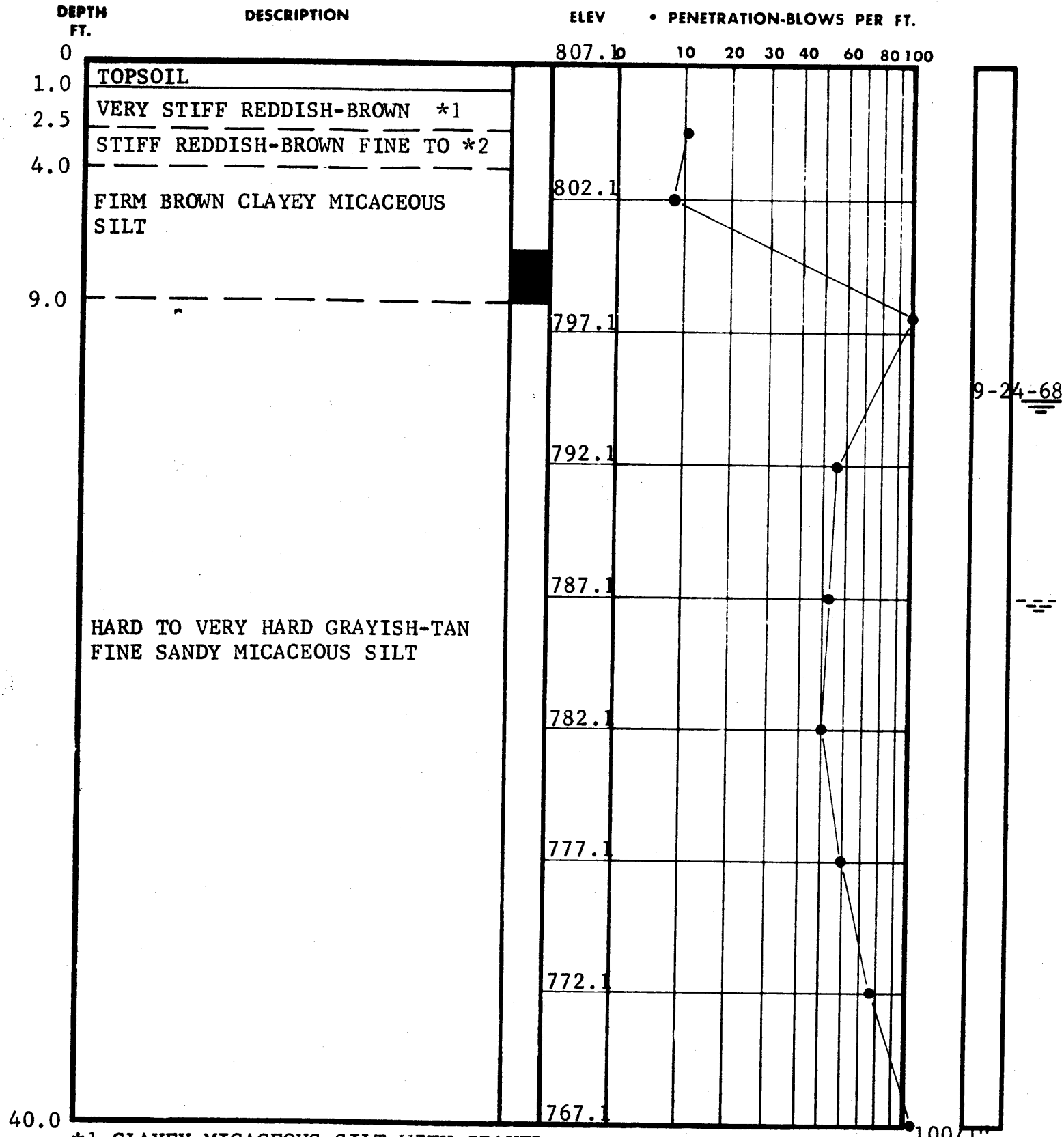
LOSS OF DRILLING WATER

BORING NO. B-135

DATE DRILLED 8/26/68

JOB NO. 5862

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.

BORING NO. B-136
DATE DRILLED 8/27/68
JOB NO. 5862

jj

UNDISTURBED SAMPLE
|50| % ROCK CORE RECOVERY
WATER TABLE, 24 HR.
WATER TABLE, 1 HR.
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		767.1	100/1"
	HARD TO VERY HARD GRAYISH-TAN FINE SANDY MICACEOUS SILT	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.

BORING NO. B-136
DATE DRILLED 8/27/68
JOB NO. 5862

UNDISTURBED SAMPLE

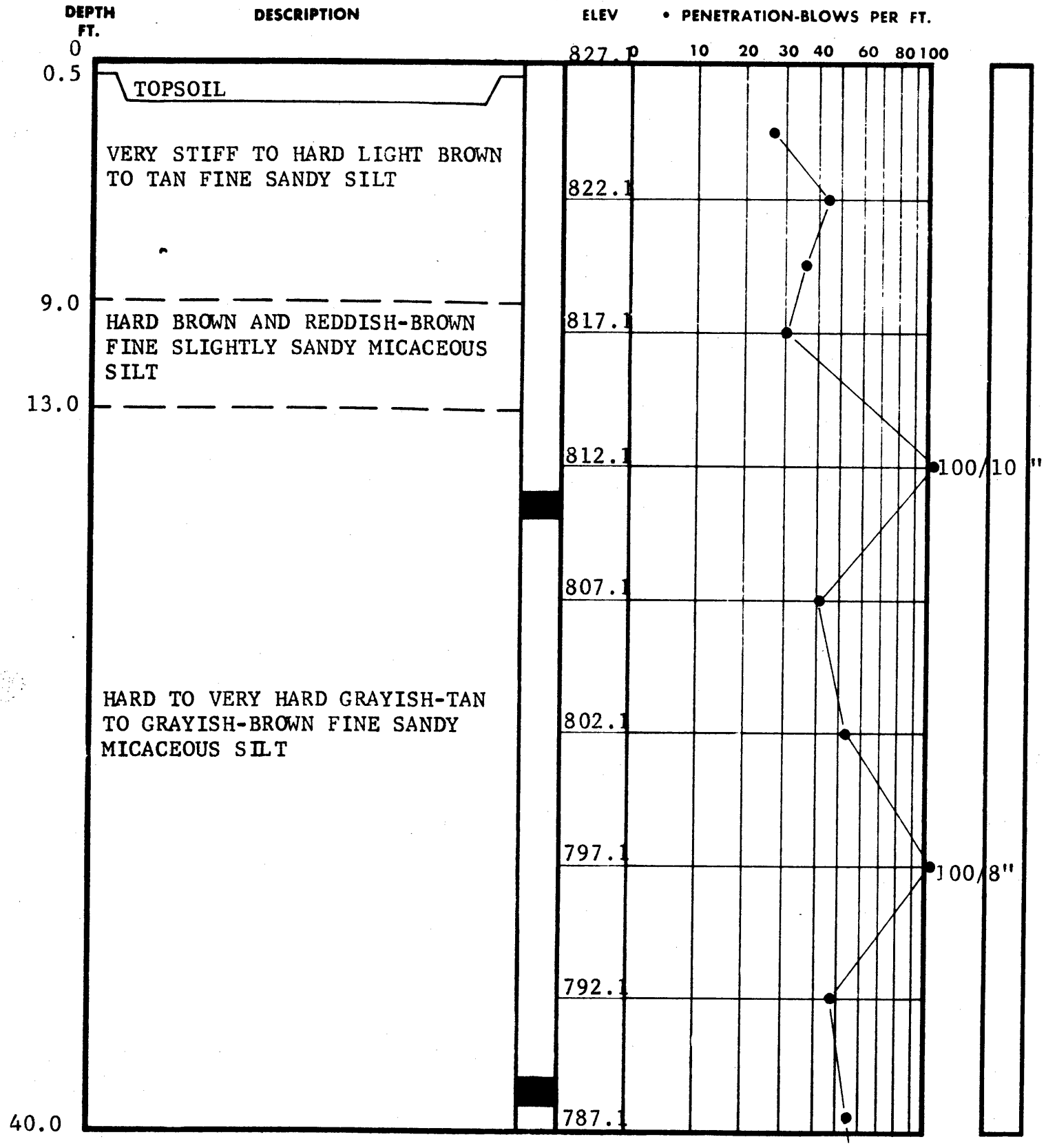
|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

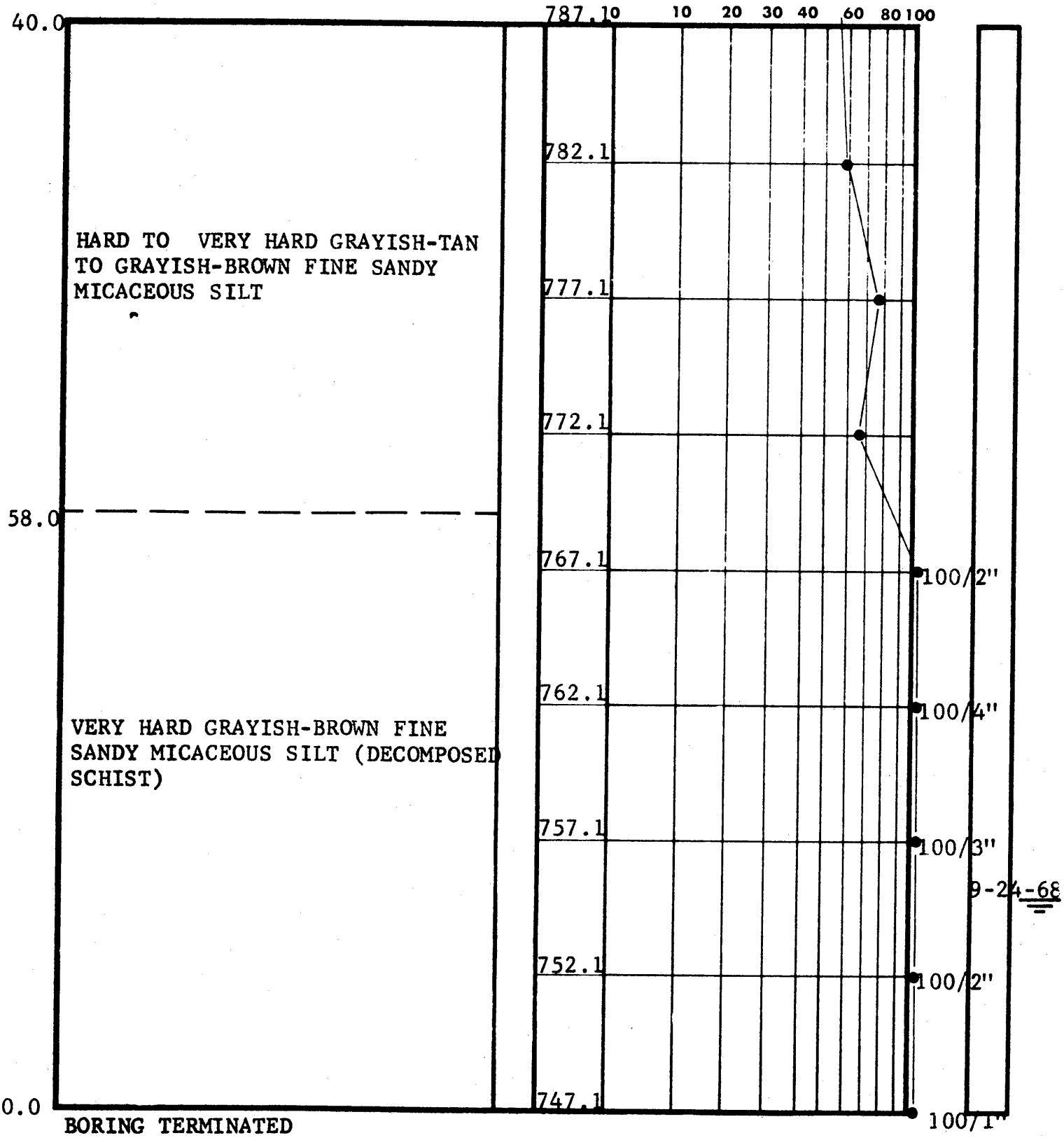
LOSS OF DRILLING WATER

BORING NO. B-137

DATE DRILLED 8/28/68

JOB NO. 5862

LAW ENGINEERING TESTING CO.



TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586
CORE DRILLING MEETS ASTM D-2113

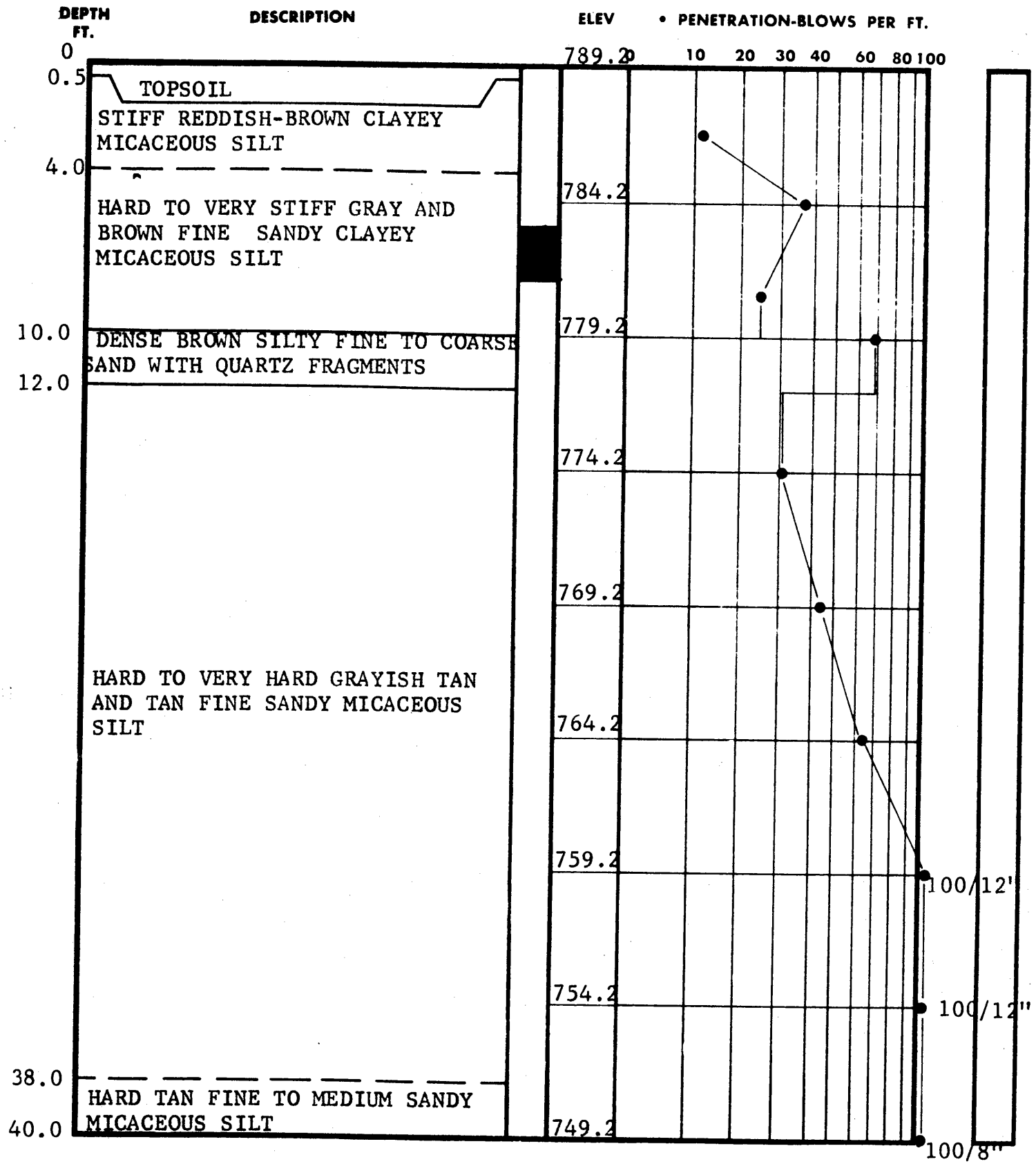
PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

BORING NO. B-137
DATE DRILLED 8/28/68
JOB NO. 5862

WATER TABLE, 24 HR.
WATER TABLE, 1 HR.
LOSS OF DRILLING WATER
UNDISTURBED SAMPLE
|50| % ROCK CORE RECOVERY

jj

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.

UNDISTURBED SAMPLE

jj |50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

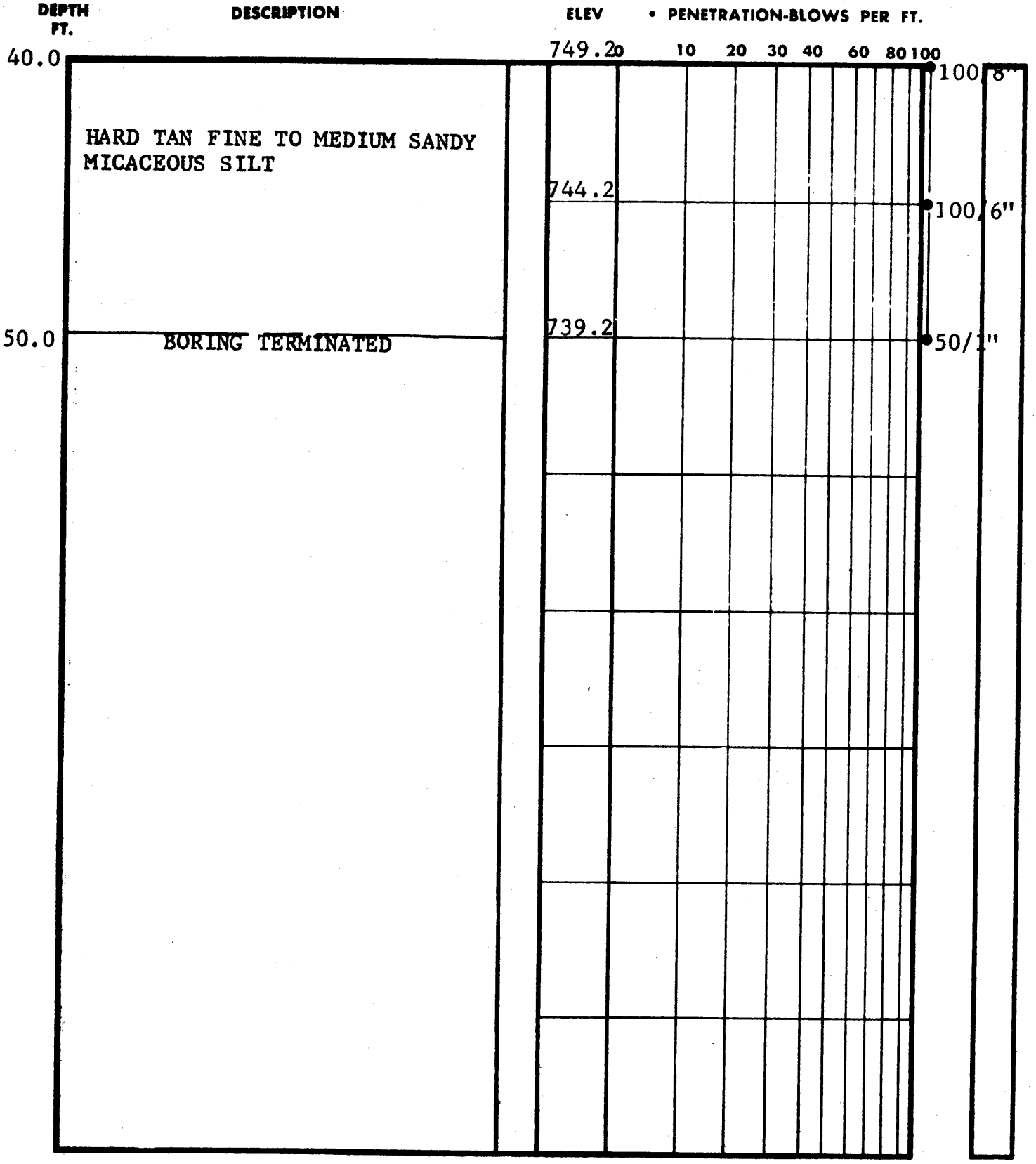
LOSS OF DRILLING WATER

BORING NO. B-138

DATE DRILLED 8/28/68

JOB NO. 5862

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.

UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

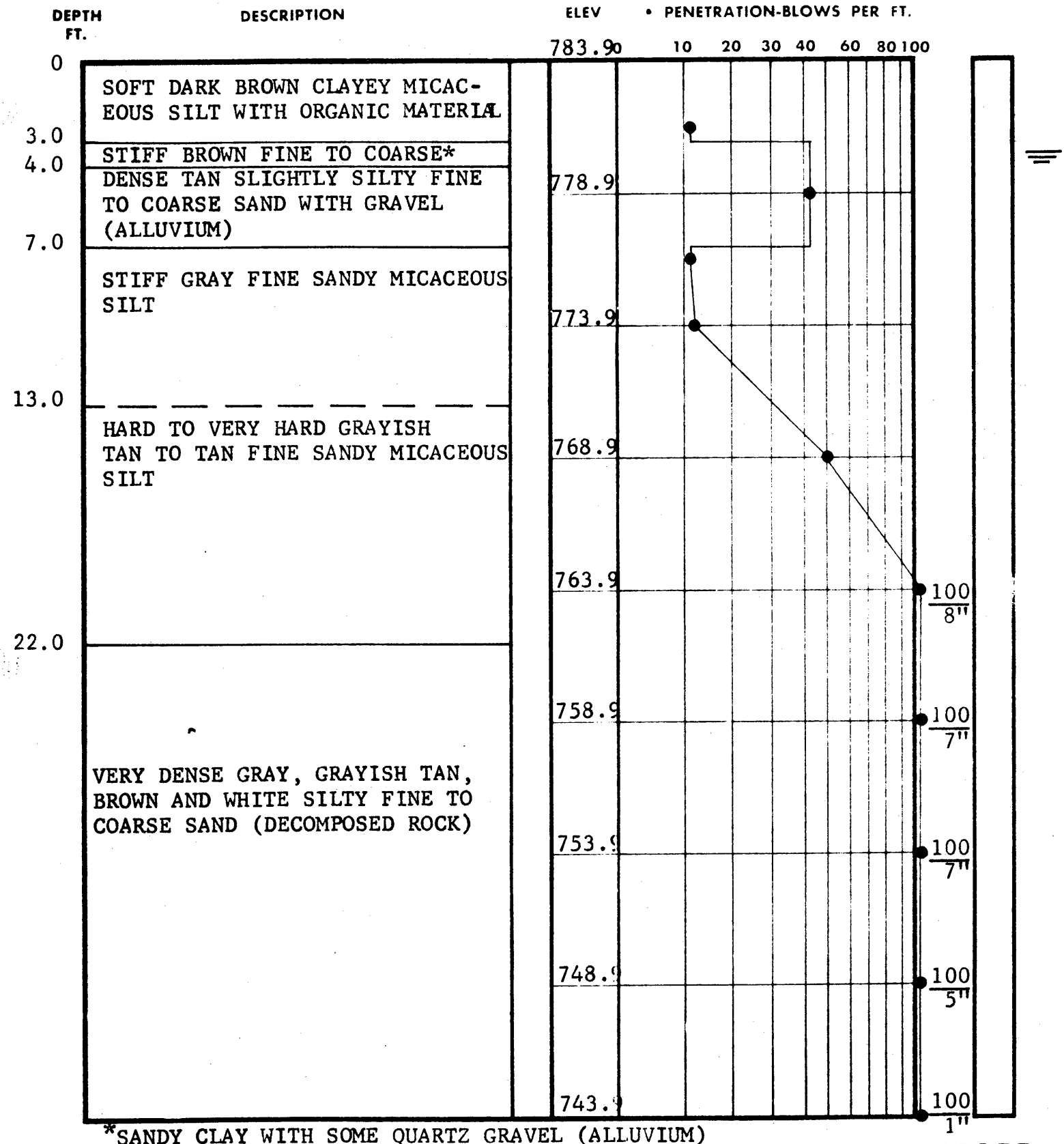
BORING NO. B-138

DATE DRILLED 8/28/68

JOB NO. 5862

LAW ENGINEERING TESTING CO.

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.

BORING NO. B-139

DATE DRILLED 8-28-68

JOB NO. 5862

WATER TABLE, 24 HR.

UNDISTURBED SAMPLE

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
		743.9	100/1"
	VERY DENSE GRAY, GRAYISH TAN, BROWN AND WHITE SILTY FINE TO COARSE SAND (DECOMPOSED ROCK) (NO SPOON SAMPLES RECOVERED AT 40' AND 45')	738.9	100/2"
40.0		733.0	100/6"
54.5	REFUSAL SEE CORE BORING RECORD	728.0	

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.

abc UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

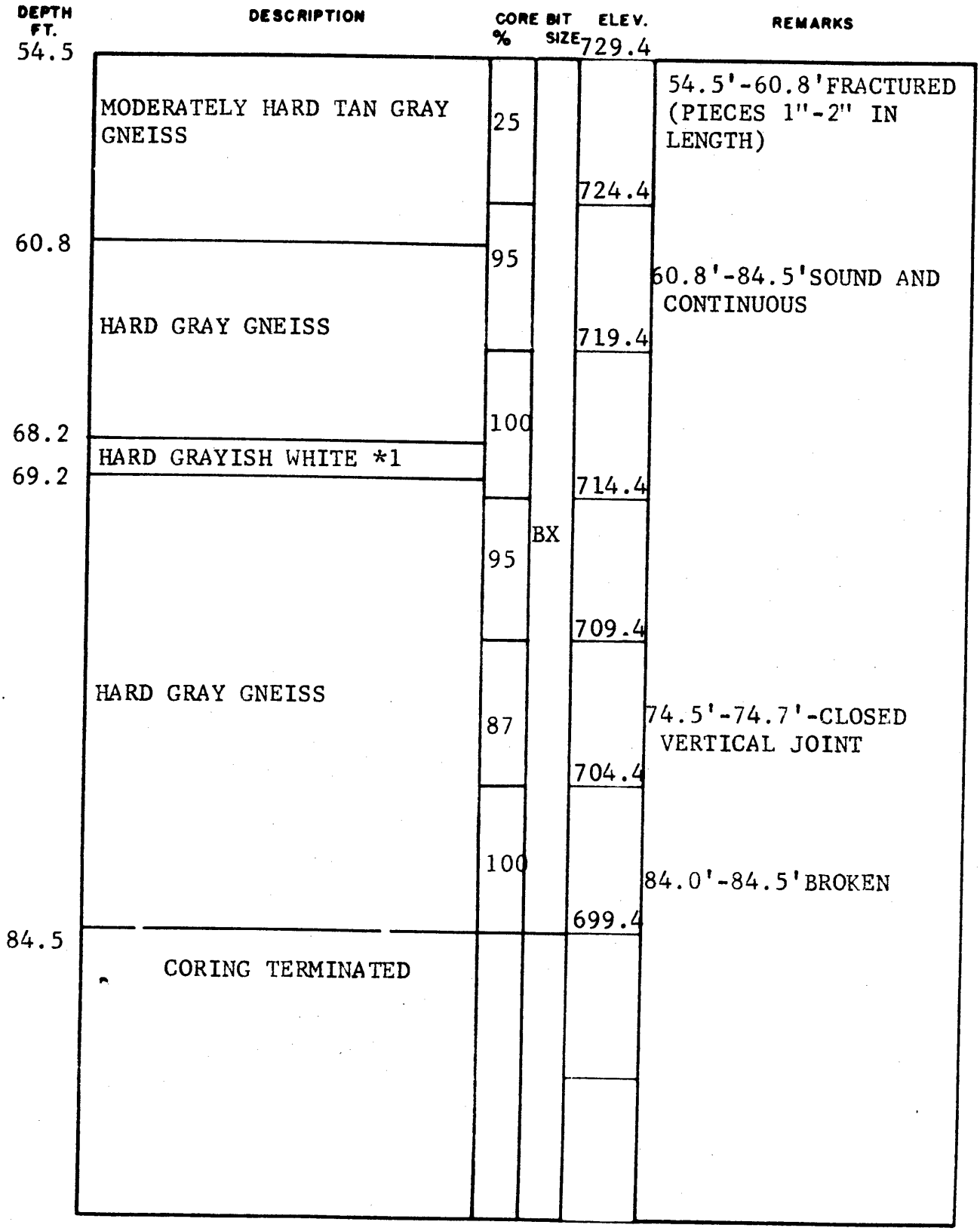
◀ LOSS OF DRILLING WATER

BORING NO. B-139

DATE DRILLED 8-28-68

JOB NO. 5862

LAW ENGINEERING TESTING CO.



*1 PEGMATITE
NO DRILLING WATER LOSS RECORDED

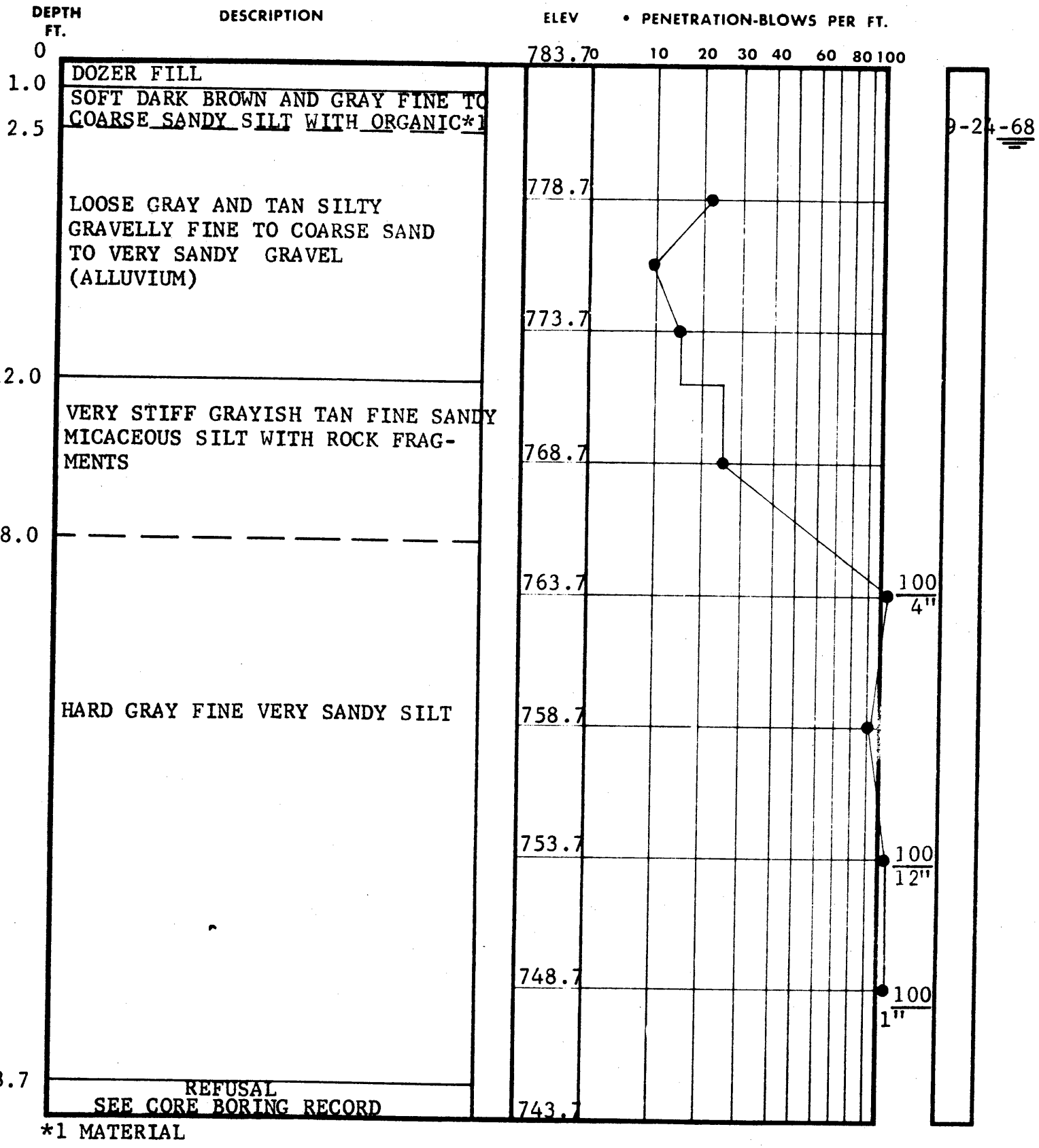
CORE BORING RECORD

BORING NO. B-139
JOB NO. 5862

jj

WATER TABLE

LAW ENGINEERING TESTING CO.



*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.

jj

UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

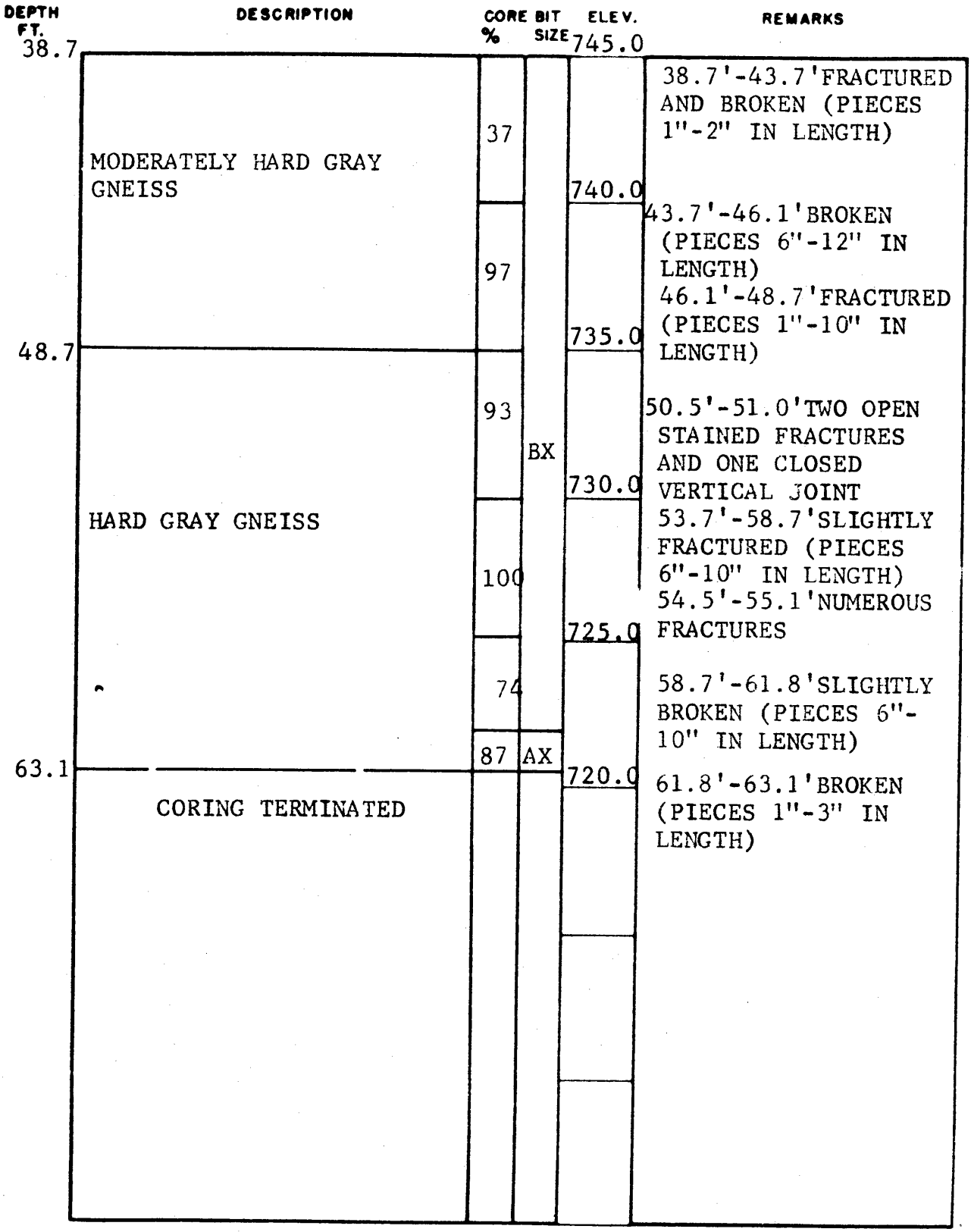
LOSS OF DRILLING WATER

BORING NO. B-140

DATE DRILLED 8/29/68

JOB NO. 5862

LAW ENGINEERING TESTING CO.



NO DRILLING WATER LOSS RECORDED

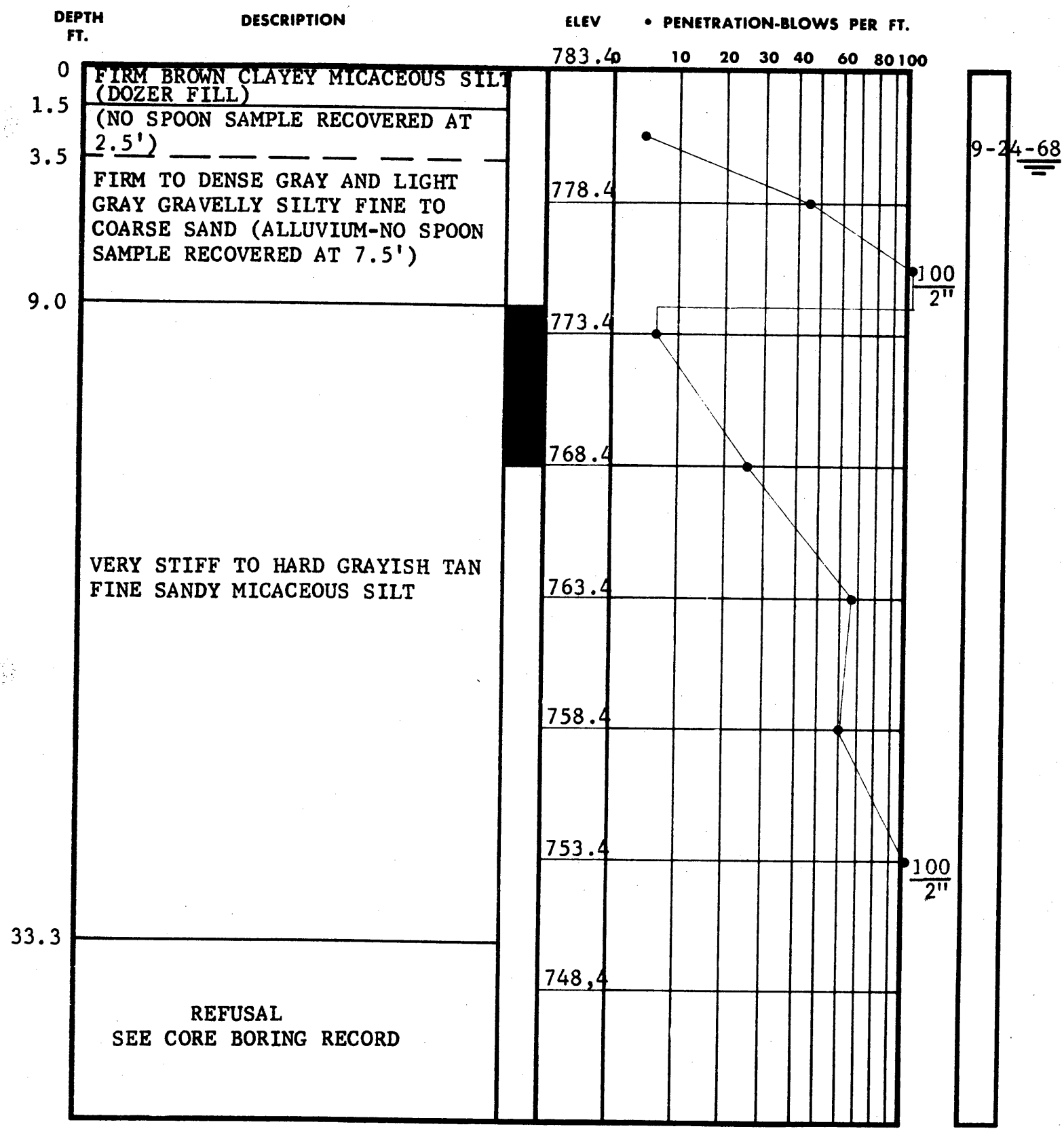
CORE BORING RECORD

BORING NO. 140
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.

UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

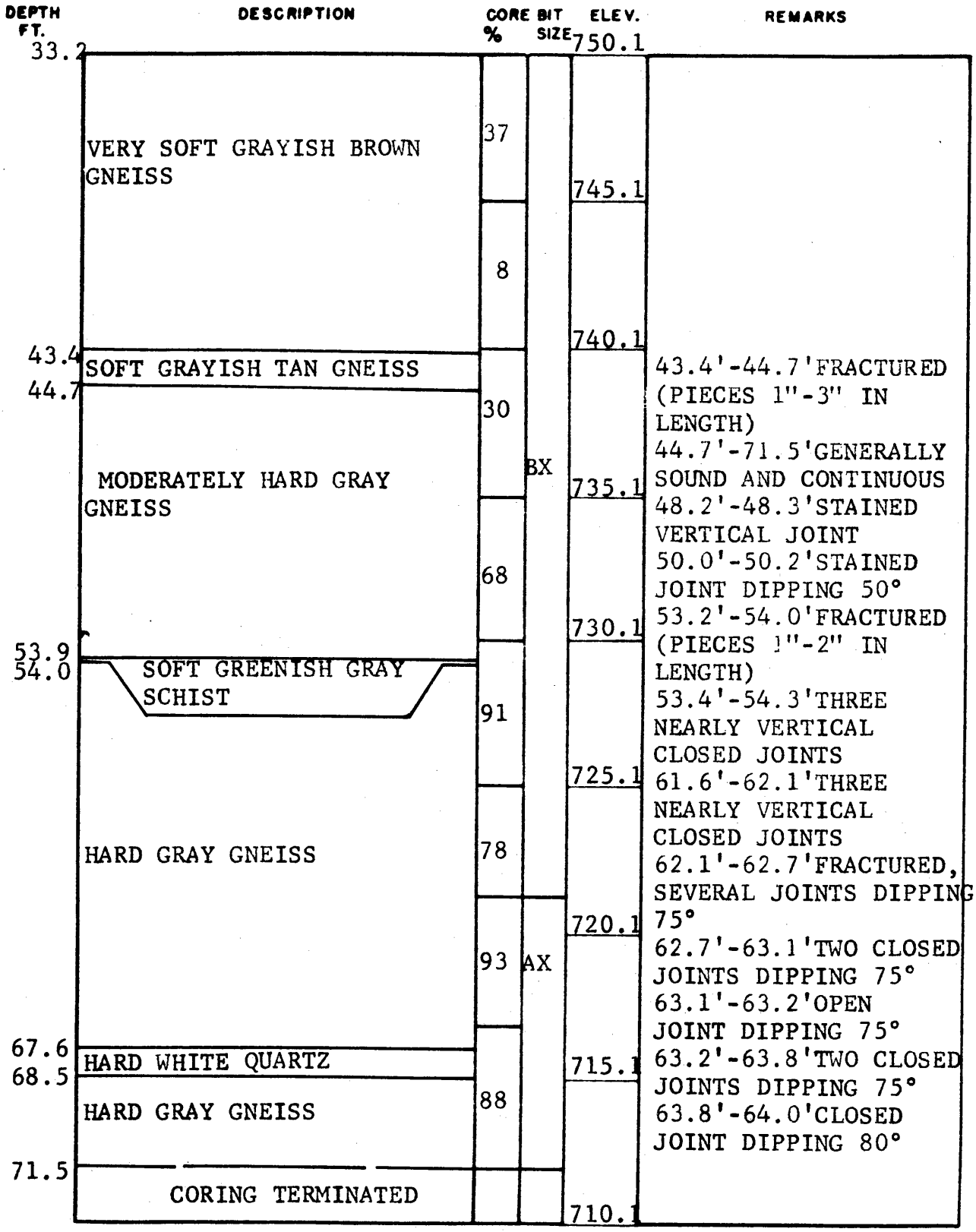
BORING NO. B-141

DATE DRILLED 9/4/68

JOB NO. 5862

LAW ENGINEERING TESTING CO.

jj



NO DRILLING WATER LOSS RECORDED

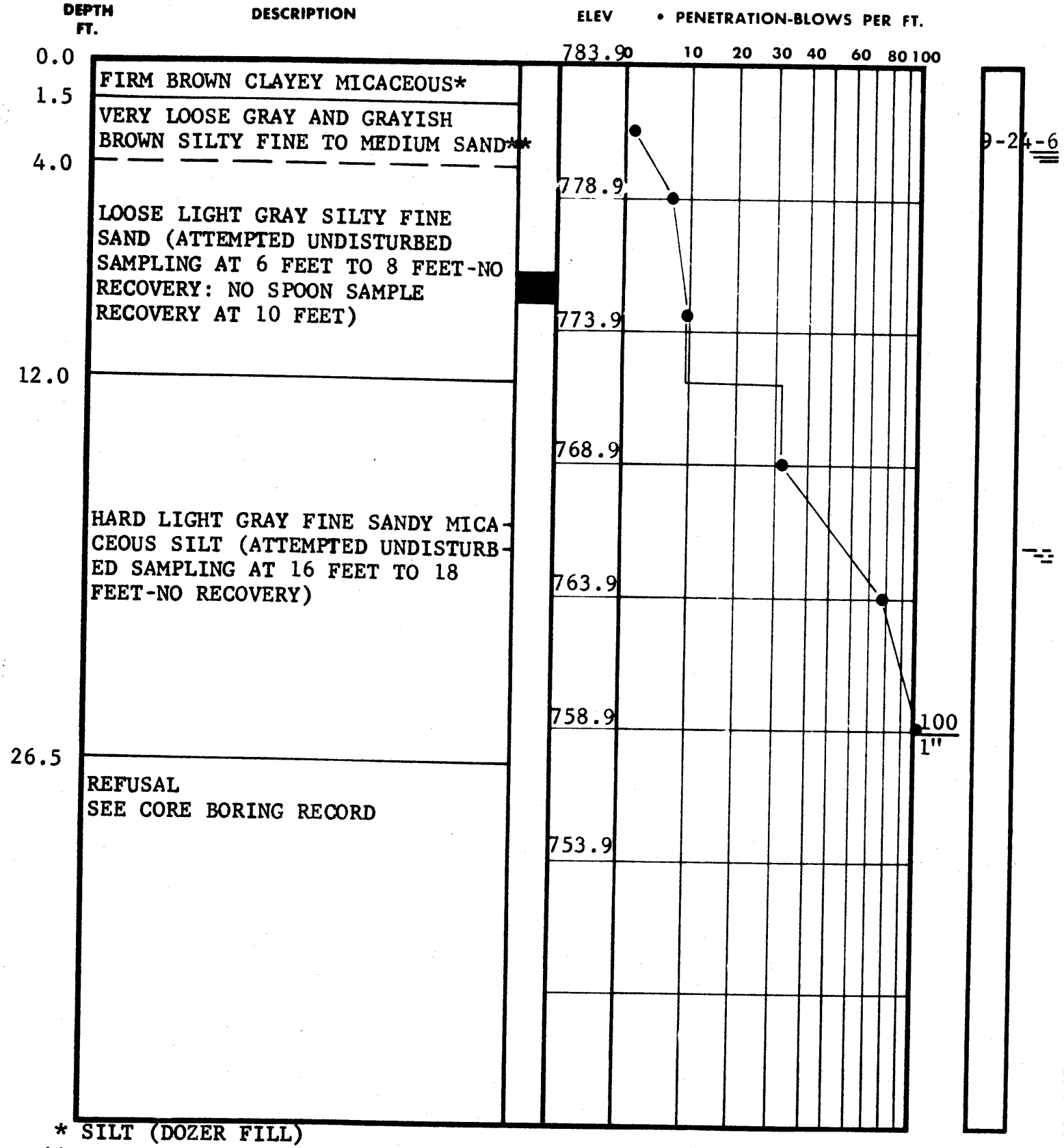
CORE BORING RECORD

BORING NO. 141
JOB NO. 5862

jj

WATER TABLE

LAW ENGINEERING TESTING CO.



* SILT (DOZER FILL)

** WITH ORGANIC 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.

abc ▬ UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

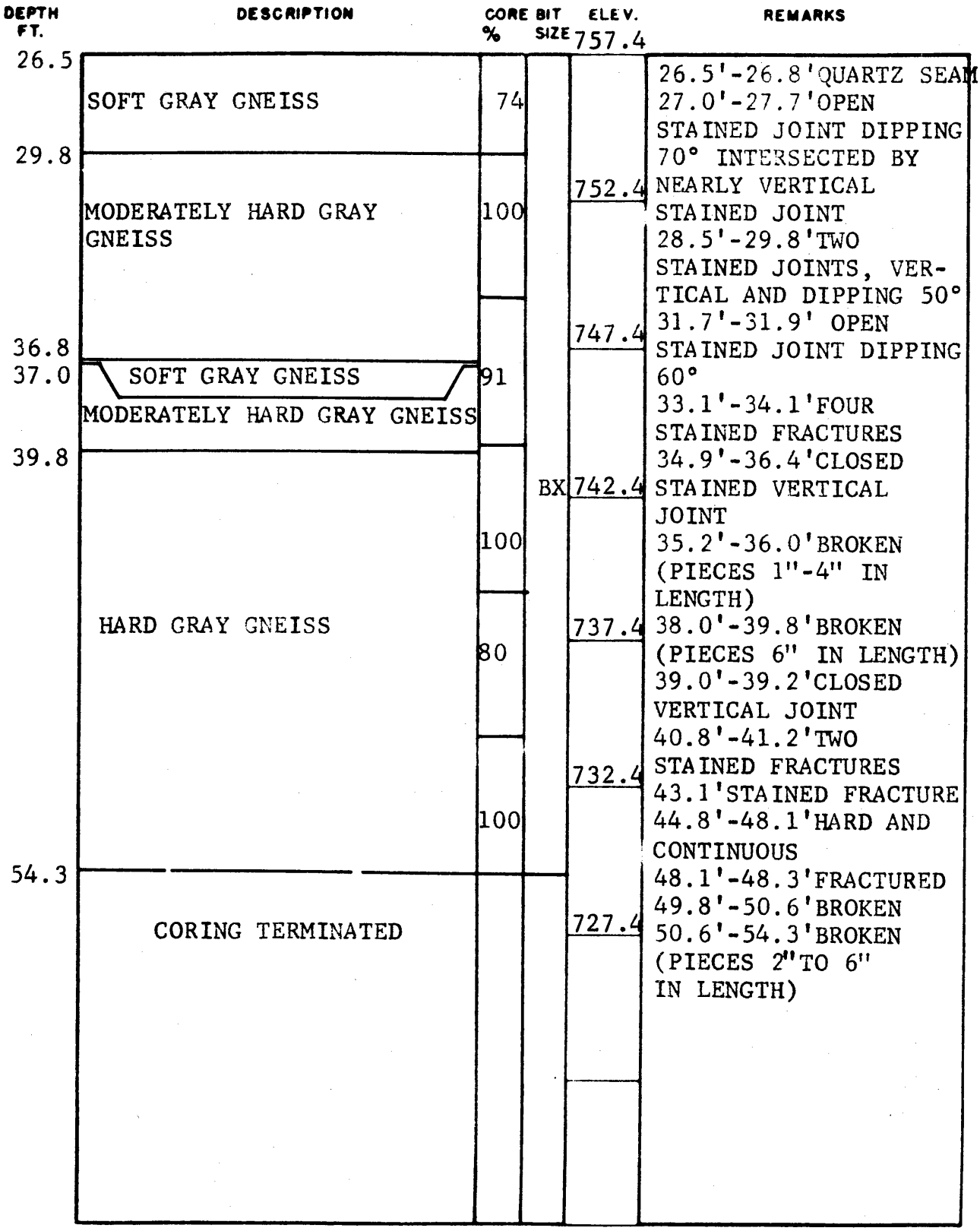
◀ LOSS OF DRILLING WATER

BORING NO. B-142

DATE DRILLED 9-5-68

JOB NO. 5862

LAW ENGINEERING TESTING CO



NO DRILLING WATER LOSS RECORDED

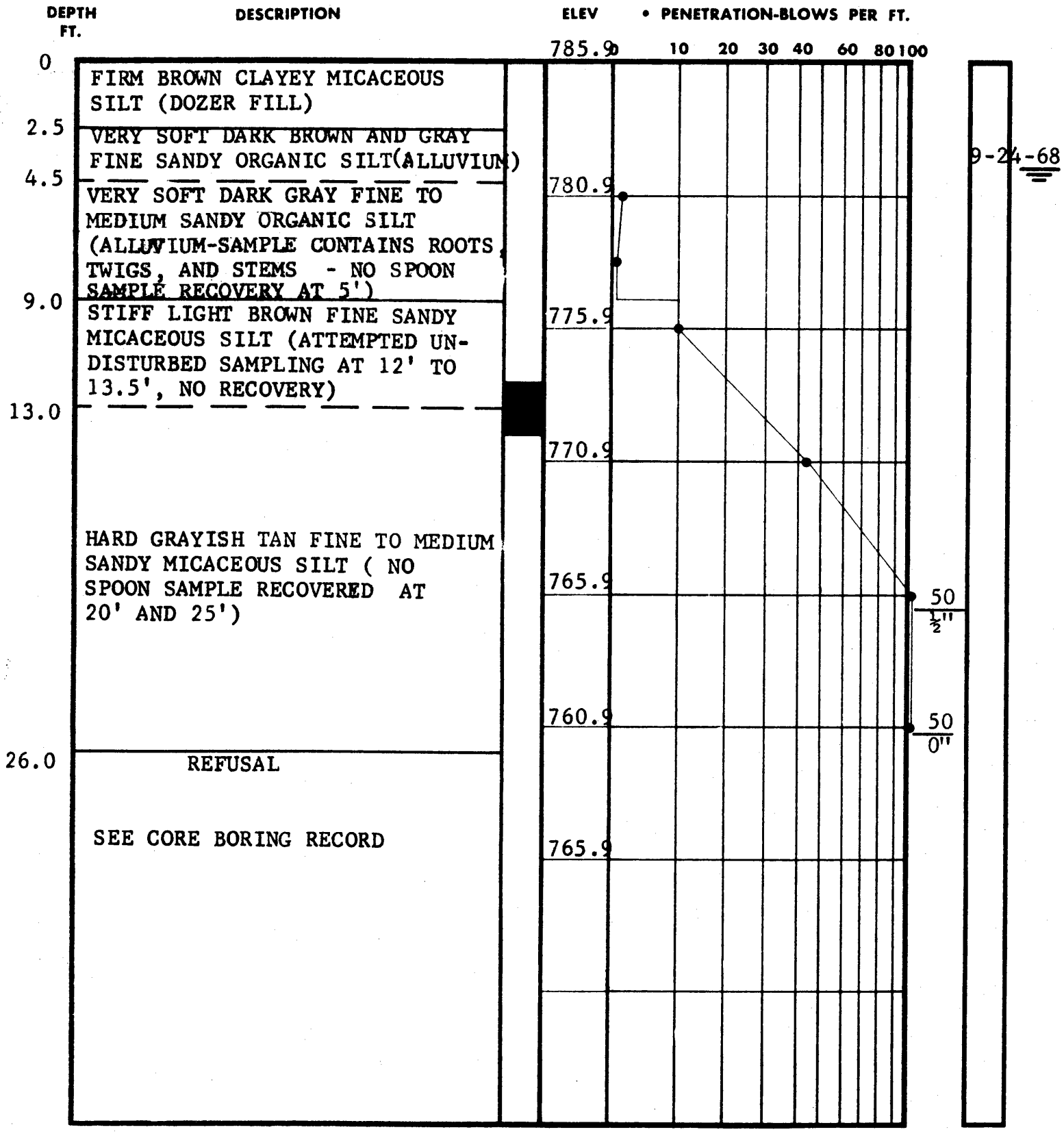
CORE BORING RECORD

BORING NO. 142
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-143
DATE DRILLED 9/10/68
JOB NO. 5862

jj

UNDISTURBED SAMPLE

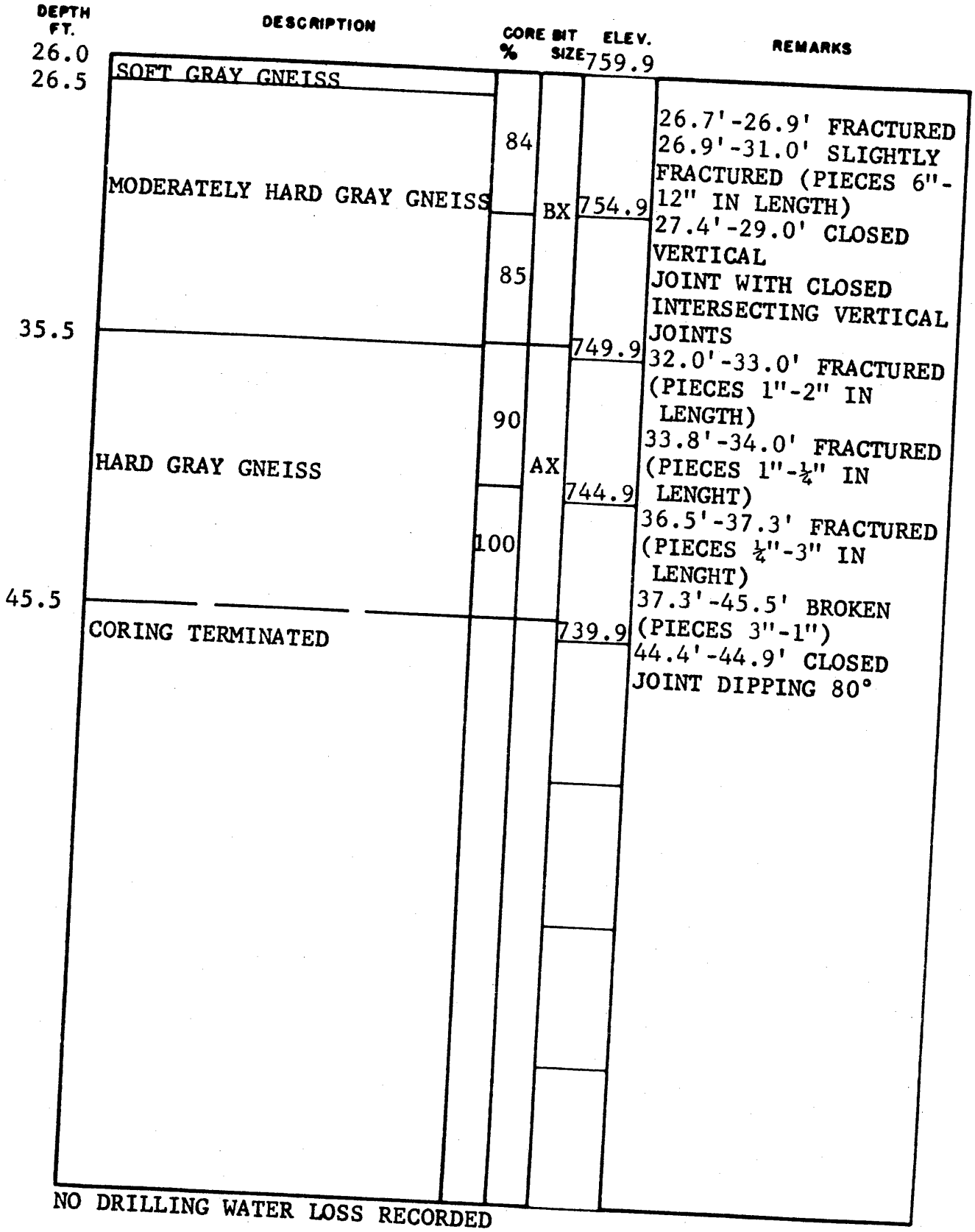
|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

LAW ENGINEERING TESTING CO

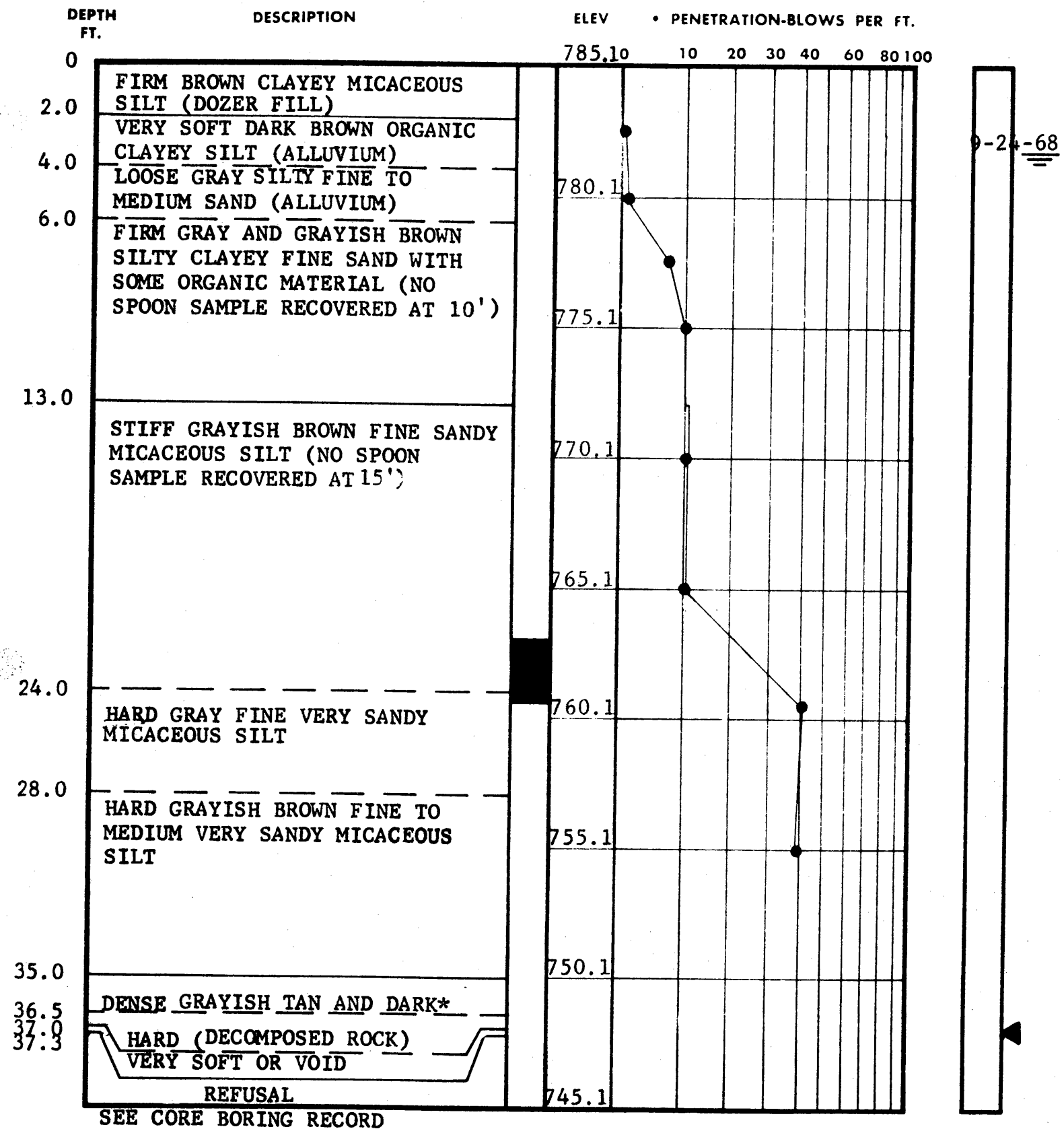


CORE BORING RECORD

PAGE 2 OF 2 BORING NO. 143
JOB NO. 5862

abc

WATER TABLE



SEE CORE BORING RECORD

* BROWN SILTY FINE TO COARSE MICACEOUS SAND (DECOMPOSED ROCK)

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.

WATER TABLE, 24 HR.

UNDISTURBED SAMPLE

WATER TABLE, 1 HR.

|50| % ROCK CORE RECOVERY

LOSS OF DRILLING WATER

BORING NO. B-145

DATE DRILLED 9-10-68

JOB NO. 5862

LAW ENGINEERING TESTING CO.

DEPTH FT.	DESCRIPTION	CORE %	BIT SIZE	ELEV.	REMARKS
37.3				747.8	
	HARD GRAY GNEISS	95	BX	742.8	37.3'-37.7' FRACTURED 40.3'-41.1' STAINED FRACTURES 42.3'-44.9' BROKEN PIECES 1"-6" IN LENGTH) 44.9'-47.3' CONTINUOUS 47.3'-49.3' CONTINUOUS 49.5' FRACTURE 50.5'-50.7' CLOSED JOINT DIPPING 70° 50.6 FRACTURE 51.7'-52.3' FRACTURED AND STAINED NEARLY VERTICAL JOINT 52.3'-52.6' OPEN STAINED JOINT DIPPING 80° 53.1'-53.4' FRACTURE AND CLOSED JOINT DIPPING 50°
		92		737.8	
		100		732.8	
		100		727.8	
57.3	CORING TERMINATED				55.8'-56.8' CLOSED JOINT DIPPING 70° 55.8'-57.3' FRACTURED (PIECES 1"-6" IN LENGTH)

LOST DRILLING WATER AT 37 FEET

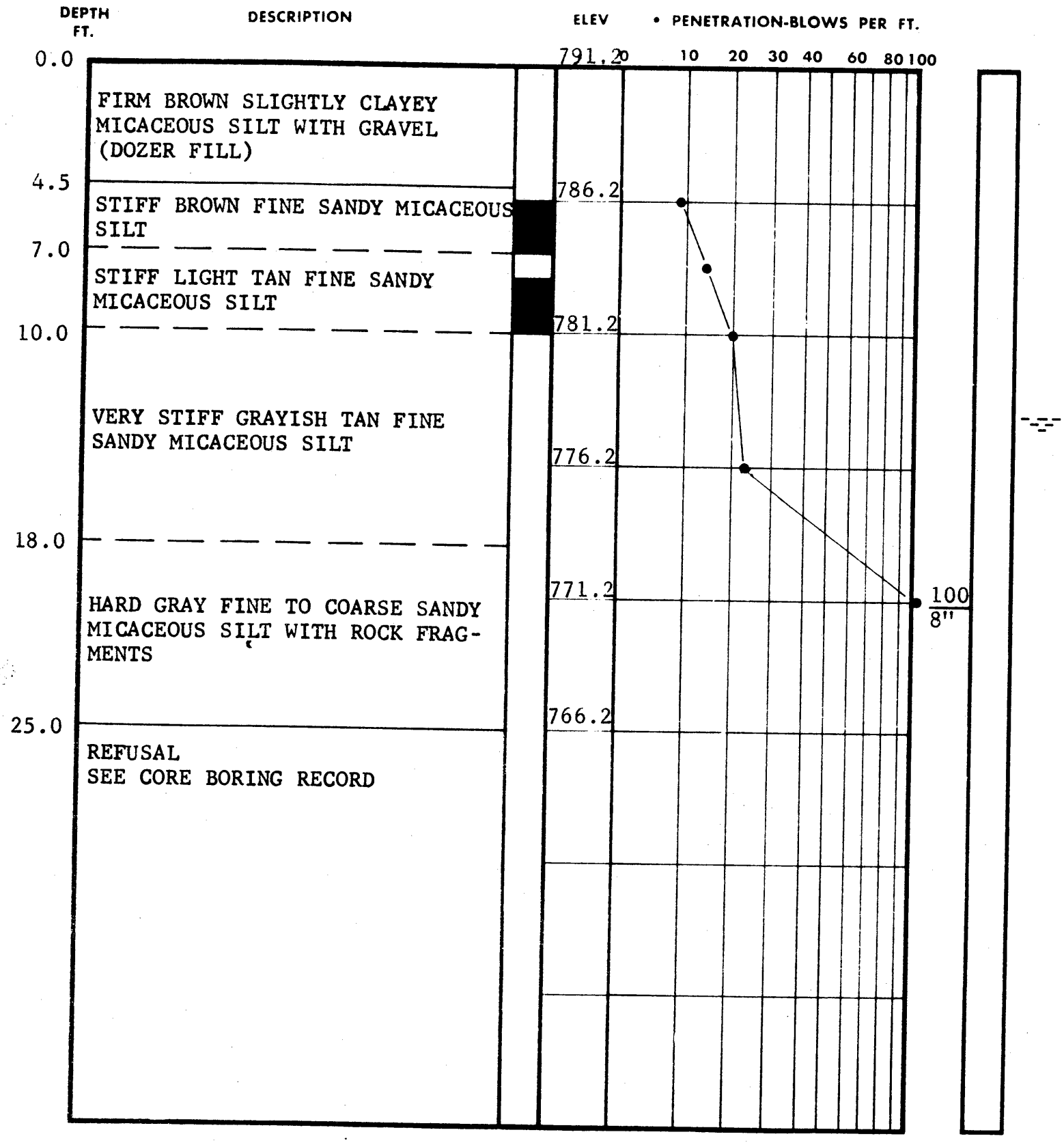
CORE BORING RECORD

BORING NO. 145
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.

abc UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

BORING NO. B-146
DATE DRILLED 9-24-68
JOB NO. 5862

LAW ENGINEERING TESTING CO.

DEPTH FT.	DESCRIPTION	CORE %	BIT SIZE	ELEV.	REMARKS
25.0				766.2	
	SOFT GRAY GNEISS	72	NX		25.0 - 30.0 SOME OPEN FRACTURES
28.6					31.5 OPEN FRACTURE
30.0	VERY SOFT GRAY GNEISS			761.2	32.4 - 33.3 THREE OPEN FRACTURES
	MODERATELY HARD GRAY GNEISS	100	NX		34.4 OPEN FRACTURE
32.8					
	HARD GRAY GNEISS				
35.0				756.2	
	CORING TERMINATED				

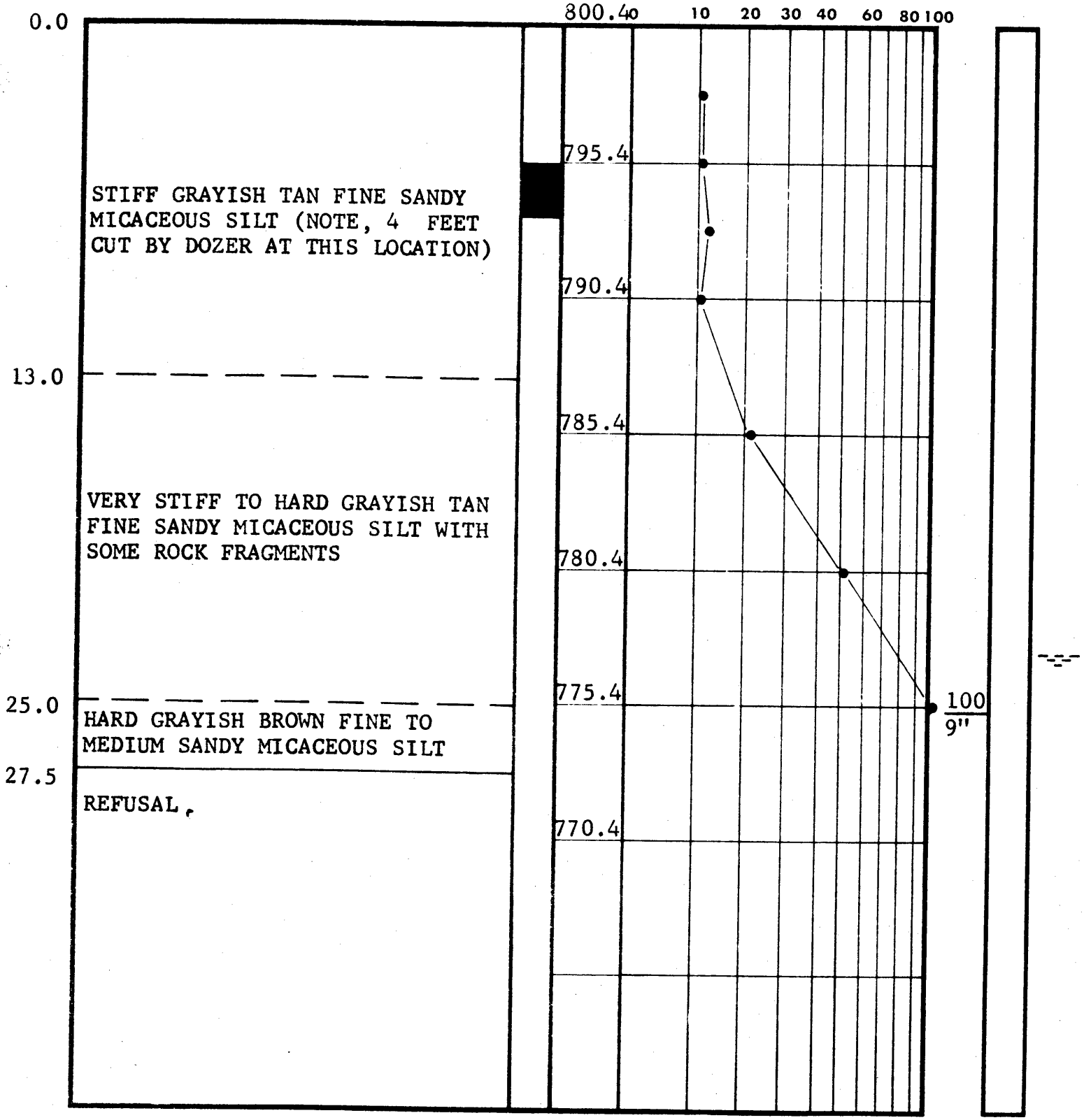
CORE BORING RECORD

BORING NO. B-146
JOB NO. 5862

abc

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.

abc — UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

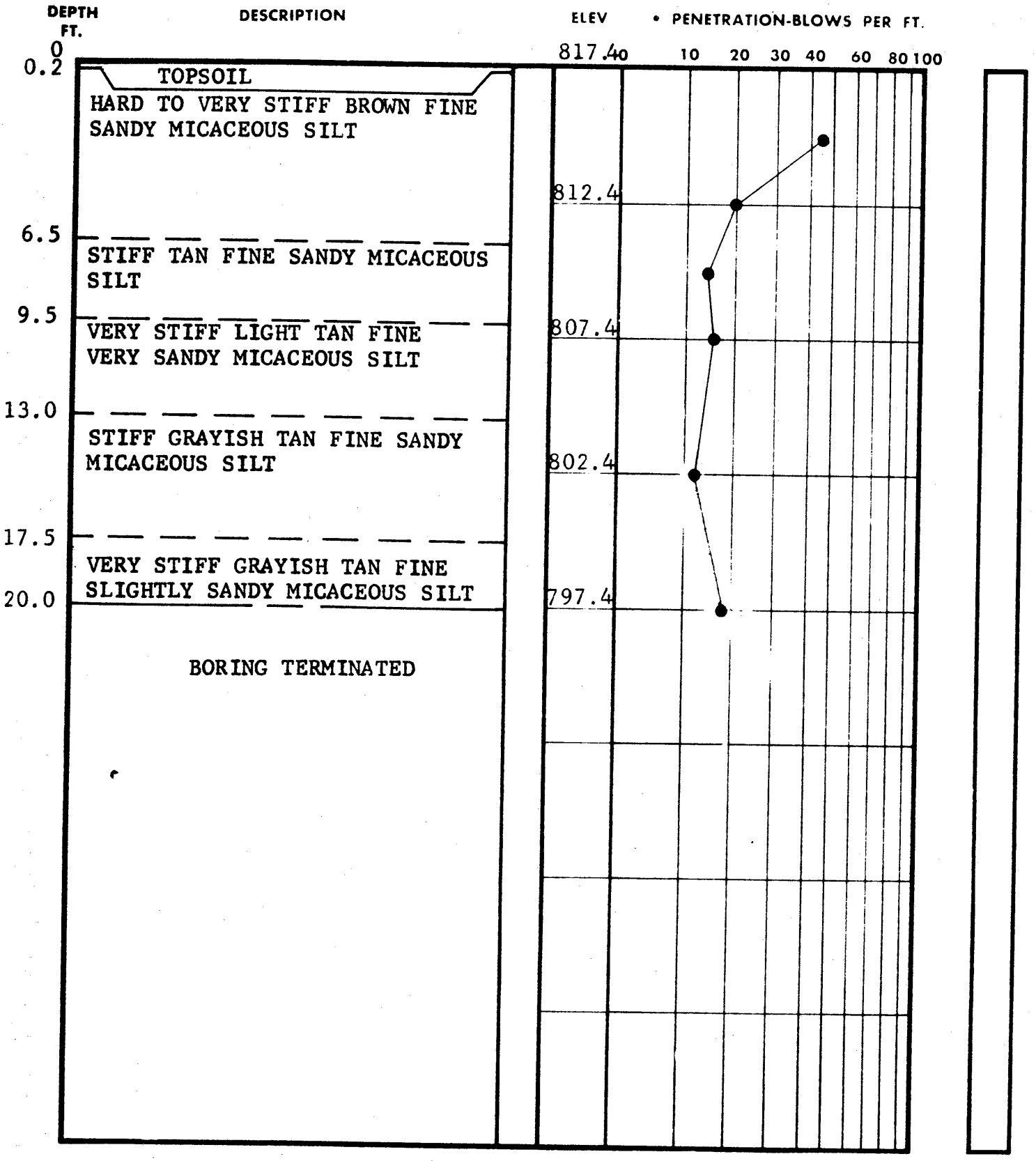
◀ LOSS OF DRILLING WATER

BORING NO. B-147

DATE DRILLED 9-26-68

JOB NO. 5862

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.

WATER TABLE, 24 HR.

UNDISTURBED SAMPLE

WATER TABLE, 1 HR.

|50| % ROCK CORE RECOVERY

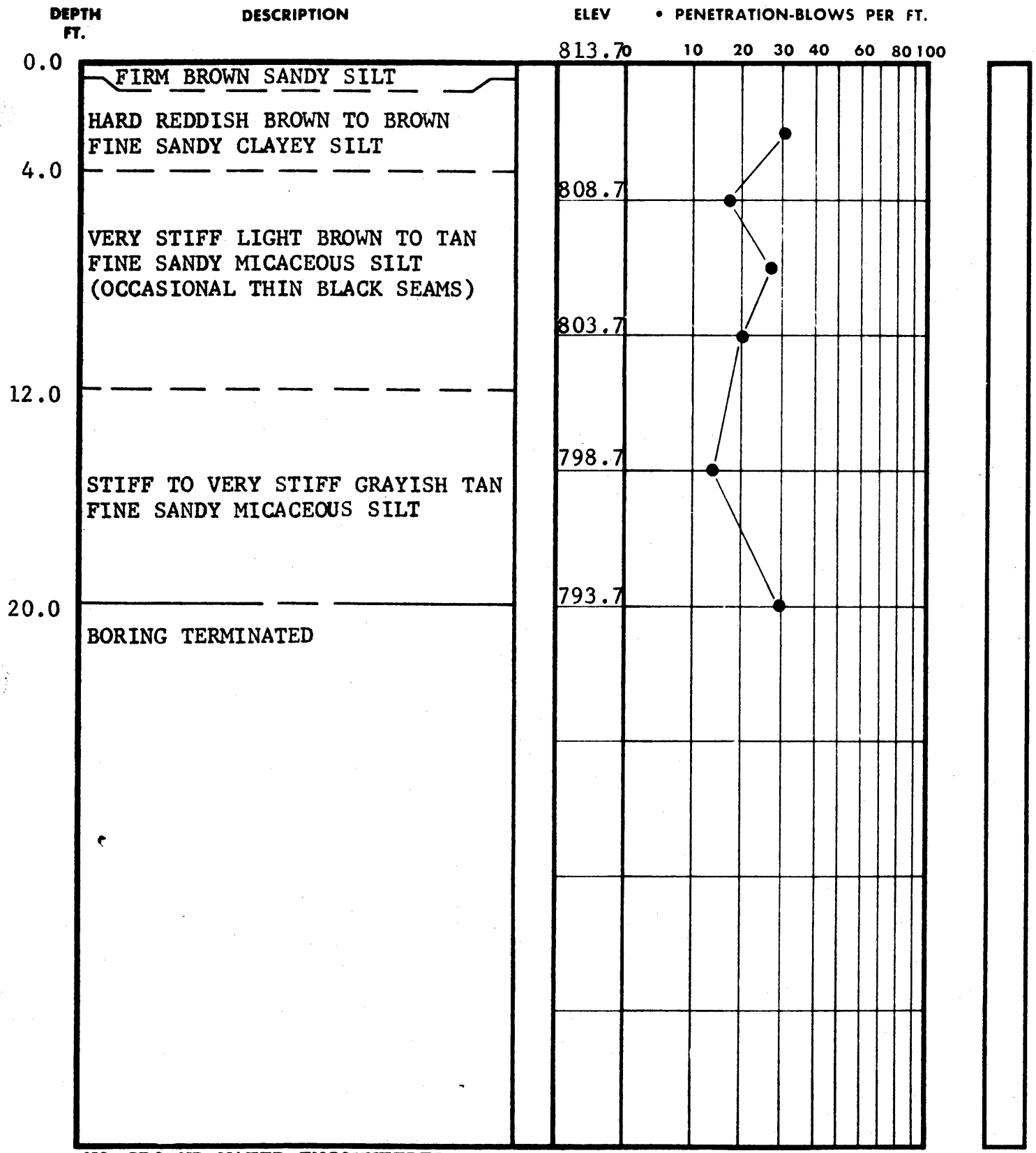
LOSS OF DRILLING WATER

BORING NO. B-148

DATE DRILLED 9-16-68

JOB NO. 5862

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.

abc UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

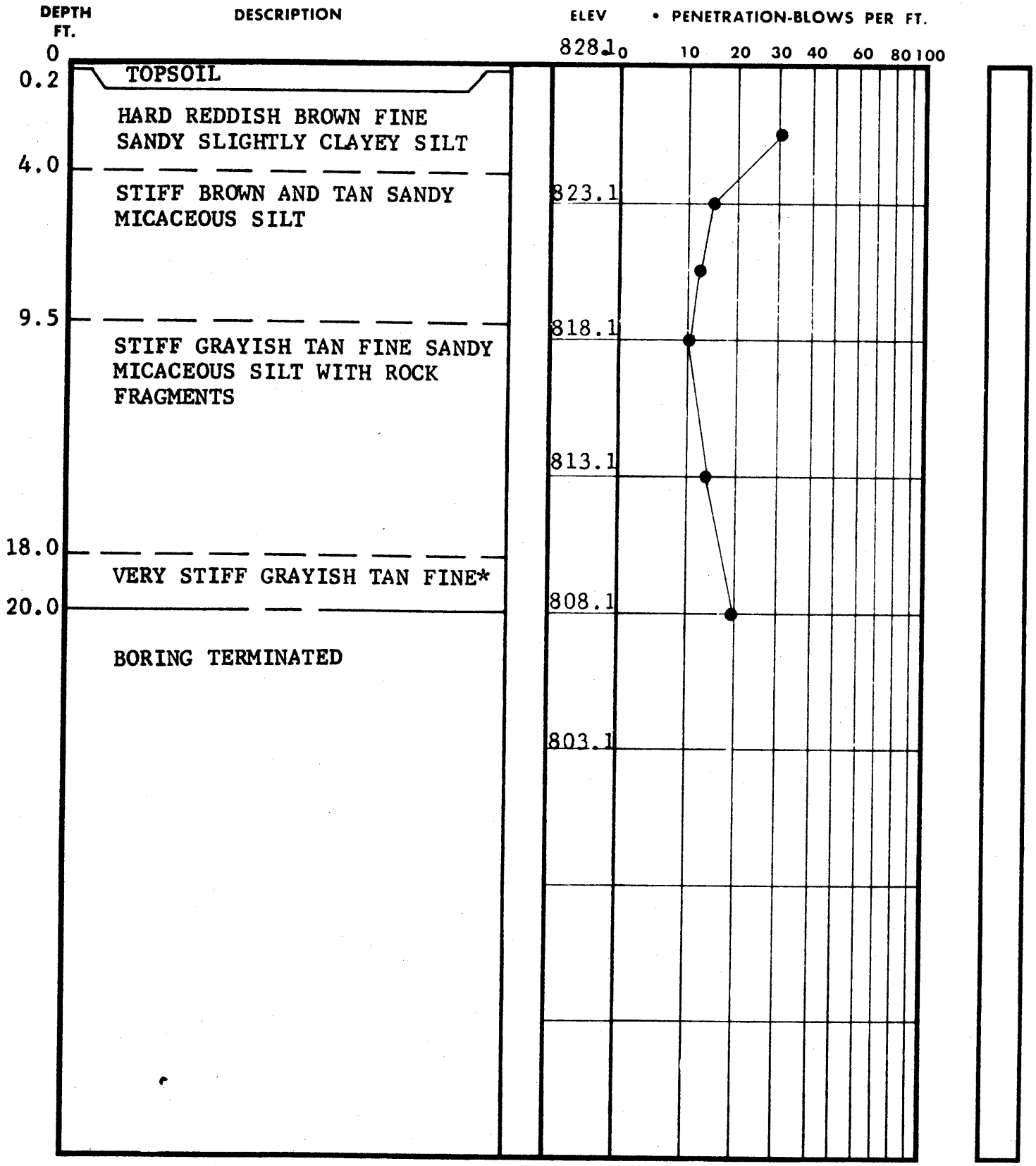
LOSS OF DRILLING WATER

BORING NO. B-149

DATE DRILLED 9-16-68

JOB NO. 5862

LAW ENGINEERING TESTING CO



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.

WATER TABLE, 24 HR.

UNDISTURBED SAMPLE

WATER TABLE, 1 HR.

|50| % ROCK CORE RECOVERY

LOSS OF DRILLING WATER

BORING NO. B-150

DATE DRILLED 9-16-68

JOB NO. 5862

LAW ENGINEERING TESTING CO.

DEPTH FT.	DESCRIPTION	ELEV	• PENETRATION-BLOWS PER FT.
		726.9	0 10 20 30 40 60 80 100
40.0	HARD TO VERY HARD GRAY FINE SANDY MICACEOUS SILT (DECOMPOSED SCHIST)	721.9	45 / 1½" ; 100 / 1"
50.0	REFUSAL	716.9	

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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

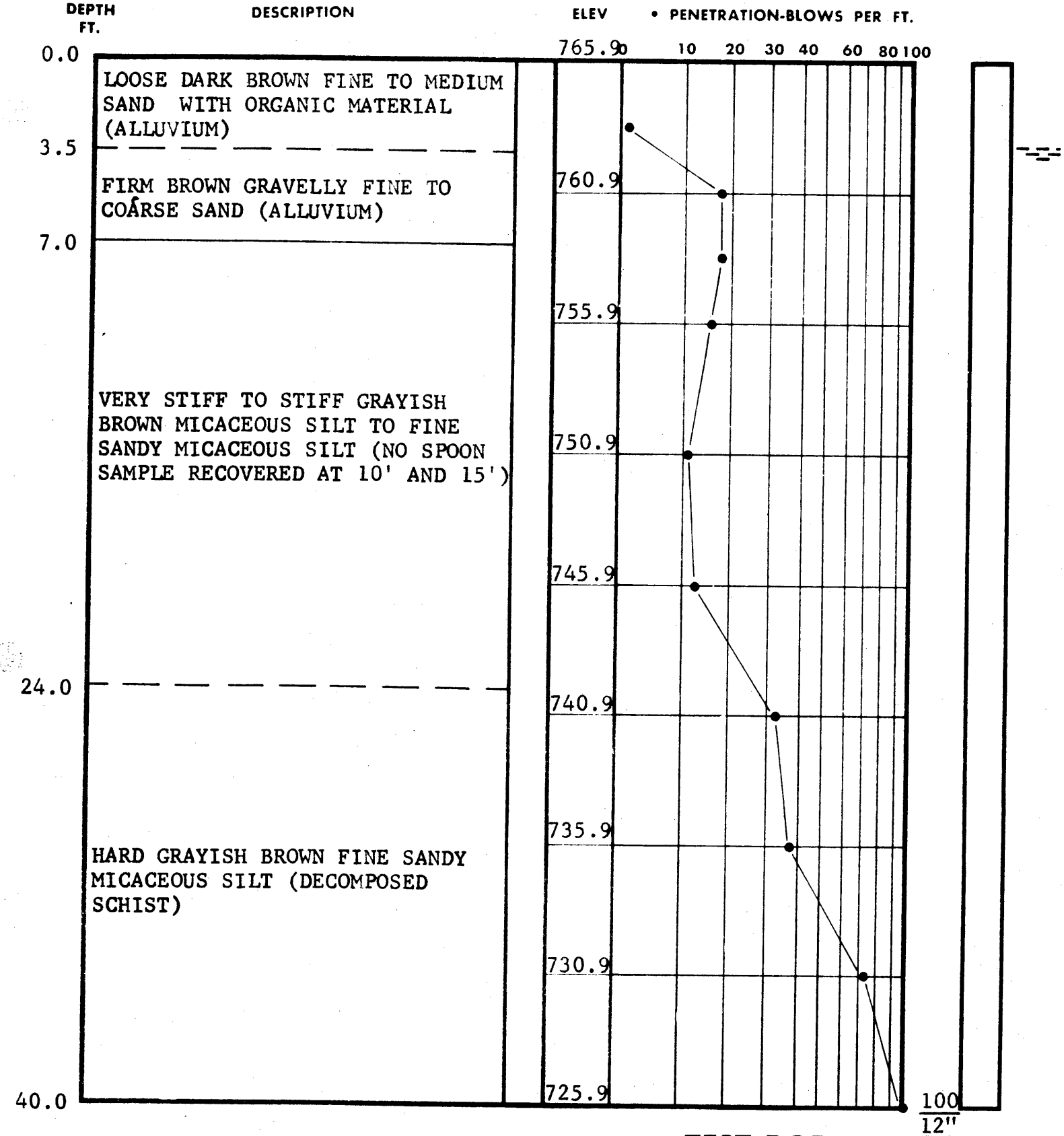
◀ LOSS OF DRILLING WATER

BORING NO. B-151

DATE DRILLED 8/6/68

JOB NO. 5862

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.

abc UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

BORING NO. B-152

DATE DRILLED 9-17-68

JOB NO. 5862

LAW ENGINEERING TESTING CO

DEPTH FT.	DESCRIPTION	ELEV	• PENETRATION-BLOWS PER FT.
40.0	HARD GRAYISH BROWN FINE SANDY MICACEOUS SILT (DECOMPOSED SCHIST)	725.9	0 10 20 30 40 60 80 100 — 100/12"
		720.9	100/6"
46.5	REFUSAL	715.9	

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.

abc ▬ UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

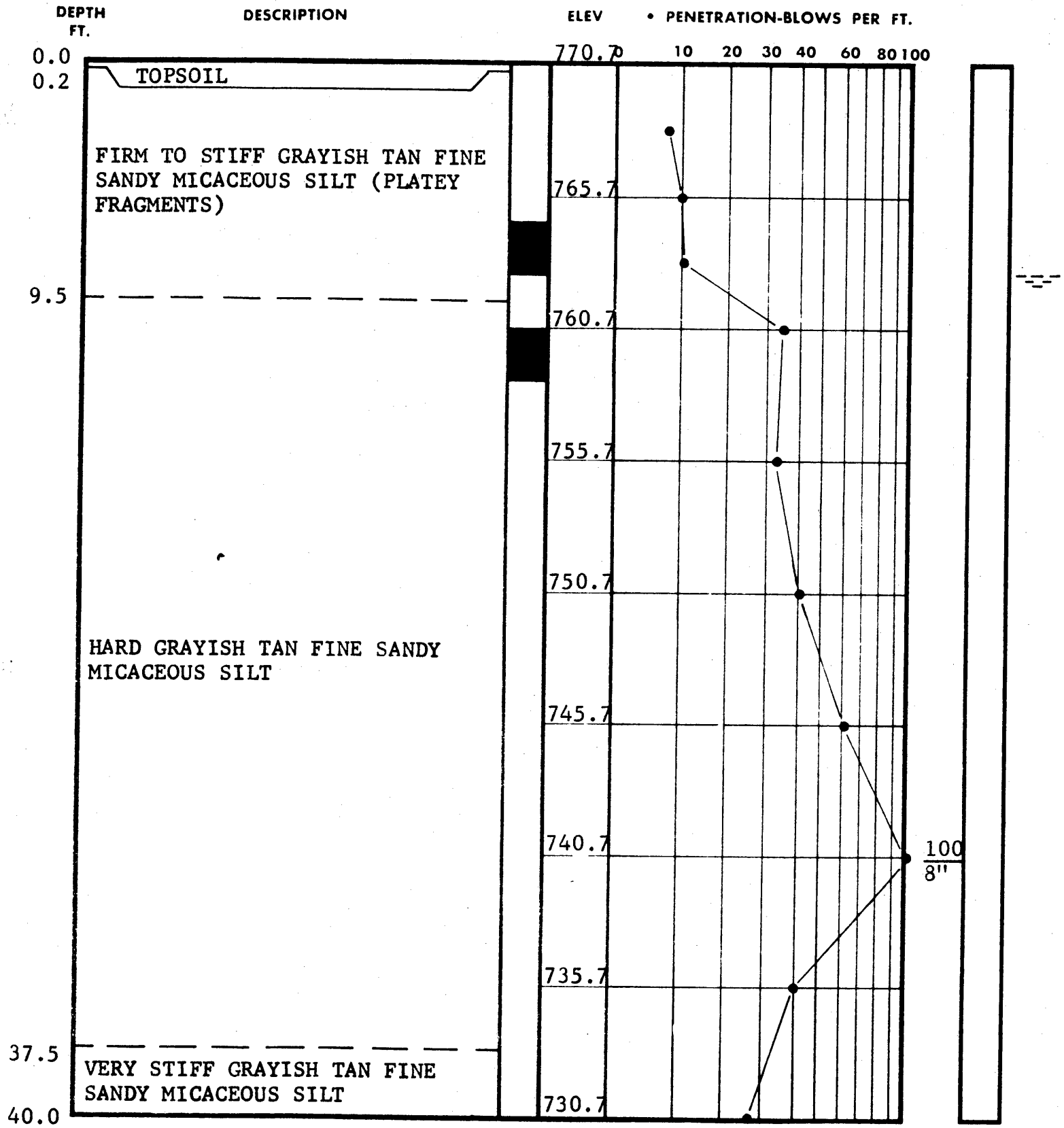
◀ LOSS OF DRILLING WATER

BORING NO. B-152

DATE DRILLED 9-17-68

JOB NO. 5862

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.

abc UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

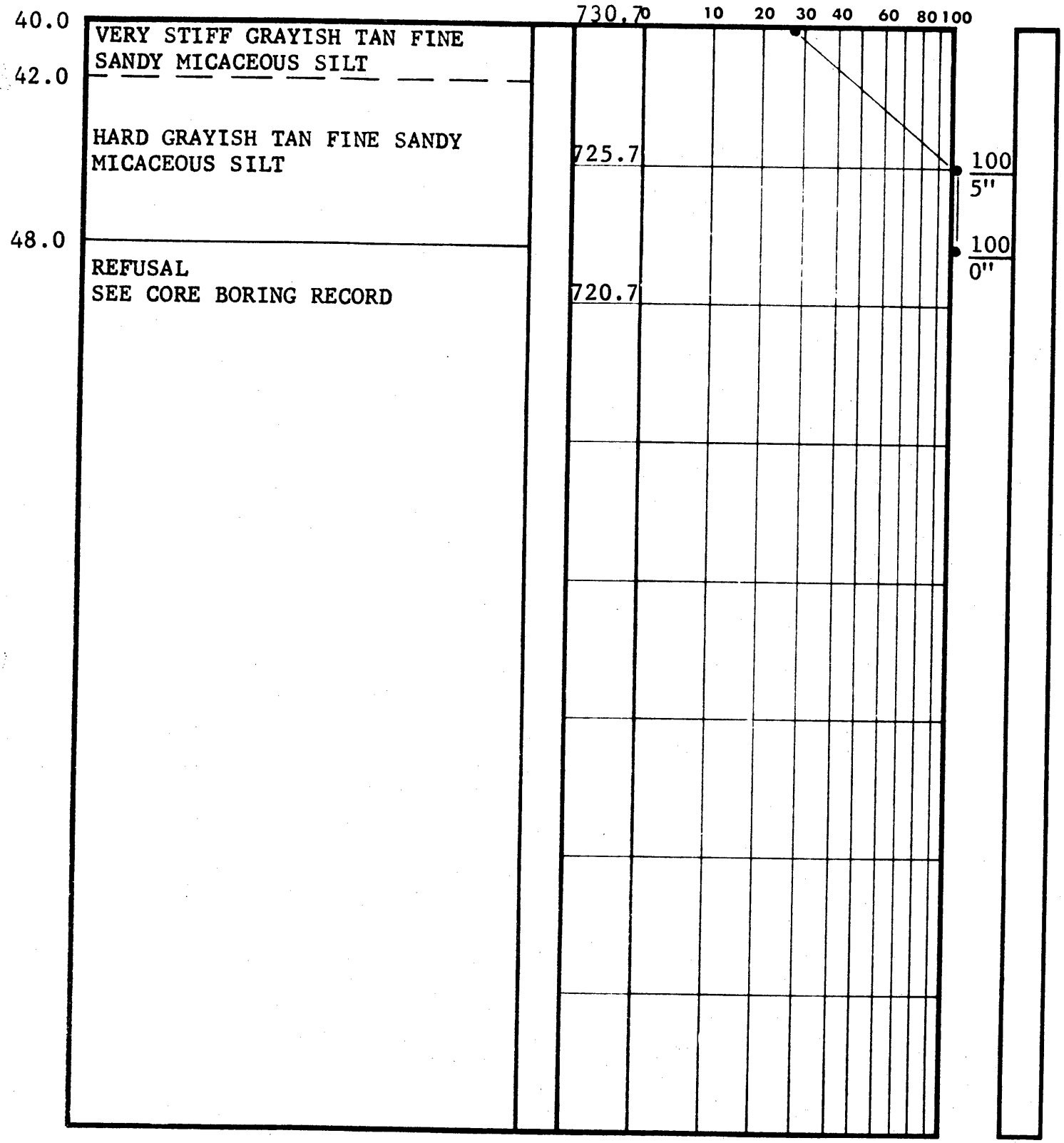
LOSS OF DRILLING WATER

BORING NO. B-153

DATE DRILLED 9-17-68

JOB NO. 5862

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.

abc UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

BORING NO. B-153

DATE DRILLED 9-17-68

JOB NO. 5862

LAW ENGINEERING TESTING CO

DEPTH FT.	DESCRIPTION	CORE %	BIT SIZE	ELEV.	REMARKS
48.0				722.7	
	MODERATELY HARD GRAY SCHIST	100	BX		48.0'- 53.0' BROKEN AND FRACTURED (PIECES 1" - 8" IN LENGHT)
53.0				717.7	49.9'-50.1' OPEN JOINT DIPPING 65°
	CORING TERMINATED				51.6' - 51.7' VERTICAL JOINT

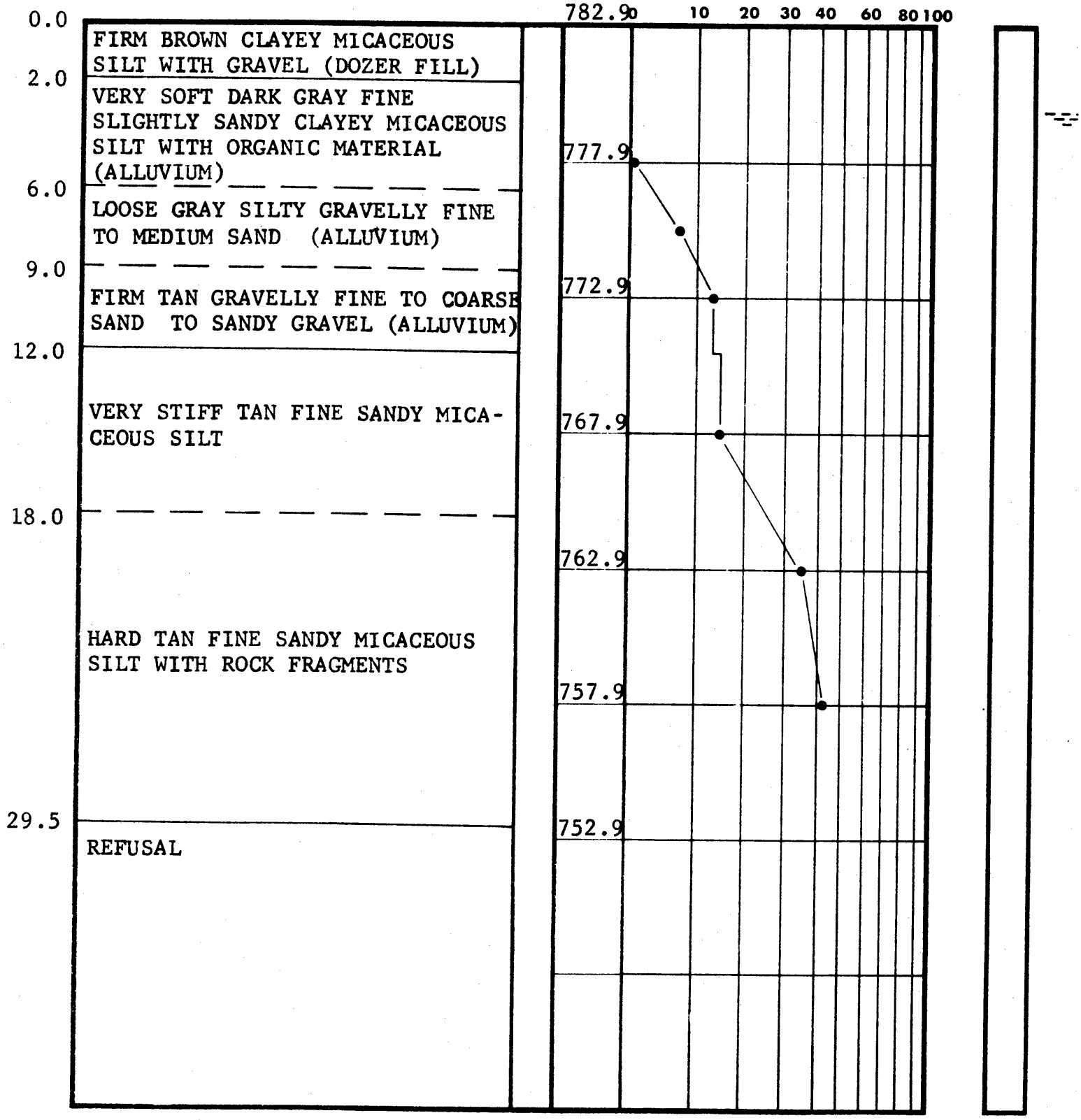
CORE BORING RECORD

BORING NO. B-153
JOB NO. 5862

abc

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.

abc UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR

WATER TABLE, 1 HR.

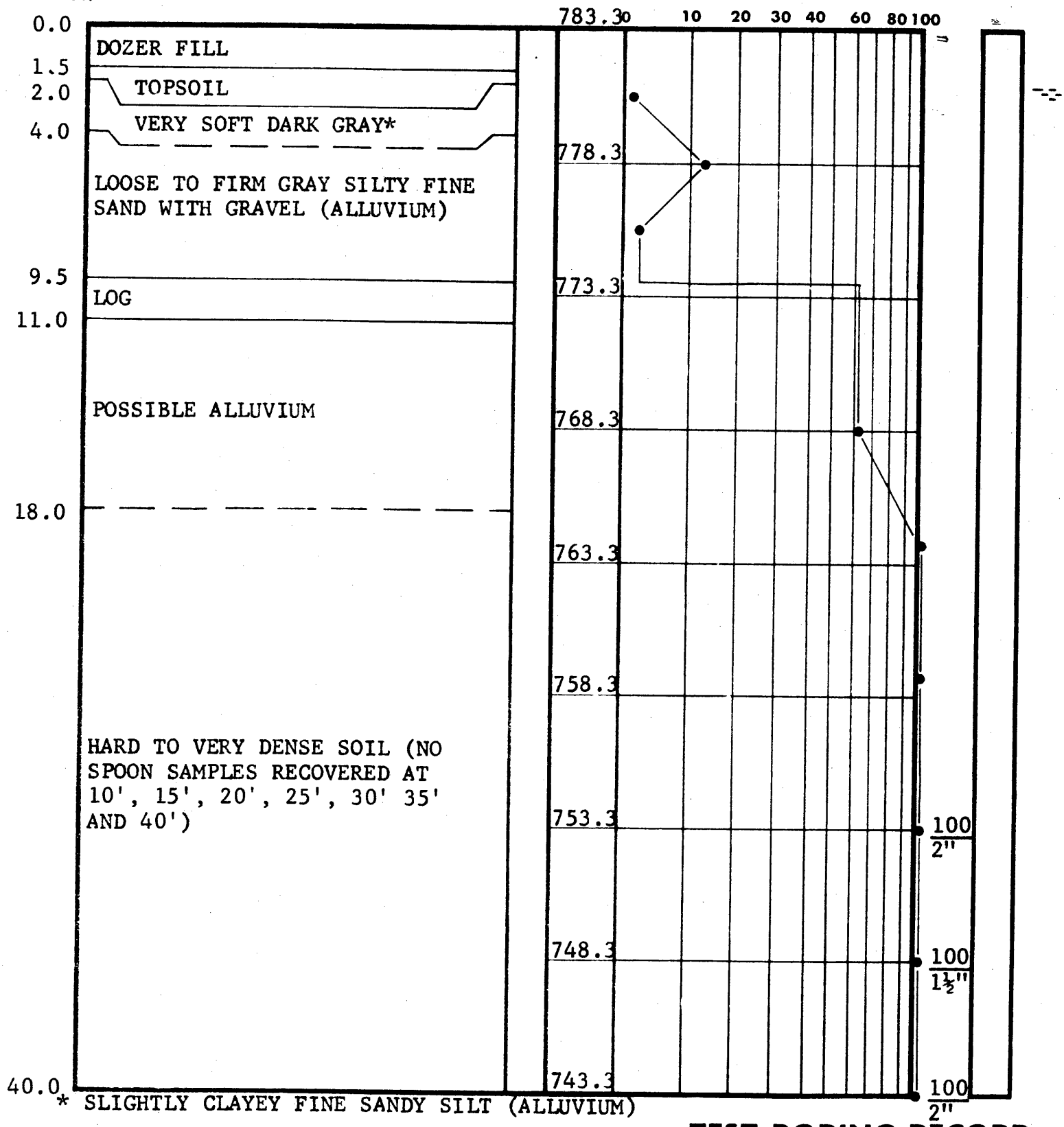
LOSS OF DRILLING WATER

BORING NO. B-154

DATE DRILLED 9-23-68

JOB NO. 5862

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.

abc UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

◀ LOSS OF DRILLING WATER

BORING NO. B-155

DATE DRILLED 9-23-68

JOB NO. 5862

LAW ENGINEERING TESTING CO.

DEPTH FT.	DESCRIPTION	ELEV	• PENETRATION-BLOWS PER FT. 0 10 20 30 40 60 80 100
		743.3	100/2"
40.0	HARD TO VERY DENSE SOIL (NO SPOON SAMPLES RECOVERED AT 10', 15', 20', 25', 30', 35' AND 40')	738.3	
46.0	REFUSAL SEE CORE BORING RECORD	733.3	

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.

abc UNDISTURBED SAMPLE

50% ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR

LOSS OF DRILLING WATER

BORING NO. B-155

DATE DRILLED 9-23-68

JOB NO. 5862

LAW ENGINEERING TESTING CO.

DEPTH FT.	DESCRIPTION	CORE %	BIT SIZE	ELEV.	REMARKS
46.0				737.3	
	MODERATELY HARD GRAY GNEISS	44	BX	732.3	46.0' - 51.0' OPEN VERTICAL JOINT, 1.2' IN LENGTH
		90	BX		51.1' - 51.3' INTERSECTING STAINED JOINTS, VERTICAL AND DIPPING 40°
56.0	CORING TERMINATED			727.3	51.0' - 56.0' BROKEN AND SLIGHTLY FRACTURED (PIECES 11" - 1" IN LENGTH)

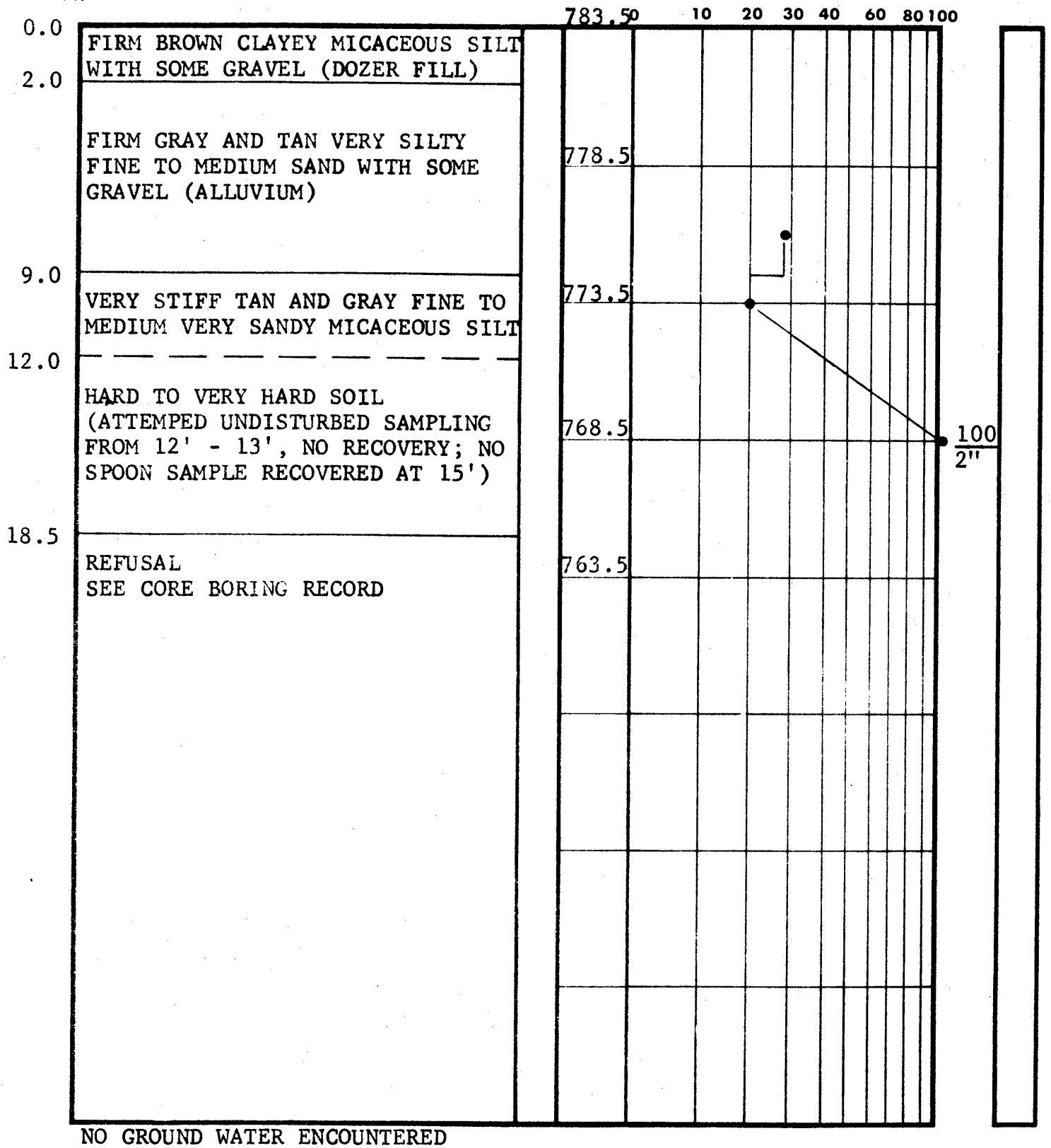
CORE BORING RECORD

BORING NO. B-155
JOB NO. 5862

abc.

WATER TABLE

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.

abc ▬ UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

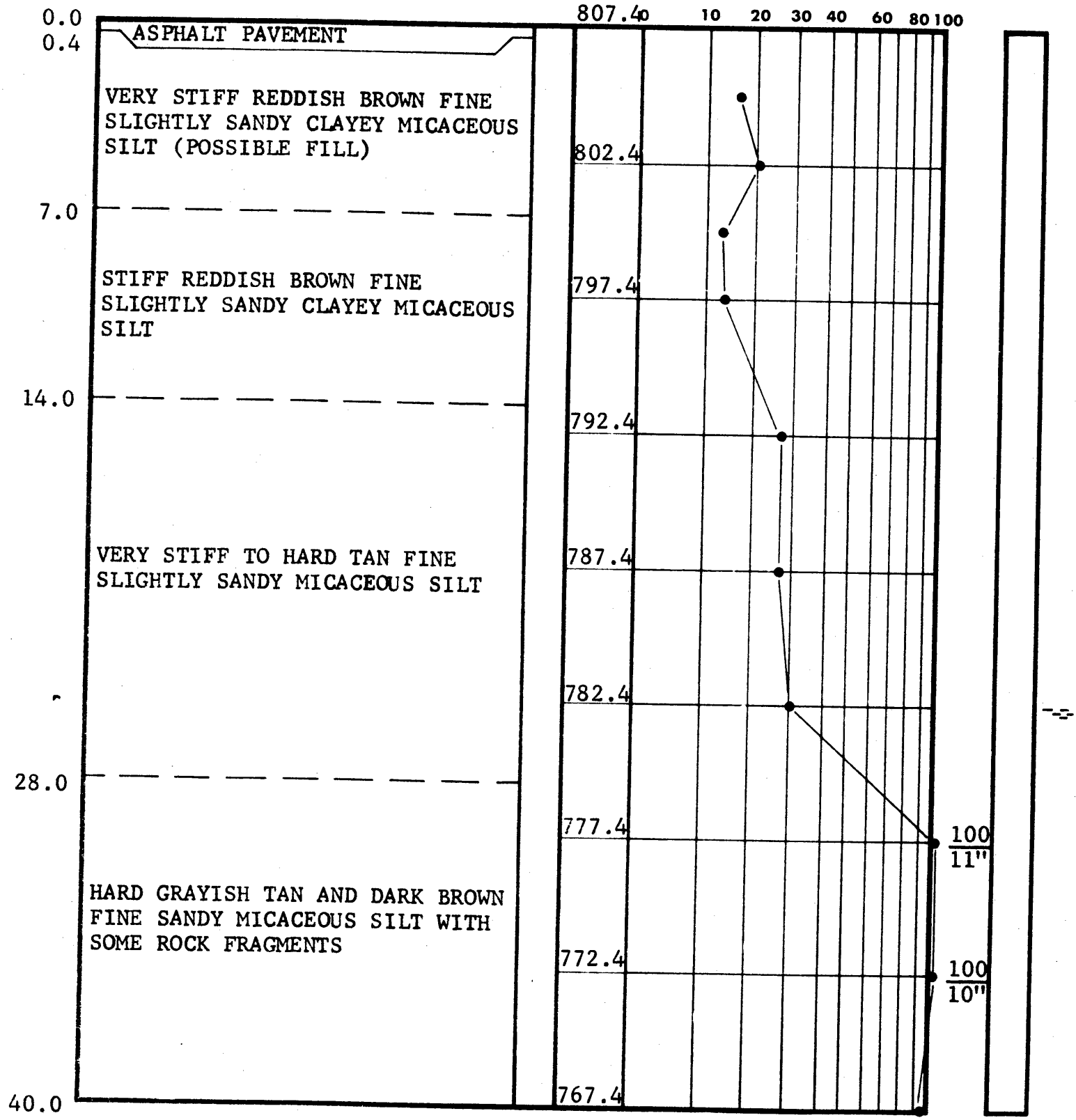
◀ LOSS OF DRILLING WATER

BORING NO. B-156

DATE DRILLED 9-23-68

JOB NO. 5862

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.

abc UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

◀ LOSS OF DRILLING WATER

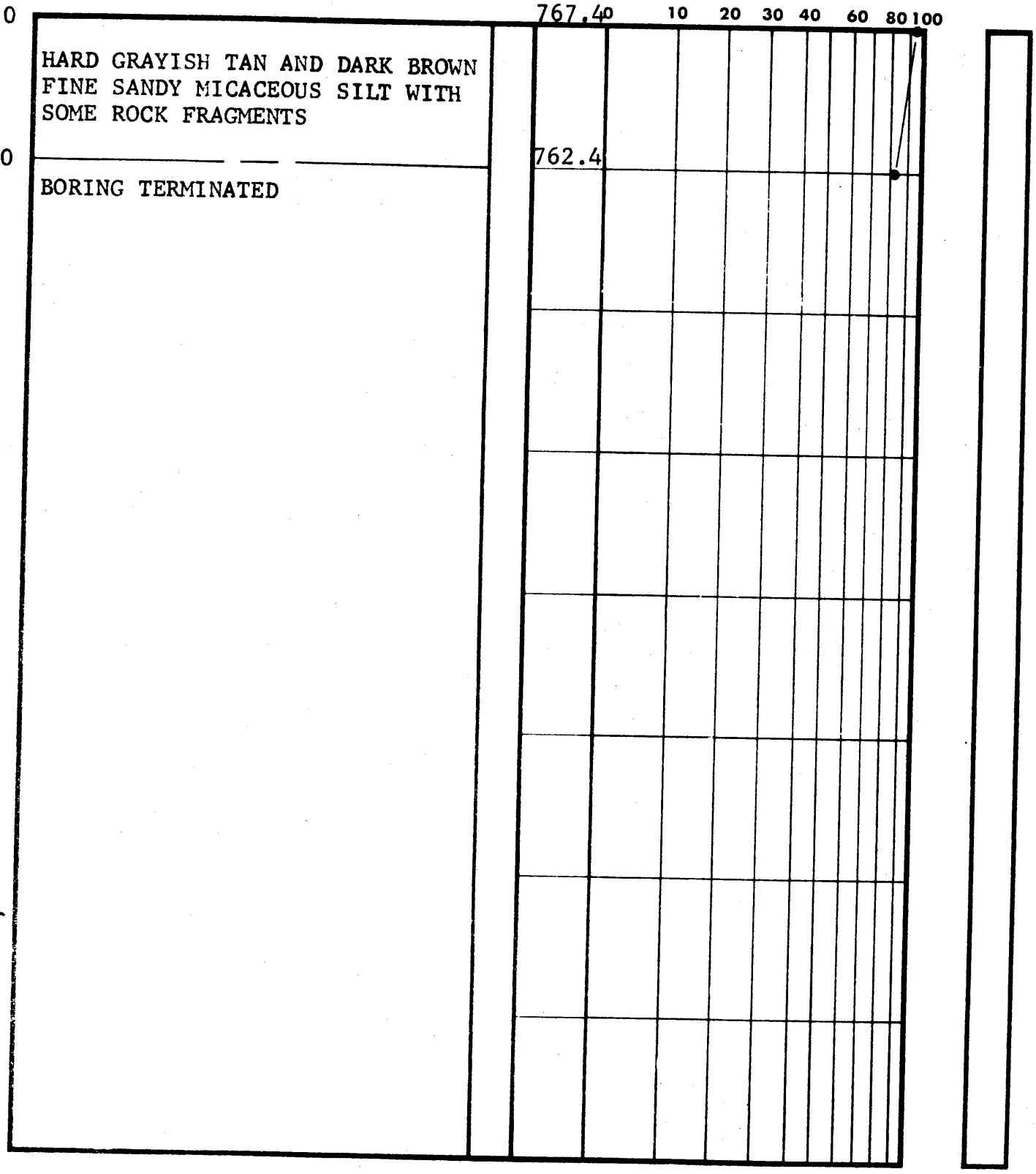
BORING NO. B-157

DATE DRILLED 9-27-68

JOB NO. 5862

LAW ENGINEERING TESTING CO.

DEPTH FT.	DESCRIPTION	ELEV	• PENETRATION-BLOWS PER FT. 10 20 30 40 60 80 100
40.0		767.4	
	HARD GRAYISH TAN AND DARK BROWN FINE SANDY MICACEOUS SILT WITH SOME ROCK FRAGMENTS		
45.0		762.4	
	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.

abc ▬ UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR

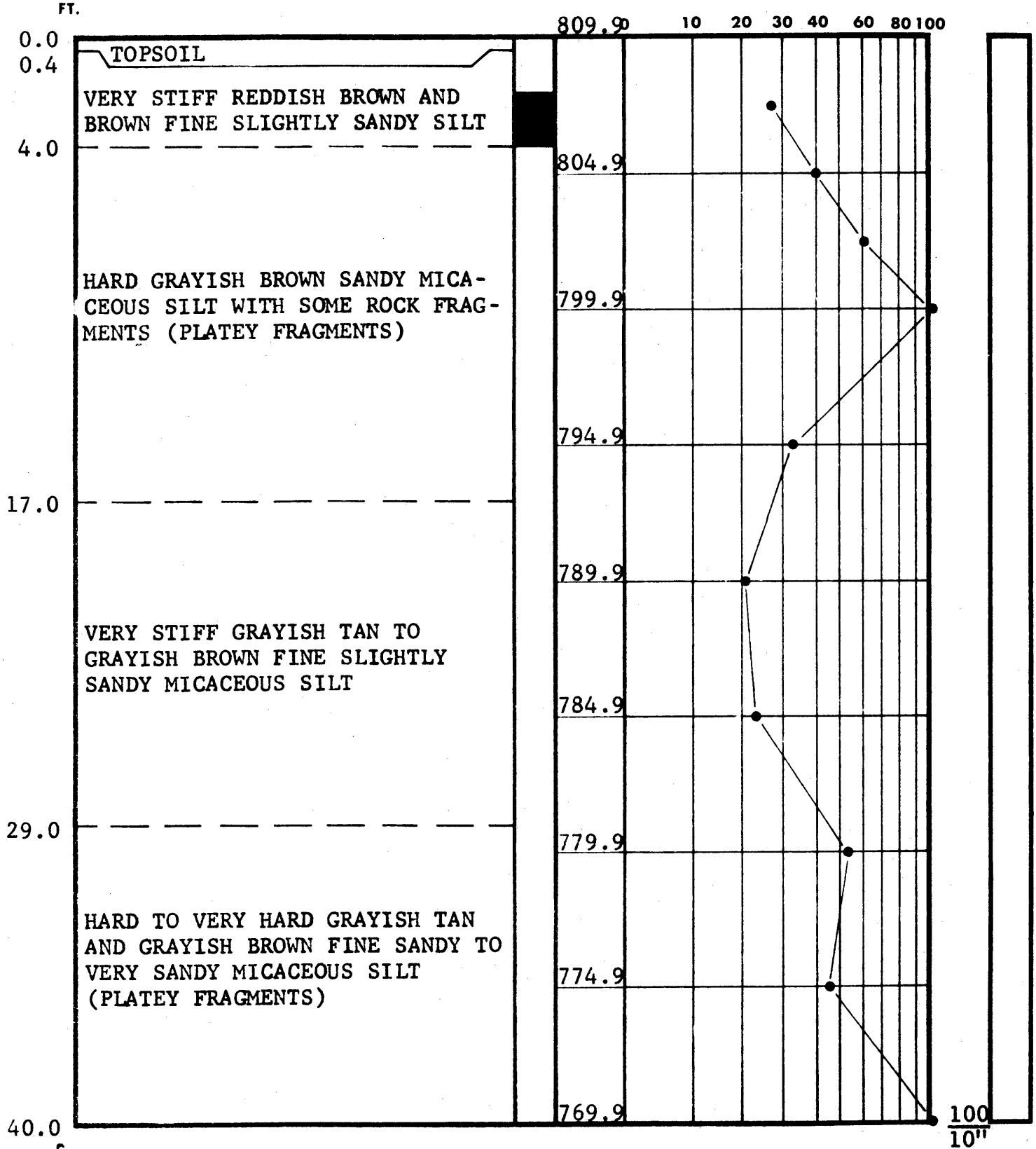
◀ LOSS OF DRILLING WATER

BORING NO. B-157

DATE DRILLED 9-27-68

JOB NO. 5862

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.

abc UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

◀ LOSS OF DRILLING WATER

BORING NO. B-158

DATE DRILLED 9-27-68

JOB NO. 5862

LAW ENGINEERING TESTING CO.

DEPTH FT.	DESCRIPTION	ELEV	• PENETRATION-BLOWS PER FT.
40.0		769.9	10 20 30 40 60 80 100 100/10"
	HARD TO VERY HARD GRAYISH TAN AND GRAYISH BROWN FINE SANDY TO VERY SANDY MICACEOUS SILT (PLATEY FRAGMENTS)	764.9	100/2"
50.0		759.9	100/3"
	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.

abc UNDISTURBED SAMPLE

SC % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

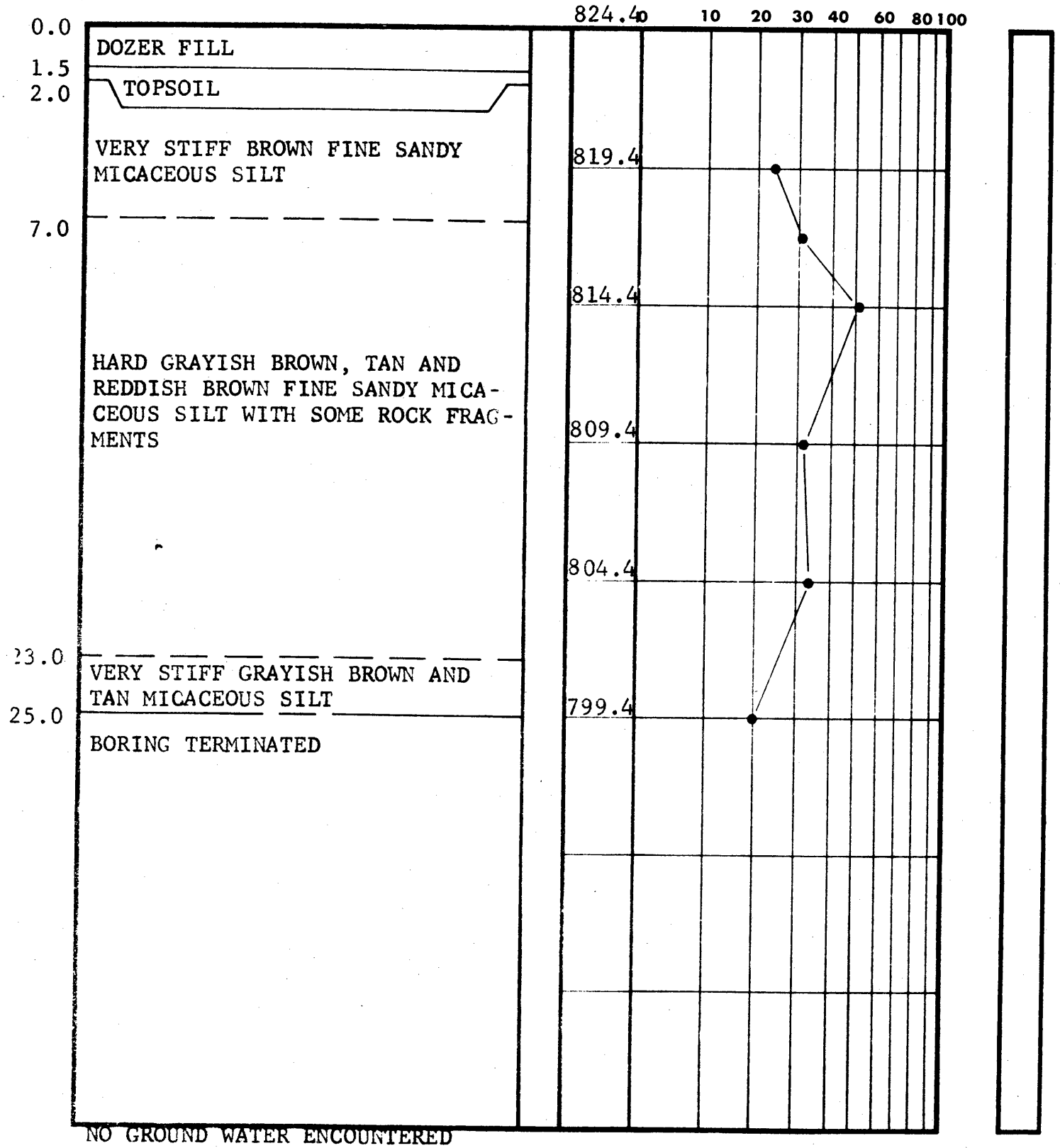
LOSS OF DRILLING WATER

BORING NO. B-158

DATE DRILLED 9-27-68

JOB NO. 5862

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.

abc ■ UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

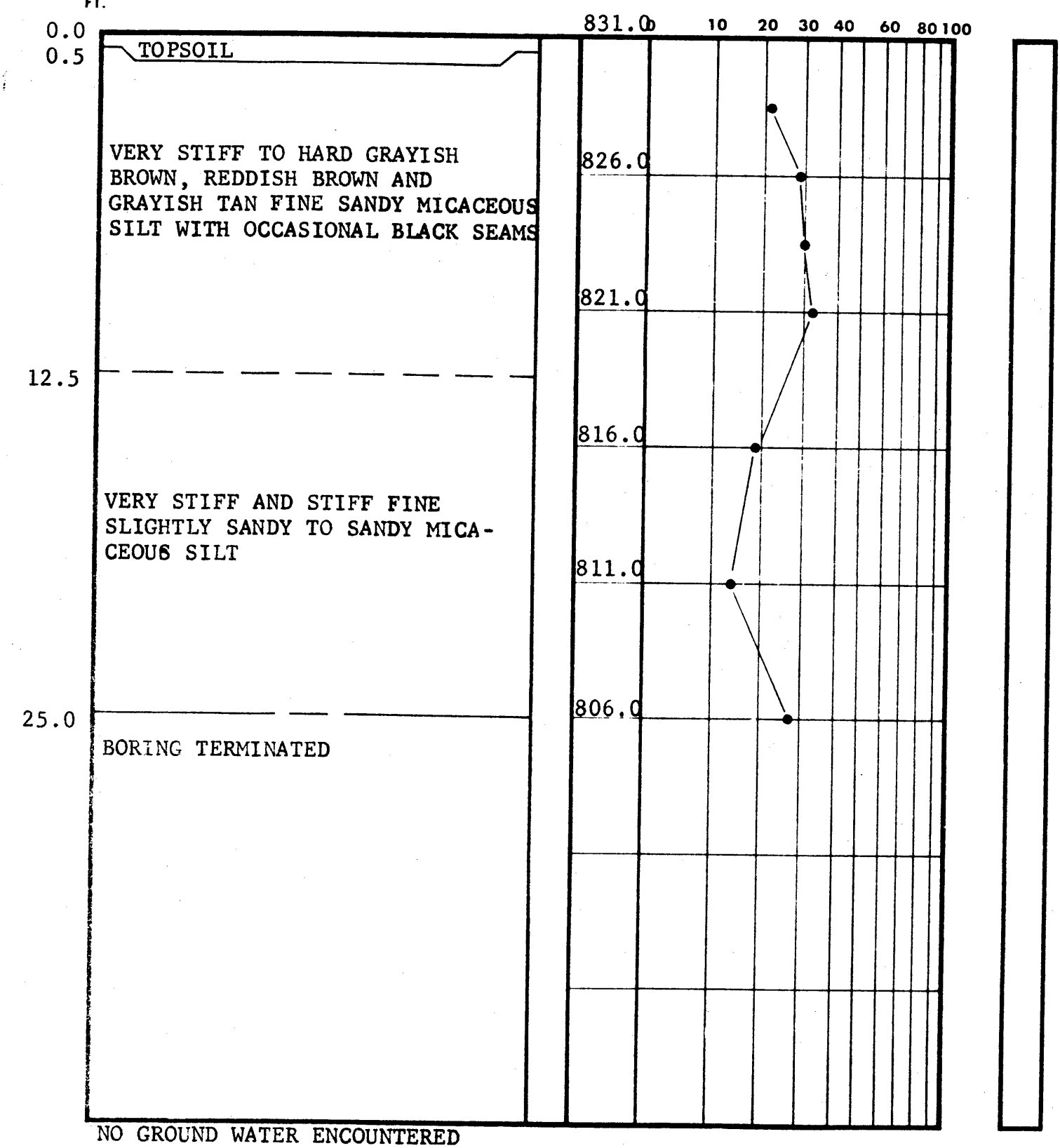
◀ LOSS OF DRILLING WATER

BORING NO. B-159

DATE DRILLED 9-26-68

JOB NO. 5862

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.

abc UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

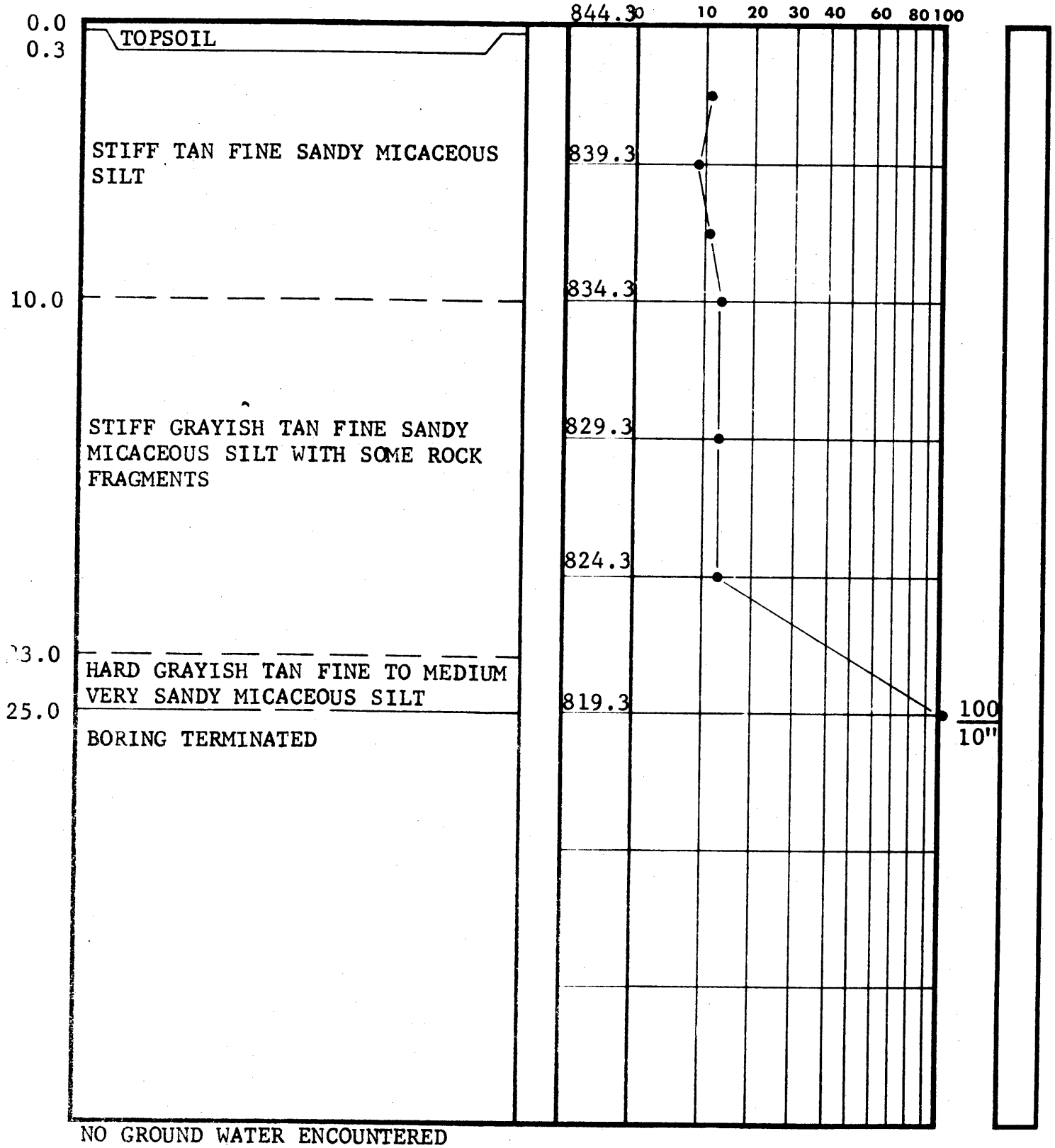
LOSS OF DRILLING WATER

BORING NO. B-160

DATE DRILLED 9-26-68

JOB NO. 5862

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.

abc ▬ UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

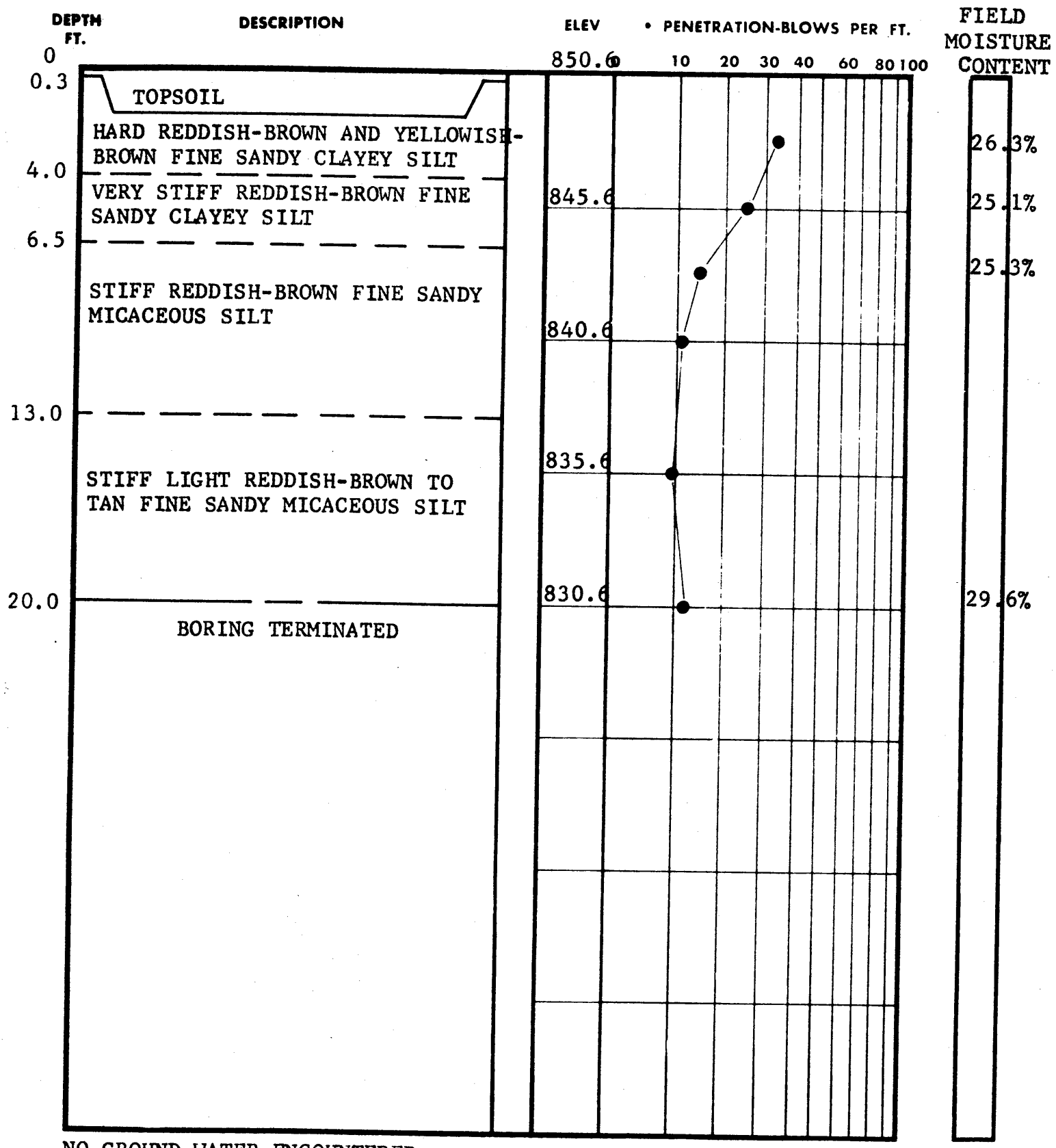
◀ LOSS OF DRILLING WATER

BORING NO. B-161

DATE DRILLED 9-26-68

JOB NO. 5862

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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

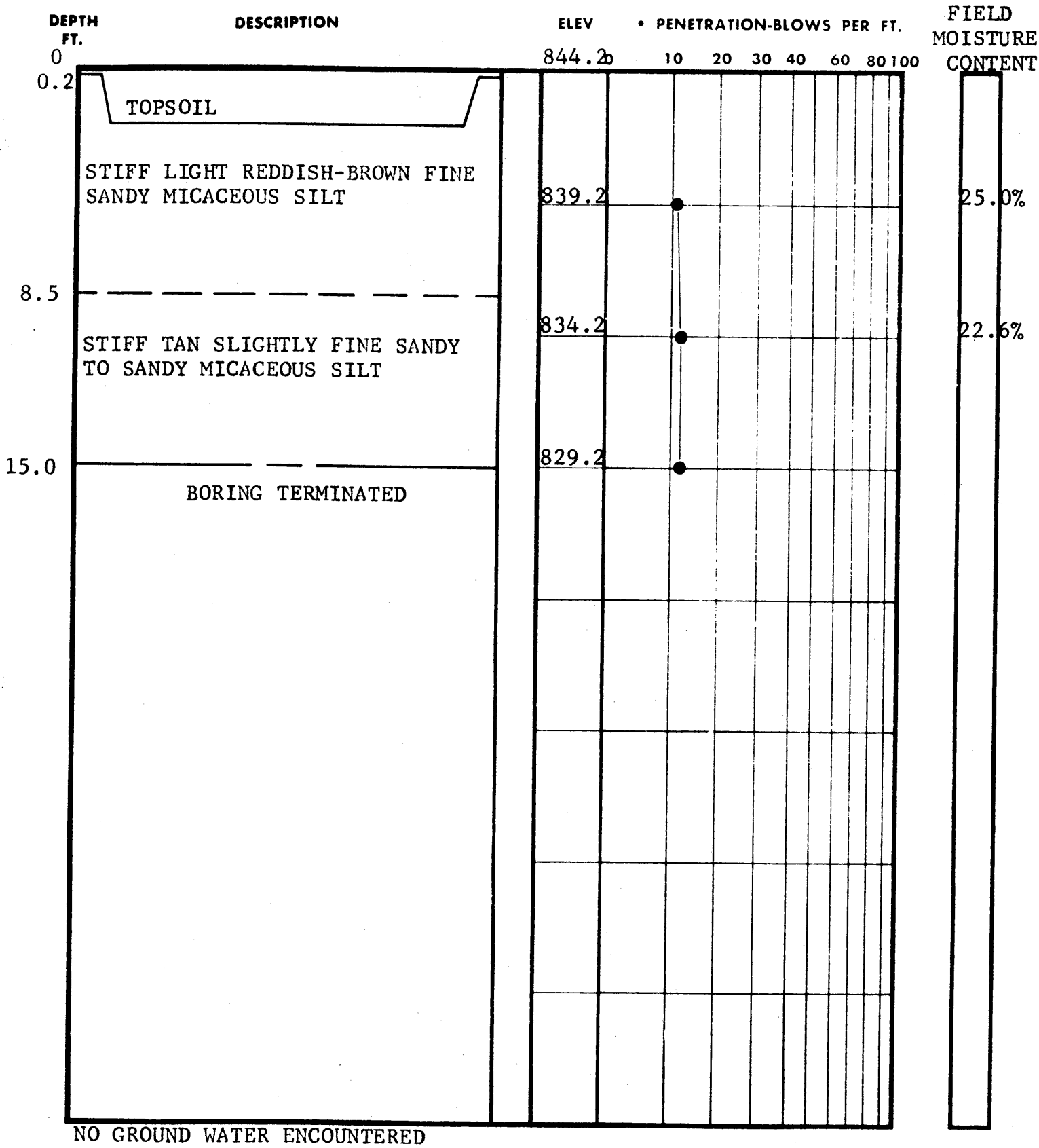
LOSS OF DRILLING WATER

BORING NO. B-201

DATE DRILLED 7/23/68

JOB NO. 5862

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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

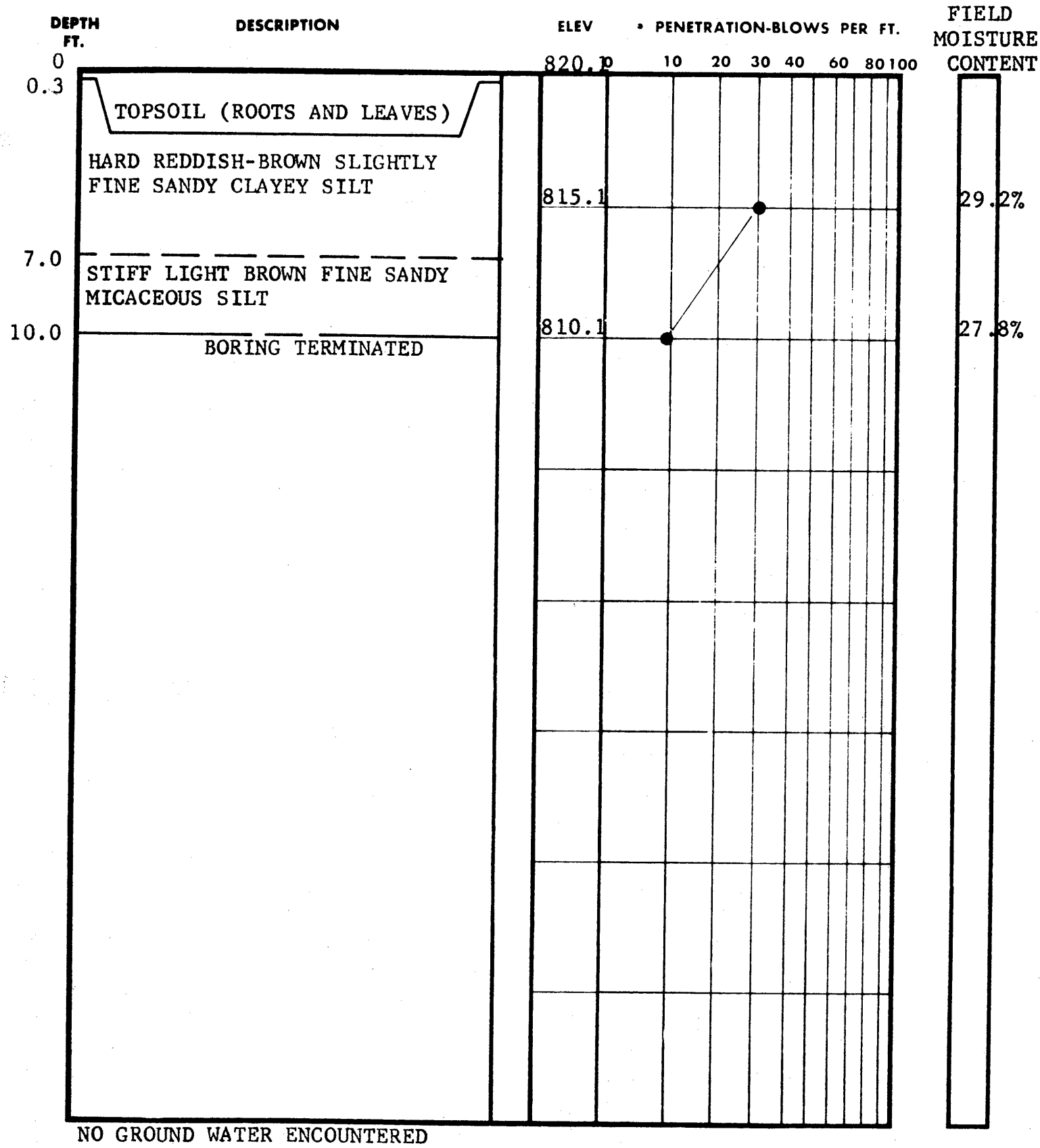
LOSS OF DRILLING WATER

BORING NO. B-202

DATE DRILLED 7/24/68

JOB NO. 5862

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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

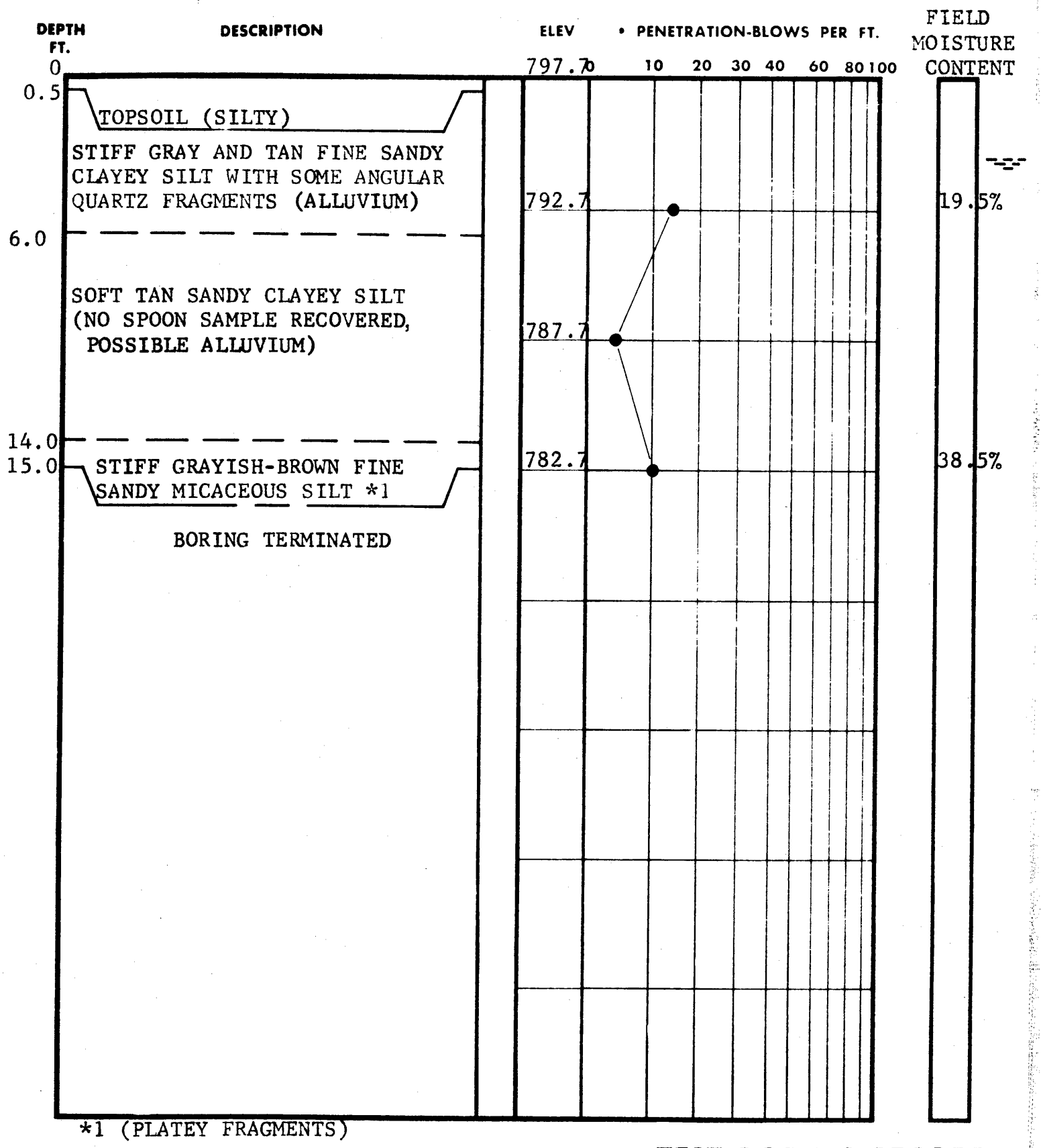
LOSS OF DRILLING WATER

BORING NO. B-203

DATE DRILLED 7/3/68

JOB NO. 5862

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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

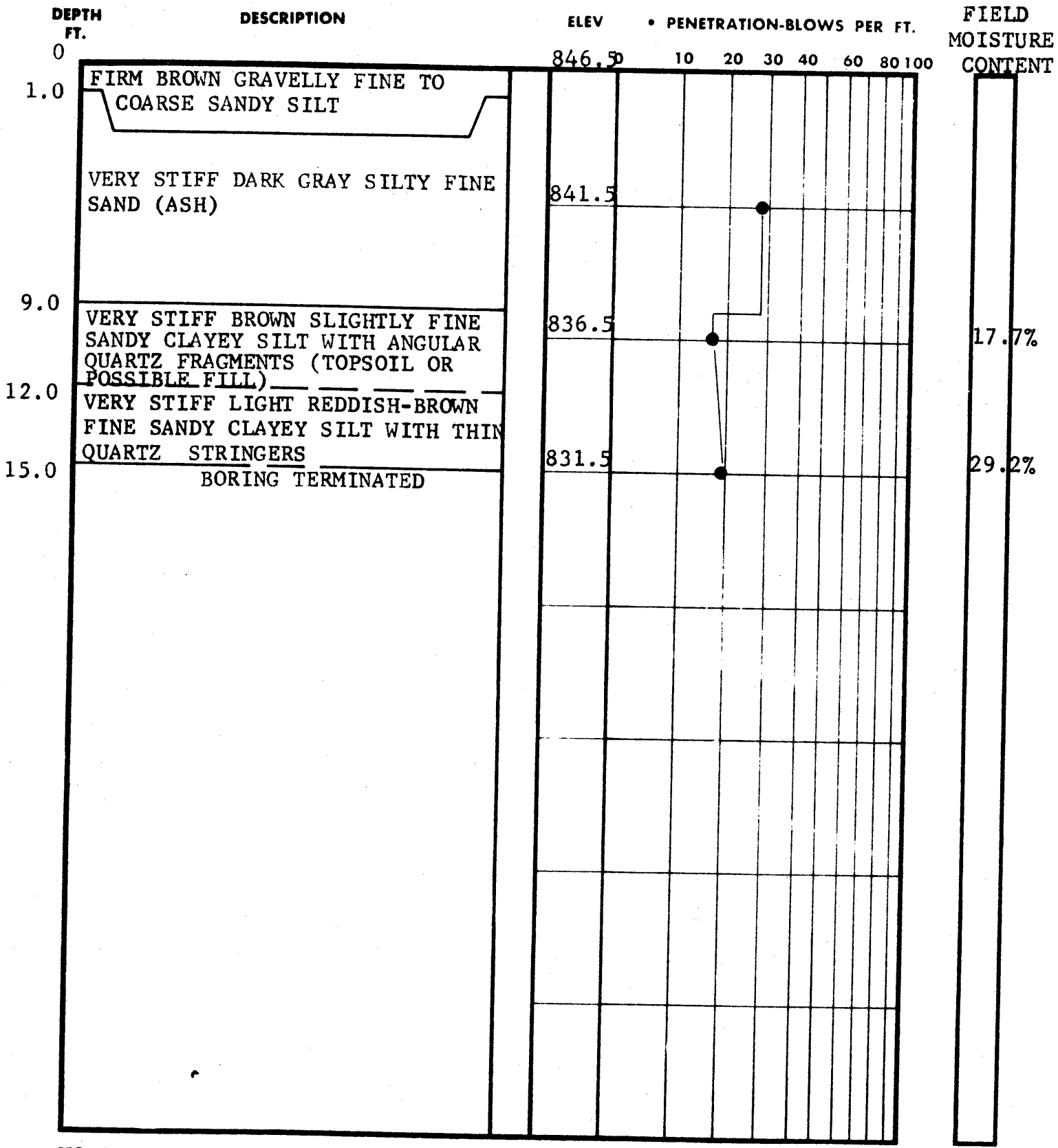
LOSS OF DRILLING WATER

BORING NO. B-204

DATE DRILLED 7/31/68

JOB NO. 5862

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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

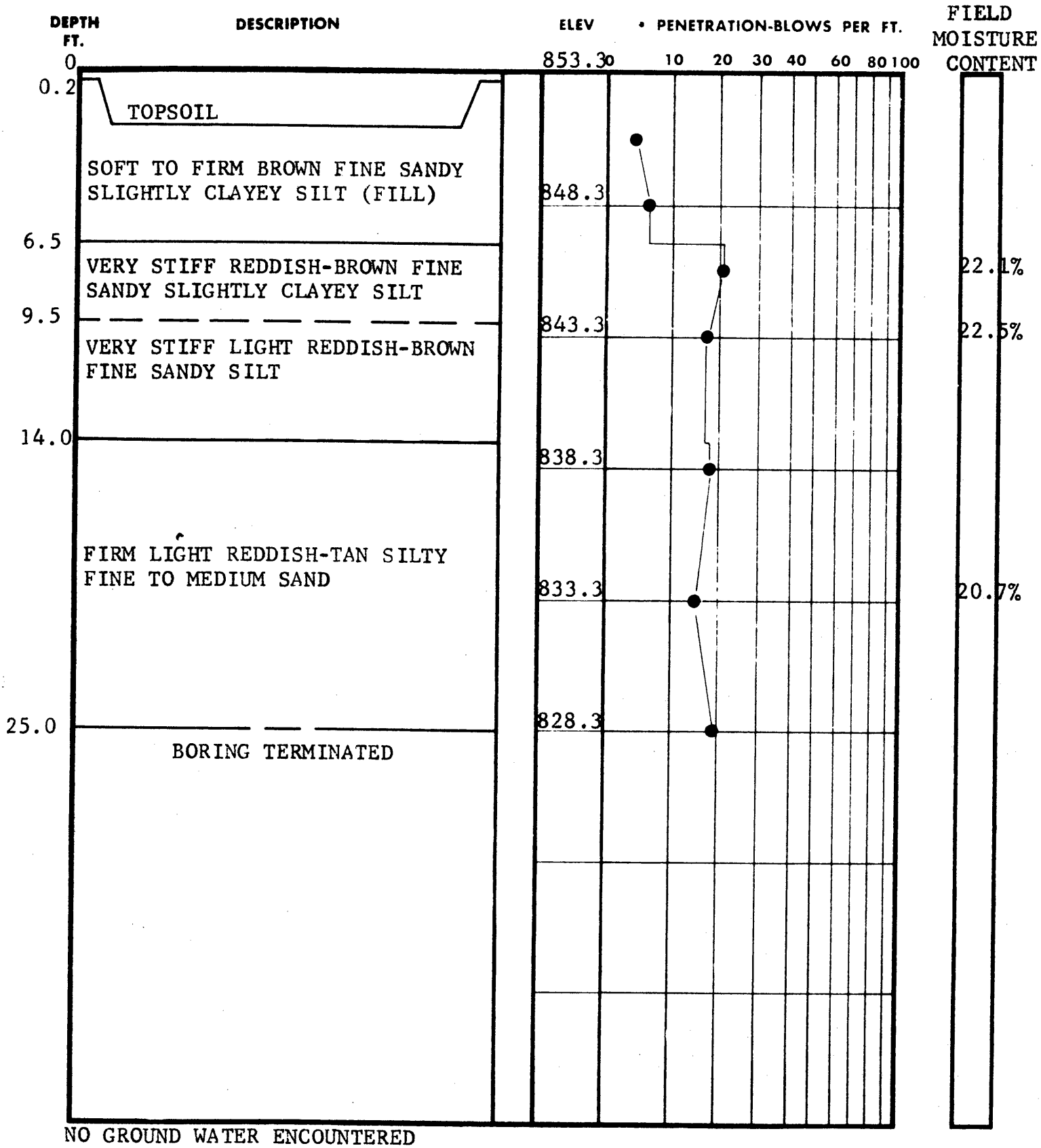
LOSS OF DRILLING WATER

BORING NO. B-205

DATE DRILLED 7/31/68

JOB NO. 5862

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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

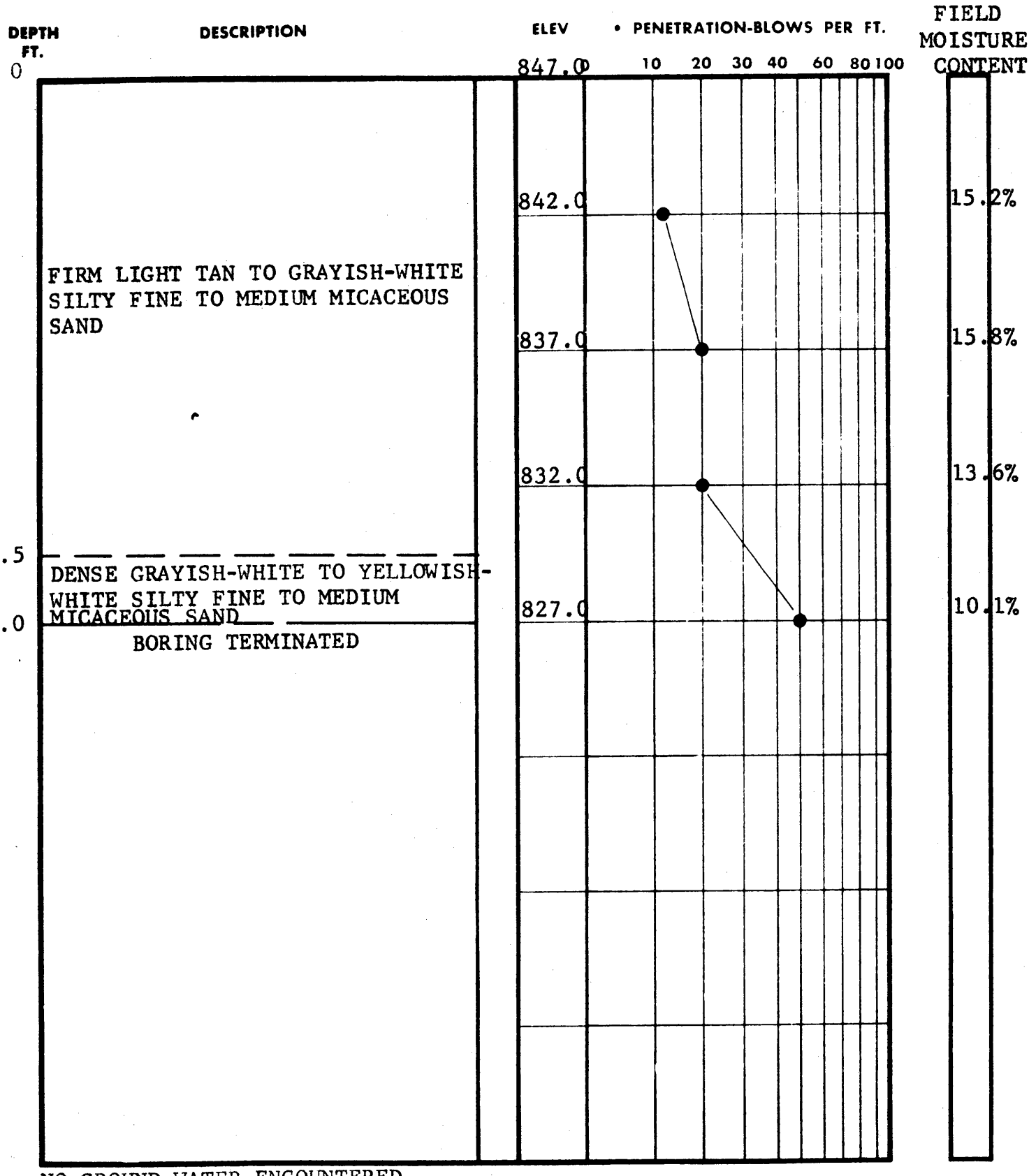
LOSS OF DRILLING WATER

BORING NO. B-206

DATE DRILLED 7/22/68

JOB NO. 5862

LAW ENGINEERING TESTING CO.



TEST BORING RECORD

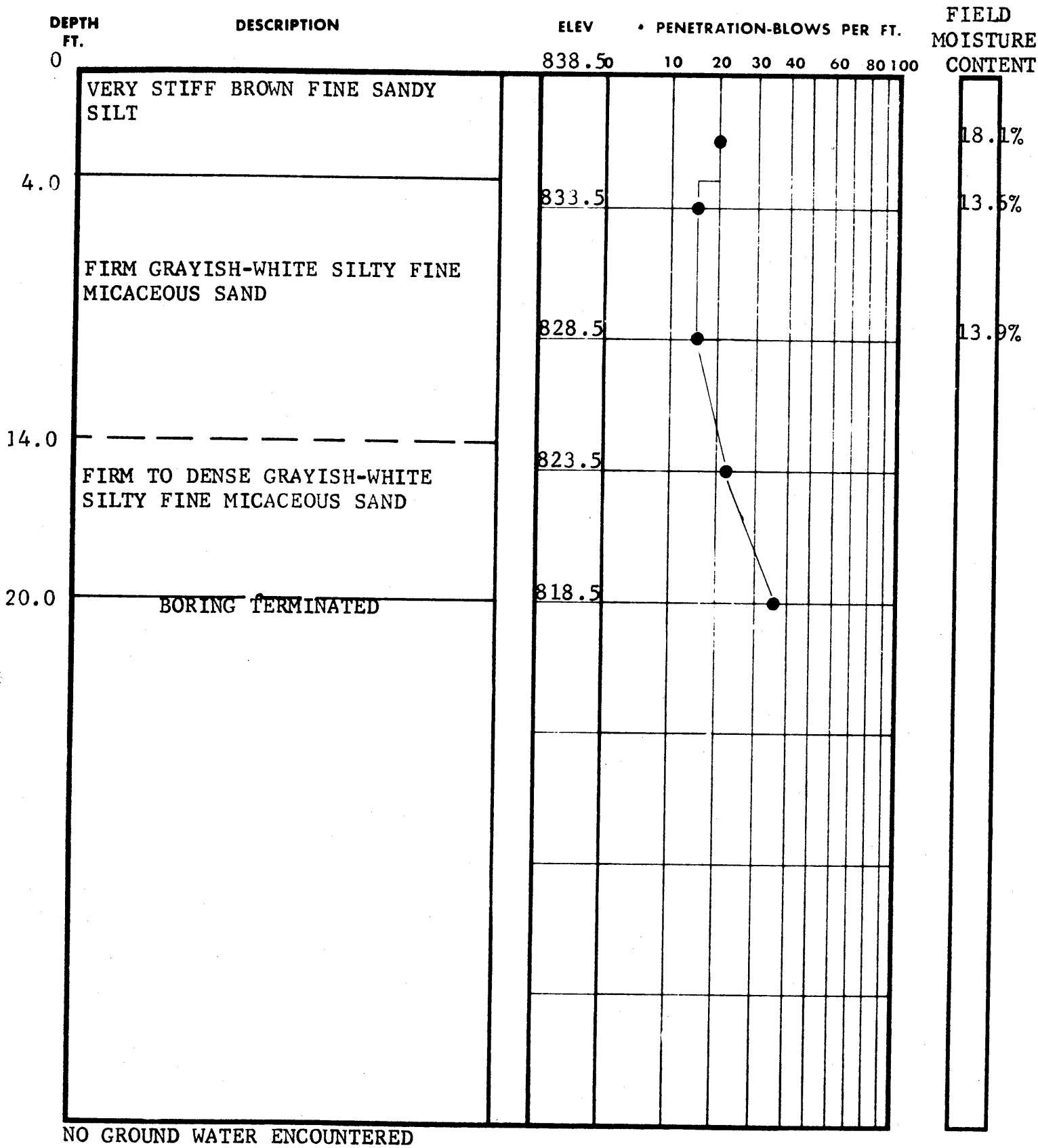
BORING AND SAMPLING MEETS ASTM D-1586
CORE DRILLING MEETS ASTM D-2113
PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

WATER TABLE, 24 HR.
UNDISTURBED SAMPLE
WATER TABLE, 1 HR.
|50| % ROCK CORE RECOVERY
LOSS OF DRILLING WATER

BORING NO. B-207
DATE DRILLED 7/24/68
JOB NO. 5862

LAW ENGINEERING TESTING CO.

jj



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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

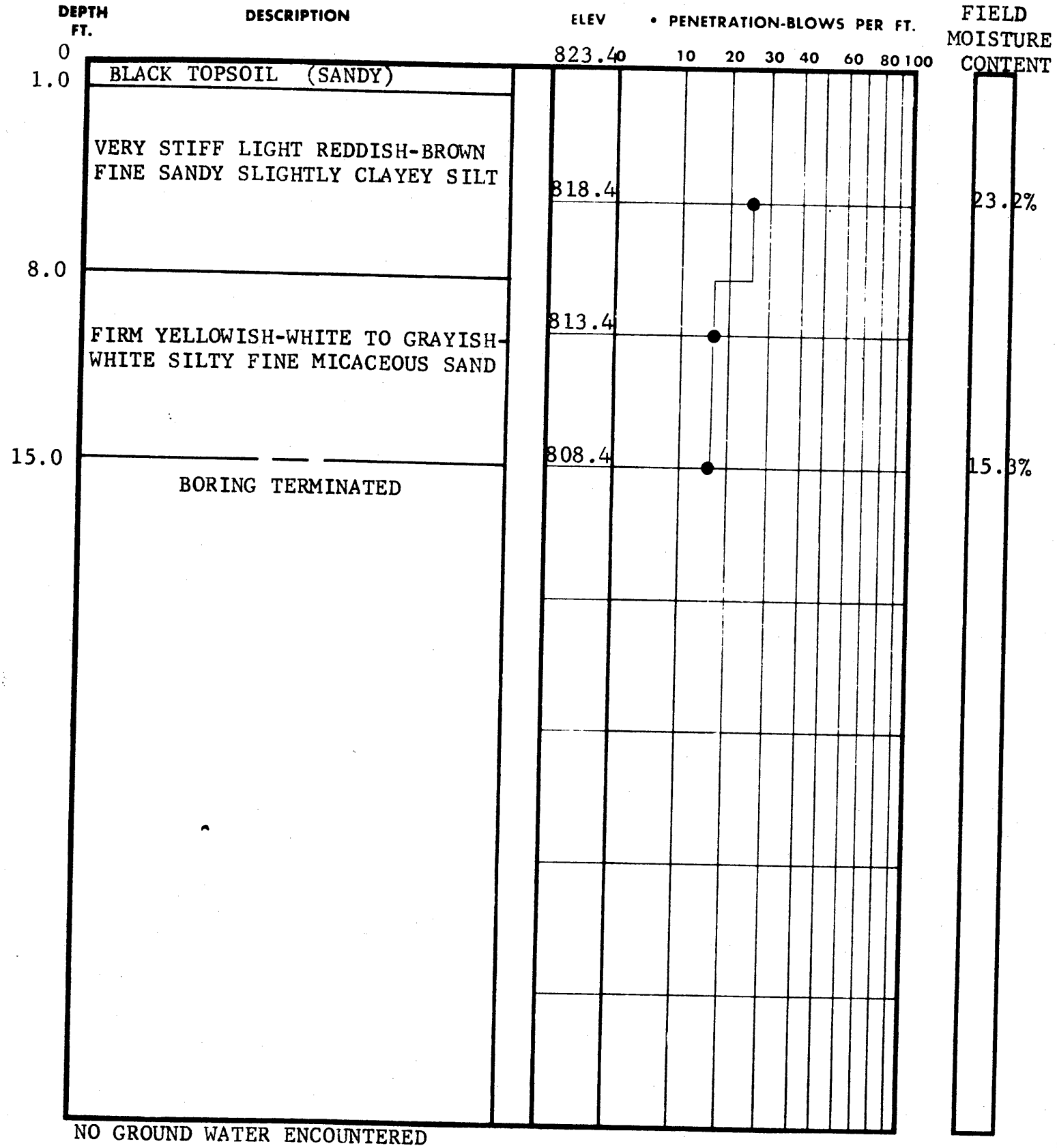
LOSS OF DRILLING WATER

BORING NO. B-208

DATE DRILLED 7/24/68

JOB NO. 5862

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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

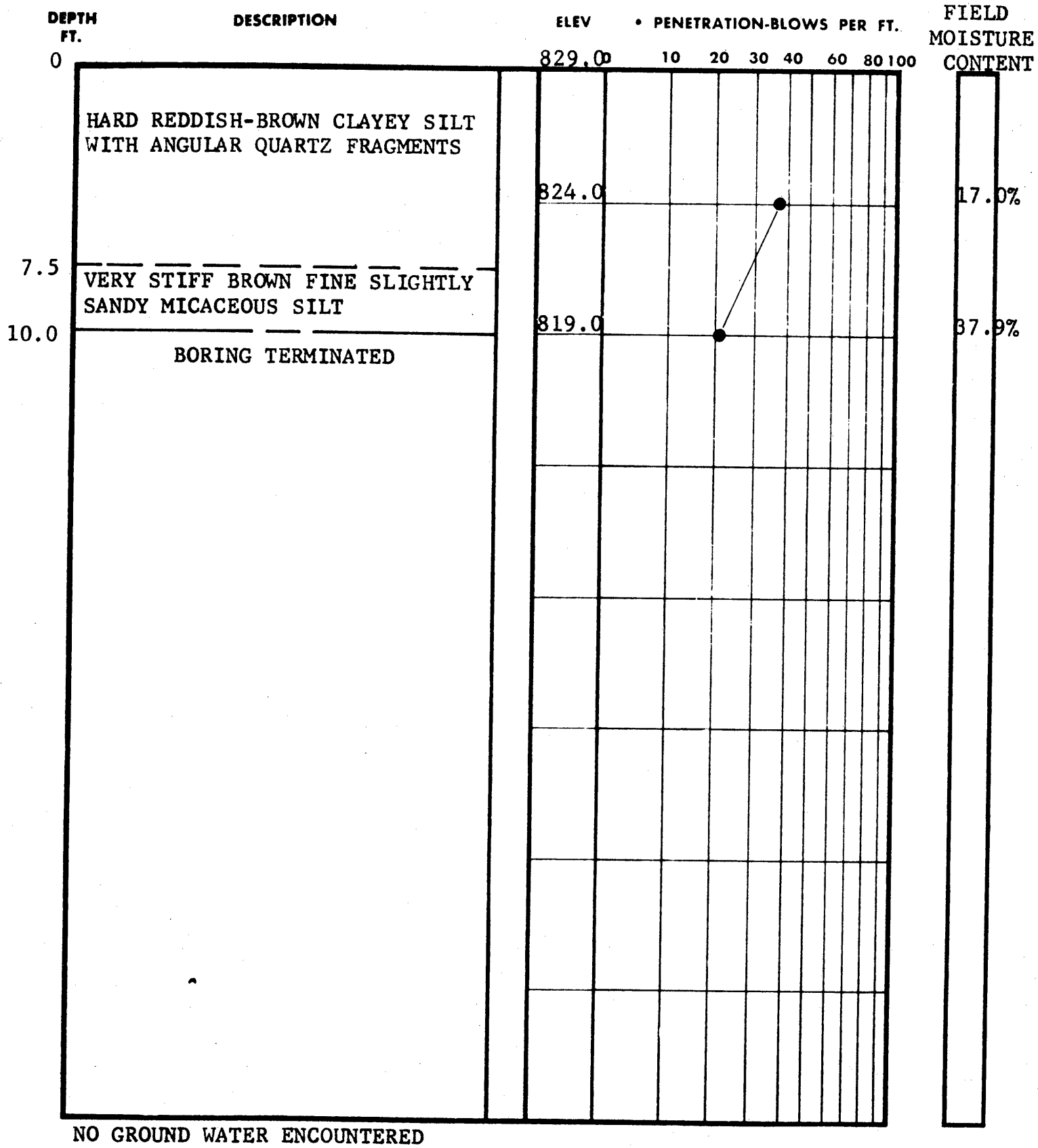
LOSS OF DRILLING WATER

BORING NO. B-209

DATE DRILLED 7/31/68

JOB NO. 5862

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.

UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

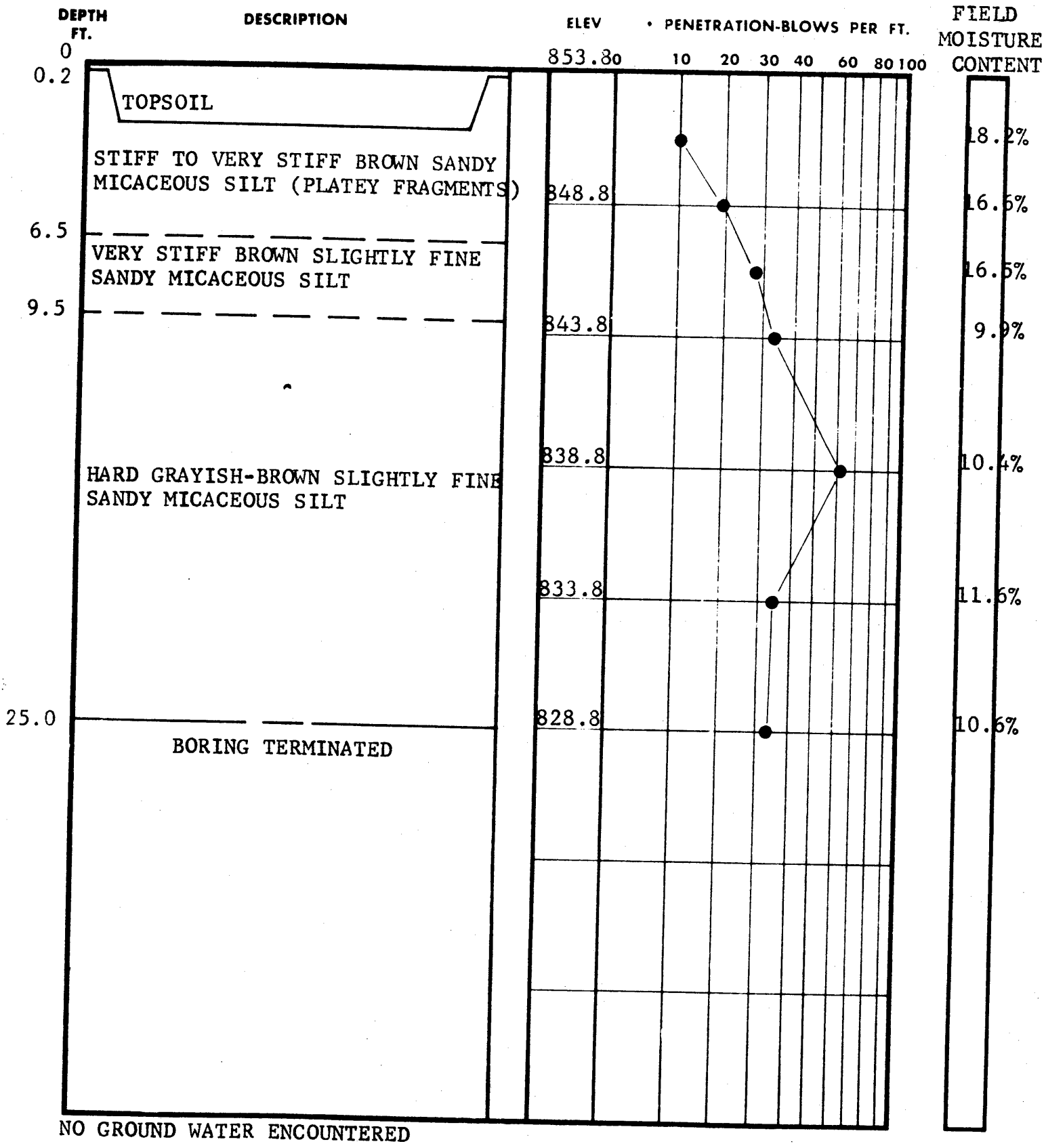
LOSS OF DRILLING WATER

BORING NO. B-210

DATE DRILLED 7/31/68

JOB NO. 5862

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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

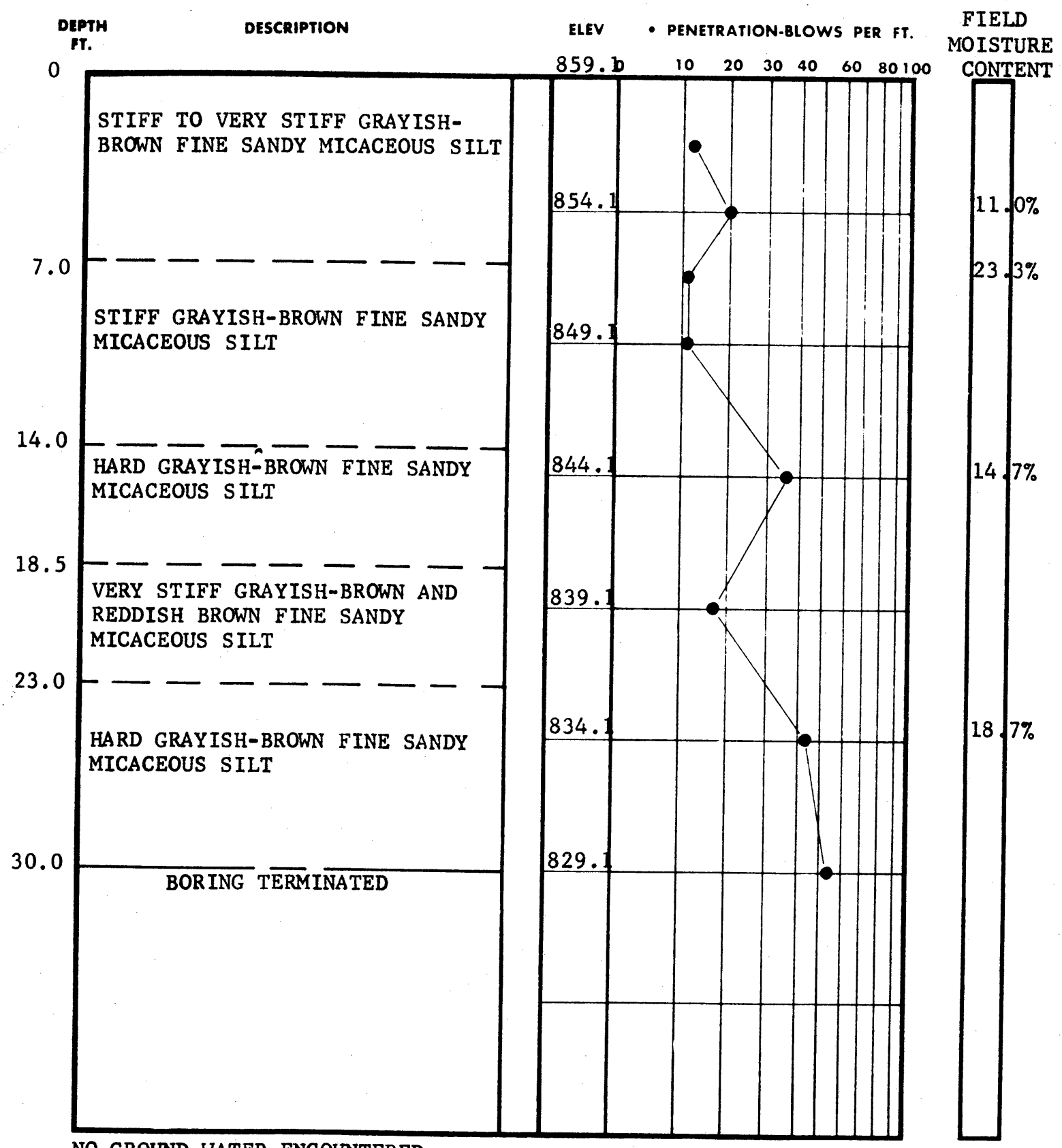
LOSS OF DRILLING WATER

BORING NO. B-211

DATE DRILLED 7/22/68

JOB NO. 5862

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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

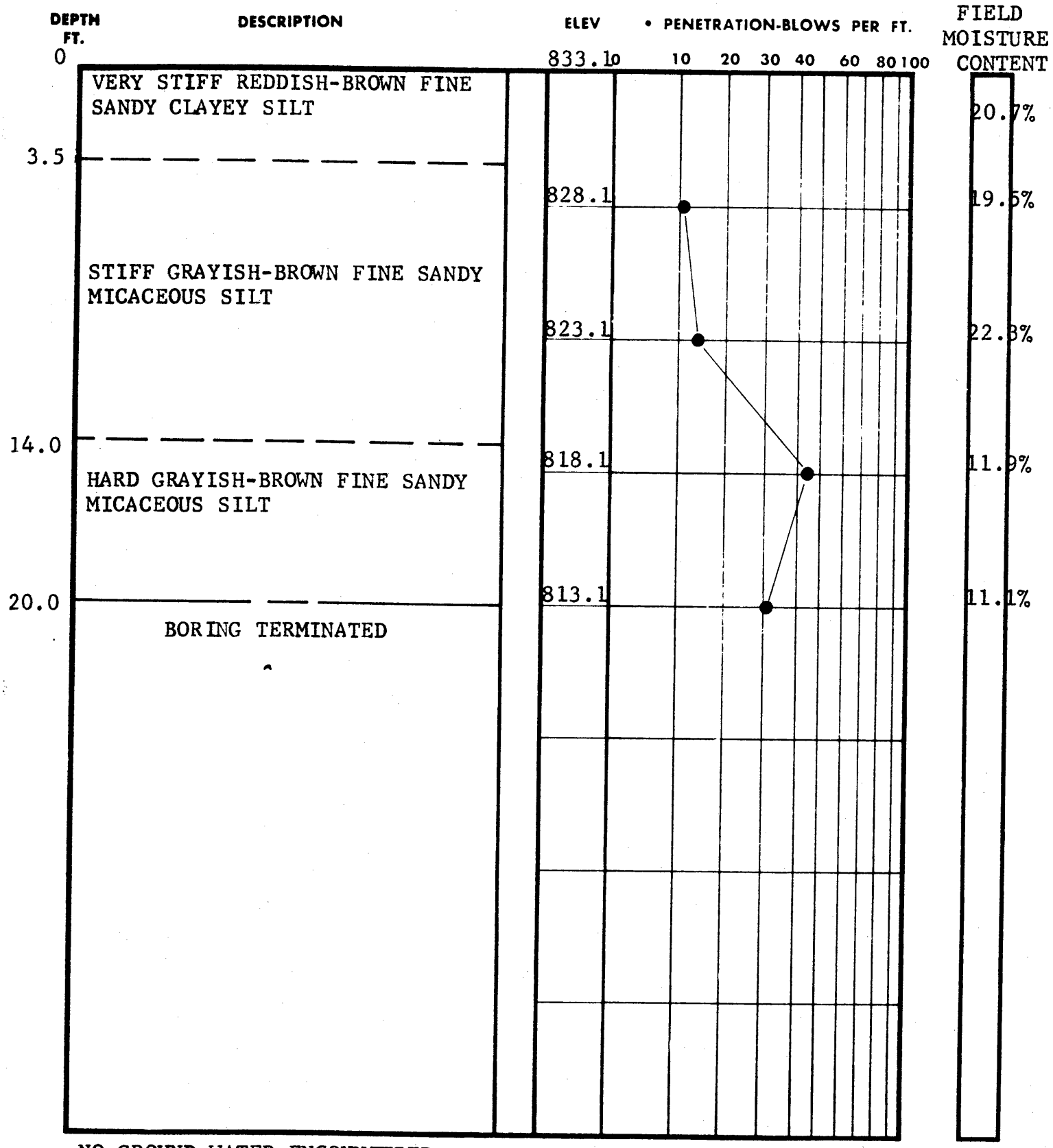
◀ LOSS OF DRILLING WATER

BORING NO. B-212

DATE DRILLED 7/23/68

JOB NO. 5862

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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

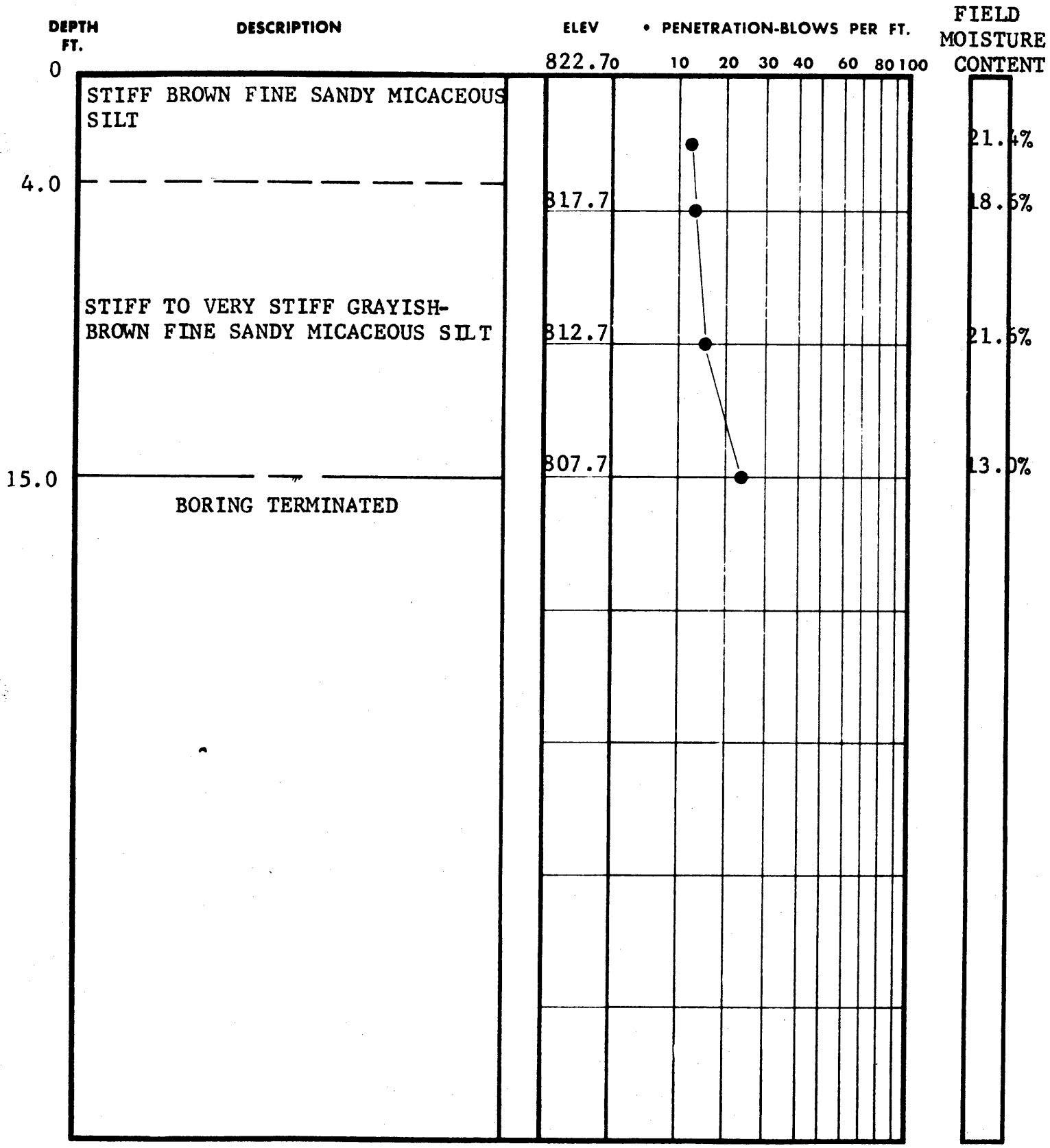
LOSS OF DRILLING WATER

BORING NO. B-213

DATE DRILLED 7/22/68

JOB NO. 5862

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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

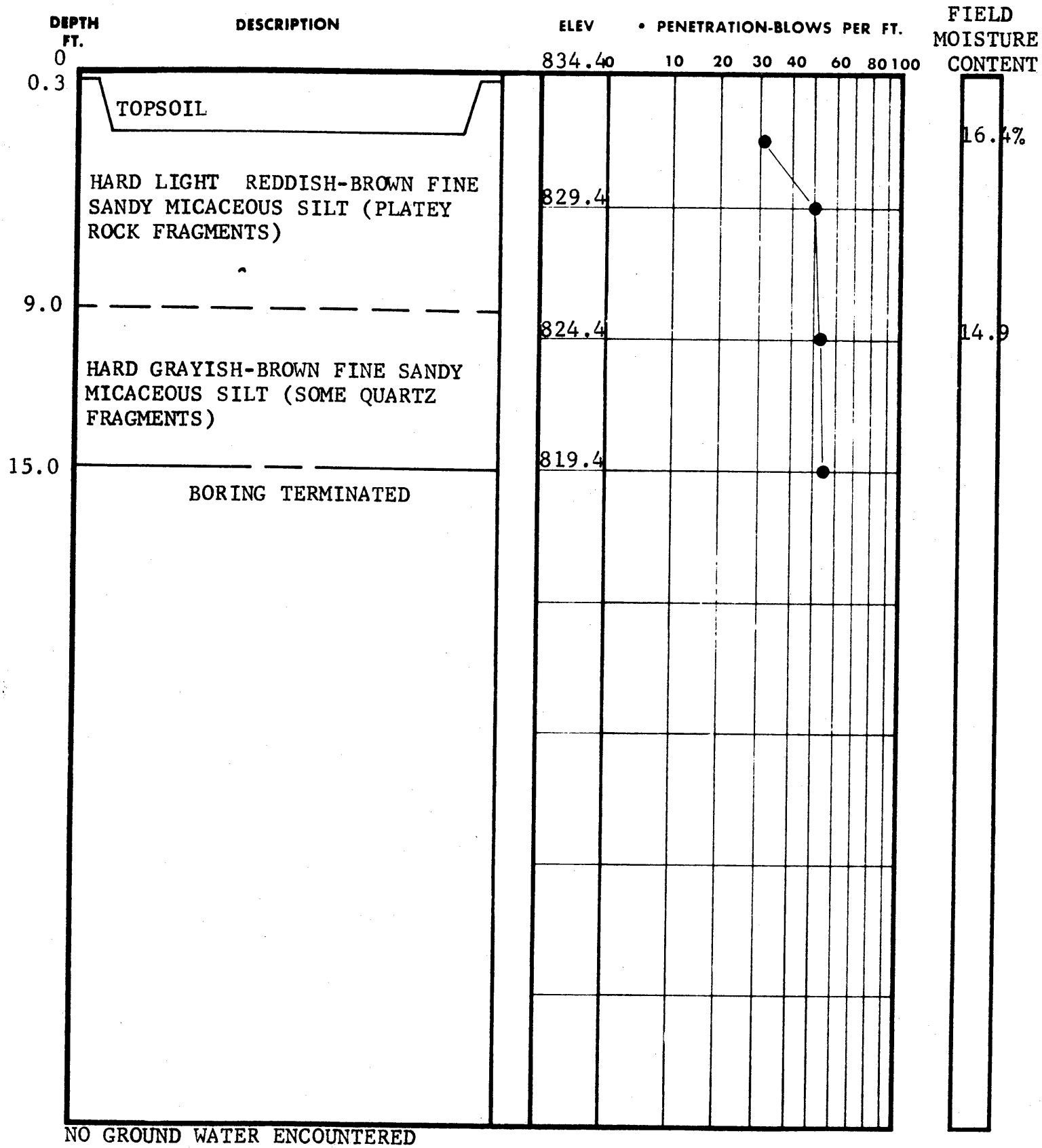
LOSS OF DRILLING WATER

BORING NO. B-214

DATE DRILLED 7/24/68

JOB NO. 5862

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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

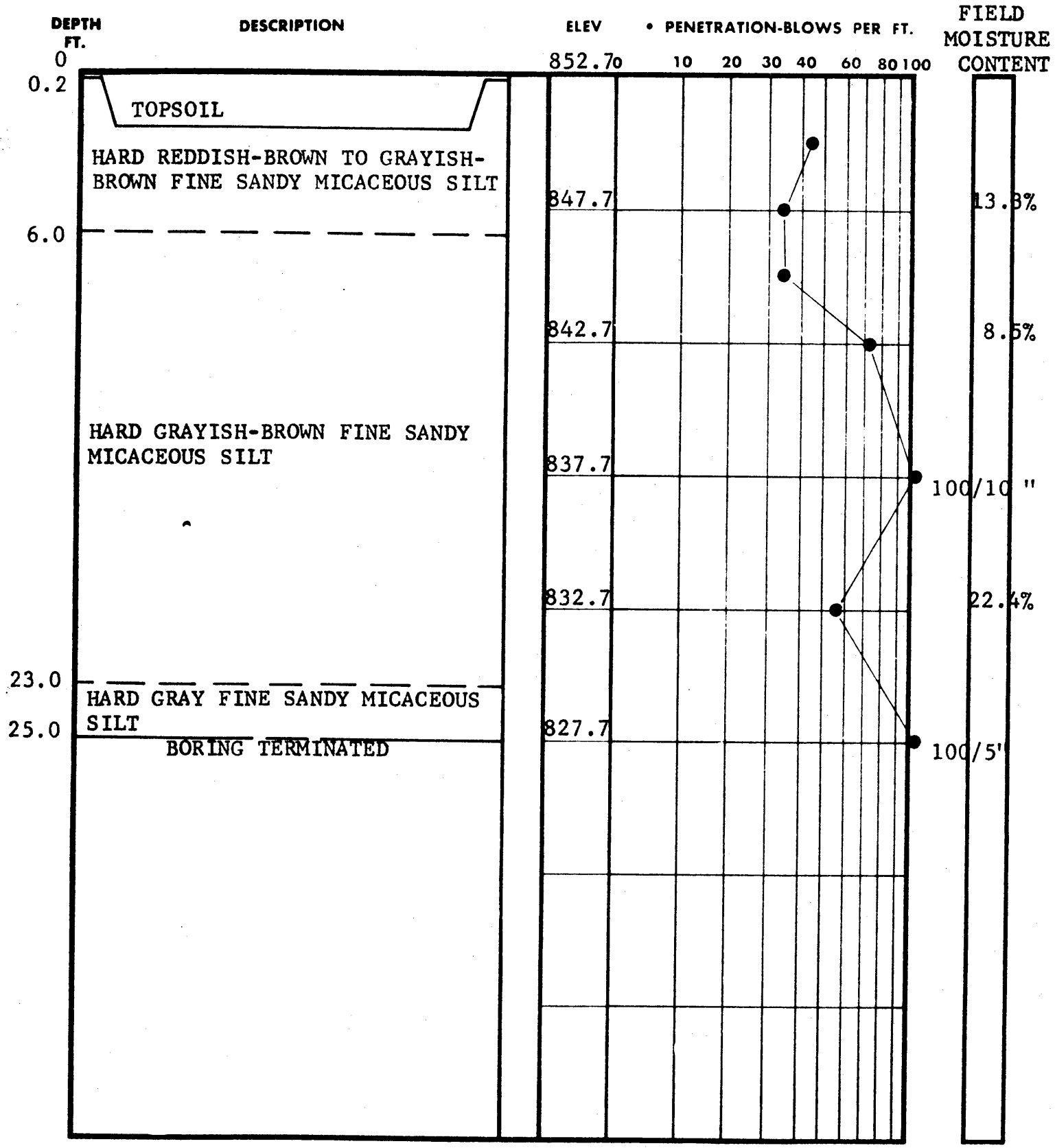
◀ LOSS OF DRILLING WATER

BORING NO. B-215

DATE DRILLED 7/25/68

JOB NO. 5862

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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

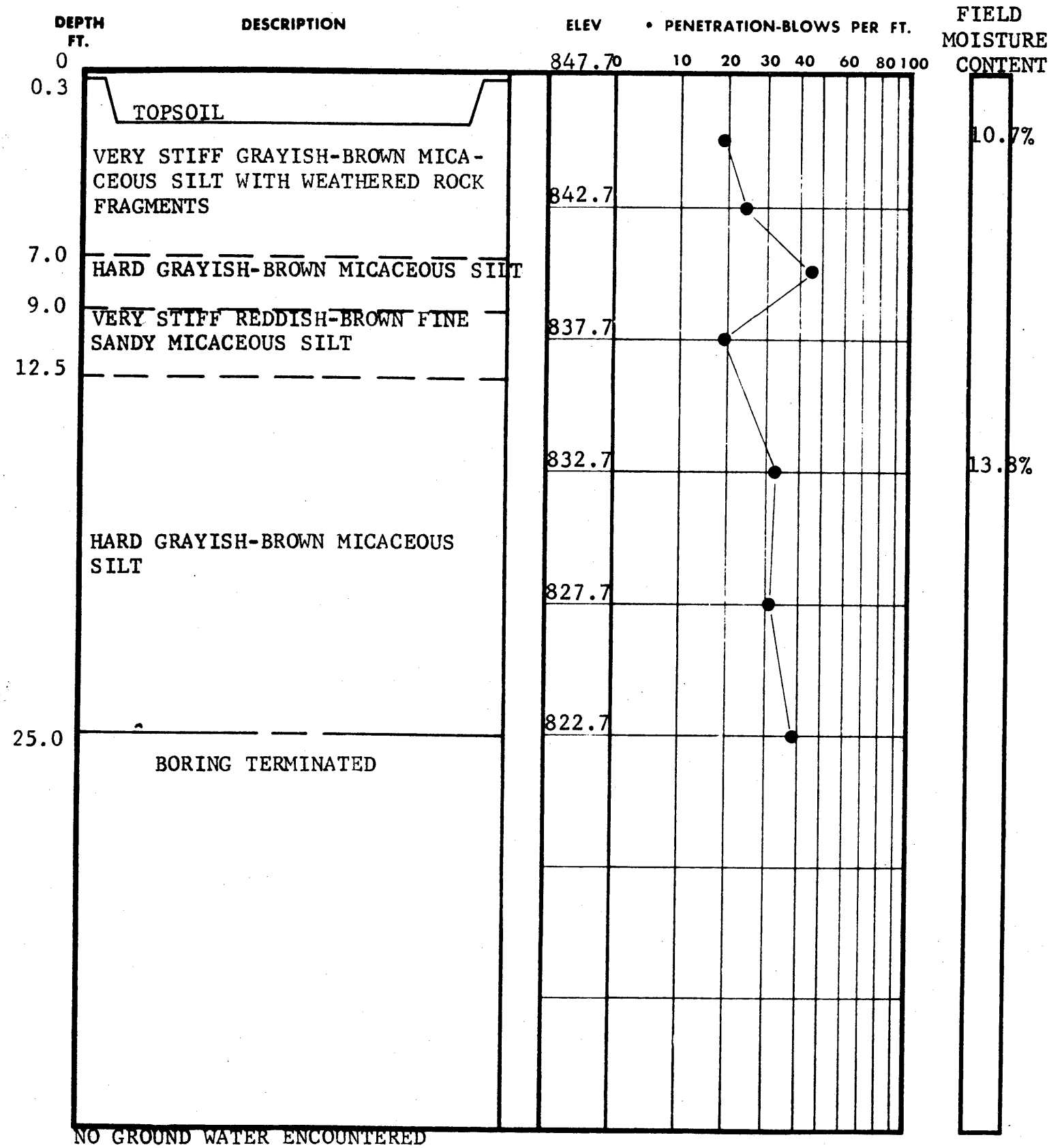
LOSS OF DRILLING WATER

BORING NO. B-216

DATE DRILLED 7/22/68

JOB NO. 5862

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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

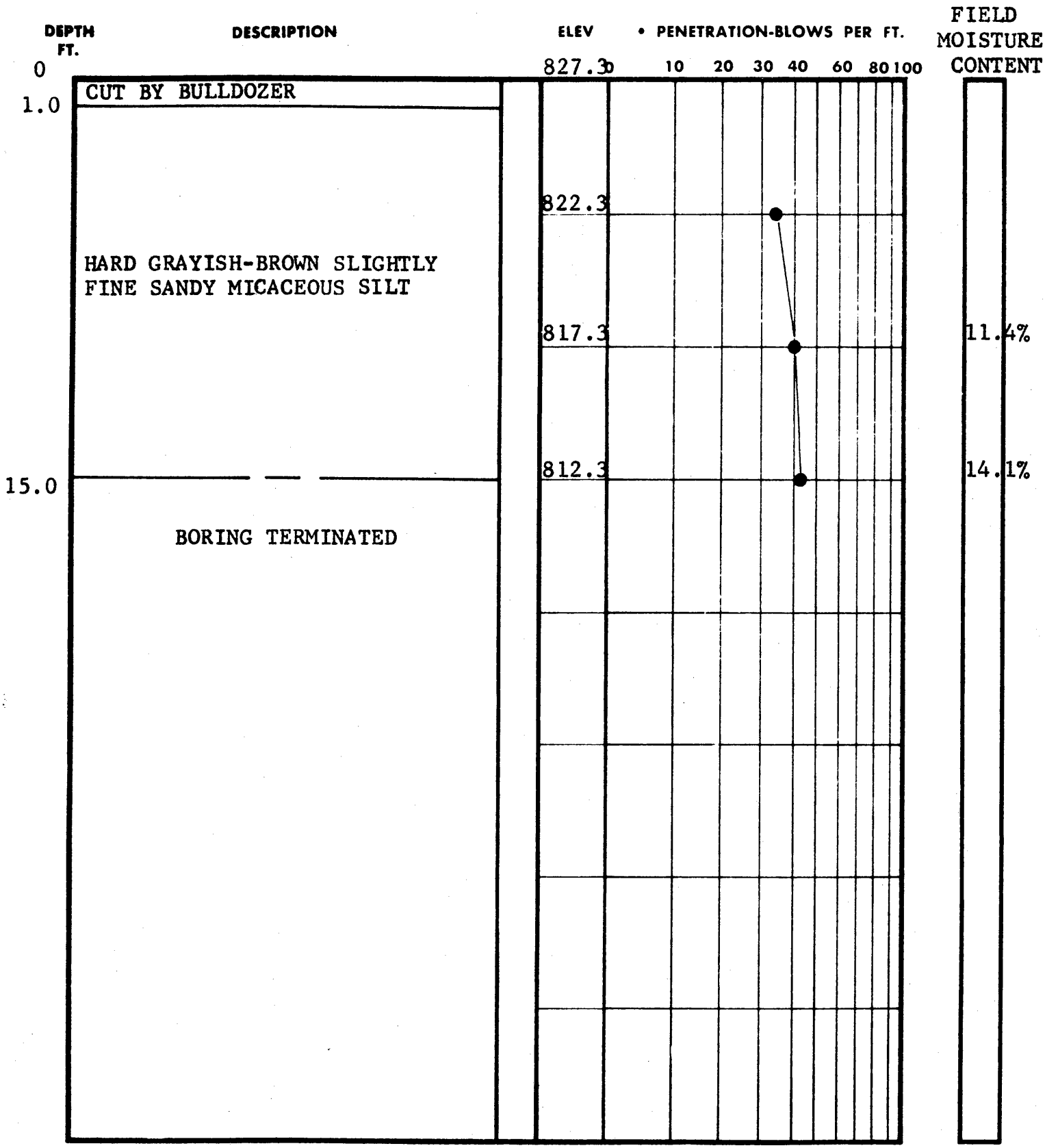
LOSS OF DRILLING WATER

BORING NO. B-217

DATE DRILLED 7/23/68

JOB NO. 5862

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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

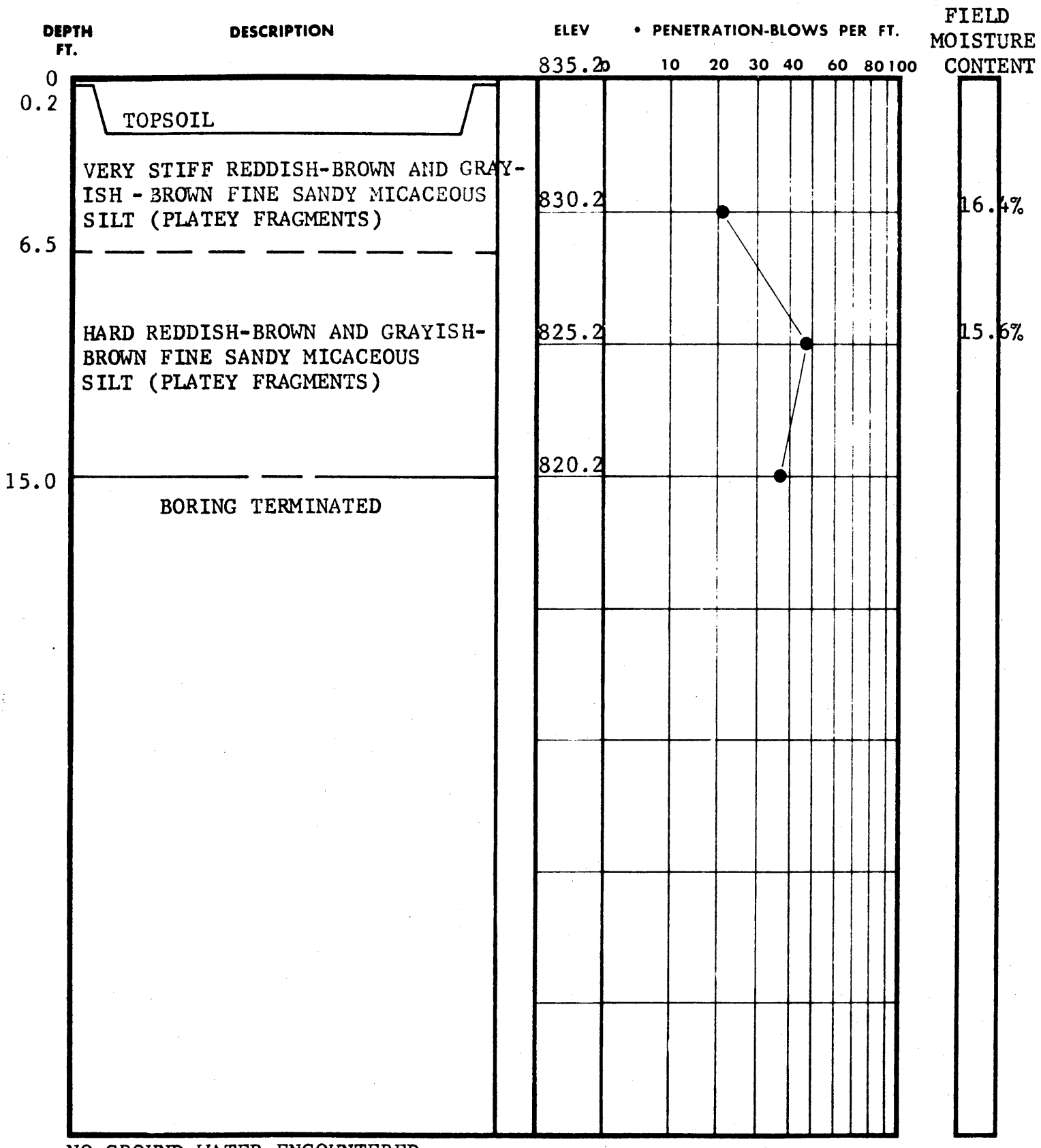
◀ LOSS OF DRILLING WATER

BORING NO. B-218

DATE DRILLED 7/31/68

JOB NO. 5862

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.

jj

UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

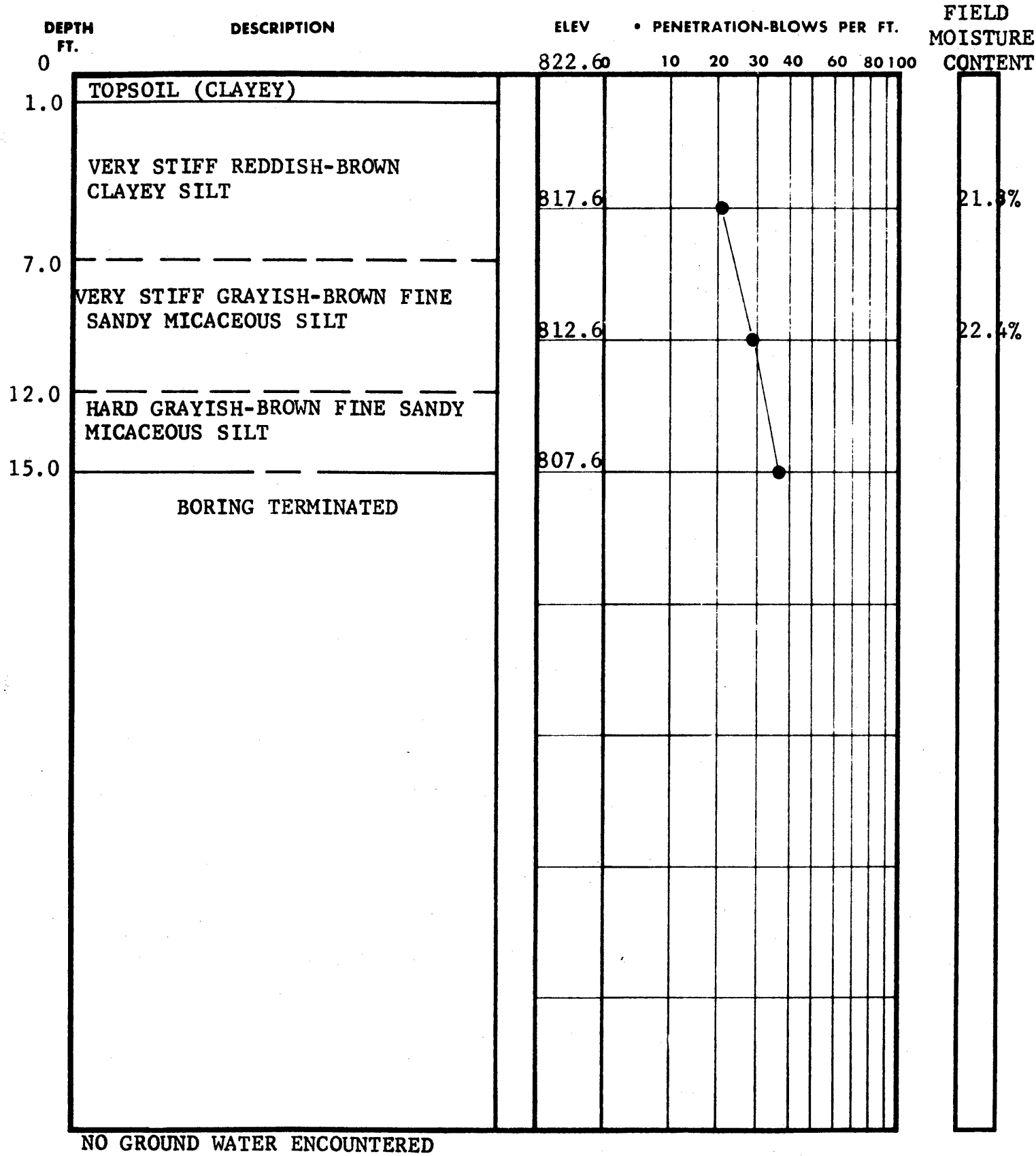
LOSS OF DRILLING WATER

BORING NO. B-219

DATE DRILLED 7/24/68

JOB NO. 5862

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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

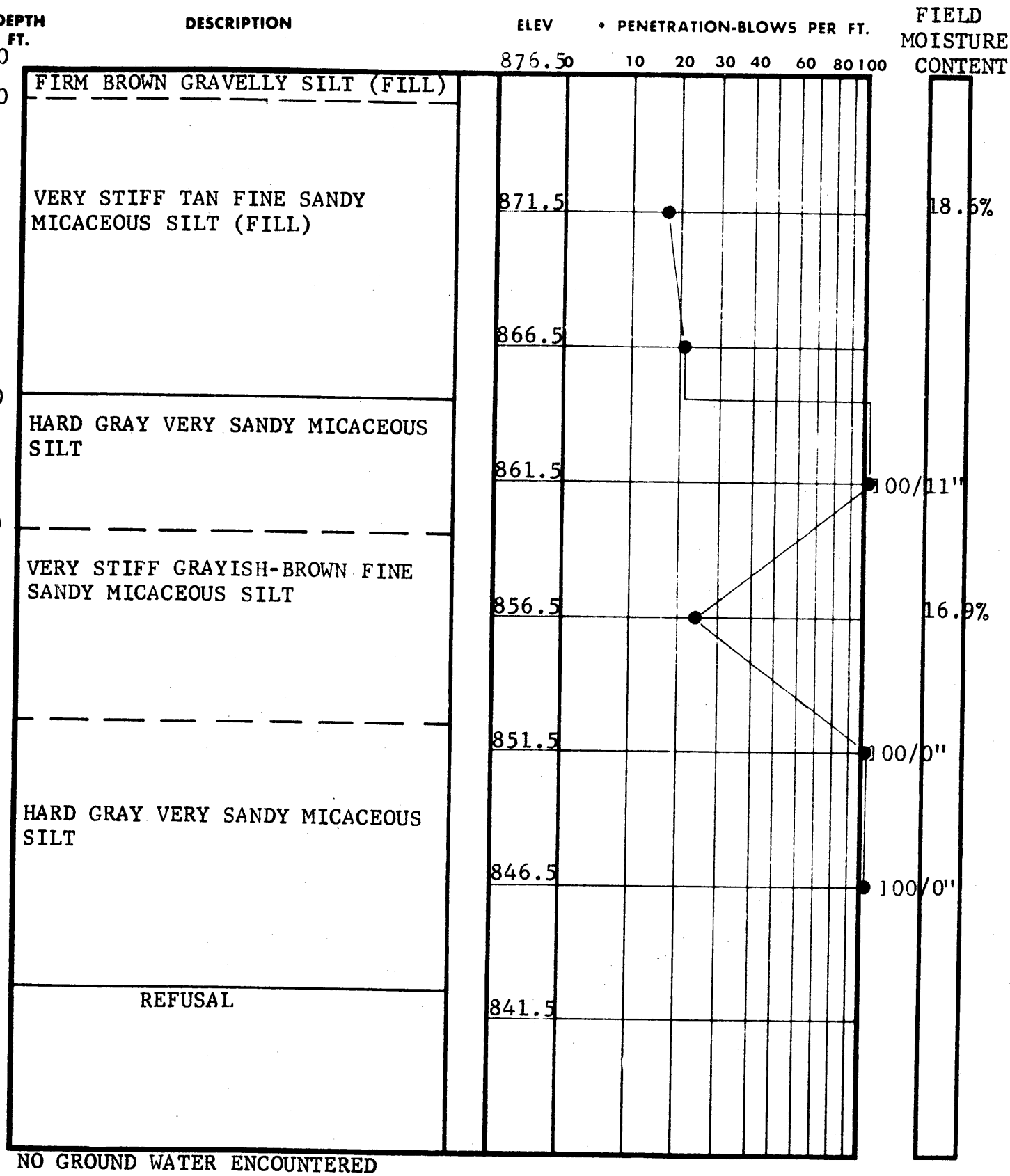
◀ LOSS OF DRILLING WATER

BORING NO. B-220

DATE DRILLED 7/30/68

JOB NO. 5862

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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

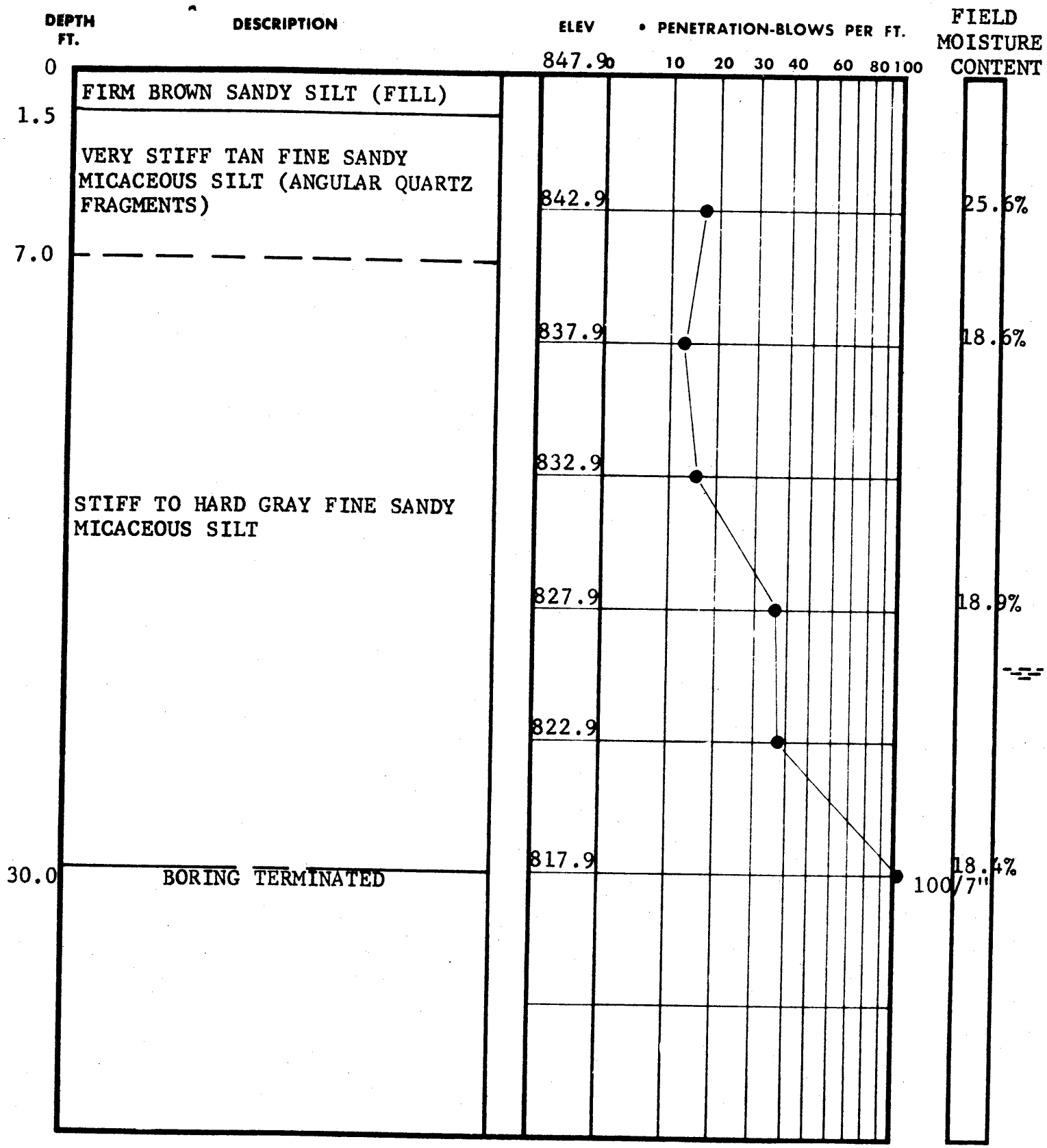
LOSS OF DRILLING WATER

BORING NO. B-221

DATE DRILLED 8/1/68

JOB NO. 5862

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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

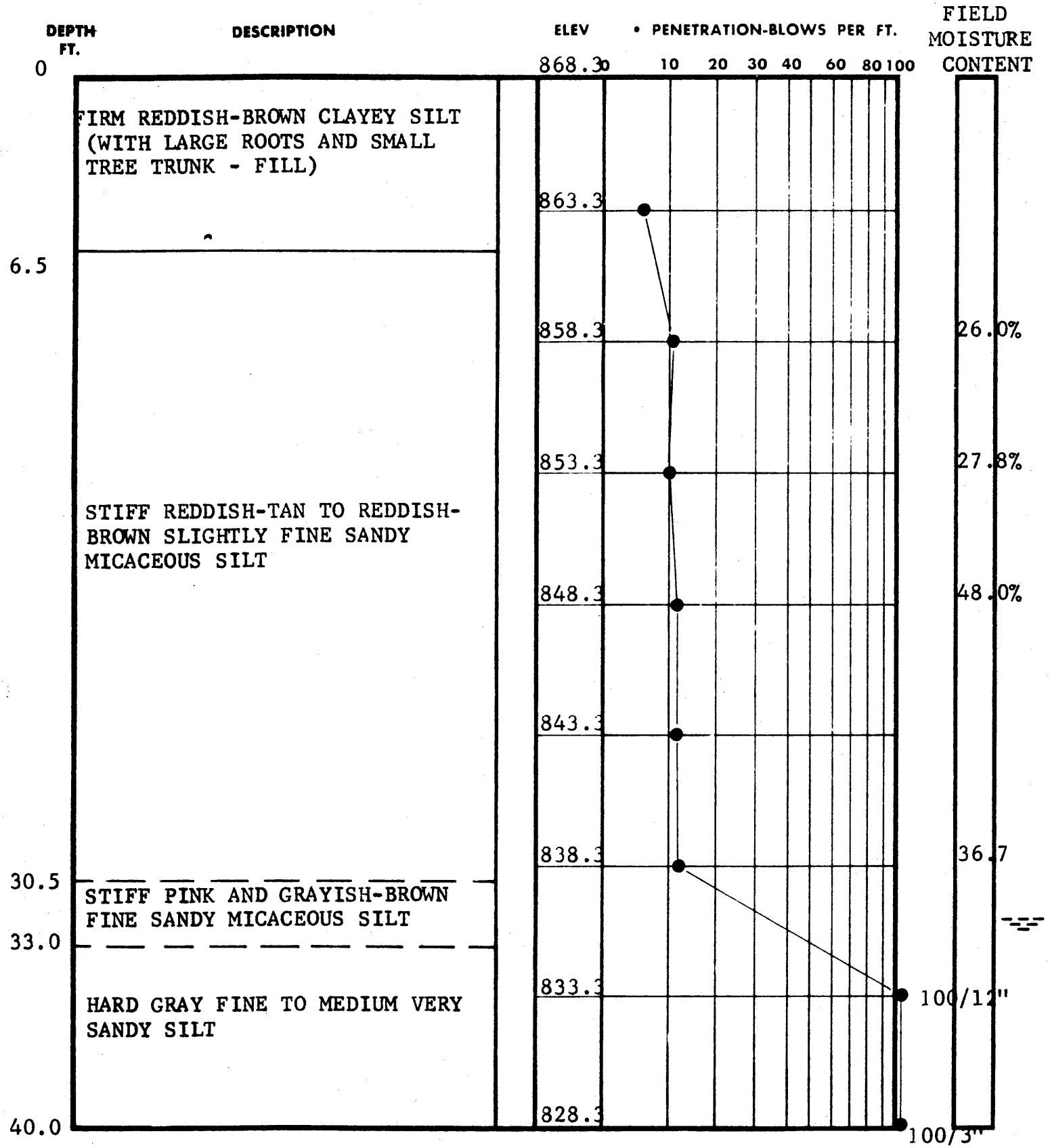
LOSS OF DRILLING WATER

BORING NO. B-222

DATE DRILLED 8/1/68

JOB NO. 5862

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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

◀ LOSS OF DRILLING WATER

BORING NO. B-223

DATE DRILLED 7/31/68

JOB NO. 5862

LAW ENGINEERING TESTING CO.

DEPTH FT.	DESCRIPTION	ELEV	• PENETRATION-BLOWS PER FT. 10 20 30 40 60 80 100
40.0	HARD GRAY FINE TO MEDIUM VERY SANDY SILT	828.3	100/3"
42.5	BORING TERMINATED	823.3	

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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

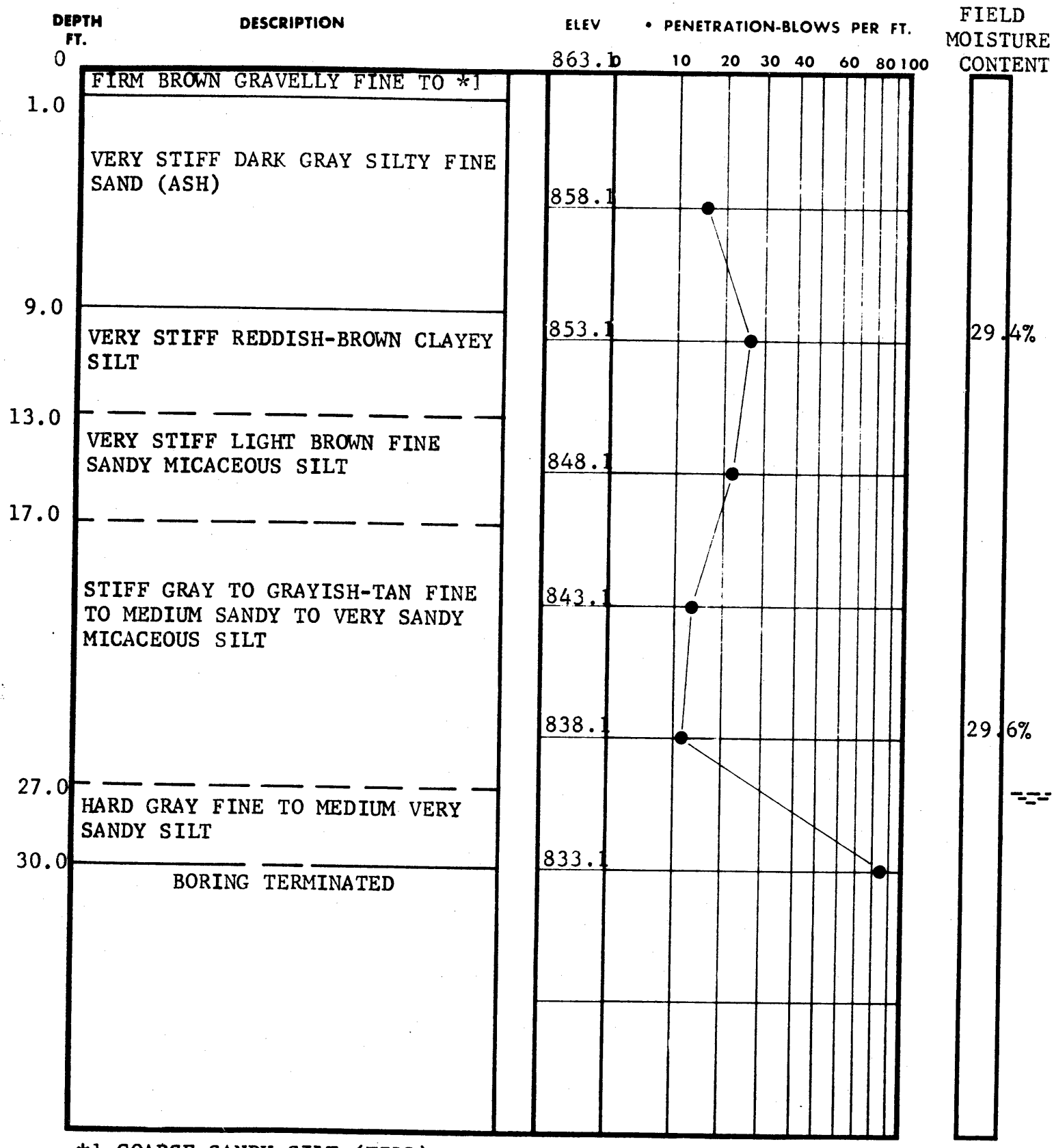
LOSS OF DRILLING WATER

BORING NO. B-223

DATE DRILLED 7/31/68

JOB NO. 5862

LAW ENGINEERING TESTING CO.



*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.

jj UNDISTURBED SAMPLE

|50| % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

BORING NO. B-224

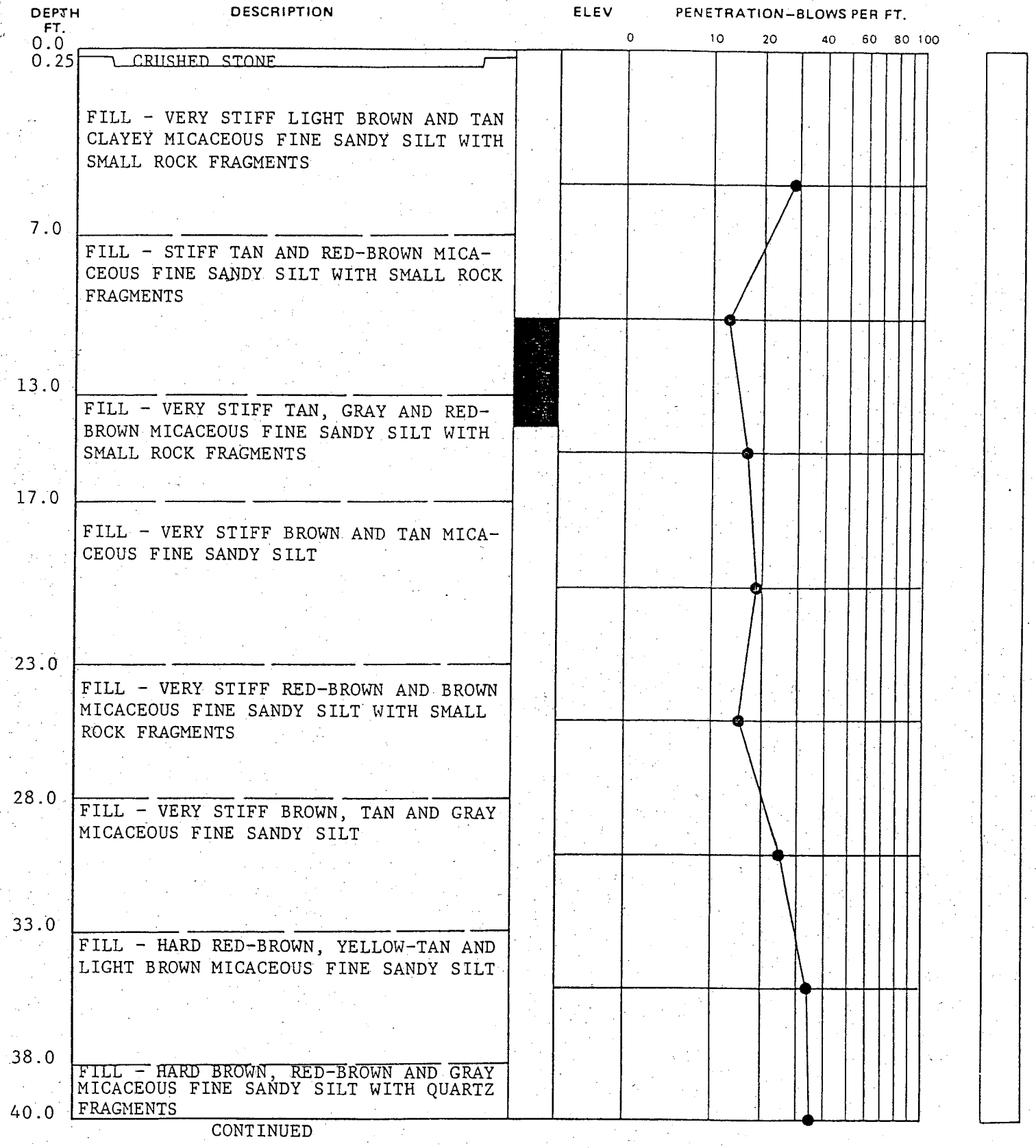
DATE DRILLED 7/31/68

JOB NO. 5862

LAW ENGINEERING TESTING CO

APPENDIX D

Borings



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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.

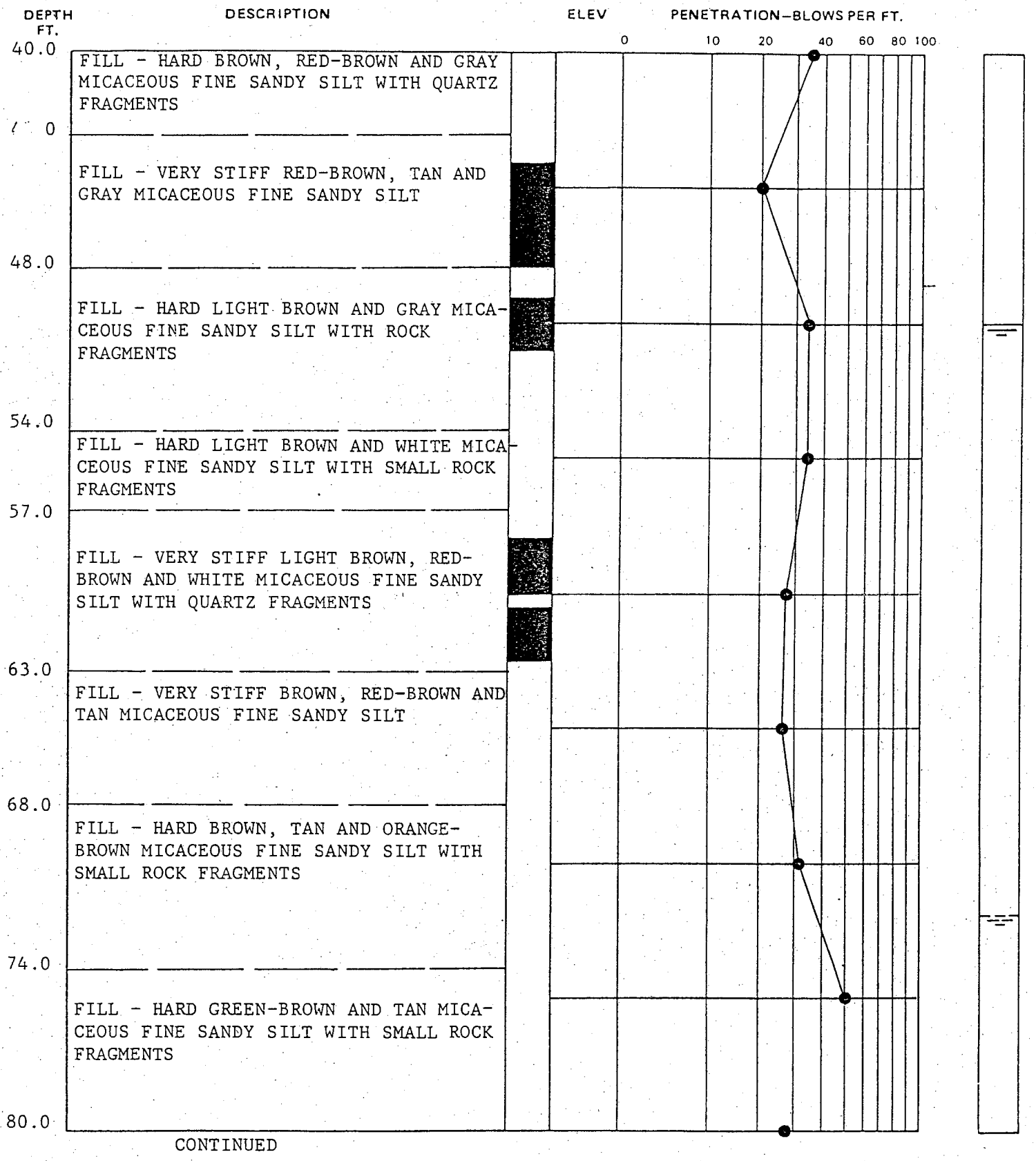
◀ LOSS OF DRILLING WATER

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

SAG 8/6 7/6



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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.

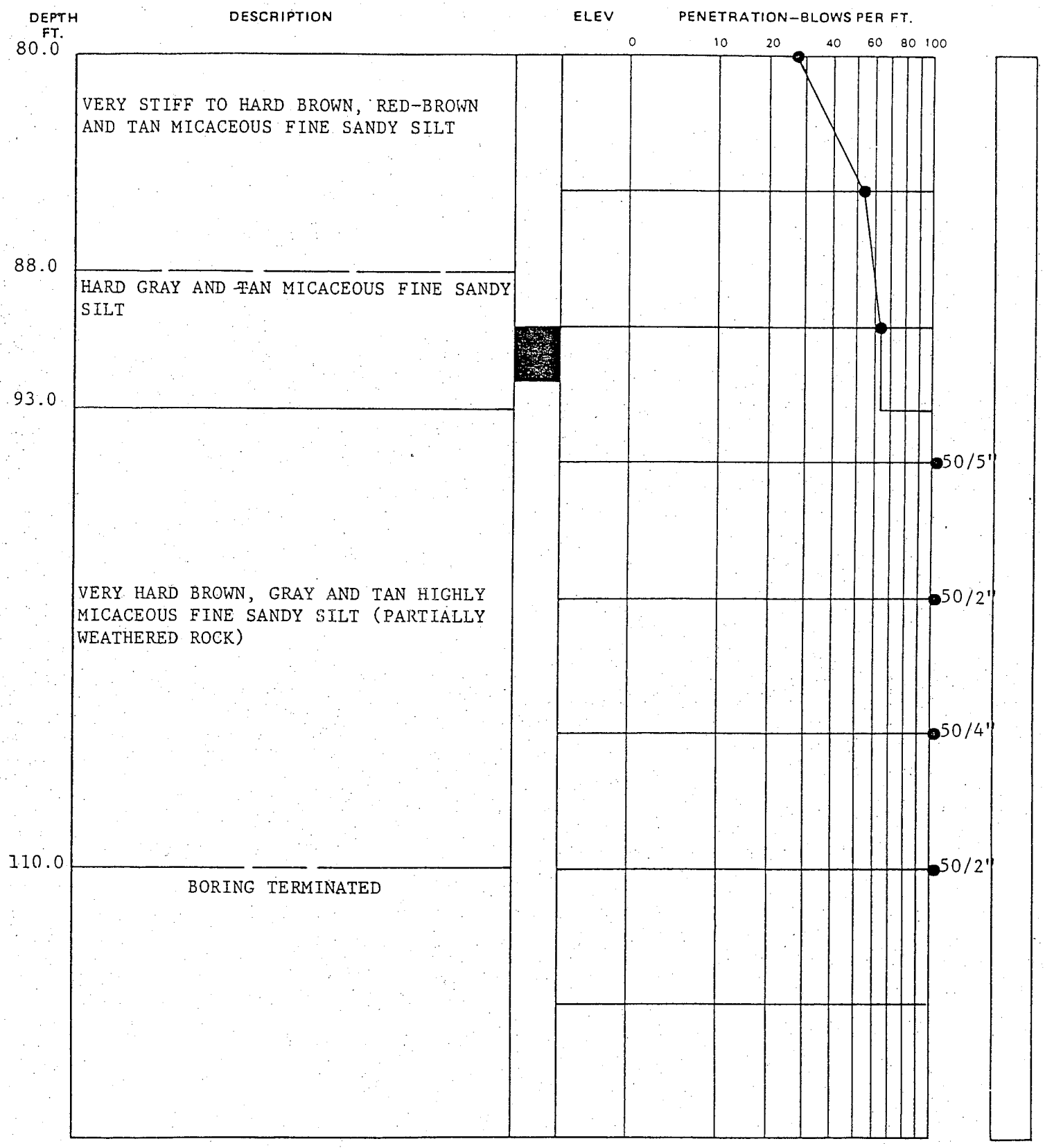
WATER TABLE, 1 HR.

◀ LOSS OF DRILLING WATER

TEST BORING RECORD

BORING NO. AP-1 (pg. 2 of 3)
DATE DRILLED 8/13-14/81
LAB NO. 80500
JOB NO. 4083

ATE 117



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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.

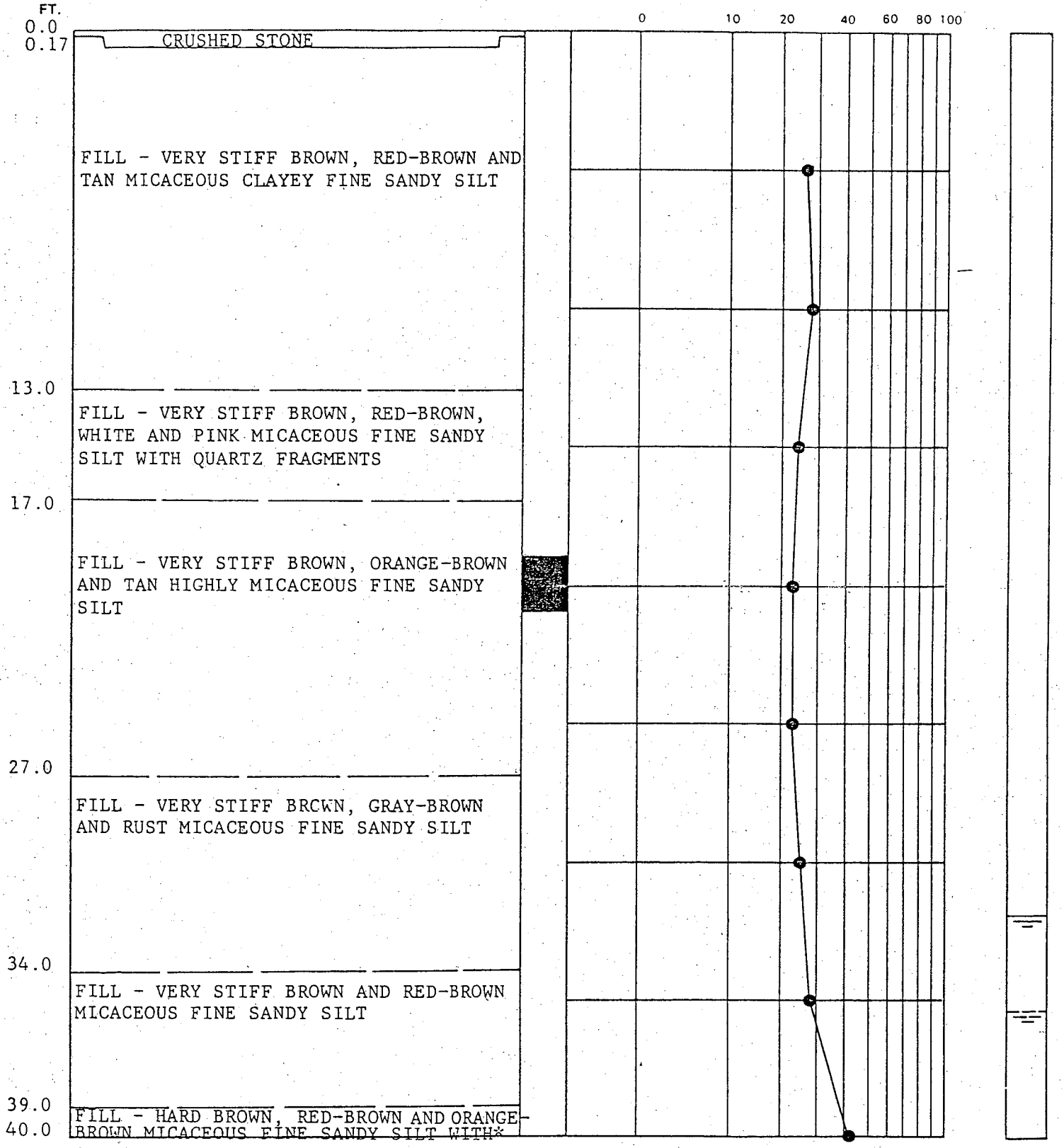
◀ LOSS OF DRILLING WATER

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

116



*SMALL ROCK FRAGMENTS

CONTINUED

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BORING AND SAMPLING MEETS ASTM D-1586
ORE DRILLING MEETS ASTM D-2113

ENETRATION 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

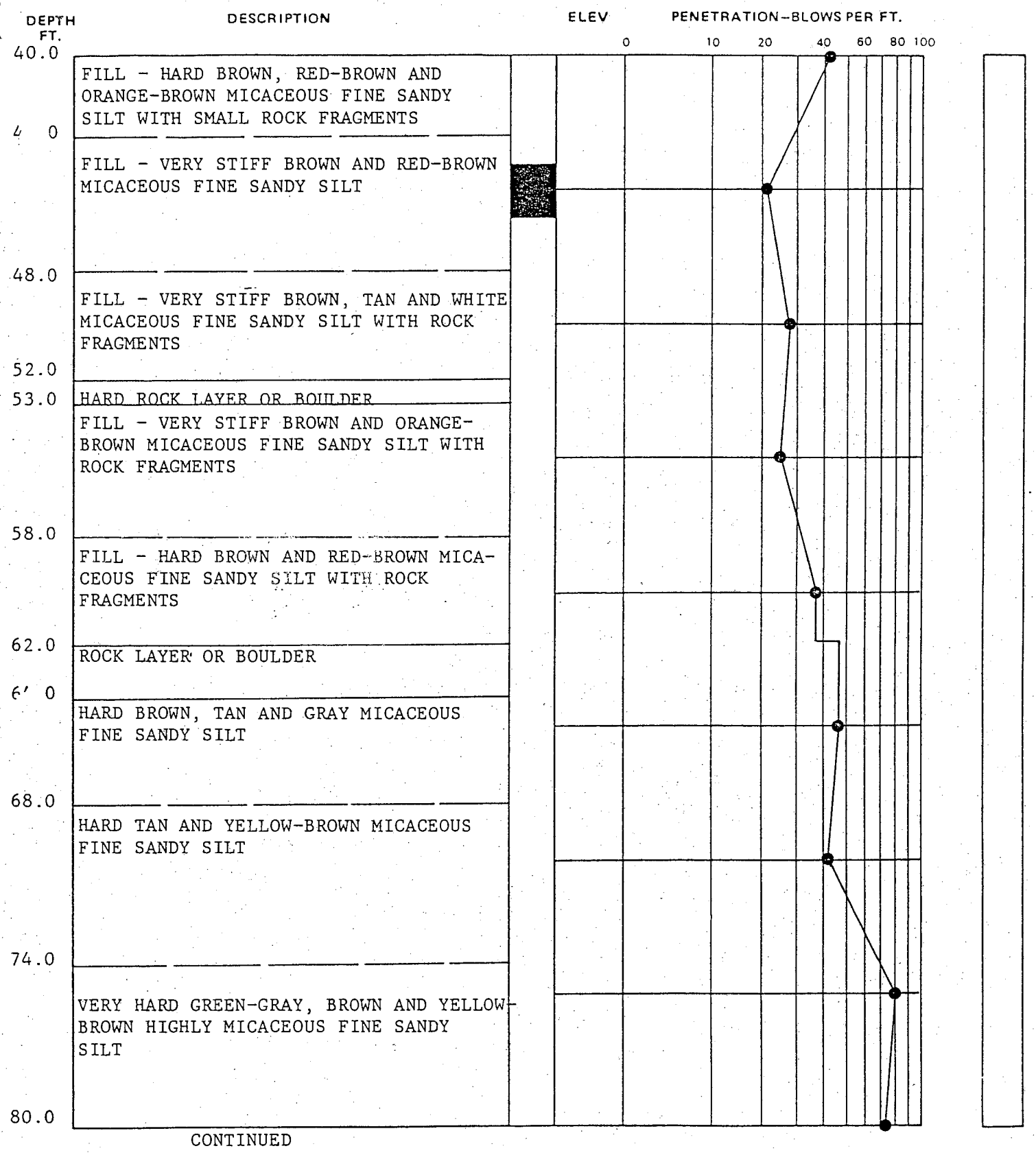
BORING NO. AP-2 (pg. 1 of 3)

DATE DRILLED 8/19-20/81

LAB NO. 80500

JOB NO. 4083

ATE 117



CONTINUED

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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.

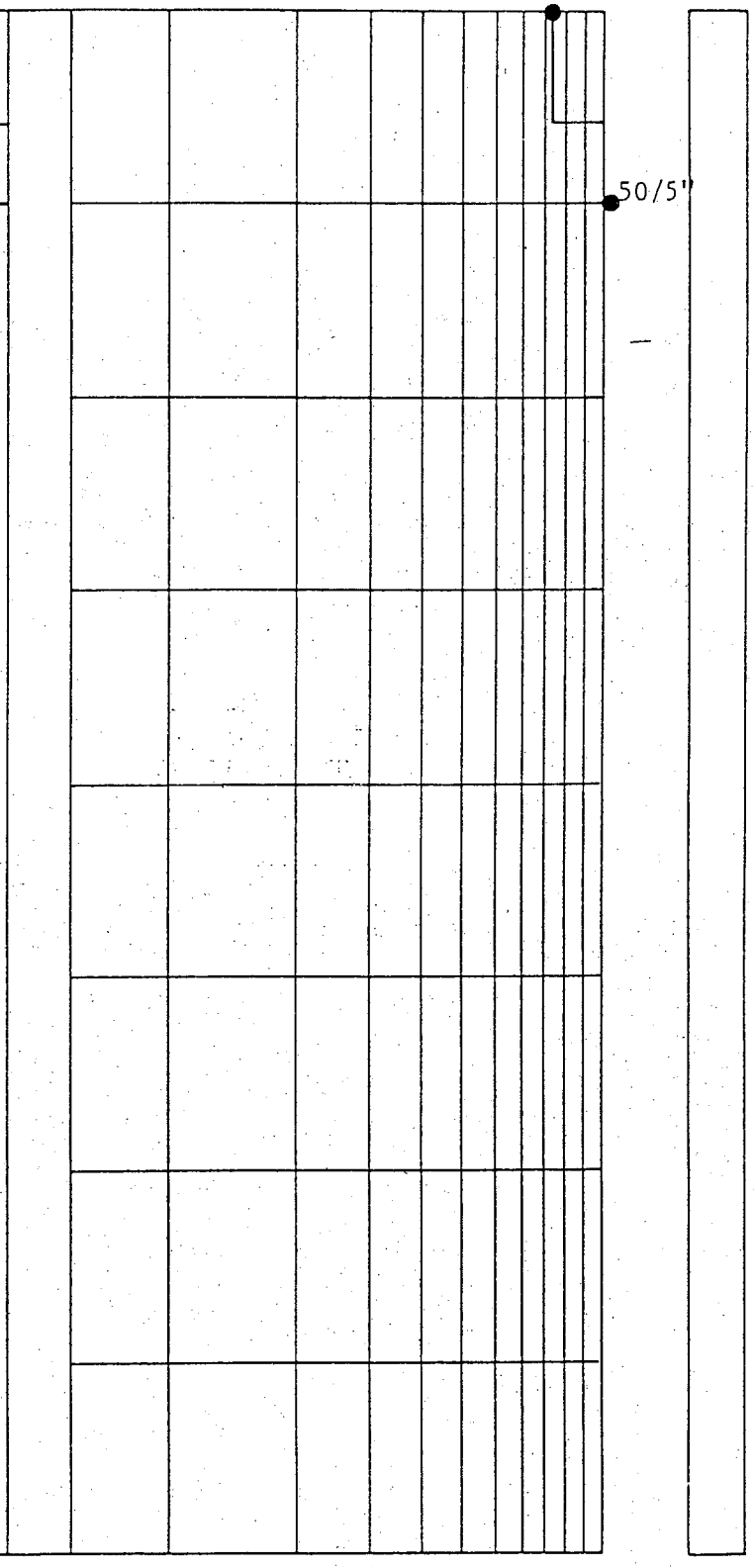
LOSS OF DRILLING WATER

TEST BORING RECORD

BORING NO. AP-2 (pg. 2 of 3)
DATE DRILLED 8/19-20/81
LAB NO. 80500
JOB NO. 4083

ATE 117

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		
	VERY HARD GREEN-GRAY AND TAN MICACEOUS FINE SANDY SILT (PARTIALLY WEATHERED ROCK)		50/5"
85.0	BORING TERMINATED		



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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.

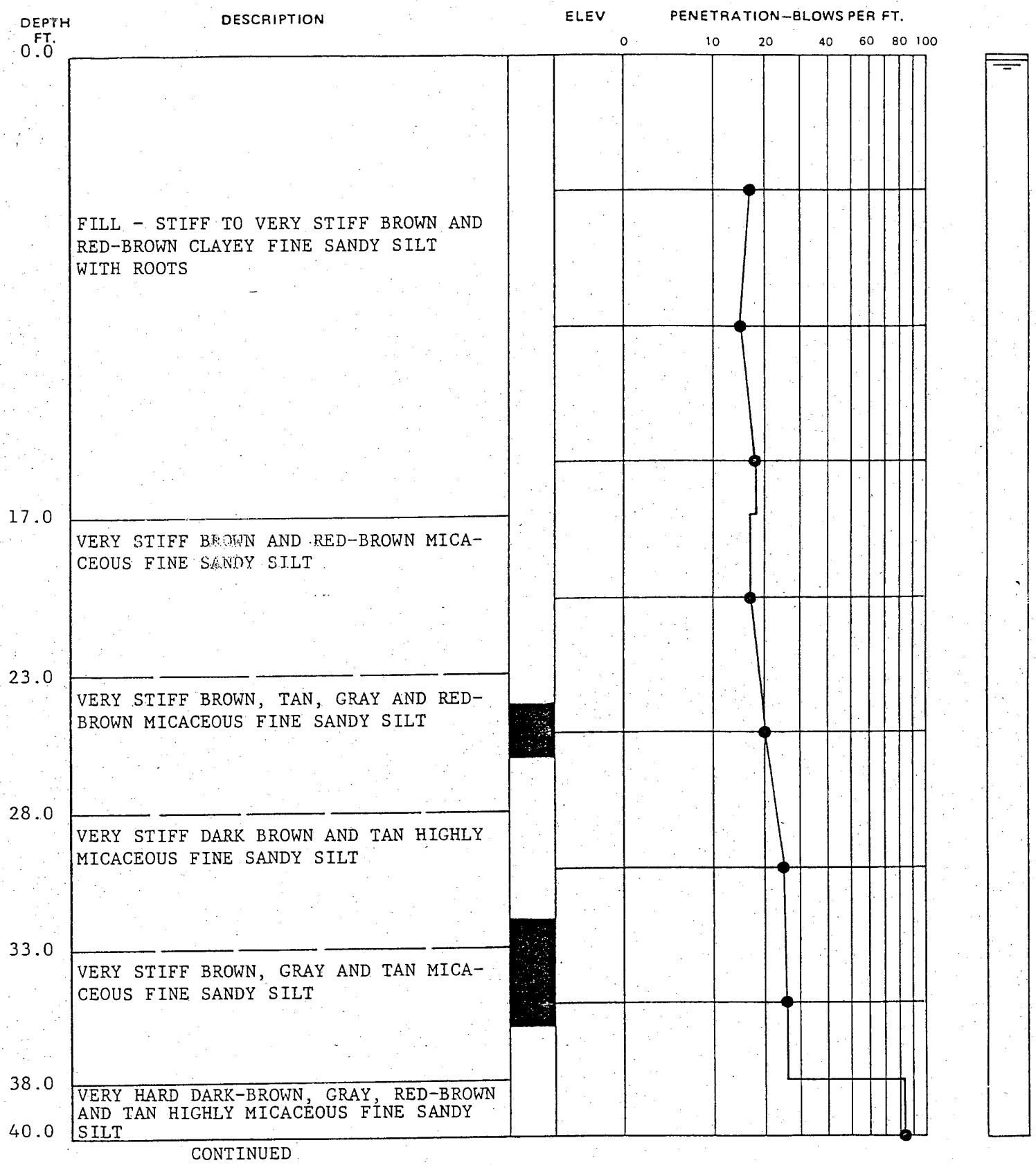
WATER TABLE, 1 HR.

◀ LOSS OF DRILLING WATER

TEST BORING RECORD

BORING NO. AP-2 (pg. 3 of 3)
DATE DRILLED 8/19-20/81
LAB NO. 80500
JOB NO. 4083

ATE 117



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ORING AND SAMPLING MEETS ASTM D-1586
ORE DRILLING MEETS ASTM D-2113

NETRATION 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

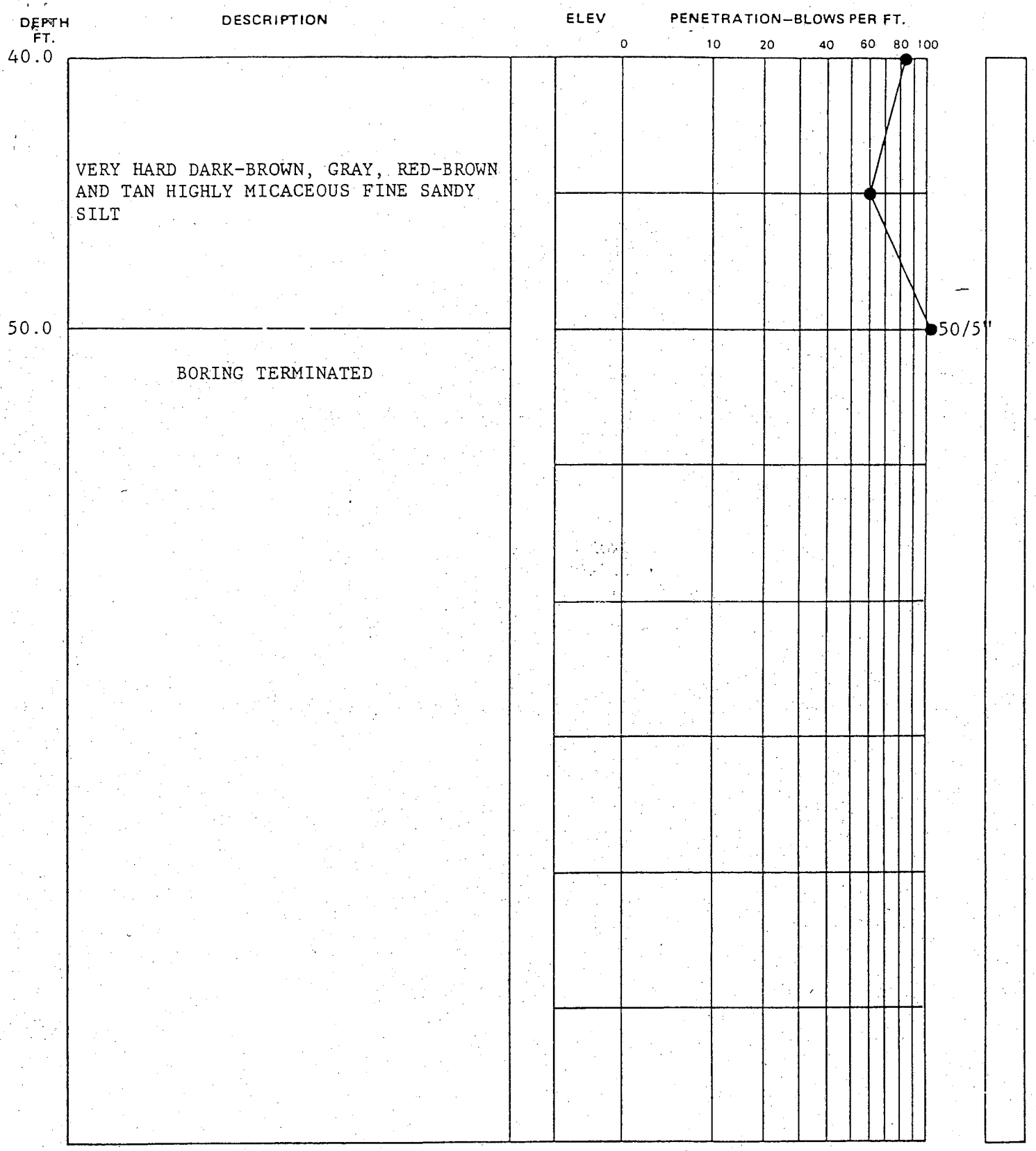
BORING NO. AP-3 (pg. 1 of 2)

DATE DRILLED 8/21-24/81

LAB NO. 80500

JOB NO. 4083

ATE 117



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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-3 (pg. 2 of 2)

DATE DRILLED 8/21-24/81

LAB NO. 80500

JOB NO. 4083

ATE 117

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\ASHPOND3AND4CLOSUREBORINGS.GPJ

SOUTHERN COMPANY

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

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION (ELEV.)	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE) / PERCENT RECOVERY (RQD)	COMMENTS
0		**Coal Combustion Byproduct (ASH)** - gray, moist, loose				poor recovery till natural soil - ash inferred where no recovery.
20		821.6				
25		**Silt (ML)** - tan, moist, dense				
		816.6				

Bottom of borehole at 25.0 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\ASHPOND3AND4CLOSUREBORINGS.GPJ

SOUTHERN COMPANY

LOG OF TEST BORING

BORING AP3-09
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.** 840.9 **COORDINATES:** N:1,393,871.34 E:2,201,936.46
CONTRACTOR Ranger Consulting **EQUIPMENT** **METHOD** Direct Push
DRILLED BY B. Ozment **LOGGED BY** G. Dyer **CHECKED BY** **ANGLE** **BEARING**
BORING DEPTH 18 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) / PERCENT RECOVERY (RQD)	COMMENTS
5		**Coal Combustion Byproduct (ASH)** - gray, moist, loose				poor recovery till natural soil - ash inferred where no recovery.
10						
15		825.9				
		Silt (ML) - tan, moist, dense				Terminated due to refusal at 18 feet.
		822.9				

Bottom of borehole at 18.0 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\ASHPOND3AND4CLOSUREBORINGS.GPJ

SOUTHERN COMPANY

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 _____

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE) / PERCENT RECOVERY (RQD)	COMMENTS
0		**Coal Combustion Byproduct (ASH)** - gray, moist, loose					poor recovery till natural soil - ash inferred where no recovery.
5							
10							
15			825.2				Terminated due to refusal at 15 feet.
		Silt (ML) - tan, moist, dense	825.1				
		Bottom of borehole at 15.0 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\ASHPOND3AND4CLOSUREBORINGS.GPJ

SOUTHERN COMPANY

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

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION (ELEV.)	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE) / PERCENT RECOVERY (RQD)	COMMENTS
5, 10		**Coal Combustion Byproduct (ASH)** - gray, moist, loose				poor recovery till natural soil - ash inferred where no recovery.
		836.0				
15, 20		**Silt (MH)** - tan, moist, dense				
		827.0				

Bottom of borehole at 20.0 feet.

2012 GEOTECH ENGINEERING LOGS - ESEE2012DATABASE.GDT - 3/14/13 16:02 - T:\ESEE MAJOR PROJECTS\PROJECTS\MCDONOUGH_ATKINSON\2012\ES2207 ASH PONDCLOSURES AP1-3-4\ASH POND 4 DATA\ASHPOND3AND4CLOSUREBORINGS.GPJ

SOUTHERN COMPANY

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 _____

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE) / PERCENT RECOVERY (RQD)	COMMENTS
0		**Coal Combustion Byproduct (ASH)** - gray, moist, loose, fly ash					
5		- with layers of bottom ash and brown clayey soil from 1.8 to 4.5 ft					
			831.1				
		Silt (ML) - tan, moist, dense, silty, micaceous residual soil	830.6				
		Bottom of borehole at 9.0 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\ASHPOND3AND4CLOSUREBORINGS.GPJ

SOUTHERN COMPANY

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 _____

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION (ELEV.)	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE) / PERCENT RECOVERY (RQD)	COMMENTS
0		**Coal Combustion Byproduct (ASH)** - gray, moist, loose, fly ash				
		- with layers of bottom ash and brown clayey soil from 1.8 to 4.5 ft				
5						
10						
15		824.1				Terminated at 17 ft due to limits of hand auger equipment.

Bottom of borehole at 17.0 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\ASHPOND3AND4CLOSUREBORINGS.GPJ

SOUTHERN COMPANY

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) / PERCENT RECOVERY (RQD)	COMMENTS
		Coal Combustion Byproduct (ASH) - gray, moist, loose, fly ash					
		- with layers of brown sandy soil from 3.5 to 4.5 ft	837.3				
5		**Silt (ML)** - tan, moist, dense, silty, micaceous residual soil	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\ASHPOND3AND4CLOSUREBORINGS.GPJ

SOUTHERN COMPANY

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	ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE) / PERCENT RECOVERY (RQD)	COMMENTS
		Coal Combustion Byproduct (ASH) - gray, wet, loose, fly ash	837.0				
5		**Silt (MH)** - tan, moist, medium dense, low plasticity, residual soil	830.5				

Bottom of borehole at 7.5 feet.

SOUTHERN COMPANY

LOG OF TEST BORING

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 _____

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE) / PERCENT RECOVERY (RQD)	COMMENTS
0		**Coal Combustion Byproduct (ASH)**	837.3				
		- gray, wet, loose, fly ash					
		Silt (MH)					
		- tan, moist, medium dense, low plasticity, residual soil					
5							
10			826.8				

Bottom of borehole at 11.0 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\ASHPOND3AND4CLOSUREBORINGS.GPJ

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\ASHPOND3AND4CLOSUREBORINGS.GPJ

SOUTHERN COMPANY

LOG OF TEST BORING

BORING AP3-H06
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.** 838.3 **COORDINATES:** N:1,393,605.14 E:2,201,774.43
CONTRACTOR ESEE **EQUIPMENT** Hand **METHOD** 3" manual bucket auger
DRILLED BY B. Gallagher **LOGGED BY** B. Gallagher **CHECKED BY** _____ **ANGLE** _____ **BEARING** _____
BORING DEPTH 8.3 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) / PERCENT RECOVERY (RQD)	COMMENTS
5		**Coal Combustion Byproduct (ASH)** - gray, wet, loose, fly ash	830.5				
		Silt (MH) - tan, moist, medium dense, low plasticity, residual soil Bottom of borehole at 8.3 feet.	830.0				

BORING AP3-H11
PAGE 1 OF 1
ES 2207

SOUTHERN COMPANY

LOG OF TEST BORING

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 _____

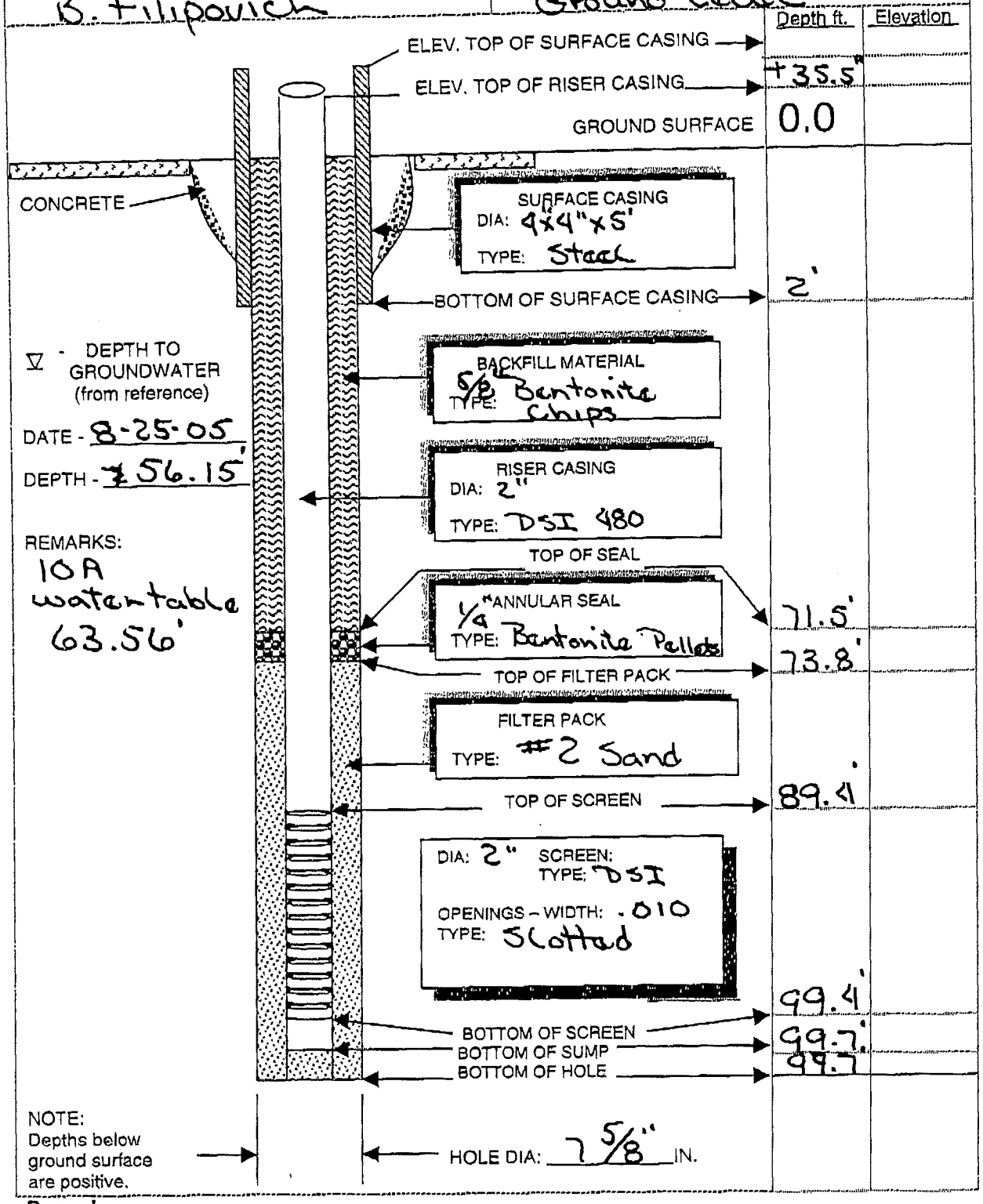
DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE) / PERCENT RECOVERY (RQD)	COMMENTS
		Coal Combustion Byproduct (ASH) - gray, moist, loose, fly ash with numerous layers of bottom ash					
		▽ - fly ash with very few layers of bottom ash below 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 drililing below 11 ft due to squeeze. terminated due to dense natural soil and squeeze in overlying ash.
			827.2				
		Silty Sand (SM) - tan, moist, dense, sandy residual soil, little mica	826.5				
		Bottom of borehole at 13.5 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\ASHPOND3AND4CLOSUREBORINGS.GPJ

Piezometer Log

Southern Company

DATE INSTALLED: 8-23-05	DATE DEVELOPED: 8-23-05	WELL NO.: 10C
EWO #	PROJECT: McDonough	LOCATION: Ash Pond
PREPARED BY: B. Filipovich	REFERENCE POINT FOR MEASUREMENTS: Ground Level	

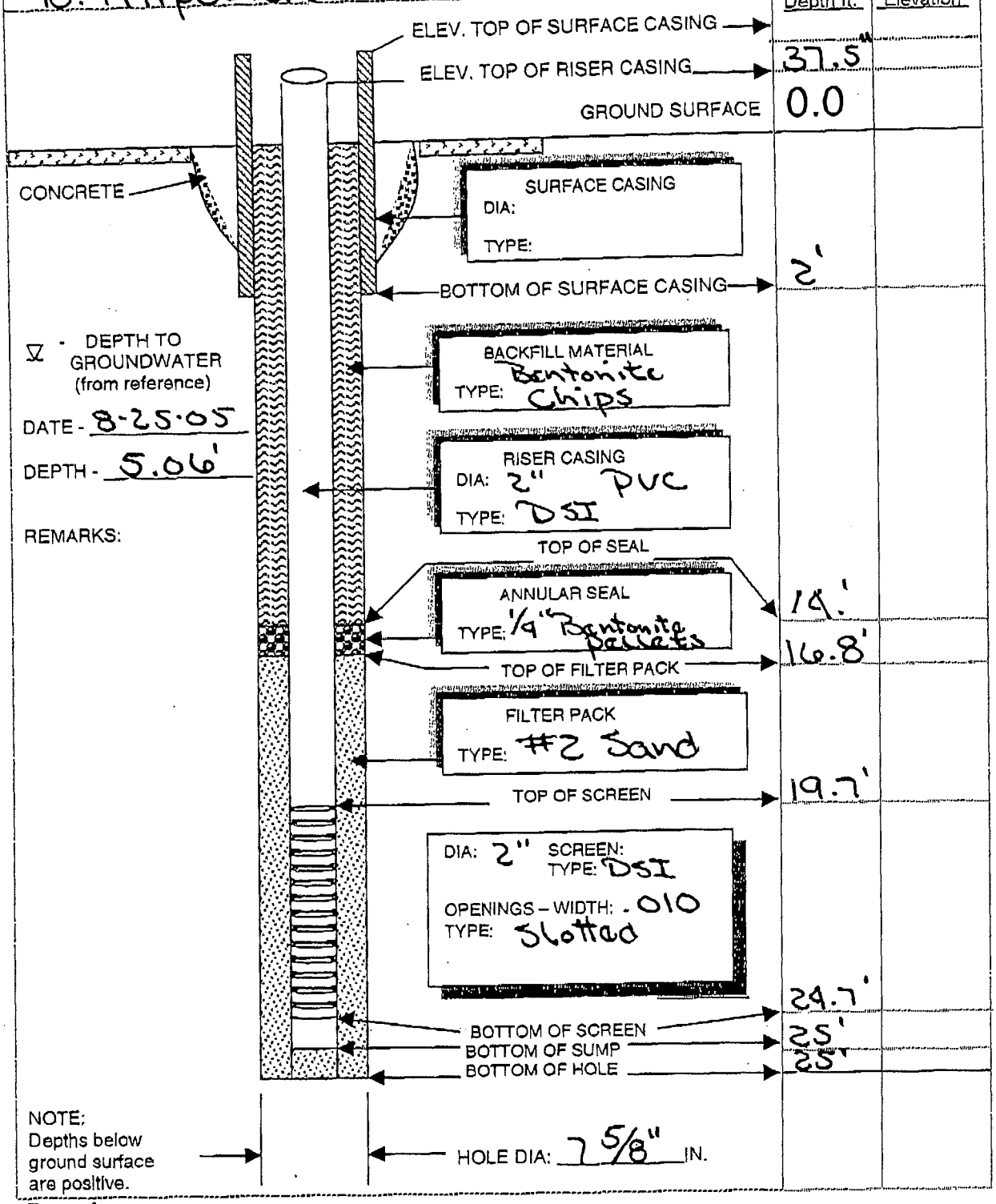


Remarks:

Southern Company

Piezometer Log

DATE INSTALLED: 8-23-05	DATE DEVELOPED: 8-23-05	WELL NO.: 8-B
EWO #:	PROJECT: McDonough Walls	LOCATION: Ash Pond
PREPARED BY: B. Filipovich		REFERENCE POINT FOR MEASUREMENTS: Ground Level



Remarks:

Field Test Boring Record
Geotechnical Field Services

Southern Company Services

PROJECT	EWO #	LEAD DRILLER	DATE
Plant Mc Donough		BF	9-22-05

LOCATION	BORING #
Atlanta GA	P-10 C

DEPTH FROM	DEPTH TO	DESCRIPTION	SAMPLE NO	SAMPLE DEPTH	1st 6"	2nd 6"	3rd 6"	N	CORE REC
0.0	.75	Field Material Crush & Run							
		Top Soil							
.75	3'	Redish Brown Micaceous							
		Sandy Silt							
3'		Dark Brown Black Micaceous							
	6.5	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.	1	61.5	9	9	11	20	
		Damp Approx 70'	2	66.5	4	7	11	18	
		Red & Brown Micaceous Silt with Rock	3	71.5	5	10	11	21	
		Red	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
SS			AUGER	.75	100'	CME 550
WASH			TRI-CONE			
___ CASING			___ CORE			
BIT						

GWATOB _____ GW 24 HRS. _____ ELEVATION:

DRILLED BY BF LOGGED BY Mike Hughes

800961

Sheet ___ of ___

Field Test Boring Record
Geotechnical Field Services

Southern Company Services

PROJECT	EWO #	LEAD DRILLER	DATE:
Plant McDonough		B.F	8-22-05

LOCATION	BORING #
Atlanta GA	P-10-C

DEPTH FROM	DEPTH TO	DESCRIPTION	SAMPLE NO	SAMPLE DEPTH	1st 6"	2nd 6"	3rd 6"	N	CORE REC
		Cont.	9	100	50/2				

	FROM	TO	41.25	FROM	TO	REMARKS: CME 550
SS			AUGER			
WASH			TRI-CONE			
___ CASING			___ CORE			
BIT						

GWATOB _____ . GW 24 HRS. _____ ELEVATION:

DRILLED BY B F LOGGED BY Mike Hughes

800961

Sheet ___ of ___

Southern Company Services

Field Test Boring Record
Geotechnical Field Services

PROJECT	EWO #	LEAD DRILLER	DATE:
Plant McDonough		B E	8-23-05

LOCATION: Atlanta GA

BORING #: B-B

DEPTH FROM	DEPTH TO	DESCRIPTION	SAMPLE NO	SAMPLE DEPTH	1st 6"	2nd 6"	3rd 6"	N	CORE REC
0.0	.75	Fill Material Crushed Rock							
.75	2'	Brown Micaceous Silt							
2'	25	Dark Brown Sandy Silt							
		- W/ Rock fragments							
		Drilling Complete 8-23-05							
		Mike Hughes							

	FROM	TO	4.25	FROM	TO	REMARKS
SS			AUGER	.75	25.5	CME 550
WASH			TRI-CONE			
___ CASING			___ CORE			
BIT						

GWATOB 2.5' . GW 24 HRS. 5

ELEVATION:

DRILLED BY B. F

LOGGED BY Mike Hughes

800961

Sheet ___ of ___

RECORD OF BOREHOLE CPT-28-AP4 (boring)

PROJECT: McDonough Ash Pond 3&4 Investigation and De-Watering
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 Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES SAMPLE TYPE & NUMBER	BLOWS per 6 in (ASTM D1586, 140 lb hammer, 30 inch drop, Automatic hammer)	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft (20 40 60 80)	WATER CONTENT (%) (W_p W W_l) (20 40 60 80)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		0.0		858.0									
	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			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		847.5			DO S-2	0-1-1 **(2)**	18 / 18	2			
			Bottom of borehole at 10.5 ft. Backfilled with auger cuttings.										
15													
20													
25													
30													
35													
40													
45													
50													
55													

DRILLING CO.: Premier Drilling
DRILLER: Scott Towe
DRILL RIG: CME 550

LOGGED: Randy Pettyjohn
CHECKED: Draft
REVIEWED: Draft

Golder Associates

CPT-28-AP4 (boring)
1 of 1

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

RECORD OF BOREHOLE CPT-32-AP4 (boring)

PROJECT: McDonough Ash Pond 3&4 Investigation and De-Watering
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 Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES SAMPLE TYPE & NUMBER	BLOWS per 6 in (ASTM D1586, 140 lb hammer, 30 inch drop, Automatic hammer)	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		0.0		858.0						20 40 60 80		
		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		DO S-1	3-3-5-5 **(8)**	24 / 24	8		
	3-1/4" HSA				SM							
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			DO S-2	5-4-13-26 **(17)**	24 / 24	17		
			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		CL-ML		AS Bulk-1		60			
10		10.0		848.0			DO S-3	1-1-2-1 **(3)**	15 / 24	3		
			Bottom of borehole at 10.0 ft. Backfilled with auger cuttings.									
15												
20												
25												
30												
35												
40												
45												
50												
55												

WATER CONTENT (%): W_p — W — W_l (20 40 60 80)

DRILLING CO.: Premier Drilling
DRILLER: Scott Towe
DRILL RIG: CME 550
LOGGED: P. Callahan / R. Pettyjohn
CHECKED: Draft
REVIEWED: Draft

Golder Associates

CPT-32-AP4 (boring)
1 of 1

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 12/22/15 11:07
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RECORD OF BOREHOLE CPT-33-AP4 (boring)

PROJECT: McDonough Ash Pond 3&4 Investigation and De-Watering
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: Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES: SAMPLE TYPE & NUMBER	BLOWS per 6 in (ASTM D1586, 140 lb hammer, 30 inch drop, Automatic hammer)	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		0.0		856.0						20 40 60 80		
		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					WATER CONTENT (%) W_p W W_l 20 40 60 80		
		2.0		854.0	SM		DO S-1	3-2-3-4 **(5)**	20/24	5 ■		
	3-1/4" HSA		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		SM		DO S-2	2-4-5-10 **(9)**	18/24	9 ■		
5		5.0		851.0								
			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		CL-ML		AS Bulk-1		60			
							DO S-3	1-2-2-1 **(4)**	12/24	4 ■		
10		10.0		846.0								
			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									
15			Bottom of borehole at 10.0 ft. Backfilled with auger cuttings.									
20												
25												
30												
35												
40												
45												
50												
55												

DRILLING CO.: Premier Drilling
DRILLER: Scott Towe
DRILL RIG: CME 550
LOGGED: P. Callahan / R. Pettyjohn
CHECKED: Draft
REVIEWED: Draft

Golder Associates

CPT-33-AP4 (boring)
1 of 1

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 12/22/15 11:07
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RECORD OF BOREHOLE CPT-39-AP4 (boring)

PROJECT: McDonough Ash Pond 3&4 Investigation and De-Watering
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: Depth	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: Elev	USCS	GRAPHIC LOG	SAMPLES: SAMPLE TYPE & NUMBER	SAMPLES: BLOWS per 6 in (ASTM D1586, 140 lb hammer, 30 inch drop, Automatic hammer)	SAMPLES: REC ATT (in)	PENETRATION RESISTANCE BLOWS / ft; WATER CONTENT (%)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		0.0		854.0								
	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							
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		CL-ML		DO S-1	4-5-7/0" **(12)**	18/18	12		
							AS Bulk-1		60			
10		10.5		843.5			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												

DRILLING CO.: Premier Drilling
DRILLER: Scott Towe
DRILL RIG: CME 550
LOGGED: P. Callahan / R. Pettyjohn
CHECKED: Draft
REVIEWED: Draft

Golder Associates

CPT-39-AP4 (boring)
1 of 1

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 12/22/15 11:07
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RECORD OF BOREHOLE CPT-41-AP4 (boring)

PROJECT: McDonough Ash Pond 3&4 Investigation and De-Watering
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: Depth	DESCRIPTION	SOIL PROFILE: Elev	USCS	GRAPHIC LOG	SAMPLES: SAMPLE TYPE & NUMBER	SAMPLES: BLOWS per 6 in (ASTM D1586, 140 lb hammer, 30 inch drop, Automatic hammer)	SAMPLES: REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft; WATER CONTENT (%)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		0.0		859.0								
	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	857.0	SP		DO S-1	18-22-23-17 **(45)**	2 / 24	45		
5			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				DO S-2	2-2-3-3 **(5)**	14 / 24	5		
10					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		
			Bottom of borehole at 15.0 ft. Backfilled with auger cuttings.									
20												
25												
30												
35												
40												
45												
50												
55												

DRILLING CO.: Premier Drilling
DRILLER: Scott Towe
DRILL RIG: CME 550
LOGGED: Patrick Callahan
CHECKED: Draft
REVIEWED: Draft

Golder Associates

CPT-41-AP4 (boring)
1 of 1

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 12/22/15 11:07
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RECORD OF BOREHOLE CPT-42-AP4 (boring)

PROJECT: McDonough Ash Pond 3&4 Investigation and De-Watering
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 Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES SAMPLE TYPE & NUMBER	BLOWS per 6 in (ASTM D1586, 140 lb hammer, 30 inch drop, Automatic hammer)	REC ATT (in)	PENETRATION RESISTANCE BLOWS / ft; WATER CONTENT (%)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		0.0		859.0								
	3-1/4" HSA		FILL, (SP-SM), SAND, sand fine to coarse grained, low plasticity fines, trace gravel fine grained; dark brown, trace organics; cohesive, firm, moist		SP-SM		DO S-1	3-5-8-8 **(13)**	24 24	13		
							AS Bulk-01		60			
		4.0		855.0								
5			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		CL-ML		DO S-2	4-2-2-2 **(4)**	24 24	4		
10							DO S-3	2-2-2-2 **(4)**	24 24	4		
		11.0		848.0								
			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		CL-ML							
15		15.0		844.0			DO S-4	2-1-1-1 **(2)**	19 24	2		
			Bottom of borehole at 15.0 ft. Backfilled with auger cuttings.									
20												
25												
30												
35												
40												
45												
50												
55												

DRILLING CO.: Premier Drilling
DRILLER: Scott Towe
DRILL RIG: CME 550
LOGGED: Patrick Callahan
CHECKED: Draft
REVIEWED: Draft

Golder Associates

CPT-42-AP4 (boring)
1 of 1

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

RECORD OF BOREHOLE CPT-46-AP4 (boring)

PROJECT: McDonough Ash Pond 3&4 Investigation and De-Watering
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:

DEPTH (ft)	BORING METHOD	SOIL PROFILE: Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES: SAMPLE TYPE & NUMBER	BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic hammer)	REC ATT (in)	PENETRATION RESISTANCE BLOWS / ft	WATER CONTENT (%)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		0.0		847.0									
	3-1/4" HSA		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		SM		DO S-1	4-5-5-7 **(10)**	24/24	10			
		2.0		845.0									
5			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		SM		DO S-2	4-5-8-11 **(13)**	24/24	13			
		6.0		841.0									
10			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					SP-SM		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		28 - 30: Drill rods chattering	
		33.0		814.0									
35			(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				DO S-8	1-2-3-3 **(5)**	24/24	5		▼ 36.7 ft, 10/27/2015 15:20	
40					SP-SM		DO S-9	16-9-13-12 **(22)**	5/24	22			
45							DO S-10	5-4-6-7 **(10)**	4/24	10			
		47.0		800.0									
50		50.0	(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	797.0	SP		DO S-11	5-9-17-19 **(26)**	6/24	26			
55			Bottom of borehole at 50.0 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

Golder Associates

CPT-46-AP4 (boring)
1 of 1

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

RECORD OF BOREHOLE CPT-49-AP4 (boring)

PROJECT: McDonough Ash Pond 3&4 Investigation and De-Watering
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:

DEPTH (ft)	BORING METHOD	SOIL PROFILE: Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES: SAMPLE TYPE & NUMBER	BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic hammer)	REC ATT (in)	PENETRATION RESISTANCE BLOWS / ft (20 40 60 80)	WATER CONTENT (%) (W_P W W_L) (20 40 60 80)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		0.0		847.0									
		0.3	(GP), GRAVEL, gravel fine grained, angular,	846.8	GP								
		2.0	sand fine to coarse grained, trace non plastic fines; Gravel road base	845.0	SP		DO S-1	5-4-6-5 **(10)**	24 24	10 ■			
			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,		SM		DO S-2	5-4-7-10 **(11)**	24 24	11 ■			
5		6.0	moist	841.0									
			FILL, (SM), SILTY SAND, sand fine to medium grained, low plasticity to medium plasticity fines; light gray-brown, homogeneous; cohesive, firm to compact, moist				AS Bulk-01 DO S-3	3-3-4-6 **(7)**	36 24 24	7 ■			
10			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										
							DO S-4	3-4-6-9 **(10)**	24 24	10 ■			
15													
					SP-SM								
							DO S-5	4-6-9-8 **(15)**	24 24	15 ■			
20													
	3-1/4" HSA												
							DO S-6	5-6-9-10 **(15)**	24 24	15 ■			
25													
		28.4		818.6									
			FILL, (SP), SILTY SAND, sand fine grained,		SP		DO S-7	5-8-7-9 **(15)**	8 24	15 ■			
30		30.0	some medium plasticity fines; light gray-brown; non-cohesive, loose, moist	817.0									
			(SM), SILTY SAND, sand fine to medium grained, low plasticity fines; dark gray-brown, mottled, RESIDUUM; non-cohesive, loose, moist		SM		AS Bulk-02 DO S-8	3-3-4-5 **(7)**	60 24 24	7 ■		▼ 33.8 ft, 10/27/2015 13:50	
35		35.0		812.0									
			(MH), SILT, high plasticity fines, sand fine grained; dark red-brown, RESIDUUM; cohesive, soft to firm, w ~ PL										
					MH		DO S-9	2-3-3-1 **(6)**	5 24	6 ■			
40													
		43.0		804.0									
			(SM), SILTY SAND, sand fine to medium grained, low plasticity fines; dark red-brown		SM		DO S-10	2-4-7-12 **(11)**	4 24	11 ■			
45		45.0	and gray, mottled, RESIDUUM, trace mica; micaceous, non-cohesive, loose, moist	802.0									
			Bottom of borehole at 45.0 ft. Backfilled with bentonite grout. Backfilled with bentonite grout										
50													
55													

DRILLING CO.: Premier Drilling
DRILLER: Scott Towe
DRILL RIG: CME 550
LOGGED: Patrick Callahan
CHECKED: Draft
REVIEWED: Draft

Golder Associates

CPT-49-AP4 (boring)
1 of 1

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

RECORD OF BOREHOLE PZ-2

SHEET: 1 of 2

PROJECT: McDonough Ash Pond 3&4 Investigation and De-Watering
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

GS ELEV.: 858.0
TOC ELEV.: na
DATUM:

DEPTH (ft)	BORING METHOD	SOIL PROFILE: Depth	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: Elev	USCS	GRAPHIC LOG	SAMPLES: SAMPLE TYPE & NUMBER	SAMPLES: BLOWS per 6 in (ASTM D1586, 140 lb hammer, 30 inch drop, Automatic hammer)	SAMPLES: REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft; WATER CONTENT (%)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0	7-inch drag bit	0.0	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)	858.0	CL-ML		DO S-1	0-0-0-1 **(0)**	1/24	0		
40							DO S-2	1-1-1-1 **(2)**	12/24	2		
50							DO S-3	0-0-0-0 **(0)**	24/24	0		

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

Golder Associates

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

RECORD OF BOREHOLE PZ-2

SHEET: 2 of 2
GS ELEV.: 858.0
TOC ELEV.: na
DATUM:

PROJECT: McDonough Ash Pond 3&4 Investigation and De-Watering
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

DEPTH (ft)	BORING METHOD	SOIL PROFILE: Depth	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: Elev	USCS	GRAPHIC LOG	SAMPLES: SAMPLE TYPE & NUMBER	SAMPLES: BLOWS per 6 in (ASTM D1586, 140 lb hammer, 30 inch drop, Automatic hammer)	SAMPLES: REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft; WATER CONTENT (%)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
55		55.0		803.0								
60	7-inch drag bit		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)*		CL-ML		DO S-4	0-0-0-0 **(0)**	24/24	0		
65												
70							DO S-5	0-0-1-0 **(1)**	24/24	1		
75												
80							DO S-6	1-1-1-1 **(2)**	24/24	2		
85												
90		89.0		769.0			DO S-7	0-0-0-0 **(0)**	24/24	0		
		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												

DRILLING CO.: Premier Drilling
DRILLER: Scott Towe
DRILL RIG: CME 550

LOGGED: P. Callahan / J. Myers
CHECKED: Draft
REVIEWED: Draft

Golder Associates

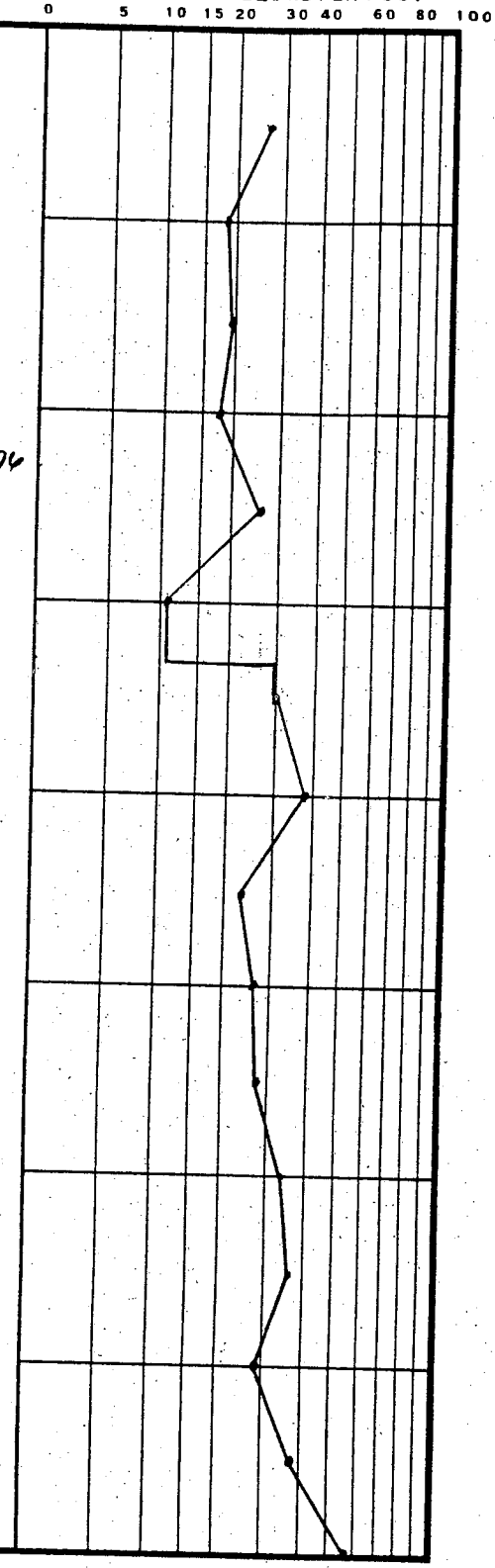
01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 12/22/15 11:07
X:\CLIENTS\SOUTHERN COMPANY\1539180 MCDONOUGH ASH PONDS 3 AND 4 CLOSURE\300_FIELD INFORMATION\GINT\PLANT MCD AP3&4 BORINGS.GPJ

TEST BORING RECORD

†ELEV.	DEPTH FEET	DESCRIPTION
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
805		
795		
785		
775		
	77	
765	80	

12-3-76

PENETRATION-BLOWS PER FOOT
0 5 10 15 20 30 40 60 80 100



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

SHEET 1 OF 2

†ESTIMATED FROM SITE PLAN

TEST BORING RECORD

*ELEV.	DEPTH FEET	DESCRIPTION
765	80	VERY DENSE TAN-BROWN MICACEOUS SILTY MEDIUM TO FINE SAND
	85	
		BORING TERMINATED @ 85'
755		

PENETRATION-BLOWS PER FOOT
0 5 10 15 20 30 40 60 80 100

REMARKS:
LOCATION: STA 6+75

*ESTIMATED FROM SITE PLAN

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

SHEET 2 OF 2

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			12-3-76
	14	AUGER BORING TO 49.5' NO SAMPLES TAKEN	
800			
790			
780			
770	49.5	BORING TERMINATED @ 49.5'	

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
845	0	FIRM TAN & GRAY MICACEOUS SILTY MEDIUM TO FINE SAND WITH GRAVEL AND VERY STIFF RED BROWN & TAN SANDY SILTY CLAY WITH GRAVEL (FILL)
835		
825		
815		
805		
795		
785		
775		
765	80	

12-3-76

PENETRATION-BLOWS PER FOOT
0 5 10 15 20 30 40 60 80 100

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

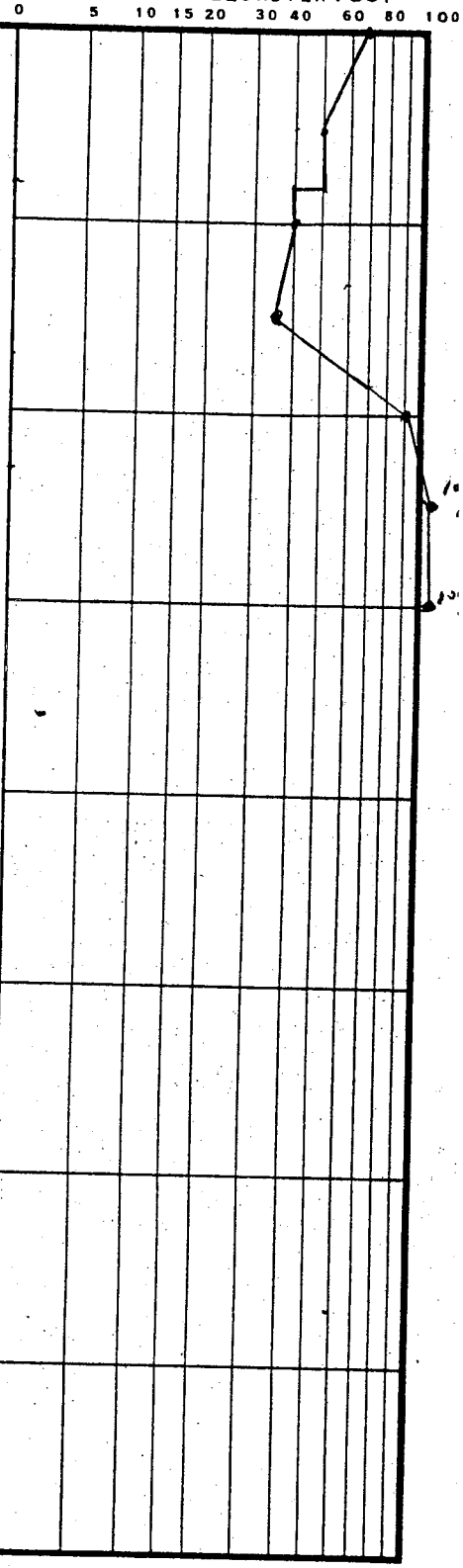
*Estimated From Site Plan

8 F 6
88
7 5 8

TEST BORING RECORD

*ELEV.	DEPTH FEET	DESCRIPTION
765	80	
	88	
755		DENSE TO VERY DENSE TAN & GRAY MICACEOUS SILTY MEDIUM TO FINE SAND WITH GRAVEL
	97	
745		PARTIALLY WEATHERED ROCK SAMPLED AS VERY DENSE TAN & GRAY MICACEOUS SILTY MEDIUM TO FINE SAND WITH GRAVEL
735	110	BORING TERMINATED @ 110'

PENETRATION-BLOWS PER FOOT
0 5 10 15 20 30 40 60 80 100



REMARKS:
LOCATION: STA 16+50

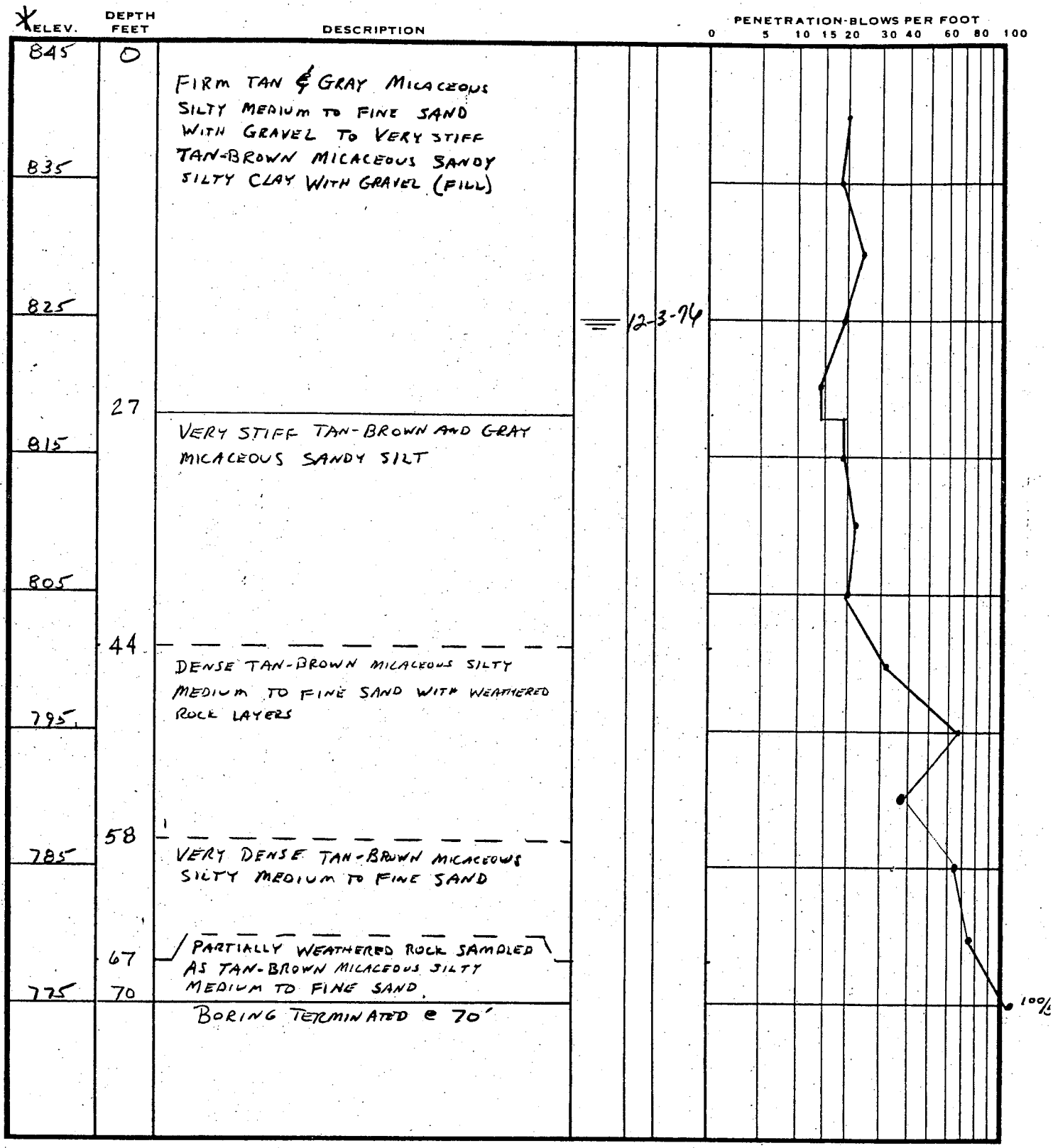
*Estimated From Site Plan

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

SHEET 2 OF 2

TEST BORING RECORD



REMARKS:

LOCATION : STA 25+00

INSTALLED : 30' SOLID PVC (4")
30' SOLID PVC (2")
40' SLOTTED PVC (2")

DRILLED BY H C

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
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	

PENETRATION-BLOWS PER FOOT
0 5 10 15 20 30 40 60 80 100

12-3-76

REMARKS:

LOCATION: STA 33+00
INSTALLED: 80' SOLID PVC (4") (FLUSHED)
80' SOLID PVC (2")
20' SLOTTED PVC (2")

DRILLED BY HC
LOGGED BY MRT
CHECKED BY SAS

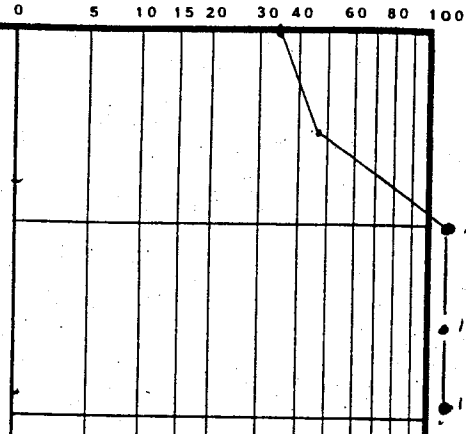
BORING NUMBER P-10A
DATE STARTED 11-18-76
DATE COMPLETED 11-19-76
JOB NUMBER SA-1401

*Estimated From Site Plan

TEST BORING RECORD

*ELEV.	DEPTH FEET	DESCRIPTION
765	80	DENSE TO VERY DENSE TAN AND GRAY MICACEOUS SILTY MEDIUM TO FINE SAND
755	88	PARTIALLY WEATHERED ROCK SAMPLED AS VERY DENSE TAN AND GRAY MICACEOUS SILTY MEDIUM TO FINE SAND
745	99	BORING TERMINATED @ 99'

PENETRATION-BLOWS PER FOOT
0 5 10 15 20 30 40 60 80 100



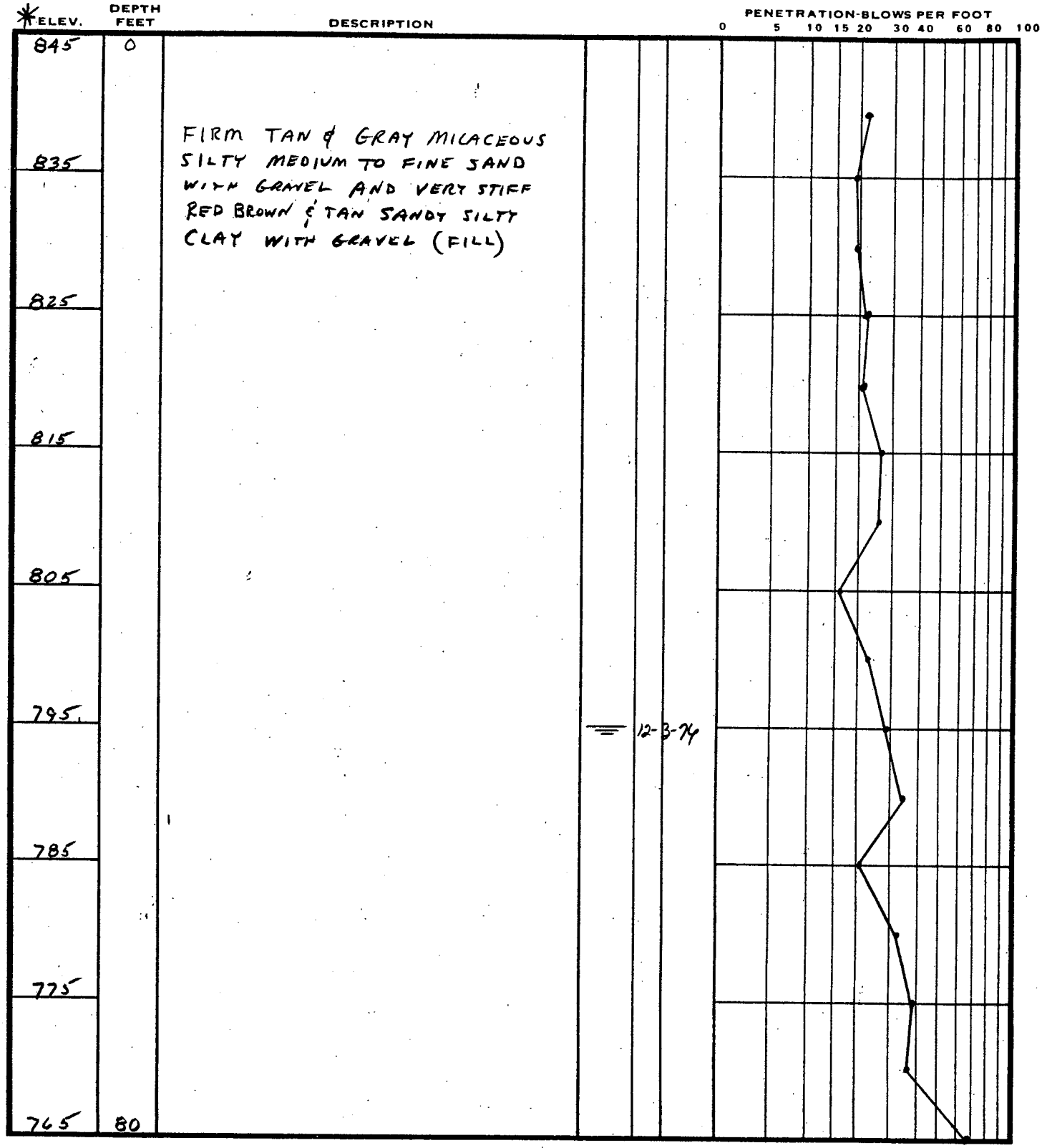
REMARKS:
LOCATION: STA 33+00

DRILLED BY HC
LOGGED BY MET
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



REMARKS:

LOCATION: STA 16+50

INSTALLED: 90' SOLID PVC (4") (GROUTED)
93' SOLID PVC (2")
20' SLOTTED PVC (2")

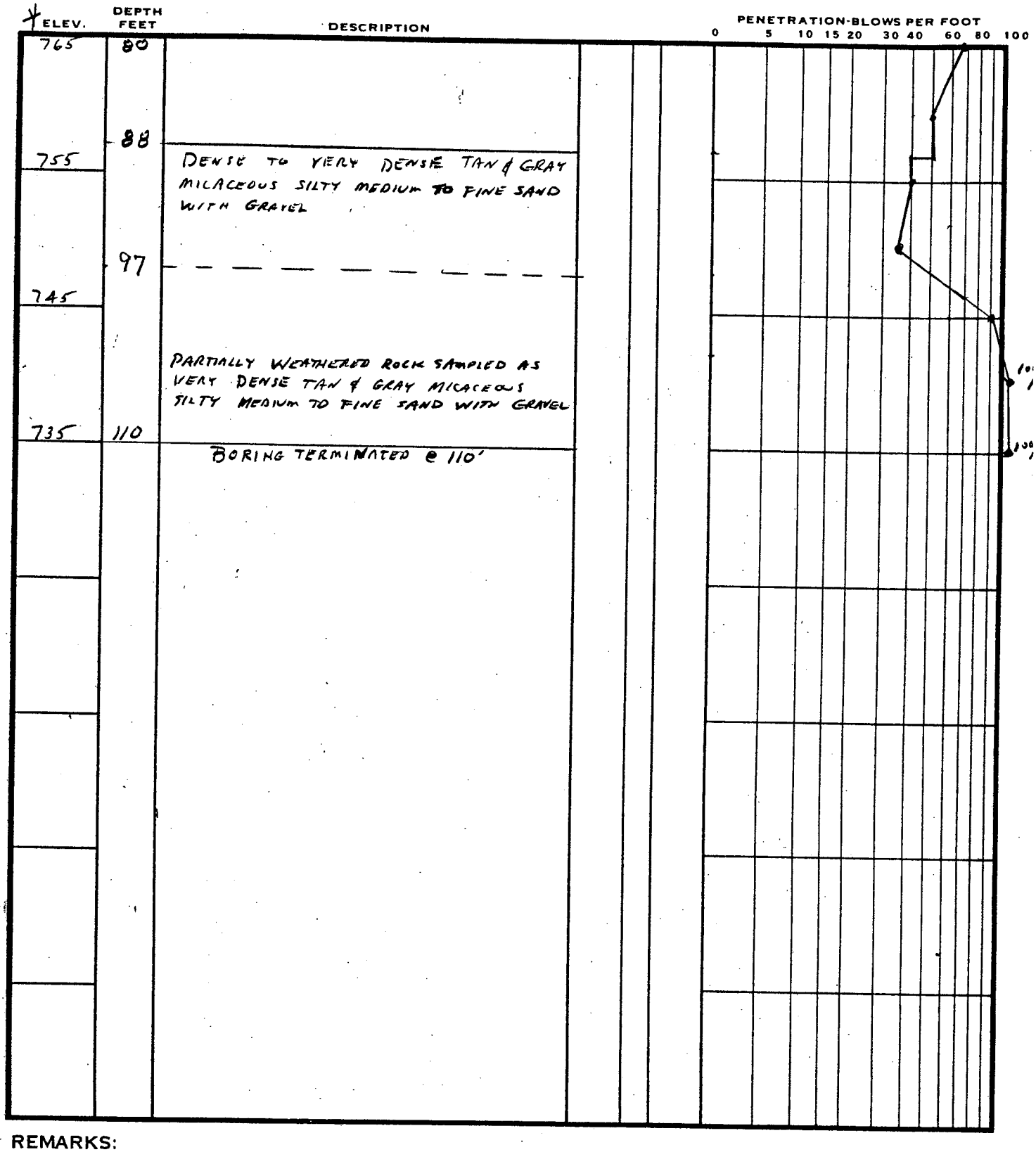
DRILLED BY HC
LOGGED BY MRT
CHECKED BY SAS

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



REMARKS:

LOCATION: STA 16+50

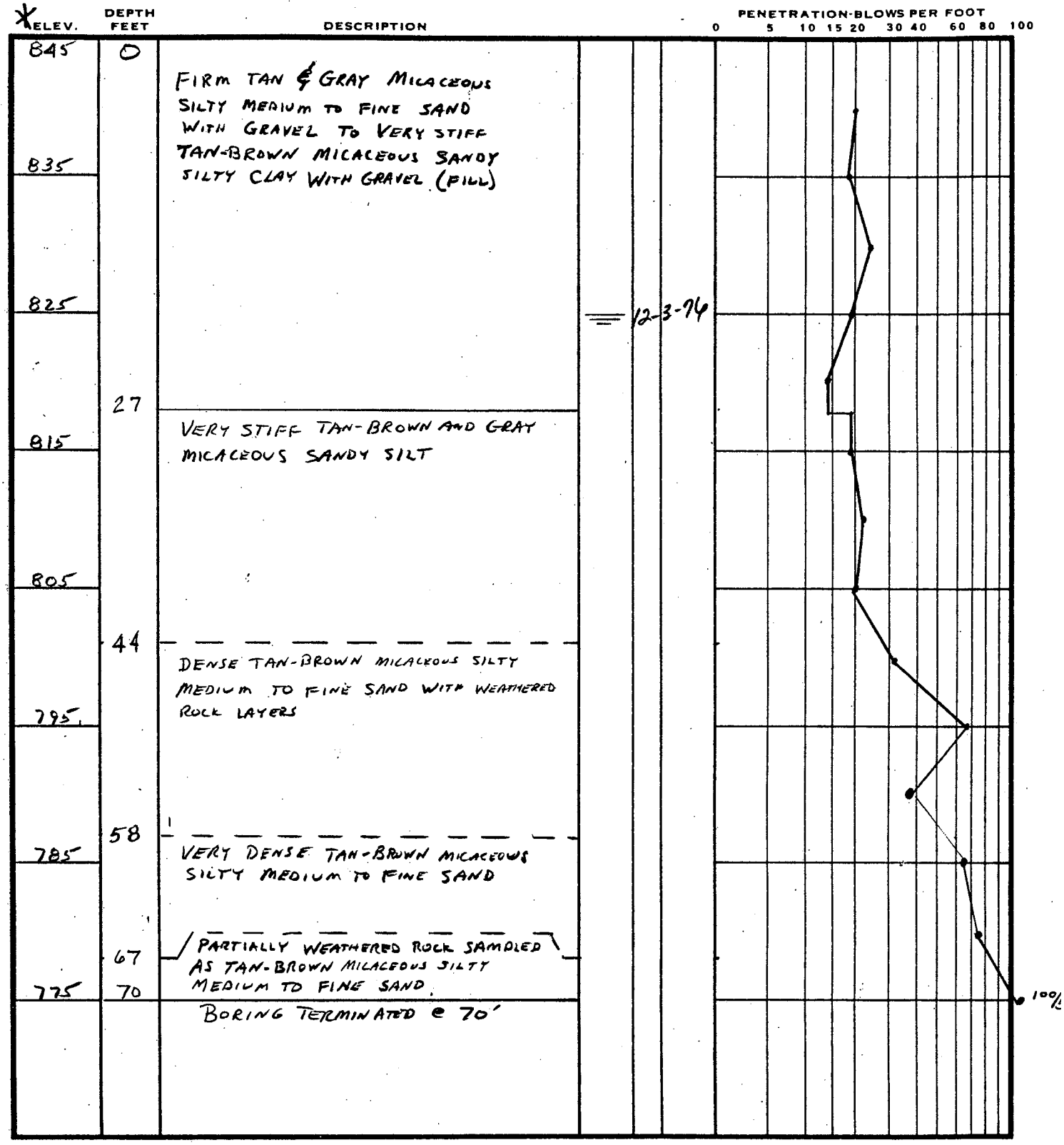
*Estimated From Site Plan

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

SHEET 2 OF 2

TEST BORING RECORD



REMARKS:

LOCATION : STA 25+00

INSTALLED: 30' SOLID PVC (4")
30' SOLID PVC (2")
40' SLOTTED PVC (2")

DRILLED BY H C
LOGGED BY MRT
CHECKED BY SAS

BORING NUMBER P-7A
DATE STARTED 11-17-76
DATE COMPLETED 11-18-76
JOB NUMBER SA-1401

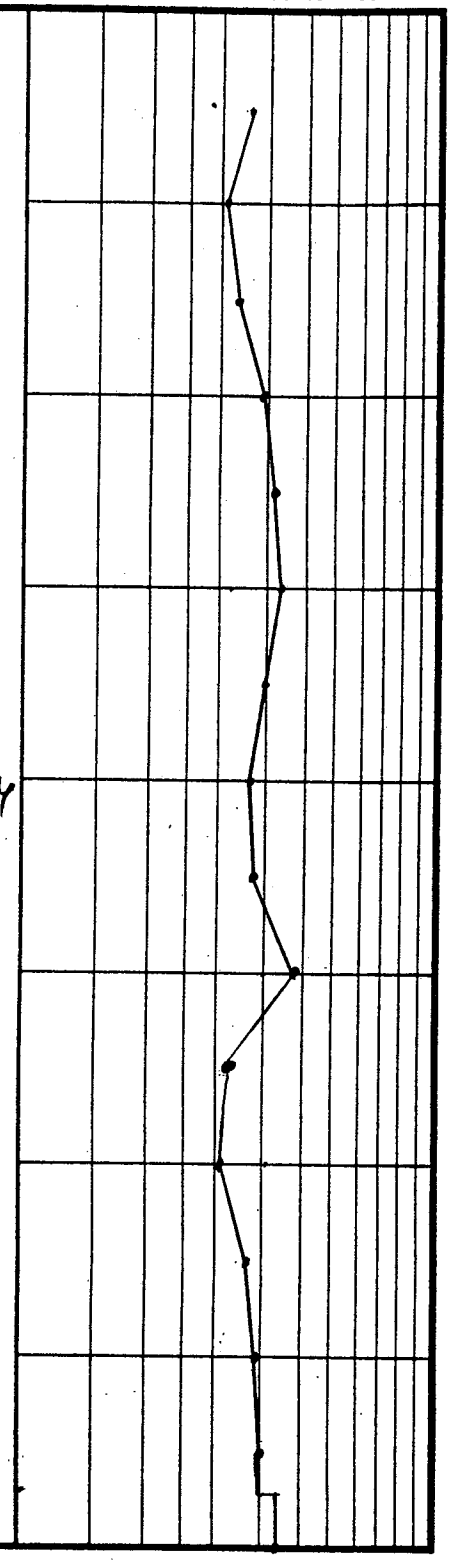
*Estimated From Site Plan

TEST BORING RECORD

*ELEV.	DEPTH FEET	DESCRIPTION
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

PENETRATION-BLOWS PER FOOT
0 5 10 15 20 30 40 60 80 100



REMARKS:

LOCATION: STA 33+00
INSTALLED: 80' SOLID (ERRATED) PVC (4")
80' SOLID PVC (2")
20' SLOTTED PVC (2")

DRILLED BY HC
LOGGED BY MRT
CHECKED BY SAS

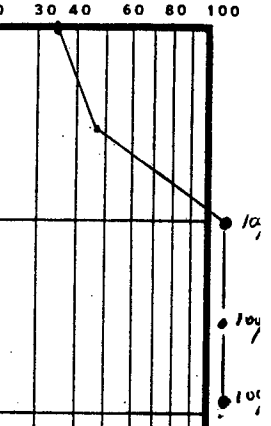
BORING NUMBER P-10A
DATE STARTED 11-18-76
DATE COMPLETED 11-19-76
JOB NUMBER SA-1401

*Estimated From Site Plan

TEST BORING RECORD

*ELEV.	DEPTH FEET	DESCRIPTION
765	80	DENSE TO VERY DENSE TAN AND GRAY MICACEOUS SILTY MEDIUM TO FINE SAND
755	88	PARTIALLY WEATHERED ROCK SAMPLED AS VERY DENSE TAN AND GRAY MICACEOUS SILTY MEDIUM TO FINE SAND
745	99	BORING TERMINATED @ 99'

PENETRATION-BLOWS PER FOOT
0 5 10 15 20 30 40 60 80 100



REMARKS:
LOCATION: STA 33+00

*Estimated From Site Plan

DRILLED BY HC
LOGGED BY MET
CHECKED BY SAS

BORING NUMBER P-10A
DATE STARTED 11-18-76
DATE COMPLETED 11-19-76
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)
820	0	FIRM TAN AND GRAY MICACEOUS SILTY MEDIUM TO FINE SAND (FILL)	
810			12-3-76
	14	AUGER BORING TO 49.5' NO SAMPLES TAKEN	
800			
790			
780			
770	49.5	BORING TERMINATED @ 49.5'	

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
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
805		
795		
785		
775		
	77	
765	80	

PENETRATION-BLOWS PER FOOT
0 5 10 15 20 30 40 60 80 100

12-3-76

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

SHEET 1 OF 2

*ESTIMATED FROM SITE PLAN

TEST BORING RECORD

*ELEV.	DEPTH FEET	DESCRIPTION
765	80	VERY DENSE TAN-BROWN MICACEOUS SILTY MEDIUM TO FINE SAND
	85	
		BORING TERMINATED @ 85'
755		

PENETRATION-BLOWS PER FOOT
0 5 10 15 20 30 40 60 80 100

REMARKS:
LOCATION: STA 6+75

*ESTIMATED FROM SITE PLAN

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

TEST BORING RECORD

*ELEV.	DEPTH FEET	DESCRIPTION	12-3-74	PENETRATION-BLOWS PER FOOT 0 5 10 15 20 30 40 60 80 100
780	0	AUGER BORING TO 40' NO SAMPLES TAKEN		
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 ▽ 12-3-76	
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		12-3-76	
780			
770			
760			
750			
740	80	BORING TERMINATED @ 80'	

REMARKS:

LOCATION: STA 33+00

INSTALLED 63' SOLID PVC (2")
20' SLOTTED PVC (2")

*ESTIMATED FROM SITE PLAN

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

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		12-3-74	
785			
775			
765	75	BORING TERMINATED @ 75'	

REMARKS:
LOCATION: STA 32+50
INSTALLED 53' SOLID PVC (2")
25' SLOTTED PVC (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 25+00
INSTALLED: 23' SOLID PVC (2")
20' SLOTTED PVC (2")

*Estimated From Site Plan

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 SA-1401

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'	12-3-76 ▽

REMARKS:

LOCATION: STA 25+00

INSTALLED: 10' SOLID PVC (2")
10' SLOTTED PVC (2")

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	12-3-76	PENETRATION-BLOWS PER FOOT 0 5 10 15 20 30 40 60 80 100
780	0	AUGER BORING TO 40'		
770		NO SAMPLES TAKEN		
760				
750				
740	40	BORING TERMINATED @ 40'		

REMARKS:

LOCATION: STA 16+50

INSTALLED: 20' SOLID PVC (2")
20' SLOTTED PVC (2")

DRILLED BY WS
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'	
800		NO SAMPLES TAKEN	
		▽ 12-3-76	
780			
760			
740			
720	100	BORING TERMINATED @ 100'	

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			
		▽ 12-3-76	
785			
775			
765	85	BORING TERMINATED @ 85'	

REMARKS:

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

TEST BORING RECORD

ELEV.	DEPTH FEET	DESCRIPTION	PENETRATION-BLOWS PER FOOT 0 5 10 15 20 30 40 60 80 100
		P-3 NOT DRILLED	

REMARKS:

DRILLED BY N/A
LOGGED BY _____
CHECKED BY _____

BORING NUMBER P-3
DATE STARTED N/A
DATE COMPLETED N/A
JOB NUMBER SA-140

TEST BORING RECORD

*ELEV.	DEPTH FEET	DESCRIPTION	PENETRATION-BLOWS PER FOOT (0 5 10 15 20 30 40 60 80 100)
845	0		
835		AUGER BORING TO 30' NO SAMPLES TAKEN	
825			
		12-8-76 ▽	
815	30	BORING TERMINATED @ 30'	

REMARKS:

LOCATION: STA 6+75

INSTALLED: 20' SOLID PVC (2")
10' SLOTTED PVC (2")

* ESTIMATED FROM SITE PLAN

DRILLED BY WM
LOGGED BY MRT
CHECKED BY SAS

BORING NUMBER P-1
DATE STARTED 11-17-76
DATE COMPLETED 11-17-76
JOB NUMBER SA-1401

APPENDIX E

Certified Well Survey Report

METRO ENGINEERING & SURVEYING CO., INC.
SURVEYORS - ENGINEERS - PHOTOGRAMMETRISTS
PROVIDING PROFESSIONAL SERVICE SINCE 1967

1469 HIGHWAY 20 WEST • MCDONOUGH, GA 30253
phone: 770-707-0777 fax: 770.707-0755
WWW.METRO-ENGINEERING.COM

SURVEYOR'S REPORT

SCOPE OF WORK:

Field survey of existing monitoring wells at Georgia Power Company, Plant McDonough in Smyrna, GA.

Horizontal and vertical datum was derived from RTK GPS observations with corrections from the eGPS network and conventional surveying equipment. Horizontal datum is Georgia State Plane, West Zone, NAD83(2011) and vertical datum is NAVD88.

EQUIPMENT USED TO ESTABLISH THE MONITORING WELL LOCATIONS:

Trimble R8 Dual Frequency GPS Receiver
Leica TS16 Total Station
Leica DNA10 Digital Level

CERTIFICATION:

I hereby certify that the center of well casing (PVC) has a horizontal accuracy of 0.5+/- feet or better using a Trimble R8 Dual Frequency RTK (survey-grade) global positioning system receiver referencing the Georgia State Plane, west zone, NAD83(2011) coordinate system in US survey feet. The top of well casing (PVC) elevation data was determined in feet above mean sea level based on the NAVD88 vertical datum. Vertical data was confirmed to be accurate within 0.01 foot through establishment of a closed level check loop with a Leica DNA10 digital level having a published accuracy of 0.9mm per dual-traverse kilometer.

James R. Green R.L.S. No. 2543

Date: 8/10/20



Plant McDonough
Monitoring Well Locations
August 7, 2020

Well ID	LATITUDE	LONGITUDE	NAIL NORTHING	NAIL EASTING	NAIL ELEV	PVC NORTHING	PVC EASTING	TOP PVC ELEV	ELEV AT BASE
B-100	N33.821507	W84.477304	1390255.7	2202241.1	775.32	1390254.8	2202242.1	777.95	775.3
B-16	N33.827948	W84.473793	1392595.3	2203314.4	823.54	1392595.1	2203315.4	826.47	823.6
B-18	N33.827740	W84.475241	1392520.2	2202876.1	823.89	1392521.0	2202875.5	826.56	823.9
B-24	N33.827616	W84.479935	1392479.7	2201451.1	819.19	1392479.9	2201450.0	822.11	819.3
B-25	N33.828532	W84.479765	1392813.0	2201503.9	833.41	1392813.3	2201502.7	836.54	833.5
B-26	N33.829336	W84.479610	1393105.5	2201551.4	850.61	1393105.6	2201550.4	853.60	850.6
B-28	N33.826209	W84.479175	1391968.5	2201678.9	813.28	1391967.4	2201679.2	816.08	813.3
B-29	N33.825994	W84.480021	1391891.0	2201421.4	813.47	1391890.0	2201422.0	816.43	813.5
B-3	N33.831925	W84.476784	1394044.3	2202412.0	834.86	1394045.1	2202411.5	837.78	835.0
B-31	N33.826387	W84.481648	1392034.9	2200928.0	794.84	1392034.3	2200928.5	797.47	794.9
B-41	N33.823333	W84.478925	1390921.5	2201751.1	792.40	1390920.8	2201751.9	795.20	792.4
B-50	N33.825358	W84.478639	1391656.0	2201840.9	806.49	1391657.1	2201841.0	809.67	809.2
B-51	N33.822173	W84.481705	1390500.7	2200905.6	763.29	1390501.2	2200906.5	765.92	763.3
B-52	N33.827143	W84.480378	1392307.3	2201314.3	820.18	1392308.3	2201314.8	822.89	820.3
B-54	N33.832971	W84.474387	1394422.3	2203141.2	782.54	1394423.5	2203140.7	785.46	782.6
B-55	N33.832207	W84.471067	1394142.2	2204146.8	822.86	1394142.6	2204147.9	825.12	822.9
B-56	N33.831700	W84.470934	1393957.6	2204186.8	820.95	1393957.9	2204187.8	823.59	821.0
B-57	N33.824649	W84.475687	1391397.5	2202736.1	786.03	1391396.3	2202736.9	789.04	786.0
B-58	N33.823902	W84.476706	1391126.5	2202426.0	785.20	1391125.7	2202426.5	788.17	785.2
B-59	N33.832766	W84.474846	1394348.1	2203001.5	785.41	1394349.1	2203001.1	788.00	785.5
B-6	N33.832961	W84.473972	1394420.5	2203266.5	786.45	1394419.5	2203266.5	789.47	786.5
B-60	N33.823839	W84.475205	1391101.4	2202882.2	779.25	1391100.7	2202881.6	782.13	779.2
B-61	N33.823442	W84.476443	1390958.4	2202506.9	778.95	1390957.8	2202505.8	782.09	779.0
B-62	N33.820331	W84.478719	N.A.	N.A.	N.A.	1389828.1	2201811.2	760.08	760.4
B-63	N33.823559	W84.474888	1390998.7	2202977.5	777.37	1390999.1	2202978.1	777.10	777.3
B-64	N33.832856	W84.474746	1394382.3	2203030.6	785.98	1394381.9	2203031.3	785.83	786.1
B-65	N33.832862	W84.471389	N.A.	N.A.	N.A.	1394381.2	2204050.8	821.95	822.3
B-66	N33.831427	W84.470638	1393859.2	2204277.7	813.33	1393858.2	2204277.5	815.90	813.3

Plant McDonough
Monitoring Well Locations
August 7, 2020

B-68	N33.824362	W84.482346	1391298.8	2200715.2	759.05	1391298.2	2200714.2	758.68	759.0
B-7	N33.832841	W84.472887	1394375.6	2203596.0	806.04	1394374.6	2203596.1	809.16	806.1
B-76	N33.822783	W84.475614	1390716.5	2202756.0	760.87	1390717.4	2202756.9	760.53	766.5
B-77	N33.823420	W84.475007	1390949.4	2202941.4	777.12	1390948.7	2202942.0	776.86	777.1
B-78	N33.832708	W84.474987	1394327.3	2202958.7	787.79	1394328.2	2202958.2	790.75	788.0
B-79	N33.833068	W84.474116	1394457.8	2203223.6	785.84	1394458.6	2203223.0	788.66	785.9
B-80	N33.832834	W84.473091	1394373.5	2203533.9	801.73	1394372.6	2203533.9	804.47	801.8
B-81	N33.832815	W84.472409	1394365.8	2203741.3	817.64	1394364.9	2203741.1	820.56	817.7
B-82	N33.831129	W84.470701	1393750.1	2204256.8	807.55	1393750.0	2204258.1	810.07	807.5
B-83	N33.822832	W84.475816	1390735.9	2202695.1	777.17	1390735.5	2202695.6	776.98	777.1
B-84	N33.821939	W84.477307	1390411.2	2202242.5	776.52	1390411.9	2202241.9	776.34	776.6
B-85	N33.832998	W84.474407	1394432.8	2203134.8	782.71	1394433.4	2203134.5	782.54	782.7
B-86	N33.833127	W84.474170	1394479.5	2203207.0	784.52	1394480.0	2203206.6	784.29	784.6
B-87	N33.832915	W84.473100	1394400.8	2203531.3	800.32	1394401.9	2203531.3	803.37	800.4
B-88	N33.832914	W84.472419	1394399.9	2203738.1	816.80	1394401.1	2203738.3	820.07	817.0
B-89	N33.832910	W84.471394	1394398.7	2204048.6	822.53	1394398.4	2204049.4	822.36	822.6
B-90	N33.833185	W84.474151	1394500.4	2203212.8	784.16	1394501.0	2203212.6	784.00	784.2
B-91	N33.833036	W84.474442	N.A.	N.A.	N.A.	1394447.1	2203123.9	782.98	783.1
B-92	N33.832887	W84.474761	1394393.2	2203026.4	785.30	1394392.7	2203026.7	785.08	785.3
B-93	N33.832763	W84.475024	1394348.1	2202947.0	789.19	1394348.7	2202946.7	789.07	789.2
B-94	N33.832915	W84.473158	1394400.9	2203513.8	799.12	1394402.0	2203513.7	801.74	799.2
B-95	N33.833233	W84.474299	1394519.5	2203167.2	784.18	1394518.6	2203167.7	784.00	784.3
B-96	N33.833122	W84.474524	1394479.4	2203098.8	785.19	1394478.7	2203099.3	784.92	785.3
B-97	N33.832988	W84.474823	1394430.6	2203008.0	786.50	1394430.0	2203008.3	786.29	786.6
B-98	N33.832883	W84.475066	1394392.7	2202934.6	789.81	1394392.5	2202934.0	789.67	789.8
B-99	N33.833247	W84.474573	1394524.7	2203084.9	782.57	1394524.2	2203084.5	782.39	782.6
DGWA-53	N33.830346	W84.479224	1393473.5	2201667.7	841.37	1393472.8	2201668.8	844.26	841.3
DGWA-70A	N33.822116	W84.482741	1390480.2	2200591.7	805.67	1390481.4	2200591.6	808.52	805.8
DGWA-71	N33.831695	W84.479078	1393964.3	2201714.7	861.22	1393963.3	2201714.8	863.84	861.2
DGWC-8	N33.832699	W84.471944	1394323.0	2203882.3	824.02	1394322.2	2203882.1	826.38	824.1

Plant McDonough
Monitoring Well Locations
August 7, 2020

DGWC-37	N33.822121	W84.481661	1390483.0	2200920.7	763.64	1390482.2	2200919.8	766.21	763.7
DGWC-10	N33.831317	W84.470889	1393818.1	2204200.0	820.82	1393818.3	2204201.1	823.55	820.9
DGWC-11	N33.830571	W84.471001	1393546.9	2204167.3	797.99	1393547.1	2204166.2	800.57	798.1
DGWC-12	N33.829478	W84.471122	1393149.8	2204127.3	771.10	1393149.4	2204128.3	773.86	771.2
DGWC-13	N33.828740	W84.471263	1392880.8	2204085.7	791.20	1392881.1	2204084.6	794.10	791.3
DGWC-14	N33.827896	W84.471495	1392574.5	2204014.4	789.69	1392574.2	2204013.3	792.40	789.8
DGWC-15	N33.827810	W84.472595	1392544.2	2203677.9	821.43	1392544.1	2203679.0	824.50	821.5
DGWC-17	N33.828084	W84.474664	1392645.0	2203050.2	834.14	1392645.6	2203051.0	837.05	834.2
DGWC-19	N33.827248	W84.476143	1392341.8	2202601.5	822.87	1392342.6	2202601.0	825.46	822.9
DGWC-2	N33.831683	W84.477745	1393957.1	2202119.4	848.17	1393958.0	2202119.5	850.88	848.3
DGWC-20	N33.826754	W84.477079	1392163.7	2202316.3	819.66	1392164.5	2202315.6	822.14	819.8
DGWC-21	N33.826487	W84.477911	1392066.4	2202063.3	813.47	1392067.5	2202063.5	816.28	813.5
DGWC-22	N33.826647	W84.478805	1392125.2	2201791.7	813.69	1392126.3	2201791.9	816.59	813.7
DGWC-23	N33.826957	W84.479498	1392240.4	2201582.8	815.63	1392239.7	2201582.0	818.37	815.7
DGWC-38	N33.821795	W84.480906	1390363.6	2201149.0	754.67	1390362.7	2201148.6	757.43	754.7
DGWC-39	N33.821635	W84.479616	1390302.5	2201539.8	756.93	1390303.6	2201540.1	759.89	757.0
DGWC-4	N33.832275	W84.475959	1394170.6	2202662.7	812.06	1394171.5	2202662.4	814.85	812.1
DGWC-40	N33.822523	W84.478678	1390625.1	2201826.7	776.12	1390625.7	2201825.9	779.06	776.2
DGWC-42	N33.824453	W84.478540	1391327.4	2201869.1	801.98	1391327.8	2201870.2	804.68	802.0
DGWC-47	N33.825080	W84.476104	1391553.1	2202611.3	794.35	1391553.8	2202610.5	797.45	794.3
DGWC-48	N33.824420	W84.477157	1391314.2	2202289.2	785.21	1391314.6	2202290.2	788.33	785.2
DGWC-5	N33.832647	W84.474964	1394305.3	2202965.3	788.64	1394306.3	2202965.1	791.75	788.7
DGWC-67	N33.823417	W84.481959	1390953.6	2200830.0	766.80	1390953.8	2200830.7	766.70	767.0
DGWC-68A	N33.824370	W84.482278	1391300.9	2200733.4	765.06	1391301.2	2200734.9	765.33	765.4
DGWC-69	N33.825150	W84.482537	1391583.9	2200657.2	763.99	1391585.0	2200657.1	763.75	764.0
DGWC-9	N33.831969	W84.470993	1394055.6	2204168.9	821.86	1394055.9	2204170.0	824.35	821.8

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SURVEYOR'S REPORT

SCOPE OF WORK:

Field survey of existing monitoring wells at Georgia Power Company, Plant McDonough in Smyrna, GA.

Horizontal and vertical datum was derived from RTK GPS observations with corrections from the eGPS network and conventional surveying equipment. Horizontal datum is Georgia State Plane, West Zone, NAD83(2011) and vertical datum is NAVD88.

EQUIPMENT USED TO ESTABLISH THE MONITORING WELL LOCATIONS:

Trimble R8 Dual Frequency GPS Receiver
Leica TS16 Total Station
Leica DNA10 Digital Level

CERTIFICATION:

I hereby certify that the center of well casing (PVC) has a horizontal accuracy of 0.5+/- feet or better using a Trimble R8 Dual Frequency RTK (survey-grade) global positioning system receiver referencing the Georgia State Plane, west zone, NAD83(2011) coordinate system in US survey feet. The top of well casing (PVC) elevation data was determined in feet above mean sea level based on the NAVD88 vertical datum. Vertical data was confirmed to be accurate within 0.01 foot through establishment of a closed level check loop with a Leica DNA10 digital level having a published accuracy of 0.9mm per dual-traverse kilometer.

James R. Green R.L.S. No. 2543

GEORGIA REGISTERED NO. LS002543 PROFESSIONAL LAND SURVEYOR JAMES RANDOLPH GREEN

Date: 1/6/21

Plant McDonough
Monitoring Well Locations
January 6, 2021

Well ID	LATITUDE	LONGITUDE	NAIL NORTHING	NAIL EASTING	NAIL ELEV	PVC NORTHING	PVC EASTING	TOP PVC ELEV	ELEV AT BASE
B-101D	N33.831990	W84.470999	1394063.3	2204167.1	821.24	1394063.6	2204168.2	824.29	821.2
B-102D	N33.831344	W84.470891	1393828.2	2204199.0	820.64	1393828.4	2204200.4	823.42	820.6
B-103D	N33.825052	W84.476091	1391542.8	2202615.0	793.77	1391543.5	2202614.4	795.96	793.8
B-104D	N33.824431	W84.477129	1391317.9	2202297.4	785.31	1391318.3	2202298.5	787.90	785.3
B-105D	N33.822547	W84.478659	1390633.9	2201832.7	776.03	1390634.5	2201831.9	779.01	776.0
B-106D	N33.832712	W84.471987	1394328.3	2203869.6	823.39	1394327.1	2203869.2	826.21	823.5
B-107D	N33.827226	W84.476158	1392333.6	2202597.0	820.44	1392334.5	2202596.4	823.38	820.6
B-108D	N33.826733	W84.477091	1392155.6	2202313.1	818.33	1392156.1	2202312.5	821.13	818.4
B-109D	N33.831682	W84.477720	1393956.4	2202127.0	847.78	1393957.5	2202127.0	850.73	847.8
B-110D	N33.824352	W84.482274	1391294.0	2200734.6	764.55	1391294.4	2200736.0	764.61	764.7
B-111D	N33.832640	W84.474992	1394302.6	2202956.5	789.04	1394303.4	2202956.4	791.87	789.1
B-72	N33.824206	W84.482307	1391241.2	2200724.9	758.45	1391241.4	2200725.9	758.46	758.5
B-73	N33.824509	W84.482395	1391351.5	2200698.5	759.16	1391351.8	2200699.4	759.21	759.2
B-74	N33.824311	W84.482504	1391278.9	2200666.3	759.18	1391279.9	2200666.1	759.06	759.2
DW-D1	N33.832657	W84.474840	NA	NA	NA	1394309.5	2203002.8	786.78	786.2
DW-D2	N33.832842	W84.473838	NA	NA	NA	1394375.8	2203307.1	788.53	788.3
DW-D3	N33.832812	W84.472368	NA	NA	NA	1394363.7	2203753.5	817.50	817.2
DW-D4	N33.831941	W84.470988	NA	NA	NA	1394045.5	2204171.7	820.68	820.4

STAFF GAGE	LATITUDE	LONGITUDE	T/POST NORTHING	T/POST EASTING	TOP T/POST ELEV	TOP GAGE ELEV @ 8'	ELEV AT GRD
WT-1	N33.825586	W84.482522	1391743.6	2200662.1	759.85	759.32	755.3
WT-3	N33.824028	W84.482353	1391176.9	2200711.8	757.80	756.92	752.6
WT-4	N33.822014	W84.481690	1390443.3	2200910.8	754.13	753.21	749.2
WT-5	N33.821283	W84.480144	1390175.9	2201379.5	749.01	749.07	744.9
ET-1	N33.832761	W84.474439	1394347.0	2203124.5	NA	779.94	775.9

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SURVEYOR'S REPORT

SCOPE OF WORK:

Field survey of existing monitoring wells at Georgia Power Company, Plant McDonough in Smyrna, GA.

Horizontal and vertical datum was derived from RTK GPS observations with corrections from the eGPS network and conventional surveying equipment. Horizontal datum is Georgia State Plane, West Zone, NAD83(2011) and vertical datum is NAVD88.

EQUIPMENT USED TO ESTABLISH THE MONITORING WELL LOCATIONS:

Trimble R8 Dual Frequency GPS Receiver
Leica TS16 Total Station
Leica DNA10 Digital Level

CERTIFICATION:

I hereby certify that the center of well casing (PVC) has a horizontal accuracy of 0.5+/- feet or better using a Trimble R8 Dual Frequency RTK (survey-grade) global positioning system receiver referencing the Georgia State Plane, west zone, NAD83(2011) coordinate system in US survey feet. The top of well casing (PVC) elevation data was determined in feet above mean sea level based on the NAVD88 vertical datum. Vertical data was confirmed to be accurate within 0.01 foot through establishment of a closed level check loop with a Leica DNA10 digital level having a published accuracy of 0.9mm per dual-traverse kilometer.

James R. Green R.L.S. No. 2543

Date: 5/11/21



Plant McDonough
Monitoring Well Locations
April 11, 2021

Well ID	LATITUDE	LONGITUDE	NAIL NORTHING	NAIL EASTING	NAIL ELEV	PVC NORTHING	PVC EASTING	TOP PVC ELEV	ELEV AT BASE
B-111D	N33.832640	W84.474992	1394302.7	2202956.6	788.99	1394303.6	2202956.4	791.84	789.0
B-112D	N33.825093	W84.482513	1391564.0	2200663.1	765.98	1391564.2	2200664.1	765.58	766.1
B-113D	N33.824270	W84.482329	1391264.7	2200720.2	758.87	1391264.6	2200719.2	758.22	758.8
B-115D	N33.824287	W84.476200	1391266.0	2202580.1	786.43	1391265.3	2202580.7	789.17	786.4
B-116D	N33.822123	W84.482677	1390483.0	2200611.0	805.31	1390483.7	2200611.0	807.82	805.3
B-117D	N33.831696	W84.479036	1393964.7	2201727.1	861.23	1393963.8	2201727.3	863.82	861.2
B-118	N33.824143	W84.483216	1391220.2	2200449.5	804.99	1391219.3	2200449.7	807.70	805.0
B-119D	N33.824190	W84.483226	1391237.5	2200446.4	804.53	1391236.4	2200446.6	807.15	804.5
B-120D	N33.831931	W84.476702	1394046.4	2202436.8	834.03	1394047.2	2202436.4	836.42	834.0

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SURVEYOR'S REPORT

SCOPE OF WORK:

Field survey of existing monitoring wells at Georgia Power Company, Plant McDonough in Smyrna, GA.

Horizontal and vertical datum was derived from RTK GPS observations with corrections received via a cellular modem utilizing the Leica "Smartnet" RTK Network and conventional surveying equipment. Horizontal datum is Georgia State Plane, West Zone, NAD83(2011) and vertical datum is NAVD88.

EQUIPMENT USED TO ESTABLISH THE MONITORING WELL LOCATIONS:

Leica GS18T GPS Receiver
Leica TS16 Total Station
Leica DNA10 Digital Level

CERTIFICATION:

I hereby certify that the center of well casing (PVC) has a horizontal accuracy of 0.5+/- feet or better using a Leica GS18T GPS (survey-grade) global positioning system receiver referencing the Georgia State Plane, West Zone, NAD83(2011) coordinate system in US survey feet. The top of well casing (PVC) elevation data was determined in feet above mean sea level based on the NAVD88 vertical datum. Vertical data was confirmed to be accurate within 0.01 foot through establishment of a closed level check loop with a Leica DNA10 digital level having a published accuracy of 0.9mm per dual-traverse kilometer.

James R. Green R.L.S. No. 2543

Date: 5/10/22



Plant McDonough
Monitoring Well Locations
May 9, 2022

Well ID	LATITUDE	LONGITUDE	NAIL NORTHING	NAIL EASTING	NAIL ELEV	PVC NORTHING	PVC EASTING	TOP PVC ELEV	ELEV AT BASE
B-122D	N33.823541	W84.474897	1390992.06	2202975.35	777.32	1390992.8	2202975.4	777.03	777.3
B-123D	N33.824203	W84.476108	1391233.80	2202608.91	778.85	1391234.4	2202608.4	781.80	779.0
DWGC121	N33.822829	W84.481895	1390739.51	2200848.27	764.52	1390739.7	2200849.4	764.16	764.6

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SURVEYOR'S REPORT

SCOPE OF WORK:

Field survey of existing monitoring wells at Georgia Power Company, Plant McDonough in Smyrna, GA.

Horizontal and vertical datum was derived from RTK GPS observations with corrections received via a cellular modem utilizing the Leica "Smartnet" RTK Network and conventional surveying equipment. Horizontal datum is Georgia State Plane, West Zone, NAD83(2011) and vertical datum is NAVD88.

EQUIPMENT USED TO ESTABLISH THE MONITORING WELL LOCATIONS:

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Leica TS16 Total Station
Leica DNA10 Digital Level

CERTIFICATION:

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James R. Green R.L.S. No. 2543



Date: 5/8/23

Plant McDonough
Monitoring Well Locations
May 4, 2023

Well ID	LATITUDE	LONGITUDE	NAIL NORTHING	NAIL EASTING	NAIL ELEV	PVC NORTHING	PVC EASTING	TOP PVC ELEV	ELEV AT BASE
B-125D	N33.832109	W84.476228	1394111.1	2202580.9	819.15	1394111.6	2202580.7	821.70	819.1



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