PLANT McDONOUGH-ATKINSON CCR SURFACE IMPOUNDMENT (CCR UNIT AP-1) COBB COUNTY, GEORGIA PART B SECTION 1 – HYDROGEOLOGICAL ASSESSMENT REPORT

FOR



March 2023

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Certification

This *Hydrogeologic Assessment Report* for Georgia Power Company's (Georgia Power) Plant McDonough-Atkinson (Plant McDonough) CCR Surface Impoundment (CCR Unit AP-1) 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 1 (AP-1) 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 Ponds 2 and 3/4 (AP-2 and 3/4) are located east of AP-1 and are referenced here as they relate to site conditions. Information included specific to AP-2 and 3/4 should not be considered for permitting. This report and the facility's Groundwater Monitoring Plan supports compliance with the CCR Rule by demonstrating that the groundwater monitoring system at Plant McDonough meets the requirements outlined in 391-3-4-.10(6) and 40 CFR § 257.91.

1.1 Current Site Conditions and Pond Closure

The Closure Plan (Golder, 2019) was prepared in accordance with 40 CFR 257, Subpart D and meets the requirements of 40 CFR 257.102(b).

The surface impoundment referred to as AP-1 at Plant McDonough has been closed in place. The closure process included 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). 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. Maintenance activities will include, as needed, repairs to the final cover to correct any effects related to settlement, subsidence, erosion or other events, and will be performed to prevent run-on or run-off from eroding or otherwise damaging the final cover.

2.0 BACKGROUND INFORMATION

2.1 Site Description and Physiography

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

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

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

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

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

Topographic relief near Plant McDonough ranges from less than 750 feet North American Vertical Datum 1988 (ft NAVD88) near the tributaries and river to greater than 840 ft 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 forming a dendritic drainage pattern. These rocks are deeply weathered due to the humid climate and bedrock is typically overlain by a variably thick blanket of residual soils and saprolite. The overall depth of weathering in the Piedmont geologic province is variable (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.

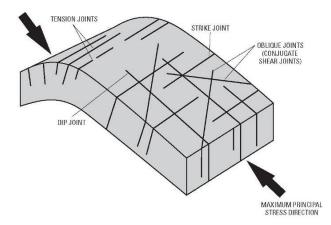
2.2.1 Regional Geology

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 unnamed, faulted, intrusive contact traverses northeast-southwest across the Site and is observed throughout most of the metro-Atlanta area. Regionally, this appears to be a normal fault contact; however, where it is exposed and observed in core holes drilled adjacent to the contact at Plant McDonough, the fault has endured substantial movement as indicated by porphyroclastic-feldspars with sigmoidal-tails. Other regional faults characterized by near-vertical, strike-slip movement, occur north and south of the Site: the Long Island Creek Fault is located approximately one mile north of the Site; and a series of strike-slip faults that define a zone of intense shearing within the Brevard Zone occur just south of the Site. These faults were formed at significant depth within the crust, enduring intense ductile deformation while forming in a high pressure, low temperature environment.

Four main joint orientations are commonly found in folded and faulted rocks in the Piedmont Physiographic Province (see inset below). Strike joints develop parallel to the strike of bedding, foliation, and fold axes, typically forming from tension along fold hinges or due to shearing. The dip direction and angle of these joints is orthogonal to the dip direction and angle of bedding. Dip joints form parallel to bedding dip direction and are typically perpendicular to the strike of bedding and fold axes, representing extension in the maximum principal stress direction or direction of compression. These joints are commonly near vertical. Oblique joints develop diagonal (+/- 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, 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. This saprolitic material is generally more permeable than the overlying residuum, and the underlying bedrock, and serves to concentrate groundwater along a tabular zone of enhanced permeability. Although weathering generally increases porosity and permeability within this zone, some processes taking place in this zone, such as the growth of clay minerals, mineral deposition in fractures, and development of iron oxide 'hardpan,' can significantly decrease the permeability. This tabular zone of enhanced permeability is referred to as the transitionally weathered zone, which is characterized by heterogeneously interlayered, fresh to completely weathered (saprolitic) rock.

Groundwater within the overburden, which is comprised of residual soils, saprolite, and transitionally weathered rock (TWR), is generally unconfined and the surface is generally a subdued reflection of topography. In areas where bedrock is relatively shallow and when water levels are seasonally depressed, the regional groundwater 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 onsite and a series of subsurface boring and well data that were collected over several years. Subsurface conditions were evaluated from available boring and monitoring well installation logs. Interpretations were made, primarily related to depth to bedrock and the material that constitutes bedrock (e.g., minerology), considering the overall rock mass quality [e.g., rock quality designation (RQD)]. These data were used as the basis of a top of rock contour map, presented as Sheet GW-2, and for geologic cross sections, presented as Sheet GW-3a through GW-3i.

3.1 Geologic Mapping Methodology

Geologic mapping was performed in 2016 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 structural and lithologic features encountered during mapping of the area. Information recorded at each map station included: lithology and mineralogy; orientation and characteristics of structural discontinuities including, shearing, faulting, jointing, cleavage, and compositional bedding; and depth and type of weathering characteristics of the rock. Map station locations were chosen based on outcrop availability and recorded using a hand-held, Wide Area Augmentation System (WAAS)-enabled Global Positioning System (GPS).

3.2 Residual Soil and Saprolite

Boring logs indicate that residual soils, primarily clayey/sandy silt, sandy silt with clay, and silty sand (increasing with depth), occur as a variably thick deposit overlying bedrock across most of the Site, as illustrated on geologic



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

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

3.3 Lithologic Units

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

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

<u>Long Island Creek Gneiss (OZli)</u>: 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.

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

<u>Phyllonite</u>, <u>Button Schist</u>, <u>Mylonite</u>, <u>and Mylonitic Biotite Gneiss (OZbs)</u>: 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. 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 site during geologic mapping, the property is characterized by foliation that strikes generally northeast-southwest. Equalarea, lower-hemisphere stereonet analyses of the foliation measurements for this domain has an average pole concentration representing a foliation of N44°E, dipping 42°to the southeast.



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

3.4.2 Joints

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

Joints within the Brevard Zone are common and persistent in most of the rock types. The joints are generally spaced on the order of a few inches to a few feet; however, there are more massive parts of various rock units which have a wider joint spacing. Joint sets in units outside of the Brevard Zone are variably developed, largely dependent upon the lithologic character of the unit.

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

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

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

3.5 Lineament Analysis

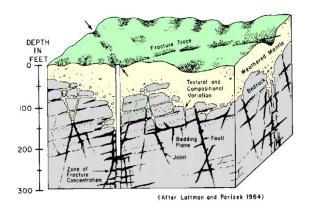
3.5.1 Methodology

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

Because discontinuity zones are typically less resistant to weathering, they are often expressed as natural topographic lows, such as straight stream valley segments, swales, aligned depressions and gaps in ridges or as linear tonal or vegetative alignments due to variations in soil thickness and moisture (see inset). These surface manifestations are referred to as fracture traces or lineaments and were identified for this project by remote-



sensing techniques using topographic maps, aerial photographs, and shaded relief maps generated from 10-meter Digital Elevation Model (DEM) data.



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

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

3.5.2 Discussion of Lineaments

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

- ▶ L₁: N40° to 60°W perpendicular to foliation strike
- ➤ L₂: N30° to 60°E parallel to foliation strike

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

3.5.3 Discontinuity Mapping and Lineament Analysis Correlation

Lineaments identified are considered to be the ground-surface expression of preferential weathering related to discontinuities in rock. Sheet GW-6 shows a comparison of measured discontinuities and lineaments for this study. Based on this evaluation, the project area appears to be characterized by two persistent lineament sets whose orientations are consistent with the structural stresses experienced in this area. It appears that L_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.

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.

4.0 CONCEPTUAL SITE HYDROGEOLOGIC MODEL

4.1 Uppermost Groundwater Aquifer

Boring logs and monitoring well/piezometer installation logs were used to evaluate hydrostratigraphy of the Site. Piezometers at the Site have been used for water level measurements and enhance the understanding of site hydrogeology. Material types identified included residual soils, saprolitic soils, saprolitic rock (or PWR if blow counts were provided), TWR, and competent bedrock. Based on review of the logs, the screen/filter pack interval for most of the piezometers and monitoring wells installed on site provides connection to the overburden, indicating that the Site is underlain by a regional groundwater aquifer that occurs within the overburden and upper bedrock depending on topographic location.

According to water level measurements recorded between August 2016 and September 2022 from wells and piezometers screened in the overburden and upper bedrock, the water table elevation ranges between approximately 834 ft NAVD88 at upgradient well DGWA-71 to approximately 742 ft NAVD88 at downgradient piezometer B-62. These data are summarized in Table GW-1. The depth to saturation varies from approximately -1.6 to 46.4 feet below ground surface (ft bgs) across the Site and is variable with lithology (Table GW-1). Depth to saturation ranged from approximately 2.5 to 42.6 ft bgs and 0.9 to 46.4 ft bgs in the OZli and OZbs formations, respectively. The geometric mean of depth to saturation data was similar in both formations.

Localized groundwater flow directions within this aquifer are influenced by topographic and top of rock variations on site. As illustrated on the Geologic Cross-Section Schematics shown on Sheets GW-3a through GW-3j and the September 6, 2022, Potentiometric Surface shown on Sheet GW-7, the water table surface is a subdued reflection of topography at the Site, with groundwater generally flowing towards the south and west of the ash ponds. As discussed in Section 3.2, the top of rock surface also generally follows topography and likely controls groundwater flow direction in the uppermost aquifer. Local complexities in groundwater flow within this aquifer are influenced by topographic and related top of rock variations on site. The groundwater flow pattern interpreted using the September 2022 elevation data is consistent with previous observations.

4.2 Groundwater Flow

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



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

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

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

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

Data from several borings drilled into deeper bedrock during delineation activities at AP-1 confirm that fractures within the bedrock are limited and decrease in number and groundwater production with depth, supporting the above statement. Specifically, site borings B-103D, B-122D and B-123D were installed to vertically delineate constituents in areas where bedrock was approximately 70 feet below ground surface (bgs) and; therefore were installed to capture groundwater flow from bedrock fractures. These three groundwater monitoring wells were screened across available fractures and do not produce sufficient water for proper development or sampling.

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

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

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



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

September 2022 groundwater elevation data from six piezometer and/or monitoring well pairings located along the groundwater flow path and perpendicular to the potentiometric contours were used to calculate horizontal hydraulic gradients for AP-1 and AP-2, 3/4. As shown on Table GW-2, hydraulic gradients were calculated as follows; DGWA-53/DGWC-13 [0.028 feet/feet (ft/ft)], and B-26/DGWC-48 (0.026 ft/ft) for AP-2, 3/4, and B-29/DGWC-68A (0.035 ft/ft), B-28/DWGC-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, 3/4 derived using these horizontal gradients are 0.026 ft/ft and 0.027 ft/ft, respectively.

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

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

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

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

Using this equation, groundwater flow velocities were calculated for AP-1 and AP-2, 3/4 using September 2022 groundwater elevation data. Table GW-2 presents the velocities calculated using groundwater elevation data from the September 2022 sampling event.

Calculated (horizontal) flow velocities range from approximately 76 feet per year (ft/yr) to 138 ft/yr in September 2022. These estimated flow velocities are consistent with past results and are also generally consistent with other published velocities for regolith-upper bedrock aquifers of the Piedmont (Heath, R.C., 1984).

Vertical Hydraulic Conductivity

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



Table 4.2.1: Model Hydraulic Conductivity

Zone	Layer	Hydraulic Conductivity (ft/day)	Source
Ash	1	0.55 (horizontal) 0.037 (vertical)	AP-3/4 CPT dissipation and aquifer testing data (Golder, 2020)
Overburden	1&2	0.70 (horizontal) 0.14 (vertical)	Historical Slug testing (Golder, 2020)
PWR	3	0.2 (horizontal) 0.02 (vertical)	Model Calibration
Bedrock	4	0.16 (horizontal) 0.016 (vertical)	Model Calibration

Notes:

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

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

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

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

4.3 Conceptual Site Hydrogeologic Model Summary

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

- 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.
- 2) Bedrock north of the faulted intrusive contact is primarily characterized as Ordovician age Long Island Creek Gneiss (Ozli), which is described as felsic sphene-epidote-biotite-quartz-feldspar gneiss with well-developed foliation and an augen texture reflecting historical movement/deformation near fault and shear zones of the inactive Brevard fault zone. South of the faulted intrusive contact is primarily characterized by interlayered Ordovician age phyllonite, button schist (OZbs) with well-developed shear foliation, fine-grained mylonite with poorly developed foliation, and very fine-grained mylonitic biotite gneiss with well-developed shear foliation.



- 3) Two lineament sets (i.e., L₁ and L₂) were identified onsite that orientations are consistent with the structural stresses experienced in this area.
- 4) The top of rock surface and water table generally mimic site topography.
- 5) The uppermost aquifer occurs within the overburden and upper bedrock at the Site. According to water levels measured from August 2016 to September 2022 from wells and piezometers screened in the overburden and upper bedrock, the depth to saturation varies from approximately -1.6 to 46.4 ft bgs across the Site and is variable with topography (Table GW-1). Calculated geometric means for depth to saturation were similar in both formations. The deeper (i.e., greater than 30 feet) in the bedrock aquifer is generally massive in nature with few, low-yield and isolated fractures, with both the occurrence and water production decreasing with depth. Consequently, groundwater flow within the uppermost aquifer is anticipated to occur primarily along the TWR zone, which is located at the interface between the overburden residual soils and massive bedrock, and upper bedrock. It is anticipated that there is minimal connectivity between the overburden and the deeper bedrock hydrogeologic unit.
- 6) The potentiometric surface for the uppermost aquifer indicates groundwater flows generally west south-west across AP-1.
- 7) Across the Site, vertical gradients are expected to occur downward in topographically highs and upwards near topographic lows.

5.0 THREE-DIMENSIONAL NUMERICAL GROUNDWATER MODEL

A three-dimensional (3-D) numerical groundwater model was developed to compare closure conditions to Pre-Closure-August 2016 conditions. Model input files were created using a combination of Environmental System Research Institute ArcMap 10.4.1 and the Environmental Simulations Inc. Groundwater Vistas 7 (GV) graphical user interface. A steady state groundwater flow model was developed using the MODFLOW-NWT finite difference model code (Niswonger, Panday, & Ibaraki, 2011), which is an enhanced version of the MODFLOW code (McDonald & Harbaugh, 1988). Model construction, calibration, and results are described in the Three-Dimensional Numerical Groundwater Modeling Summary Report (Golder, 2019; Appendix A) and subsequent Three-Dimensional Numerical Groundwater Modeling Summary Report Addendum (Golder, 2021c; Appendix A).

At the time of model development, groundwater data only includes data measured up to August 2016. As such, calibration and development of this model utilizes the August 2016 dataset. The model simulates groundwater flow from the northwest corner to the south and southeast across the plant property with groundwater discharging at modelled boundary conditions. Modelled simulated groundwater flow patterns are consistent with the conceptual model of groundwater flow for the Site. The model summary addendum (Golder, 2021c) presents an update to the steady state numerical groundwater flow model. Specifically, the addendum documents revised post-closure groundwater flow model predictions based on updates to the AP-1 closure-by-removal area grading and subsurface barrier wall alignment.

6.0 WELL NETWORK DESIGN

Two groundwater monitoring systems at the Site were designed and installed to accurately represent the quality of background groundwater and groundwater passing the waste boundaries of the AP-1 and AP-2, 3/4 CCR units. For the purpose of this HAR, AP-2, 3/4 CCR units network information is presented for informational purposes



only and should not be considered for permitting. The monitoring wells are located and installed near the approximate pre-closure ash limits to yield groundwater samples representative of conditions in the uppermost aquifer that:

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

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

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

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

- 1) Groundwater conditions within saprolite and the TWR zone are comparable to conditions within the residual soil and are therefore included in the hydrostratigraphy identified for the uppermost aquifer, collectively referred to as overburden.
- 2) The uppermost aquifer generally occurs within the overburden and is connected with more fractured portions of the upper bedrock beneath the Site depending on topographic location; such that the upper 30 feet of bedrock is appears to transmit groundwater horizontally on the same order of magnitude as the overburden.
- 3) Significant amount of groundwater flow is expected to occur in the overburden, which is typical of the Piedmont as discussed in Fetter (1988), with the majority of groundwater flow occurring laterally in the TWR zone. The significance of groundwater flow between the overburden and fractured bedrock is dependent on the degree of hydraulic connectivity between the units.
- 4) Based on site-specific hydrogeologic characteristics, groundwater is expected to move laterally more than vertically within the upper aquifer, it is likely that there is limited amount of aquifer recharge occurring into deeper bedrock in and around the Site.
- 5) Consistent with regional gradients, the potentiometric surface of the uppermost aquifer is generally southsoutheast to southwest from AP-3/4 towards AP-2. Localized groundwater flow directions within this aquifer are influenced by topography and top of rock variations on site.
- 6) Lithologic variations in bedrock are anticipated to have variable geochemistry and different weathering characteristics. Overburden material is likely to represent variable geochemistry of the underlying parent rock.



7) Careful consideration was given in defining areas that represent upgradient and downgradient conditions at the Site with regard to the anticipated potentiometric surface, site geology, and the structures that will require monitoring, with some local mounding anticipated to occur near the ponds. Groundwater flow patterns are expected to change with diminishing water levels in AP-3/4; eventually returning to a pattern that generally reflects original site topography (southward).

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

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

6.1 AP-1 Network

The AP-1 detection monitoring well network consists of eleven groundwater monitoring wells (Table GW-4). Three (3) background wells (DGWA-53, DGWA-70A, and DGWA-71) are positioned on topographic highs and are considered to represent an upgradient (i.e., uninfluenced) position relative to AP-1. DGWA-53 and DGWA-71 are located north of AP-1 and provide background data for the OZli unit. DGWA-70A is located on a topographic high west of AP-1 and provides background data for the OZbs unit.

The general direction of groundwater flow across AP-1 is to the west-southwest. 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 September 2022. As described above, the uppermost aquifer generally occurs within the overburden and is connected with more fractured portions of the upper bedrock beneath the Site depending on topographic location. The AP-1 groundwater monitoring wells have a total depth ranging from 21.2 to 58.9 ft bgs and were constructed with 10-foot screened intervals so that the top of the screen is located beneath the seasonal low water table to ensure adequate monitoring of the upper aquifer. Well construction details are provided in Table GW-4.

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

For the purpose of this HAR, AP-2, 3/4 network information is presented for informational purposes only and should not be considered for permitting. The AP-2, 3/4 detection and assessment monitoring well networks are presented because data are relevant to the site hydrogeology. AP-2, 3/4 monitoring network consists of twenty-three (23) groundwater monitoring wells (Table GW-4). The three (3) background wells described above (DGWA-53, DGWA-70A, and DGWA-71) were integrated into the AP-2, and AP-3/4 network based on the following rationale: DGWA-53 and DGWA-71 are located north-northwest of AP-2, 3/4 and hydraulically upgradient of AP-3/4 towards AP-2, based on the interpreted groundwater flow direction to the south-southeast across the Site; and, DGWA-70A is located on the topographic high southwest of AP-2, 3/4 and hydraulically upgradient at the topographic high west of the engineered stream channel situated southwest of AP-2, AP-3/4.



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

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

7.0 GROUNDWATER MONITORING STATUS

Groundwater monitoring has been initiated for AP-1 CCR Units to meet USEPA and GA EPD requirements and in accordance with the Groundwater Monitoring Plan (WSP, 2023a). Activities for background monitoring and the initial detection monitoring were performed at Plant McDonough from August 2016 through June 2019. Groundwater monitoring and reporting for Plant McDonough were performed in accordance with the requirements of 40 CFR § 257.90 through 257.91 and § 257.93 through 257.98 of the USEPA CCR rule. Statistical evaluation of the groundwater monitoring data for AP-1 and AP-2, 3/4 identified statistically significant increases (SSIs) and statistically significant levels (SSLs) of Appendix III and IV groundwater monitoring parameters, respectively. An Assessment of Corrective measures has been initiated for the Site and remedy selection is ongoing. Monitoring results have been documented in Semi-Annual and Annual Groundwater Monitoring and Corrective Action Reports, prepared for AP-1, and AP-2, AP-3/4 (recent reports submitted to GA EPD, WSP, 2023b). These reports have been submitted to EPD and posted to the Site's CCR compliance website.

8.0 REFERENCES

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

Publicly available information:

Bendient, P.B., Rifai, H.S., and Newell, C.J. (1994) *Ground Water Contamination*. Prentice-Hall, Englewood Cliffs, New Jersey.

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

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

Daniel, C.C., P.R Dahlen, *Preliminary Hydrogeologic Assessment and Study Plan for a Regional Ground-Water Resource Investigation of the Blue Ridge and Piedmont Provinces of North Carolina*, U.S. Geological Survey Water-Resource Investigation Report 02-4105.



Dowd, J.F. and Marshall, J.E., Recharge to High Yield Wells in the Piedmont. *Proceeding of the 1995 Georgia Water Resources Conference held April 11-12, 1995, at The University of Georgia, Athens.*

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

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

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

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

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

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

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

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

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

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

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

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

US EPA, 1996, Soil Guidance Manual.

Internal reports:

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

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



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

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

Georgia Power, 2019. Amended Written Closure Plan 40 CFR 257.102, Plant McDonough Ash Pond 1, April 2019.

Golder, 2018b. Plant McDonough-Atkinson CCR Surface Impoundments (CCR Unit AP-2, Combined CCR Unit AP-3/4), Cobb County, Georgia Part A Section 6- Groundwater Monitoring Plan. November 2018

Golder, 2018c. Plant McDonough-Atkinson CCR Surface Impoundments (CCR Unit AP-1) Cobb County, Georgia Part A Section 6- Groundwater Monitoring Plan. -November 2018

Golder, 2020a. Three-Dimensional Numerical Groundwater Modeling Summary Report, Georgia Power-Plant McDonough, Cobb County, Georgia, Golder Associates Inc., Rev 05, October 2020.

Golder, 2020b. Well Installation and Design Report – Addendum, Georgia Power Company-Plant McDonough-Atkinson, Ash Pond 2 and 3/4, Golder Associates Inc., Revised September 2020

Golder, 2021a. Piezometer Installation Report (B-101D thorough B-111D), Georgia Power Company – Plant McDonough-Atkinson, Golder Associates Inc., February 12, 2021.

Golder, 2021b. Piezometer Installation Report (B-112D thorough B-120D), Georgia Power Company – Plant McDonough-Atkinson, Golder Associates Inc., June 13, 2021.

Golder 2021c. Three-Dimensional Numerical Groundwater Modeling Summary Report Addendum, Georgia Power – Plant McDonough, Cobb County, Georgia, Golder Associates Inc., November 22, 2021.

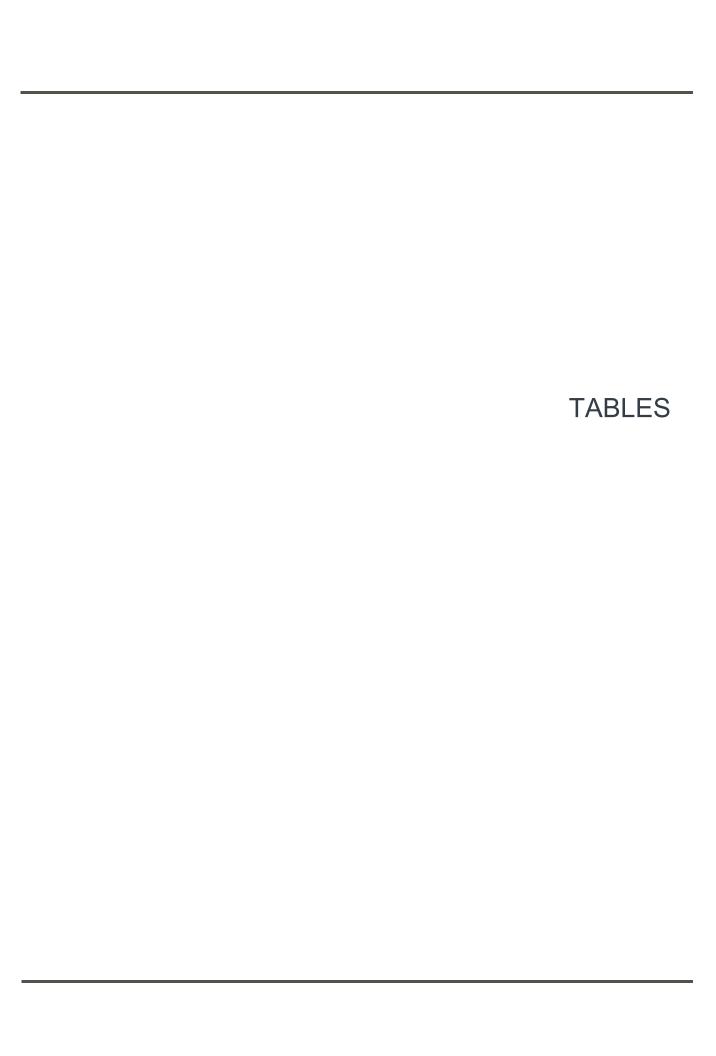
Golder, 2022a. Plant McDonough-Atkinson CCR Surface Impoundments (CCR Unit AP-2, Combined Unit AP-3/4) Cobb County, Georgia, Part A Section 8 – Post Closure Plan, July 2022.

Golder, 2022b. Plant McDonough-Atkinson CCR Surface Impoundments (CCR Unit AP-1), Cobb County, Georgia Part A Section 6- Groundwater Monitoring Plan. July 2022.

WSP, 2023a. Groundwater Monitoring Plan, Plant McDonough-Atkinson Ash Pond 1, WSP USA Inc., March 15, 2023.

WSP 2023b. 2022 Semi-Annual Groundwater Monitoring & Corrective Action Report, Georgia Power Company – Plant McDonough-Atkinson Ash Pond 2 and 3/4, Golder Associates Inc., February 28, 2023.





Well ID	Top of Casing Elevation (feet								GF	ROUNDWATE	R ELEVATIO	N (FEET NAV	/D)							
	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
ASH POND 1	(AP-1) DETECTION	MONITORIN	IG WELL NET	rwork																
DGWA-53	844.26	NM	840.16	841.21	844.59	840.73	842.64	842.00	828.02	831.04	834.88	835.51	830.74	829.41	830.68	830.87	830.64	829.75	833.41	830.21
DGWA-70A	808.52	NM	NM	NM	767.37	766.93	767.76	768.62	767.73	771.92	768.16	765.92	767.41	768.95	762.11	768.37	769.85	766.90	767.00	765.56
DGWA-71	863.84	NM	NM	834.8	835.84	835.32	835.56	835.70	834.78	837.74	835.40	834.53	835.49	835.74	835.26	835.91	836.52	835.19	835.49	834.48
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
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
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
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
DGWC-67	766.70	NM	NM	758.36	758.37	758.09	757.93	757.56	757.30	757.86	756.64	756.54	757.78	756.40	757.31	757.35	757.18	756.39	757.03	756.15
DGWC-68A	765.33	NM	NM	NM	756.30	756.46	755.73	755.81	755.69	756.02	755.35	755.32	756.82	755.00	755.53	755.42	755.45	754.97	755.45	754.83
DGWC-69	763.75	NM	NM	758.22	758.15	758.48	758.50	758.03	757.99	758.57	757.77	757.63	758.88	757.37	758.01	758.10	758.26	757.55	758.17	757.45
DGWC-121	764.16																			754.49
ASH POND 1	(AP-1) ASSESSME	NT MONITOR	RING WELL N	ETWORK																
B-62	760.08	NM	745.89	745.33	745.89	751.03	749.15	748.04	745.82	754.34	746.21	745.32	747.91	742.48	743.11	749.24	745.66	744.95	745.58	743.73
B-100	777.95												NM	742.31	742.78	749.14	744.87	744.70	744.44	743.66
B-105D	779.01																762.82	760.75	762.19	760.68
B-112D	765.58													I				757.86	758.48	757.70
B-113D	758.22																	756.21	756.79	756.18



Well ID	Top of Casing Elevation (feet								GF	ROUNDWATE	R ELEVATIO	ON (FEET NAV	′ D)							
	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
ASH POND 2	and ASH PONDS 3	3/4 (AP-2, 3/4)	DETECTION	MONITORIN	G WELL NET	WORK														
DGWA-53	844.26	NM	840.16	841.21	844.59	840.73	842.64	842.00	828.02	831.04	834.88	835.51	830.74	829.41	830.68	830.87	830.64	829.75	833.41	830.21
DGWA-70A	808.52	NM	NM	NM	767.37	766.93	767.76	768.62	767.73	771.92	768.16	765.92	767.41	768.95	762.11	768.37	769.85	766.90	767.00	765.56
DGWA-71	863.84	NM	NM	834.80	835.84	835.32	835.56	835.70	834.78	837.74	835.40	834.53	835.49	835.74	835.26	835.91	836.52	835.19	835.49	834.48
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
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
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
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
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	ВТОР	795.82
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
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
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
DGWC-13	794.10	760.19	760.30	760.39	761.49	NM	768.46	760.44	759.55	760.10	760.69	759.94	761.06	760.55	761.87	760.77	759.96	760.25	759.56	760.03
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
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
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
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
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
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
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
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
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
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
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



Well ID	Top of Casing Elevation (feet								GF	OUNDWATE	R ELEVATIO	N (FEET NAV	D)							
	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
ASH POND 2	and ASH PONDS 3	3/4 (AP-2, 3/4)	ASSESSMEN	NT MONITOR	ING WELL N	ETWORK														
B-56	823.59	NM	805.57	804.87	810.59	802.42	799.29	797.00	795.42	798.40	794.91	794.27	797.93	794.43	795.39	796.80	796.43	795.43	795.91	793.37
B-62	760.08	NM	745.89	745.33	745.89	751.03	749.15	748.04	745.82	754.34	746.21	745.32	747.91	742.48	743.11	749.24	745.66	744.95	745.58	743.73
B-63	777.10	NM	745.02	745.46	746.75	746.75	746.95	747.38	746.55	753.35	746.85	746.64	748.55	747.56	749.12	751.65	749.80	748.75	748.95	746.63
B-66	815.90	NM	801.50	799.86	804.66	799.91	798.36	797.80	796.43	798.14	794.79	796.11	801.39	793.69	796.72	797.58	798.33	796.40	799.00	794.45
B-77	776.86				1					-		745.23	748.36	746.42	748.68	750.96	748.96	747.48	748.13	745.99
B-82	810.07				-					-		797.42	801.17	790.70	794.12	796.22	796.22	793.97	798.12	792.13
B-83	776.98				-					1		744.01	748.23	744.88	745.99	747.35	747.35	746.58	746.75	745.44
B-88	820.07				-					1			788.60	787.50	786.77	782.04	782.04	783.58	783.78	782.33
B-92	785.08												781.20	779.78	780.32	780.40	777.95	779.36	780.13	779.00
B-93	789.07												784.21	781.35	782.55	782.67	779.89	780.57	782.04	779.87
B-97	786.29												NM	780.26	781.29	780.99	781.03	779.84	781.36	779.27
B-98	789.67												NM	780.52	782.01	782.15	782.39	780.15	782.45	779.46
B-100	777.95												NM	742.31	742.78	749.14	744.87	744.70	744.44	743.66
B-101D	824.29																793.26	793.84	793.97	792.29
B-102D	823.42																792.80	791.56	792.20	789.27
B-104D	787.90																781.64	780.44	780.77	780.82
B-106D	826.21																790.54	787.01	786.33	785.96
B-107D	823.38																801.98	800.95	800.67	799.55
B-108D	821.13																801.03	800.27	799.68	798.40
B-109D	850.73																812.13	811.87	811.95	811.56
B-111D	791.87																781.12	780.07	781.56	779.43
B-115D	789.17																	768.96	768.28	767.79
B-120D	836.42																	801.72	801.34	801.03
B-122D	777.03																			746.21



Well ID	Top of Casing Elevation (feet								GF	ROUNDWATE	R ELEVATIO	N (FEET NA\	/ D)							
	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
PIEZOMETER	RS																			
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
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
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
B-16	826.47	802.60	802.25	802.61	804.41	800.02	800.71	799.59	798.25	800.45	796.05	795.20	797.07	795.42	795.25	795.82	795.53	792.85	791.85	790.16
B-18	826.56	809.19	808.33	808.53	811.84	810.19	810.71	809.21	808.21	810.41	807.50	806.93	807.45	804.91	804.71	805.23	805.28	803.08	803.71	802.04
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
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
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
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
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
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
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
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
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
B-52	822.89	NM	796.52	799.44	800.17	797.09	798.56	798.66	795.73	803.49	796.58	794.51	795.78	796.63	795.34	795.87	797.86	797.81	797.23	793.02
B-54	785.46	NM	781.24	780.81	780.91	781.23	780.67	780.09	780.28	780.44	779.46	779.47	780.33	779.52	779.86	779.96	777.08	779.36	779.74	779.07
B-55	825.12	NM	812.13	810.46	815.77	807.47	805.77	804.55	803.08	805.21	802.68	803.89	806.37	802.40	804.99	805.72	802.49	798.84	799.41	797.89
B-57	789.04	NM	766.42	767.55	769.46	768.51	768.52	770.71	768.67	773.56	767.91	766.19	768.14	769.93	770.02	771.62	771.66	770.89	770.19	769.63
B-58	788.17	NM	764.20	765.36	767.61	766.40	766.63	768.59	766.37	771.75	765.57	763.75	766.02	767.77	767.76	769.52	769.72	769.31	768.75	768.27
B-59	788.00	NM	782.84	782.46	782.58	782.62	782.22	781.46	781.51	781.83	780.40	780.31	781.42	780.39	780.72	780.85	775.67	779.88	780.60	779.44
B-60	782.13	NM	748.58	748.44	749.87	749.49	749.48	751.13	749.78	755.46	749.91	748.89	750.33	750.42	751.22	753.80	752.32	751.61	751.29	750.08
B-61	782.09	NM	758.46	759.12	761.86	760.30	760.82	762.98	760.50	766.59	759.78	758.06	760.58	761.75	762.24	764.58	764.34	763.66	763.24	762.50
B-64	785.83	NM	781.29	781.40	781.50	781.67	781.20	780.54	780.67	781.01	779.69	779.66	780.89	779.70	780.14	780.27	776.49	779.28	780.03	779.03
B-65	821.95	NM	811.62	811.38	814.82	811.24	806.45	805.56	803.98	807.77	803.79	803.22	804.63	803.50	803.40	804.50	821.95	801.83	801.53	804.03
B-68	758.68	NM	NM	755.45	NM	NM	NM	NM	NM	NM	754.84	754.81	756.20	754.72	755.19	755.09	755.14	754.70	755.12	754.58
B-72	758.46												NM	755.04	754.83	755.35	755.35	754.96	755.33	754.86
B-73	759.21												NM	754.72	755.26	755.12	755.21	754.71	755.29	754.48
B-74	759.06												NM	754.90	754.68	754.59	755.39	754.90	755.31	754.61
B-76	760.53											743.20	746.62	745.42	745.11	750.04	746.06	745.71	746.10	744.63
B-78	790.75											779.94	781.70	780.25	780.84	780.90	778.67	779.65	780.47	779.19
B-79	788.66											781.71	782.74	781.84	782.14	782.21	780.49	781.58	781.97	781.01
B-80	804.47											786.97	787.99	787.10	786.62	786.37	786.13	784.84	785.16	783.21
B-81	820.56											788.80	789.17	788.63	787.86	782.41	782.41	784.31	784.29	782.91



	Top of Casing								GF	ROUNDWATE	R FI FVATIO	N (FEET NAV	(D)							
Well ID	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
PIEZOMETER	es .																			
B-84	776.34											740.54	746.22	741.33	743.85	746.63	746.63	745.42	745.68	
B-85	782.54												780.27	779.54	775.63	777.76	777.76	779.14	779.69	779.10
B-86	784.29												783.38	782.34	777.24	781.22	781.22	782.10	782.65	781.56
B-87	803.37												787.81	786.87	786.57	785.95	785.95	784.94	785.35	783.35
B-89	822.36												800.58	799.35	799.26	800.36	822.36	796.56	795.86	797.69
B-90	784.00												783.12	781.14	782.44	782.50	781.36	781.97	782.48	781.48
B-91	782.98												780.08	779.29	779.60	779.67	778.00	779.18	779.58	778.93
B-94	801.74												NM	786.71	786.49	786.26	785.79	784.86	785.30	783.27
B-95	784.00												NM	781.58	781.89	781.92	781.45	781.90	782.15	781.30
B-96	784.92												NM	779.37	779.82	779.85	778.30	778.88	779.66	778.77
B-99	782.39												NM	778.57	778.97	778.99	779.06	778.63	779.44	778.27
B-103D	795.96														-		783.50	782.28	783.34	782.74
B-110D	764.61														-		756.55	755.69	756.09	755.43
B-116D	807.82																	764.80	765.35	763.52
B-117D	863.82																	834.63	834.67	833.87
B-118	807.70																	756.15	756.6	755.79
B-119D	807.15																	759.14	759.76	759.05
B-123D	781.80																			769.00

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.

TABLE GW-2 HORIZONTAL GROUNDWATER FLOW VELCITY CALCULATIONS - SEPTEMBER 2022

Georgia Power Company - Plant McDonough Atlanta, Georgia

Flow Paths	Groundwater Elevation (feet msl)	Δh (feet) ¹	ΔΙ (feet) ²	Hydraulic Gradient	Gradient $(\Delta h/\Delta I)^3$ Conductivity, K $(centimeter per u.5)^6$ Porosity $(n_e)^6$	_	r Groundwater ocity	
	(root mor)			(Δ 11/Δ 1)	•	(n _e) ⁶	(feet per day) ⁴	(feet per year) ⁴
ASH POND 1 (AP-1)								
B-29/DGWC-68A	786.02	31.19	900	0.035	0.00077	0.2	0.38	138
B-29/DGWC-00A	754.83	31.19	900	0.033	0.00077	0.2	0.36	130
B-28/DGWC-37	784.54	32.31	1700	0.019	0.00077	0.2	0.21	76
B 20/B 0 W 0 07	752.23	02.01	1700	0.010	0.00077	0.2	0.21	70
B-50/DGWC-39	786.1	33.86	1400	0.024	0.00077	0.2	0.26	96
B 00/B 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	752.24	00.00	1400	0.024	0.00077	0.2	0.20	30
ASH POND 2 AND AS	H PONDS 3/4 (AP-2	2, 3/4)						
DGWA-53/DGWC-13	830.21	70.18	2550	0.029	0.00077	0.2	0.30	110
DGWA-55/DGWC-15	760.03	70.16	2550	0.028	0.00077	0.2	0.30	110
B-26/DGWC-48	824.89	51.24	2000	0.026	0.00077	0.2	0.28	102
D-20/DGVVC-40	773.65	31.24	2000	0.020	0.00077	U.Z	0.20	102

Notes:

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



TABLE GW-3 SUMMARY OF AQUIFER TEST DATA

SCREENED LITHOLOGY	PIEZOMETER IDENTIFICATION	SATURATED AQUIFER THICKNESS VALUE (feet)	SCREEN LENGTH (feet)	PIEZOMETER DIAMETER (inches)	AQUIFER ANALYSIS METHOD	AQUIFER TEST TYPE	HYDRAULIC CONDUCTIVITY (cm/sec)
	DGWC-9	63	10	3	Bouwer-Rice	Falling	5.0E-04
	DGWC-13	15	10	3	Bouwer-Rice	Falling	5.8E-04
	DGWC-13	15	10	3	Douwer-Nice	Rising	9.1E-04
	DGWC-19	25	10	3	Bouwer-Rice	Falling	7.2E-04
	DGWC-19	25	10	3	Douwer-Nice	Rising	8.6E-04
	DGWA-70A	20	10	2	Bouwer-Rice	Falling	2.50E-04
	DGWA-70A	20	10	2	Bouwer-Rice	Rising	1.54E-04
	DGWA-71	19	10	2	Bouwer-Rice	Falling	4.26E-04
	DGWA-71	19	10	2	Douwer-Nice	Rising	3.50E-04
E	DGWC-67	47	10	2	Bouwer-Rice	Falling	2.13E-04
OVERBURDEN	DGWC-07	41	10	2	Douwer-Mice	Rising	3.02E-04
E R B	DGWC-68A	20	10	2	Bouwer-Rice	Falling	4.48E-04
0	DGWC-00A	20	10	2	Dodwei-Nice	Rising	4.09E-04
	DGWC-69	18	10	2	Bouwer-Rice	Falling	9.84E-05
	DGWC-09	10	10	2	Bouwer-Rice	Rising	1.93E-04
	B-40	23	10	3	Bouwer-Rice	Falling	3.4E-03
	D-40	23	10	3	Bouwer-Rice	Rising	2.8E-03
	B-41	45	10	3	Bouwer-Rice	Falling	6.2E-04
	B-50	20	10	2	Bouwer-Rice	Falling	7.2E-04
	D-5U	20	IU	2	Douwer-Rice	Rising	6.4E-04
	B-51	60	10	2	Bouwer-Rice	Falling	5.7E-04
	I G-D	ου	10	2	Douwer-Rice	Rising	5.1E-04



TABLE GW-3 SUMMARY OF AQUIFER TEST DATA

SCREENED LITHOLOGY	PIEZOMETER IDENTIFICATION	SATURATED AQUIFER THICKNESS VALUE (feet)	SCREEN LENGTH (feet)	PIEZOMETER DIAMETER (inches)	AQUIFER ANALYSIS METHOD	AQUIFER TEST TYPE	HYDRAULIC CONDUCTIVITY (cm/sec)
	DGWC-14	18	10	3	Bouwer-Rice	Falling	1.4E-03
	DOWO-14	10	10	J	Dodwei-Mee	Rising	1.3E-03
	B-24	75	10	3	Bouwer-Rice	Falling	4.8E-05
	B-26	35	10	3	Bouwer-Rice	Falling	7.1E-06
	B-27	25	10	3	Bouwer-Rice	Falling	1.8E-03
	D-21	20	10	0	Dodwel-Mee	Rising	1.3E-03
	DGWC-47	100	10	2	Bouwer-Rice	Falling	3.5E-05
	DGWC-47	100	10	2	Dodwei-Nice	Rising	2.7E-05
	DGWC-48	20	10	2	Bouwer-Rice	Falling	8.1E-05
	DGWC-40	20	10	2	Douwer-Nice	Rising	9.0E-05
	B-101D	100	10	2	Bouwer-Rice	Falling	4.30E-05
~	D-101D	100	10	2	Douwer-Nice	Rising	1.16E-05
UPPER BEDROCK	B-102D	100	10	2	Bouwer-Rice	Falling	7.21E-05
EDR	D-102D	100	10	2	Dodwei-Nice	Rising	8.75E-05
ਲ 8	B-104D	100	10	2	Bouwer-Rice	Falling	2.09E-05
JPPE	D-104D	100	10	2	Bouwer-Rice	Rising	3.80E-05
2	B-105D	100	10	2	Bouwer-Rice	Falling	1.26E-04
	B-103D	100	10	2	Bouwer-Rice	Rising	1.47E-04
	B-106D	100	10	2	Bouwer-Rice	Falling	9.17E-05
	B-100D	100	10	2	Bouwer-Rice	Rising	3.53E-04
	D 407D	400	10	2	Daywar Diag	Falling	2.44E-05
	B-107D	100	10	2	Bouwer-Rice	Rising	4.08E-03
	D 400D	400	40	0	Danwer Die-	Falling	2.83E-05
	B-108D	100	10	2	Bouwer-Rice	Rising	1.92E-04
	D 400D	400	40	0	Danwar Dia-	Falling	3.14E-05
	B-109D	100	10	2	Bouwer-Rice	Rising	1.99E-05
	D 4445	400	40	2	D	Falling	2.2E-04
	B-111D	100	10	2	Bouwer-Rice	Rising	2.1E-04



TABLE GW-3 SUMMARY OF AQUIFER TEST DATA

Georgia Power Company - Plant McDonough Atlanta, GA

SCREENED LITHOLOGY	PIEZOMETER IDENTIFICATION	SATURATED AQUIFER THICKNESS VALUE (feet)	SCREEN LENGTH (feet)	PIEZOMETER DIAMETER (inches)	AQUIFER ANALYSIS METHOD	AQUIFER TEST TYPE	HYDRAULIC CONDUCTIVITY (cm/sec)
	B-112D	100	10	2	Bouwer-Rice	Falling	6.7E-04
	5 1125	100		_	Bodwor Tiloo	Falling	9.6E-04
						Falling	3.2E-04
	B-113D	100	10	2	Bouwer-Rice	Rising	1.1E-04
	D-113D	100	10	2	Douwer-Mice	Falling	7.3E-04
						Rising	7.9E-04
	B-115D	100	10	2	Bouwer-Rice	Falling	6.8E-05
	B-113D	100	10	2	Douwer-Nice	Rising	4.8E-05
_	B-116D	100	10	2	Bouwer-Rice	Falling	4.1E-04
BEDROCK	B-110D	100	10	2	Douwer-Rice	Rising	4.1E-04
EDA	B-117D	100	10	2	Bouwer-Rice	Falling	2.5E-04
m	B-117D	100	10	2	bouwer-Rice	Rising	6.4E-05
	B-118	100	10	2	Bouwer-Rice	Falling	4.2E-04
	B-118	100	10	2	Bouwer-Rice	Rising	8.0E-04
	D 440D	400	40	0	D	Falling	5.7E-05
	B-119D	100	10	2	Bouwer-Rice	Rising	1.4E-05
						Falling	1.5E-02
	D 400D	400	40		D	Rising	1.5E-02
	B-120D	100	10	2	Bouwer-Rice	Falling	9.6E-03
						Rising	1.8E-02

NOTES:

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



SUMMARY OF MONITORING WELL, ASSESSMENT WELL AND PIEZOMETER CONSTRUCTION DATA

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Well-ID	Hydraulic Location	Screened Media	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	Average Hydraulic Conductivity (cm/sec)	Kv/Kh
ASH POND 1 (AP-	1) DETECTION MO	NITORING WELL NETWO	RK										
DGWA-53	Upgradient	Upper Bedrock	1393472.8	2201668.8	844.26	841.3	28.9	823.7	813.7	10	9/24/2016		
DGWA-70A	Upgradient	Overburden	1390481.4	2200591.6	808.52	805.8	59.3	756.9	746.9	10	5/10/2017	2.02E-04	Kh
DGWA-71	Upgradient	Overburden	1393963.3	2201714.8	863.84	861.2	43.8	827.8	817.8	10	2/28/2017	3.88E-04	Kh
DGWC-37	Downgradient	Overburden	1390482.2	2200919.8	766.21	763.7	39.7	734.4	724.4	10	11/28/2012		
DGWC-38	Downgradient	Overburden	1390362.7	2201148.6	757.43	754.7	25.0	740.0	730.0	10	11/29/2012		
DGWC-39	Downgradient	Overburden	1390303.6	2201540.1	759.89	757.0	21.2	746.2	736.2	10	11/6/2012		
DGWC-40	Downgradient	Overburden	1390625.7	2201825.9	779.06	776.2	34.9	751.7	741.7	10	11/5/2012	3.10E-03	Kh
DGWC-67	Downgradient	Overburden	1390953.8	2200830.7	766.70	767.0	56.3	720.7	710.7	10	3/14/2017	2.58E-04	Kh
DGWC-68A	Downgradient	Overburden	1391301.2	2200734.9	765.33	765.4	29.8	746.0	736.0	10	4/20/2017	4.29E-04	Kh
DGWC-69	Downgradient	Overburden	1391585.0	2200657.1	763.75	764.0	24.3	749.7	739.7	10	3/16/2017	1.93E-04	Kh
DGWC-121	Downgradient	Overburden	1390739.7	2200849.4	764.16	764.5	50.0	724.8	714.8	10	3/22/2022		
ASH POND 1 (AP-	1) ASSESSMENT N	ONITORING WELL NETW	VORK										
B-62	Downgradient	Upper Bedrock	1389828.1	2201811.2	760.08	760.4	39.9	730.7	720.7	10	10/4/2016		
B-100	Downgradient	Overburden	1390254.8	2202242.1	777.95	775.3	44.8	740.5	730.5	10	7/8/2020		
B-105D	Downgradient	Upper Bedrock	1390634.5	2201831.9	779.01	776.0	70.0	716.0	706.0	10	10/19/2020	1.37E-04	Kh
B-112D	Downgradient	Upper Bedrock	1391564.2	2200664.1	765.58	766.1	55.0	721.4	711.4	10	3/22/2021		
B-113D	Downgradient	Upper Bedrock	1391264.6	2200719.2	758.22	758.8	85.0	684.4	674.4	10	3/30/2021		



SUMMARY OF MONITORING WELL, ASSESSMENT WELL AND PIEZOMETER CONSTRUCTION DATA

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



SUMMARY OF MONITORING WELL, ASSESSMENT WELL AND PIEZOMETER CONSTRUCTION DATA

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



SUMMARY OF MONITORING WELL, ASSESSMENT WELL AND PIEZOMETER CONSTRUCTION DATA

Atlanta, Georgia													
Well-ID	Hydraulic Location	Screened Media	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	Average Hydraulic Conductivity (cm/sec)	Kv/Kh
PIEZOMETERS													
B-3	Downgradient	Overburden/Upper Bedrock	1394045.1	2202411.5	837.78	835.0	37.0	808.3	798.3	10	10/3/2012		
B-6	Downgradient	Overburden	1394419.5	2203266.5	789.47	786.5	35.4	761.5	751.5	10	10/9/2012		
B-7	Downgradient	Overburden	1394374.6	2203596.1	809.16	806.1	25.2	791.3	781.3	10	10/9/2012		
B-16	Downgradient	Overburden	1392595.1	2203315.4	826.47	823.6	43.7	790.2	780.2	10	12/19/2012		
B-18	Downgradient	Overburden	1392521.0	2202875.5	826.56	823.9	32.6	801.5	791.5	10	1/10/2013		
B-24	Downgradient	Upper Bedrock	1392479.9	2201450.0	822.11	819.3	79.1	751.0	741.0	10	10/24/2012	4.80E-04	Kh
B-25	Downgradient	Upper Bedrock	1392813.3	2201502.7	836.54	833.5	54.8	789.1	779.1	10	10/24/2012		
B-26	Downgradient	Upper Bedrock	1393105.6	2201550.4	853.60	850.6	49.3	811.7	801.7	10	10/23/2012	7.10E-06	Kh
B-28	Downgradient	Overburden/Upper Bedrock	1391967.4	2201679.2	816.08	813.3	69.4	754.3	744.3	10	10/31/2012		
B-29	Downgradient	Overburden	1391890.0	2201422.0	816.43	813.5	54.4	769.4	759.4	10	1/11/2013		
B-31	Downgradient	Upper Bedrock	1392034.3	2200928.5	797.47	794.9	45.1	760.2	750.2	10	1/22/2013		
B-41	Downgradient	Overburden	1390920.8	2201751.9	795.20	792.4	60.0	743.0	733.0	10	11/14/2012	6.20E-04	Kh
B-50	Downgradient	Overburden	1391657.1	2201841.0	809.67	809.2	36.0	784.4	774.4	10	6/24/2016	6.80E-04	Kh
B-51	Downgradient	Overburden	1390501.2	2200906.5	765.92	763.3	65.0	708.3	698.3	10	6/27/2016	5.40E-04	Kh
B-52	Downgradient	Overburden	1392308.3	2201314.8	822.89	820.3	50.0	781.4	771.4	10	9/28/2016		
B-54	Downgradient	Overburden/Upper Bedrock	1394423.5	2203140.7	785.46	782.6	34.2	758.8	748.8	10	9/26/2016		
B-55	Downgradient	Overburden	1394142.6	2204147.9	825.12	822.9	52.0	781.9	771.9	10	9/22/2016		
B-57	Downgradient	Upper Bedrock	1391396.3	2202736.9	789.04	786.0	50.5	746.0	736.0	10	9/24/2016		
B-58	Downgradient	Overburden	1391125.7	2202426.5	788.17	785.2	45.0	750.7	740.7	10	9/23/2016		
B-59	Downgradient	Overburden/Upper Bedrock	1394349.1	2203001.1	788.00	785.5	30.3	765.3	755.3	10	9/23/2016		
B-60	Downgradient	Overburden	1391100.7	2202881.6	782.13	779.2	49.8	739.9	729.9	10	9/29/2016		
B-61	Downgradient	Overburden	1390957.8	2202505.8	782.09	779.0	51.9	737.5	727.5	10	9/29/2016		
B-64	Downgradient	Overburden	1394381.9	2203031.3	785.83	786.1	30.4	766.1	756.1	10	11/2/2016		
B-65	Downgradient	Overburden/Upper Bedrock	1394381.2	2204050.8	821.95	822.3	45.4	787.9	777.9	10	11/15/2016		
the second secon	_											÷	



SUMMARY OF MONITORING WELL, ASSESSMENT WELL AND PIEZOMETER CONSTRUCTION DATA

-					7 (114	rita, Georgia							
Well-ID	Hydraulic Location	Screened Media	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	Average Hydraulic Conductivity (cm/sec)	Kv/Kh
PIEZOMETERS													
B-68	Downgradient	Overburden	1391298.2	2200714.2	758.68	759.0	18.0	751.0	741.0	10	3/16/2017		
B-72	Downgradient	Overburden	1391242.2	2200723.9	758.85	758.09	21.9	746.6	736.6	10	4/19/2017		
B-73	Downgradient	Overburden	1391352.4	2200697.5	759.46	758.85	15.8	753.5	743.5	10	4/19/2017		
B-74	Downgradient	Overburden	1391279.8	2200665.3	759.44	758.96	16.5	748.2	743.2	5	4/25/2017		
B-76	Downgradient	Overburden	1390716.9	2202756.0	760.31	760.54	38.5	732.0	722.0	10	9/18/2019		
B-78	Downgradient	Overburden/Upper Bedrock	1394328.2	2202958.2	790.75	788.0	30.0	768.0	758.5	10	9/22/2019		
B-79	Downgradient	Overburden	1394458.6	2203223.0	788.66	785.9	34.9	761.0	751.5	10	9/21/2019		
B-80	Downgradient	Overburden	1394372.6	2203533.9	804.47	801.8	30.0	782.0	772.5	10	9/20/2019		
B-81	Downgradient	Overburden	1394364.9	2203741.1	820.56	817.7	50.0	778.5	768.5	10	9/22/2019		
B-84	Downgradient	Overburden	1390411.9	2202241.9	776.24	776.3	49.1	737.5	727.5	10	10/1/2019		
B-85	Downgradient	Overburden/Upper Bedrock	1394433.4	2203134.5	782.54	782.7	34.5	758.5	748.5	10	11/18/2019		
B-86	Downgradient	Overburden/Upper Bedrock	1394480.0	2203206.6	784.29	784.6	34.1	760.5	750.5	10	11/18/2019		
B-87	Downgradient	Overburden	1394401.9	2203531.3	803.37	800.4	42.0	768.7	758.7	10	11/17/2019		
B-89	Downgradient	Upper Bedrock	1394398.4	2204049.4	822.36	822.6	49.5	783.1	773.1	10	11/19/2019		
B-90	Downgradient	Overburden	1394501.0	2203212.6	784.00	784.2	33.4	760.8	750.8	10	12/10/2019		
B-91	Downgradient	Overburden	1394447.1	2203123.9	782.98	783.1	34.6	758.5	748.5	10	12/11/2019		
B-94	Downgradient	Overburden	1394402.0	2203513.7	801.74	799.2	45.2	764.6	754.6	10	1/23/2020		
B-95	Downgradient	Overburden	1394518.6	2203167.7	784.00	784.3	33.3	761.3	751.3	10	2/11/2020		
B-96	Downgradient	Overburden	1394478.7	2203099.3	784.92	785.3	33.1	762.2	752.2	10	2/10/2020		
B-99	Downgradient	Overburden	1394524.2	2203084.5	782.39	782.6	12.3	775.3	770.3	5	7/7/2020		



TABLE GW-4

SUMMARY OF MONITORING WELL, ASSESSMENT WELL AND PIEZOMETER CONSTRUCTION DATA

Georgia Power Company - Plant McDonough Atlanta, Georgia

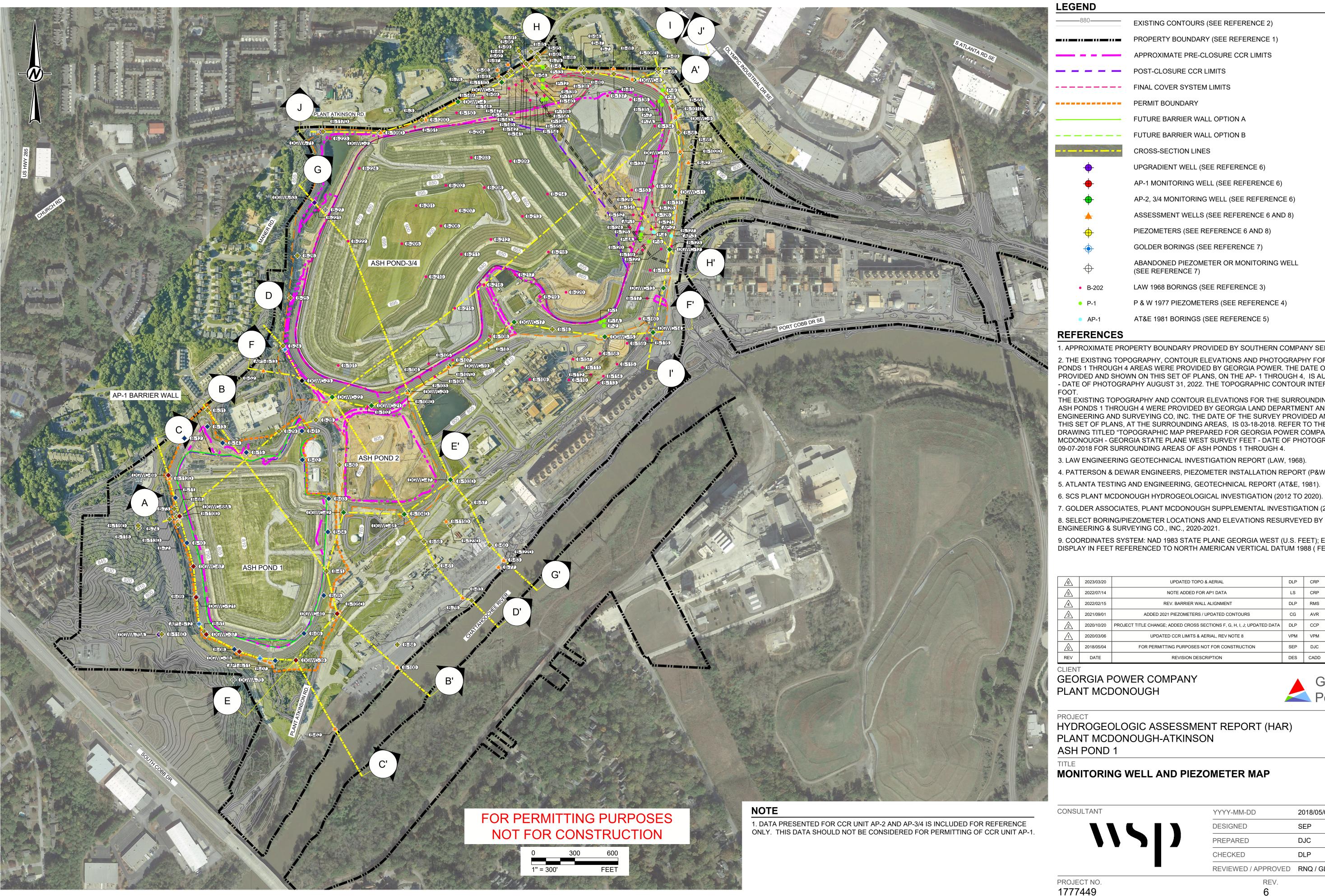
Well-ID	Hydraulic Location	Screened Media	NAD 83 Northing	NAD 83 Easting	Top of Casing Elevation (feet NAVD 88)	Ground Surface Elevation (feet NAVD 88)	Total Well Depth (feet bgs)	Top of Screen Elevation (feet NAVD 88)	Bottom of Screen Elevation (feet NAVD 88)	Screen Length (feet)	Date of Installation	Average Hydraulic Conductivity (cm/sec)	Kv/Kh
PIEZOMETERS													
B-103D	Downgradient	Upper Bedrock	1391543.5	2202614.4	795.96	793.8	70.0	733.8	723.8	10	10/15/2020		
B-110D	Downgradient	Upper Bedrock	1391294.4	2200736.0	764.61	764.7	65.0	711.7	701.7	10	11/17/2020		
B-116D	Upgradient	Upper Bedrock	1390483.7	2200611.0	807.82	805.3	90.0	726.1	716.1	10	3/8/2021		
B-117D	Upgradient	Upper Bedrock	1393963.8	2201727.3	863.82	861.2	75.0	796.5	786.5	10	3/17/2021		
B-118	Upgradient	Upper Bedrock	1391219.3	2200449.7	807.70	805.0	75.0	740.2	730.2	10	3/9/2021		
B-119D	Upgradient	Upper Bedrock	1391236.4	2200446.6	807.15	804.5	105	709.8	699.8	10	3/16/2021		
B-123D	Downgradient	Bedrock	1391234.4	2202608.4	781.80	778.9	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 - North American Datum; NAVD - North American Vertical Datum





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

UPGRADIENT WELL (SEE REFERENCE 6)

AP-1 MONITORING WELL (SEE REFERENCE 6)

AP-2, 3/4 MONITORING WELL (SEE REFERENCE 6)

PIEZOMETERS (SEE REFERENCE 6 AND 8)

GOLDER BORINGS (SEE REFERENCE 7)

ABANDONED PIEZOMETER OR MONITORING WELL (SEE REFERENCE 7)

LAW 1968 BORINGS (SEE REFERENCE 3)

P & W 1977 PIEZOMETERS (SEE REFERENCE 4)

AT&E 1981 BORINGS (SEE REFERENCE 5)

1. APPROXIMATE PROPERTY BOUNDARY PROVIDED BY SOUTHERN COMPANY SERVICES (2017).

2. THE EXISTING TOPOGRAPHY, CONTOUR ELEVATIONS AND PHOTOGRAPHY FOR THE ASH PONDS 1 THROUGH 4 AREAS WERE PROVIDED BY GEORGIA POWER. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS, ON THE AP- 1 THROUGH 4, IS AUGUST 31, 2022 - DATE OF PHOTOGRAPHY AUGUST 31, 2022. THE TOPOGRAPHIC CONTOUR INTERVALS IS 1

THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS FOR THE SURROUNDING AREAS OF ASH PONDS 1 THROUGH 4 WERE PROVIDED BY GEORGIA LAND DEPARTMENT AND METRO ENGINEERING AND SURVEYING CO, INC. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS, AT THE SURROUNDING AREAS, IS 03-18-2018. REFER TO THE SURVEY DRAWING TITLED "TOPOGRAPHIC MAP PREPARED FOR GEORGIA POWER COMPANY PLANT MCDONOUGH - GEORGIA STATE PLANE WEST SURVEY FEET - DATE OF PHOTOGRAPHY 09-07-2018 FOR SURROUNDING AREAS OF ASH PONDS 1 THROUGH 4.

3. LAW ENGINEERING GEOTECHNICAL INVESTIGATION REPORT (LAW, 1968).

4. PATTERSON & DEWAR ENGINEERS, PIEZOMETER INSTALLATION REPORT (P&W, 1977).

5. ATLANTA TESTING AND ENGINEERING, GEOTECHNICAL REPORT (AT&E, 1981).

7. GOLDER ASSOCIATES, PLANT MCDONOUGH SUPPLEMENTAL INVESTIGATION (2017-2021).

8. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020-2021.

9. COORDINATES SYSTEM: NAD 1983 STATE PLANE GEORGIA WEST (U.S. FEET); ELEVATIONS DISPLAY IN FEET REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (FEET NAVD88).

6	2023/03/20	UPDATED TOPO & AERIAL	DLP	CRP	LS	GLH
<u> </u>	2022/07/14	NOTE ADDED FOR AP1 DATA	LS	CRP	RPK	GLH
4	2022/02/15	REV. BARRIER WALL ALIGNMENT	DLP	RMS	RPK	GLH
3	2021/09/01	ADDED 2021 PIEZOMETERS / UPDATED CONTOURS	CG	AVR	RPK	GLH
2	2020/10/20	PROJECT TITLE CHANGE; ADDED CROSS SECTIONS F, G, H, I, J; UPDATED DATA	DLP	ССР	BAS	TIR / GLH
\triangle	2020/03/06	UPDATED CCR LIMITS & AERIAL, REV NOTE 8	VPM	VPM	JRJ	TIR / GLH
\triangle	2018/05/04	FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION	SEP	DJC	KNJ	RPK / GLH
REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW

GEORGIA POWER COMPANY



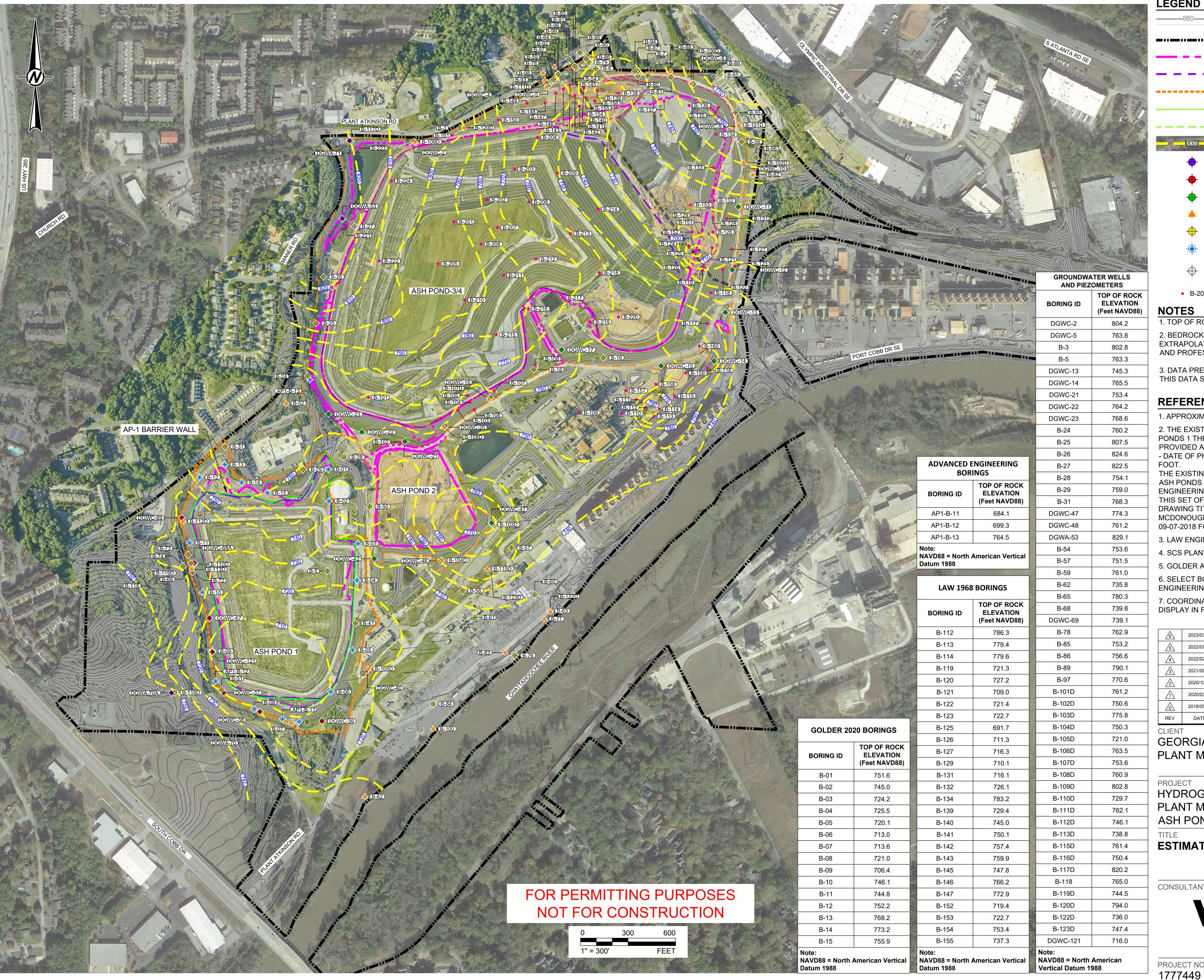
HYDROGEOLOGIC ASSESSMENT REPORT (HAR) PLANT MCDONOUGH-ATKINSON

MONITORING WELL AND PIEZOMETER MAP

ULTANT		
	\	

YYYY-MM-DD	2018/05/04
DESIGNED	SEP
PREPARED	DJC
CHECKED	DLP
REVIEWED / APPROVED	RNQ / GLH

GW-1



LEGEND

PROPERTY BOUNDARY (SEE REFERENCE 1)

APPROXIMATE PRE-CLOSURE CCR LIMITS

EXISTING CONTOURS (SEE REFERENCE 2)

FINAL CLOSURE CCR LIMITS

PERMIT BOUNDARY

FUTURE BARRIER WALL OPTION A

FUTURE BARRIER WALL OPTION B

ESTIMATED TOP OF ROCK SURFACE CONTOURS (FEET MSL) UPGRADIENT WELL (SEE REFERENCE 4)

AP-1 MONITORING WELL (SEE REFERENCE 4)

AP-2, 3/4 MONITORING WELL (SEE REFERENCE 4)

ASSESSMENT WELLS (SEE REFERENCE 4 AND 6)

PIEZOMETER (SEE REFERENCE 4 AND 6)

GOLDER BORINGS (SEE REFERENCE 5)

ABANDONED PIEZOMETER OR MONITORING WELL \oplus (SEE REFERENCE 5)

B-202 LAW 1968 BORINGS (SEE REFERENCE 3)

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

REFERENCES

1. APPROXIMATE PROPERTY BOUNDARY PROVIDED BY SOUTHERN COMPANY SERVICES (2017). 2. THE EXISTING TOPOGRAPHY, CONTOUR ELEVATIONS AND PHOTOGRAPHY FOR THE ASH PONDS 1 THROUGH 4 AREAS WERE PROVIDED BY GEORGIA POWER. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS, ON THE AP- 1 THROUGH 4, IS AUGUST 31, 2022 - DATE OF PHOTOGRAPHY AUGUST 31, 2022. THE TOPOGRAPHIC CONTOUR INTERVALS IS 1

THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS FOR THE SURROUNDING AREAS OF ASH PONDS 1 THROUGH 4 WERE PROVIDED BY GEORGIA LAND DEPARTMENT AND METRO ENGINEERING AND SURVEYING CO, INC. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS, AT THE SURROUNDING AREAS, IS 03-18-2018. REFER TO THE SURVEY DRAWING TITLED "TOPOGRAPHIC MAP PREPARED FOR GEORGIA POWER COMPANY PLANT MCDONOUGH - GEORGIA STATE PLANE WEST SURVEY FEET - DATE OF PHOTOGRAPHY 09-07-2018 FOR SURROUNDING AREAS OF ASH PONDS 1 THROUGH 4.

3. LAW ENGINEERING GEOTECHNICAL INVESTIGATION REPORT (LAW, 1968).

4. SCS PLANT MCDONOUGH HYDROGEOLOGICAL INVESTIGATIONS (2012 TO 2020).

5. GOLDER ASSOCIATES, PLANT MCDONOUGH SUPPLEMENTAL INVESTIGATION (2017-2021).

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

7. COORDINATES SYSTEM: NAD 1983 STATE PLANE GEORGIA WEST (U.S. FEET); ELEVATIONS DISPLAY IN FEET REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (FEET NAVD88).

<u>6</u>	2023/03/20	UPDATED TOPO & AERIAL	DLP	CRP	LS	GLH
<u> </u>	2022/07/14	NOTE ADDED FOR AP1 DATA	DLP	CRP	RPK	GLH
4	2022/02/15	REV. BARRIER WALL ALIGNMENT	DLP	RMS	RPK	GLH
3	2021/09/01	ADDED 2021 PIEZOMETERS / UPDATE CONTOURS	BAS	CRP	RPK	GLH
2	2020/10/20	PROJECT TITLE CHANGE, UPDATED DATA	DLP	ССР	BAS	TIR / GLH
1	2020/03/06	DWG CHANGED FROM GW-4 TO GW-2; UPDATED CCR LIMITS & AERIAL	VPM	VPM	JRJ	TIR / GLH
\triangle	2018/05/04	FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION	SEP	DJC	KNJ	RPK / GLH
REV	DATE	REVISION DESCRIPTION	DES	CADD	СНК	RVW

GEORGIA POWER COMPANY PLANT MCDONOUGH



HYDROGEOLOGIC ASSESSMENT REPORT (HAR) PLANT MCDONOUGH-ATKINSON

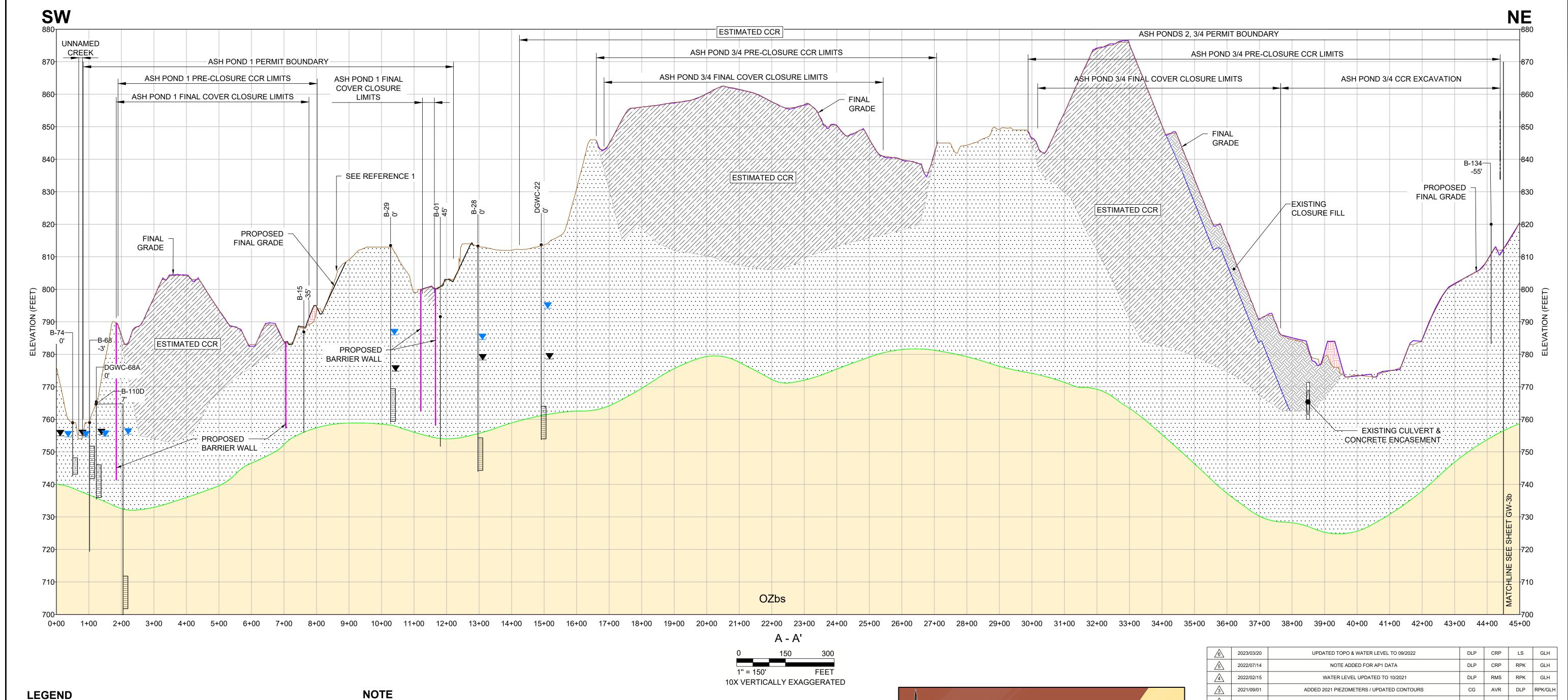
ASH POND 1

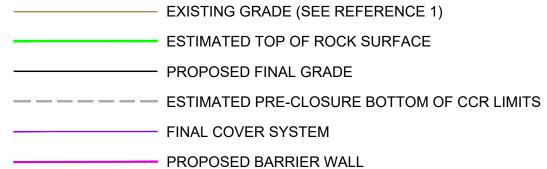
ESTIMATED TOP OF ROCK MAP

ONSULTANT				
1	1	\		

YYYY-MM-DD	2018/05/04
DESIGNED	SEP
PREPARED	DJC
CHECKED	DLP
	DNG / GLU

REVIEWED / APPROVED RNQ / GLH PROJECT NO. GW-2





/////////////// ESTIMATED CCR TO REMAIN IN PLACE

PROPOSED FILL

EXISTING CLOSURE FILL

· OVERBURDEN (COMPRISED OF RESIDUAL SOILS, · TRANSITIONALLY WEATHERED ROCK, AND FILL)

PHYLLONITE, BUTTON SCHIST, MYLONITE, AND MYLONITIC BIOTITE GNEISS (OZbs) BIOTITE GNEISS, LONG ISLAND CREEK GNEISS (OZII) ESTIMATED GROUNDWATER SURFACE (9/06/2022)

PREDICTED POST-CLOSURE GROUNDWATER SURFACE -BORING ID

-SCREEN INTERNAL

_DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT) GROUND SURFACE ELEVATION

NOTE

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

REFERENCES

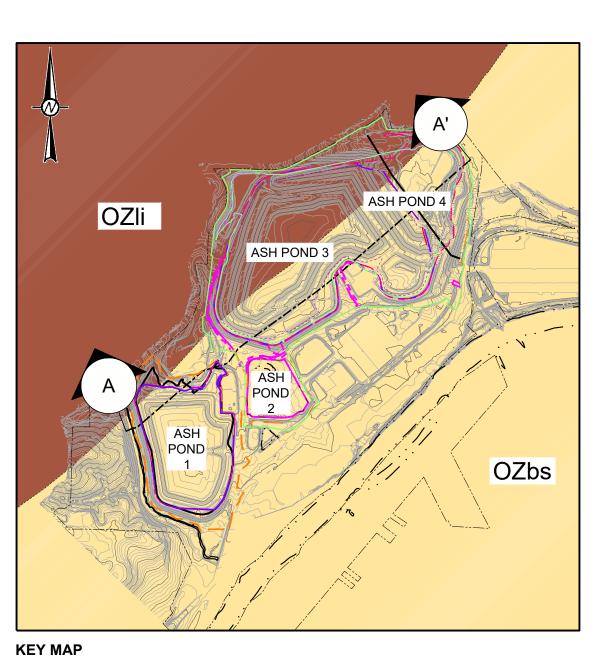
1.THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS WERE PROVIDED BY GEORGIA POWER. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS IS AUGUST 2022. GEORGIA STATE PLANE WEST SURVEY FEET.

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 GEOLOGIC MAPPING, OCTOBER 2016.

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

> FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION



2023/03/20	UPDATED TOPO & WATER LEVEL TO 09/2022	DLP	CRP	LS	GLH
2022/07/14	NOTE ADDED FOR AP1 DATA	DLP	CRP	RPK	GLH
2022/02/15	WATER LEVEL UPDATED TO 10/2021	DLP	RMS	RPK	GLH
2021/09/01	ADDED 2021 PIEZOMETERS / UPDATED CONTOURS	CG	AVR	DLP	RPK/GLH
2020/10/20	PROJECT TITLE CHANGE, UPDATED DATA	DLP	CCP	BAS	TIR / GLH
2020/03/06	DWG CHANGED FROM GW-5A TO GW-3A; UPDATED CCR LIMITS & AERIAL	VPM	VPM	JRJ	TIR / GLH
2018/05/04	FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION	SEP	DJC	KNJ	RPK / GLH
DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW
	2022/07/14 2022/02/15 2021/09/01 2020/10/20 2020/03/06 2018/05/04	2022/07/14 NOTE ADDED FOR AP1 DATA 2022/02/15 WATER LEVEL UPDATED TO 10/2021 2021/09/01 ADDED 2021 PIEZOMETERS / UPDATED CONTOURS 2020/10/20 PROJECT TITLE CHANGE, UPDATED DATA 2020/03/06 DWG CHANGED FROM GW-5A TO GW-3A; UPDATED CCR LIMITS & AERIAL 2018/05/04 FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION	2022/07/14 NOTE ADDED FOR AP1 DATA DLP 2022/02/15 WATER LEVEL UPDATED TO 10/2021 DLP 2021/09/01 ADDED 2021 PIEZOMETERS / UPDATED CONTOURS CG 2020/10/20 PROJECT TITLE CHANGE, UPDATED DATA DLP 2020/03/06 DWG CHANGED FROM GW-5A TO GW-3A; UPDATED CCR LIMITS & AERIAL VPM 2018/05/04 FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION SEP	2022/07/14 NOTE ADDED FOR AP1 DATA DLP CRP 2022/02/15 WATER LEVEL UPDATED TO 10/2021 DLP RMS 2021/09/01 ADDED 2021 PIEZOMETERS / UPDATED CONTOURS CG AVR 2020/10/20 PROJECT TITLE CHANGE, UPDATED DATA DLP CCP 2020/03/06 DWG CHANGED FROM GW-5A TO GW-3A; UPDATED CCR LIMITS & AERIAL VPM VPM 2018/05/04 FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION SEP DJC	2022/07/14 NOTE ADDED FOR AP1 DATA DLP CRP RPK 2022/02/15 WATER LEVEL UPDATED TO 10/2021 DLP RMS RPK 2021/09/01 ADDED 2021 PIEZOMETERS / UPDATED CONTOURS CG AVR DLP 2020/10/20 PROJECT TITLE CHANGE, UPDATED DATA DLP CCP BAS 2020/03/06 DWG CHANGED FROM GW-5A TO GW-3A; UPDATED CCR LIMITS & AERIAL VPM VPM JRJ 2018/05/04 FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION SEP DJC KNJ

GEORGIA POWER COMPANY PLANT MCDONOUGH

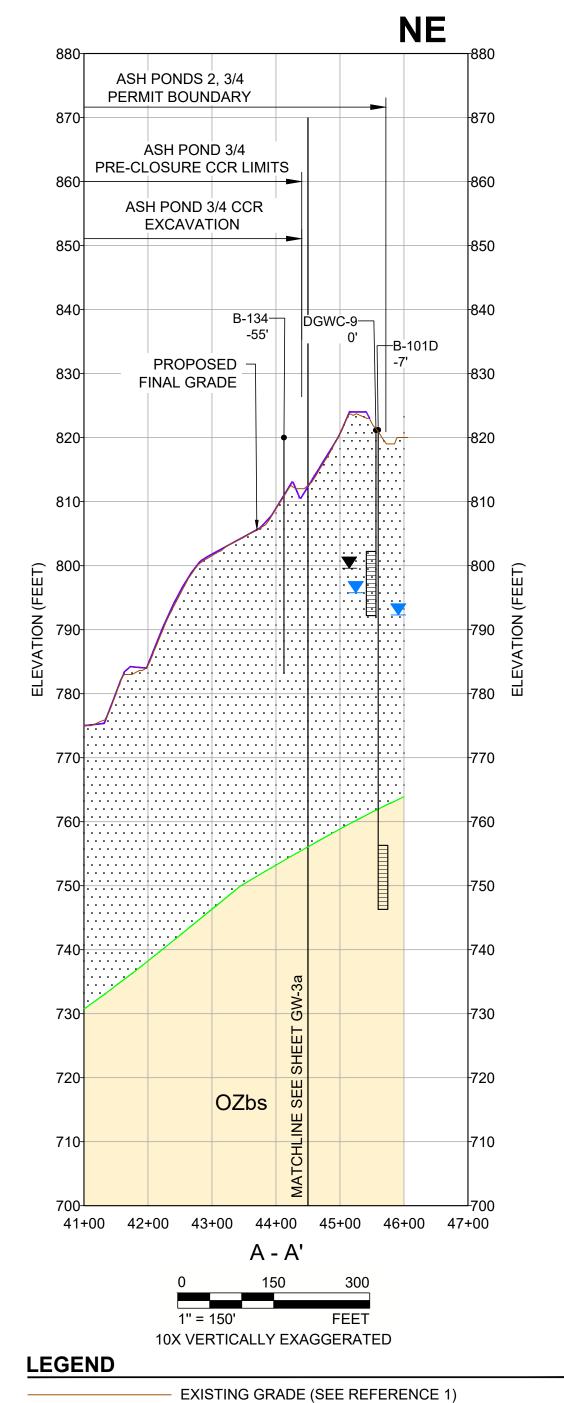


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HYDROGEOLOGIC ASSESSMENT REPORT (HAR) PLANT MCDONOUGH-ATKINSON ASH POND 1

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

CONSULTANT	YYYY-MM-DD	2018/05/04
	DESIGNED	SEP
11711	PREPARED	DJC
	CHECKED	DLP
	REVIEWED / APPROVED	RNQ / GLH
PROJECT NO.	REV.	SHEET
1777449	6	GW-3a



EXISTING GRADE (SEE REFERENCE 1)

ESTIMATED TOP OF ROCK SURFACE

PROPOSED FINAL GRADE

————— ESTIMATED PRE-CLOSURE BOTTOM OF CCR LIMITS

FINAL COVER SYSTEM

PROPOSED BARRIER WALL

//////////////////// ESTIMATED CCR TO REMAIN IN PLACE

PROPOSED FILL

BIOTITE GNEISS (OZbs)

EXISTING CLOSURE FILL

· OVERBURDEN (COMPRISED OF RESIDUAL SOILS, · TRANSITIONALLY WEATHERED ROCK, AND FILL) PHYLLONITE, BUTTON SCHIST, MYLONITE, AND MYLONITIC

BIOTITE GNEISS, LONG ISLAND CREEK GNEISS (OZII)

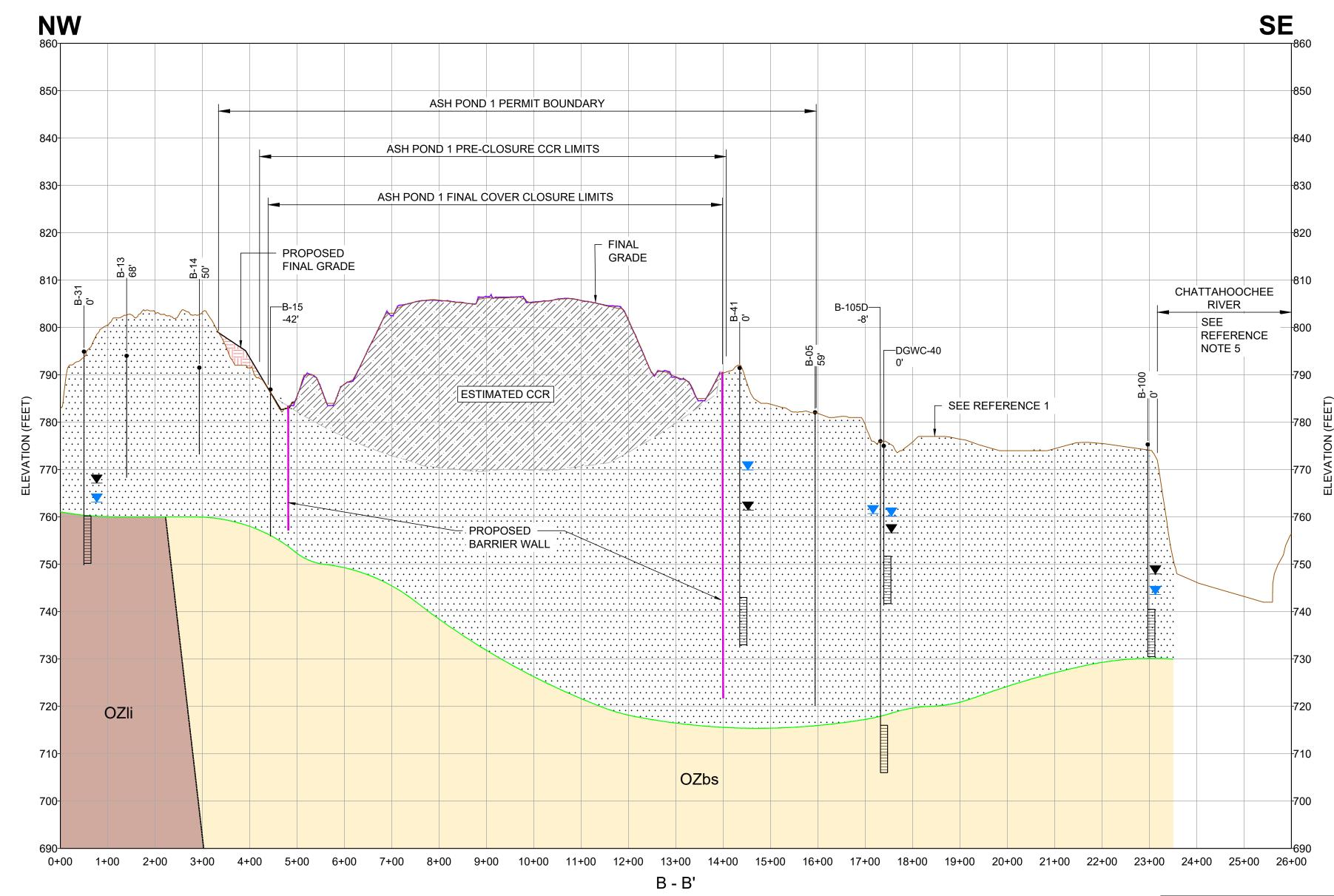
ESTIMATED GROUNDWATER SURFACE (9/06/2022) PREDICTED POST-CLOSURE GROUNDWATER SURFACE

-BORING ID

DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT)

GROUND SURFACE ELEVATION

-SCREEN INTERNAL



NOTE

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

10X VERTICALLY EXAGGERATED

REFERENCES

1.THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS WERE PROVIDED BY GEORGIA POWER. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS IS AUGUST 2022. GEORGIA STATE PLANE WEST SURVEY FEET.

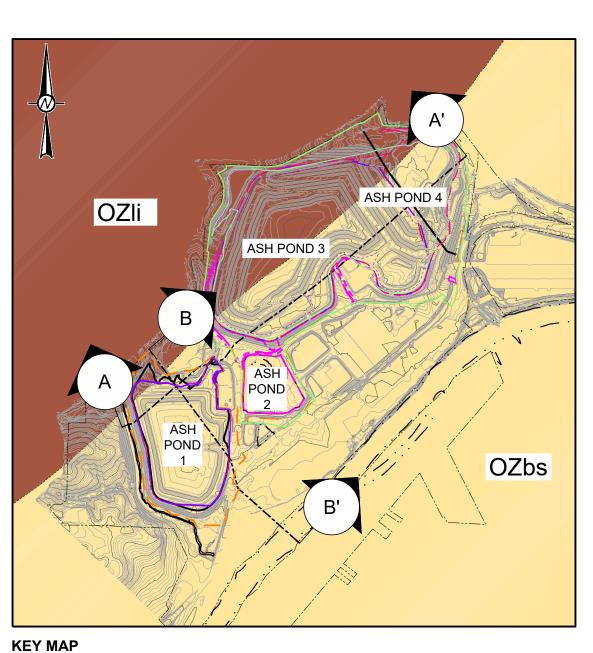
2. BORING/WELL/PIEZOMETER LOCATIONS AND ELEVATIONS PROVIDED BY SOUTHERN COMPANY SERVICES, INC. AND 1968 LAW ENGINEERING GEOTECHNICAL INVESTIGATION REPORT.

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

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

5. NO AVAILABLE SUBSURFACE GEOLOGIC DATA.

FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION



6	2023/03/20	UPDATED TOPO & WATER LEVEL TO 09/2022	DLP	CRP	LS	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
\triangle	2020/03/06	DWG CHANGED FROM GW-5B TO GW-3B; UPDATED CCR LIMITS & AERIAL	VPM	VPM	JRJ	TIR / GLH
\triangle	2018/05/04	FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION	SEP	DJC	KNJ	RPK / GLH
REV	DATE	REVISION DESCRIPTION	DES	CADD	СНК	RVW

GEORGIA POWER COMPANY PLANT MCDONOUGH

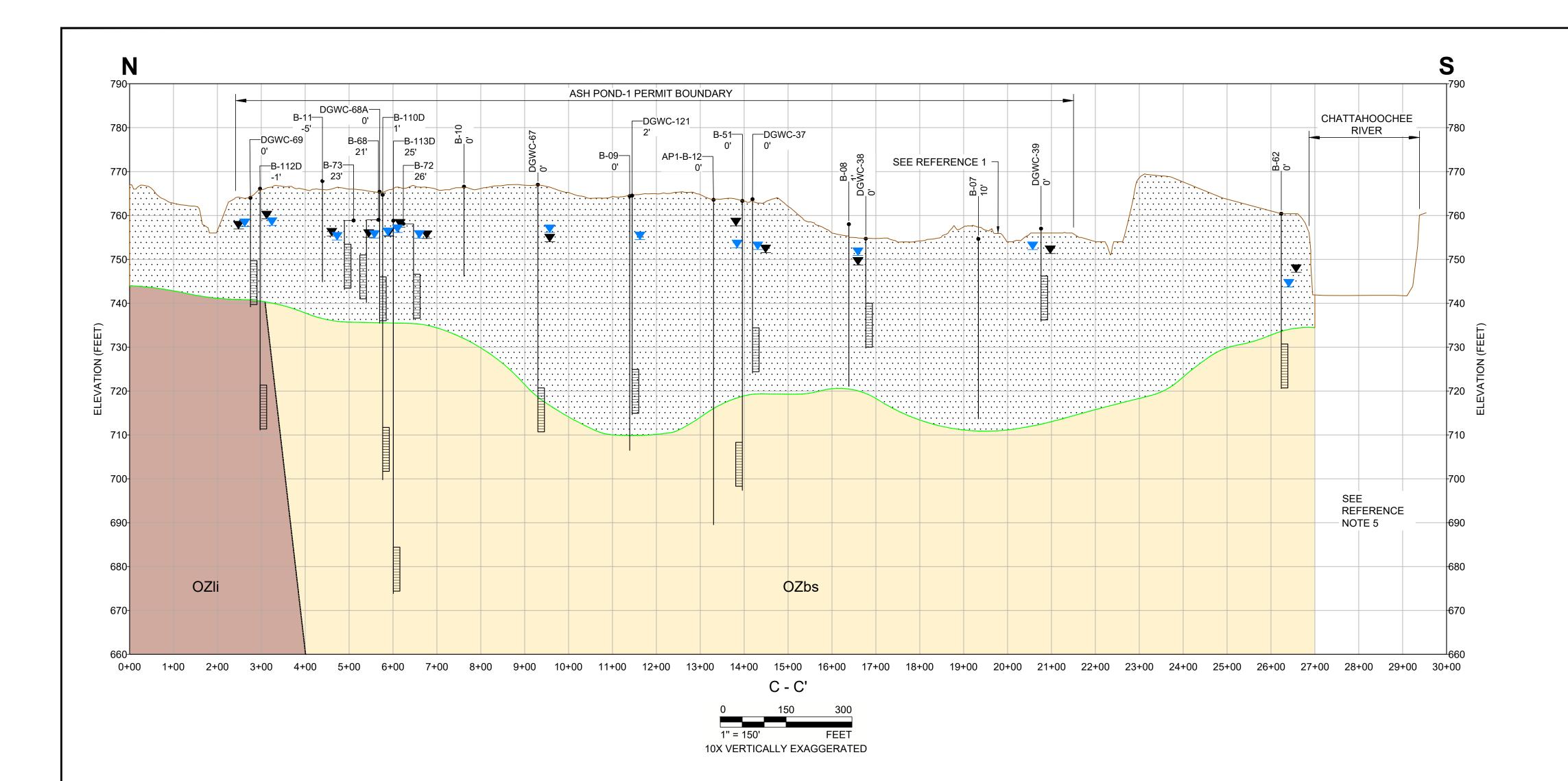


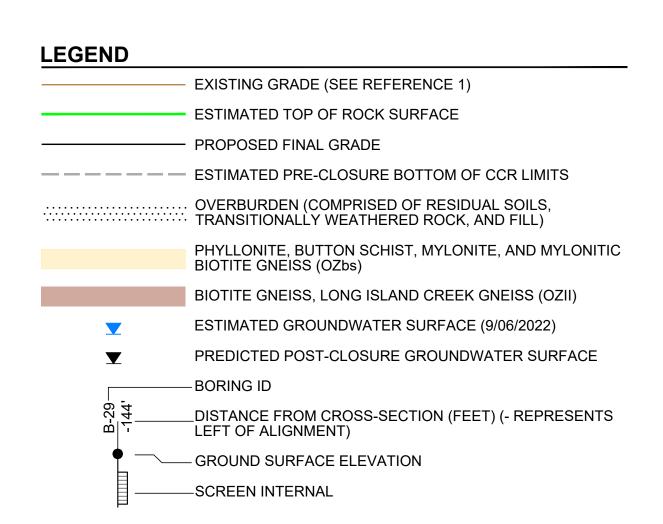
HYDROGEOLOGIC ASSESSMENT REPORT (HAR) PLANT MCDONOUGH-ATKINSON ASH POND 1

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

CONSULTANT	YYYY-MM-DD	2018/05/04	
	DESIGNED	SEP	
117	PREPARED	DJC	
	CHECKED	DLP	
•	REVIEWED / APPROVED	RNQ / GLH	
	DEV/		OLIEE

PROJECT NO. REV. GW-3b 1777449





NOTE

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

REFERENCES

1.THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS WERE PROVIDED BY GEORGIA POWER. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS IS AUGUST 2022. GEORGIA STATE PLANE WEST SURVEY FEET.

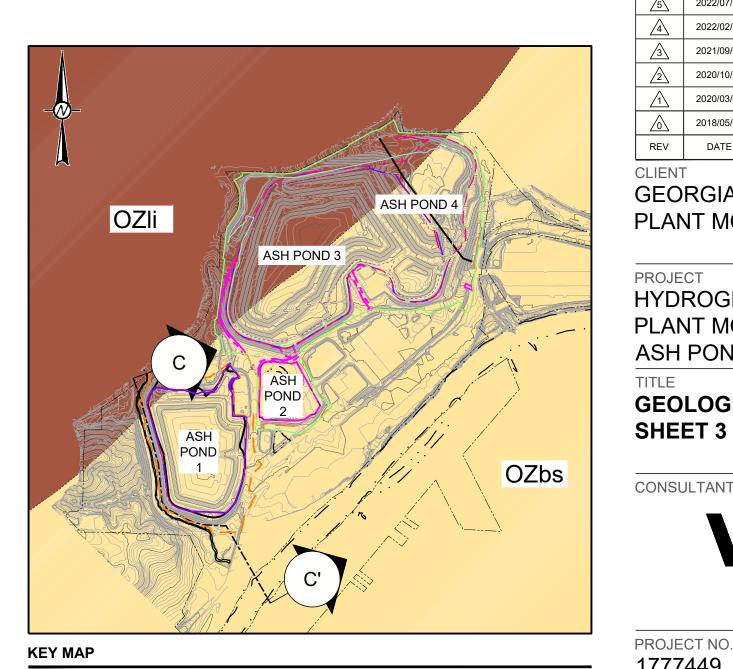
2. BORING/WELL/PIEZOMETER LOCATIONS AND ELEVATIONS PROVIDED BY SOUTHERN COMPANY SERVICES, INC. AND 1968 LAW ENGINEERING GEOTECHNICAL INVESTIGATION REPORT.

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

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

5. NO AVAILABLE SUBSURFACE GEOLOGIC DATA.

FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION



6	2023/03/20	UPDATED TOPO & WATER LEVEL TO 09/2022	DLP	CRP	LS	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
\triangle	2020/03/06	DWG CHANGED FROM GW-5C TO GW-3C; UPDATED CCR LIMITS & AERIAL	VPM	VPM	JRJ	TIR / GLH
\triangle	2018/05/04	FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION	SEP	DJC	KNJ	RPK / GLH
REV	DATE	REVISION DESCRIPTION	DES	CADD	СНК	RVW
OL JENIT	_					

GEORGIA POWER COMPANY PLANT MCDONOUGH

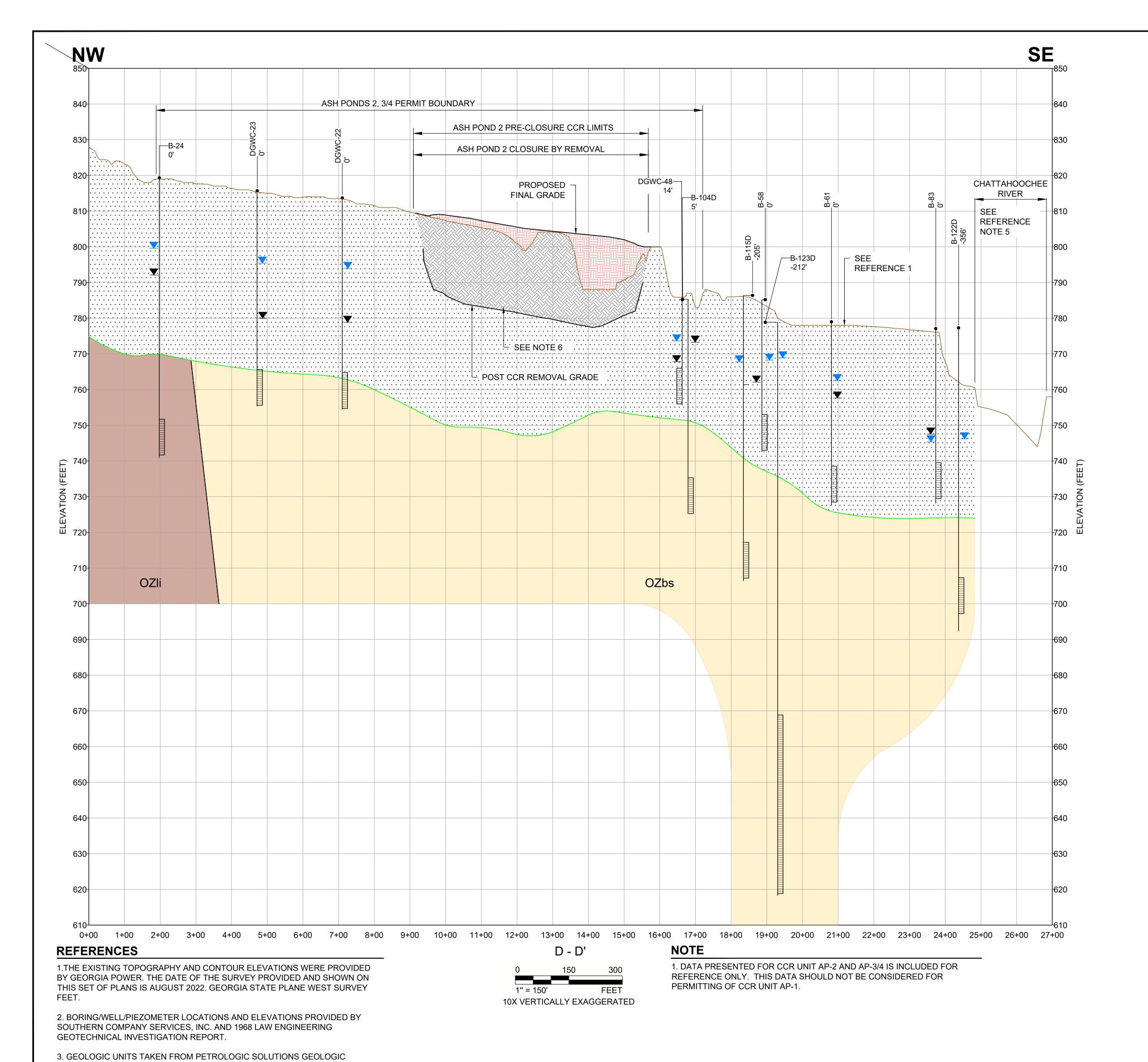


HYDROGEOLOGIC ASSESSMENT REPORT (HAR) PLANT MCDONOUGH-ATKINSON ASH POND 1

GEOLOGIC CROSS-SECTION SCHEMATIC C-C'

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

PROJECT NO. REV. GW-3c 1777449



FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION

OZII

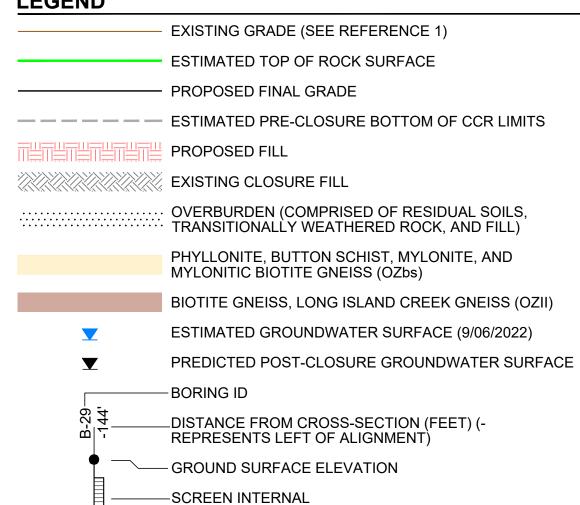
D

ASH POND 3

ASH
POND
2

ASH
POND

\mathbf{C}	N	\mathbf{D}	
ľ	IV		



6	2023/03/20	UPDATED TOPO & WATER LEVEL TO 09/2022	DLP	CRP	LS	GLH
<u>\(\)</u>	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-5D TO GW-3D; UPDATED CCR LIMITS & AERIAL	VPM	VPM	JRJ	TIR / GLH
	2018/05/04	FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION	SEP	DJC	KNJ	RPK / GLH
REV	DATE	REVISION DESCRIPTION	DES	CADD	СНК	RVW
CLIEN	т	•				

GEORGIA POWER COMPANY PLANT MCDONOUGH



ROJECT

HYDROGEOLOGIC ASSESSMENT REPORT (HAR)
PLANT MCDONOUGH-ATKINSON
ASH POND 1

GEOLOGIC CROSS-SECTION SCHEMATIC D-D' SHEET 4

CONSULTANT

YYYY-MM-DD	2018/05/04
DESIGNED	SEP
PREPARED	DJC
CHECKED	DLP
REVIEWED / APPROVED	RNQ / GLH

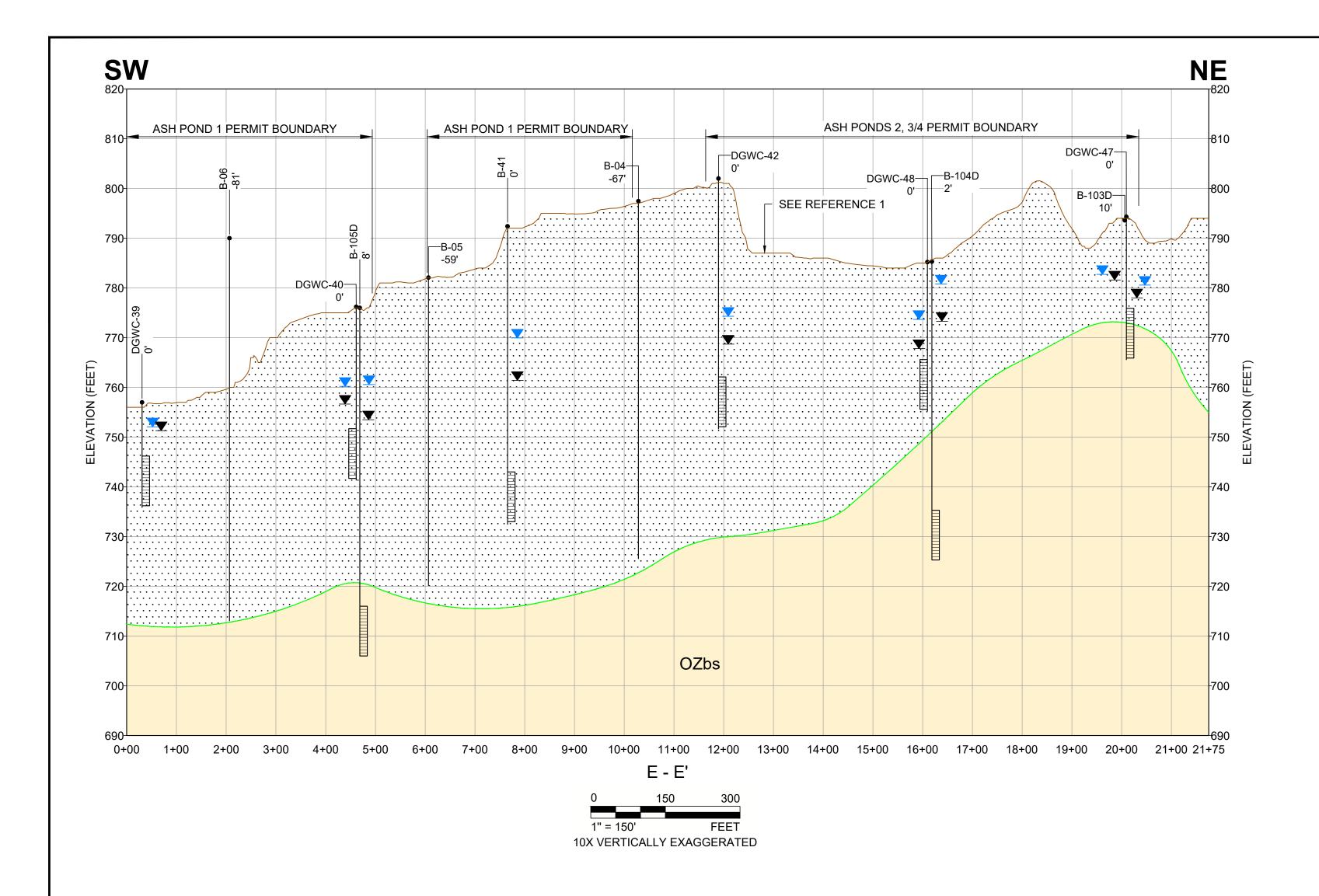
PROJECT NO. REV. SHEET **GW-3d**

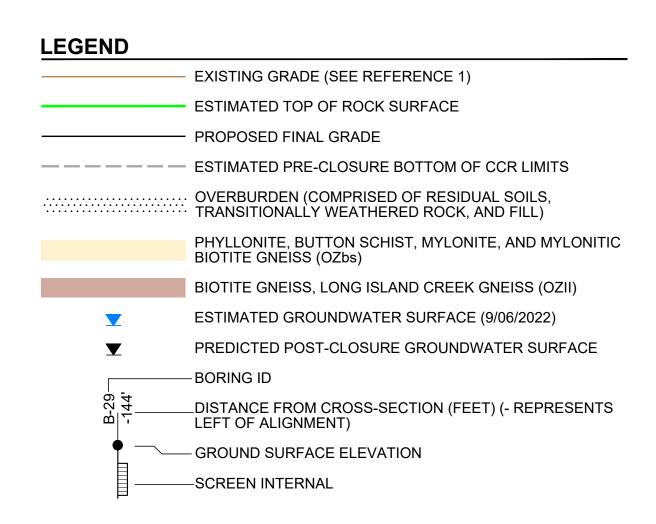
5. NO AVAILABLE SUBSURFACE GEOLOGIC DATA.

4. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED

AND/OR RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020 /

MAPPING, OCTOBER 2016.





NOTE

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

REFERENCES

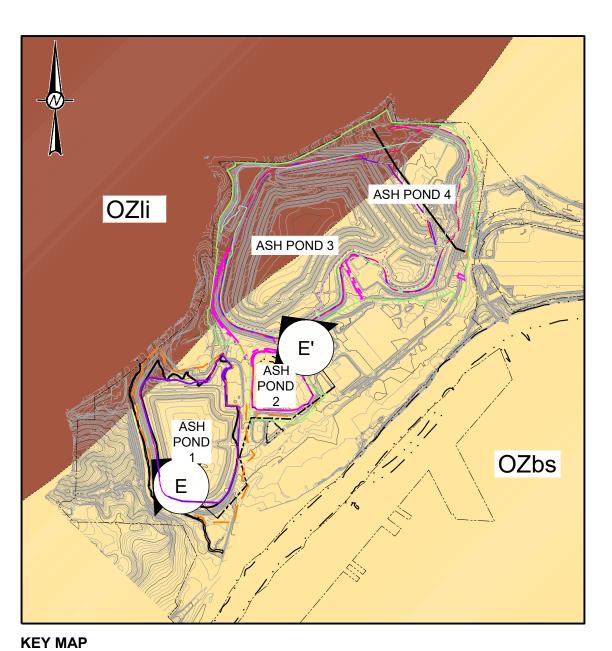
1.THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS WERE PROVIDED BY GEORGIA POWER. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS IS AUGUST 2022. GEORGIA STATE PLANE WEST SURVEY FEET.

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 GEOLOGIC MAPPING, OCTOBER 2016.

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

FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION



6	2023/03/20	UPDATED TOPO & WATER LEVEL TO 09/2022	DLP	CRP	LS	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-5E TO GW-3E; UPDATED CCR LIMITS & AERIAL	VPM	VPM	JRJ	TIR / GLH
<u></u>	2018/05/04	FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION	SEP	DJC	KNJ	RPK / GLH
REV	DATE	REVISION DESCRIPTION	DES	CADD	СНК	RVW
	-					

GEORGIA POWER COMPANY
PLANT MCDONOUGH



PROJECT

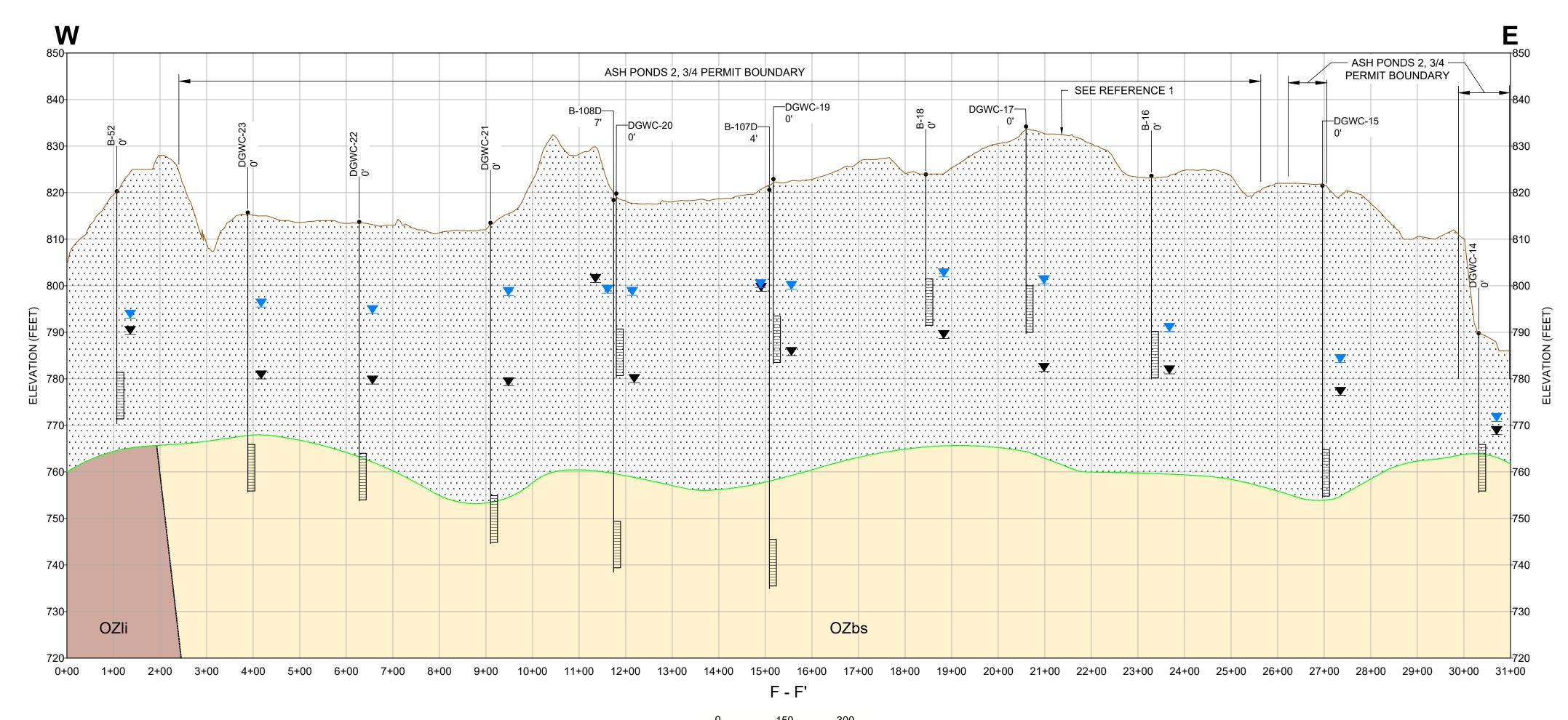
HYDROGEOLOGIC ASSESSMENT REPORT (HAR)
PLANT MCDONOUGH-ATKINSON

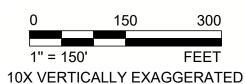
ASH POND 1

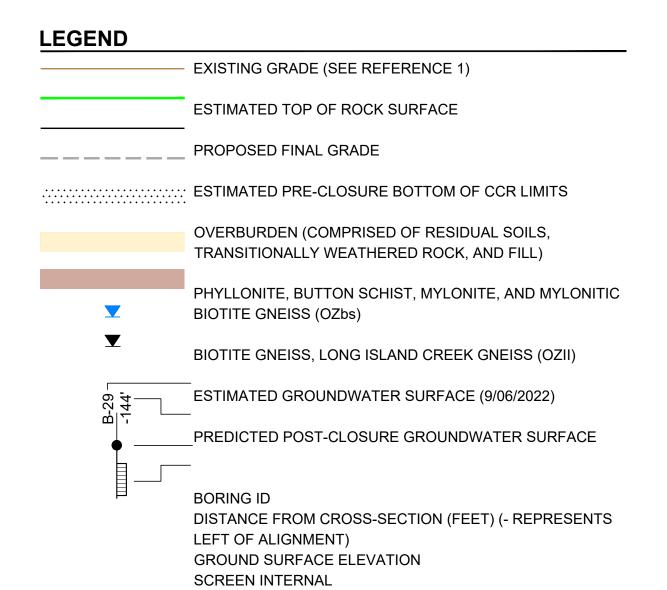
GEOLOGIC CROSS-SECTION SCHEMATIC E-E' SHEET 5

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

PROJECT NO. REV. SHEET **GW-3e**







NOTE

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

REFERENCES

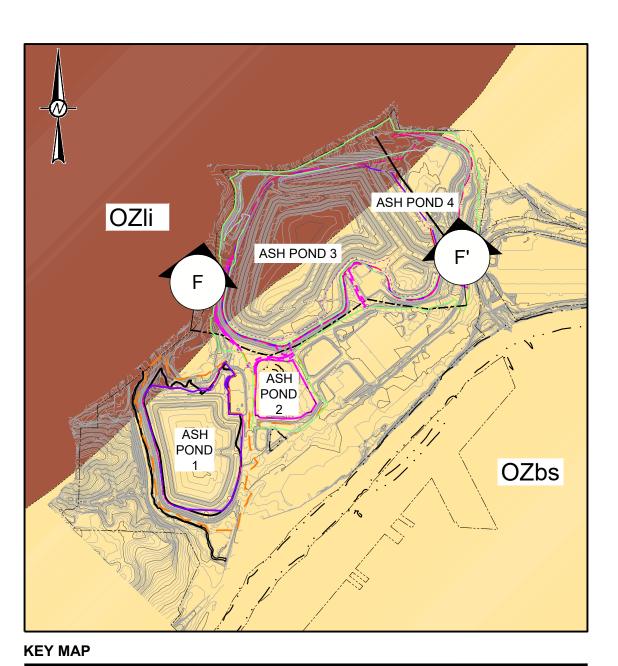
1.THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS WERE PROVIDED BY GEORGIA POWER. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS IS AUGUST 2022. GEORGIA STATE PLANE WEST SURVEY FEET.

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 GEOLOGIC MAPPING, OCTOBER 2016.

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

FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION



4	2023/03/20	UPDATED TOPO & WATER LEVEL TO 09/2022	DLP	CRP	LS	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
\triangle	2021/09/01	ADDED 2021 PIEZOMETERS / UPDATED CONTOURS	CG	AVR	DLP	RPK/GLH
\triangle	2020/10/20	FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION	DLP	CCP	BAS	TIR / GLH
REV	DATE	REVISION DESCRIPTION	DES	CADD	СНК	RVW

GEORGIA POWER COMPANY
PLANT MCDONOUGH



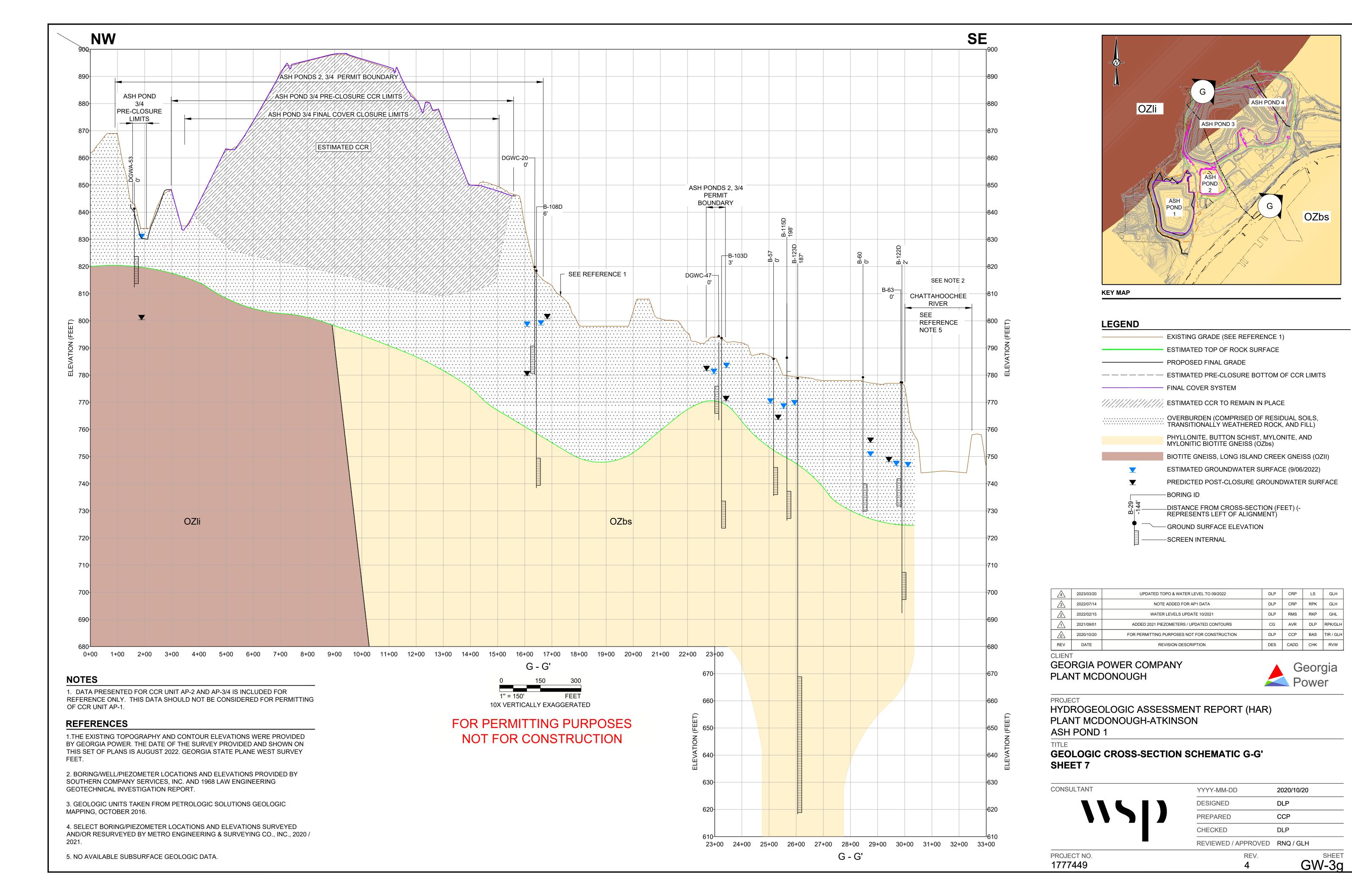
PROJECT

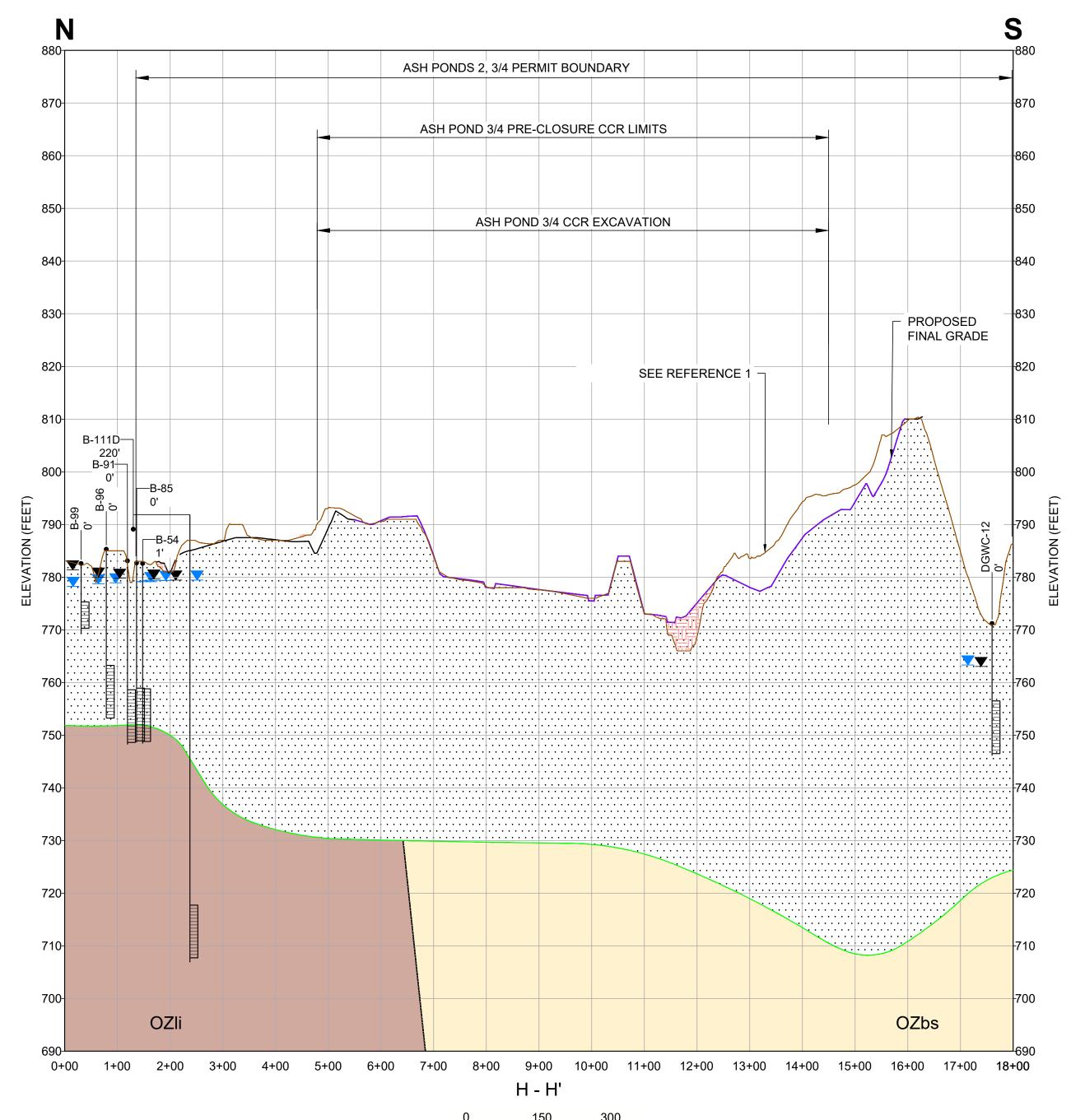
HYDROGEOLOGIC ASSESSMENT REPORT (HAR)
PLANT MCDONOUGH-ATKINSON
ASH POND 1

GEOLOGIC CROSS-SECTION SCHEMATIC F-F'
SHEET 6

CONSULTANT	YYYY-MM-DD	2020/10/20	
	DESIGNED	DLP	
	PREPARED	ССР	
	CHECKED	DLP	
	REVIEWED / APPROVED	RNQ / GLH	
DDO IECT NO	DE\/		CLIEET

PROJECT NO. REV. SHEET 1777449 4 GW-3f







EXISTING GRADE (SEE REFERENCE 1)

- ESTIMATED TOP OF ROCK SURFACE

- PROPOSED FINAL GRADE

ESTIMATED PRE-CLOSURE BOTTOM OF CCR LIMITS

FINAL COVER SYSTEM

######## PROPOSED FILL

...... OVERBURDEN (COMPRISED OF RESIDUAL SOILS, TRANSITIONALLY WEATHERED ROCK, AND FILL)

PHYLLONITE, BUTTON SCHIST, MYLONITE, AND MYLONITIC BIOTITE GNEISS (OZbs)

BIOTITE GNEISS, LONG ISLAND CREEK GNEISS (OZII)

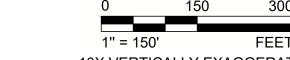
ESTIMATED GROUNDWATER SURFACE (9/06/2022)
PREDICTED POST-CLOSURE GROUNDWATER SURFACE

BORING ID

OF THE PRESENTS DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT)

GROUND SURFACE ELEVATION

SCREEN INTERNAL



NOTE 10X VERTICALLY EXAGGERATED

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

REFERENCES

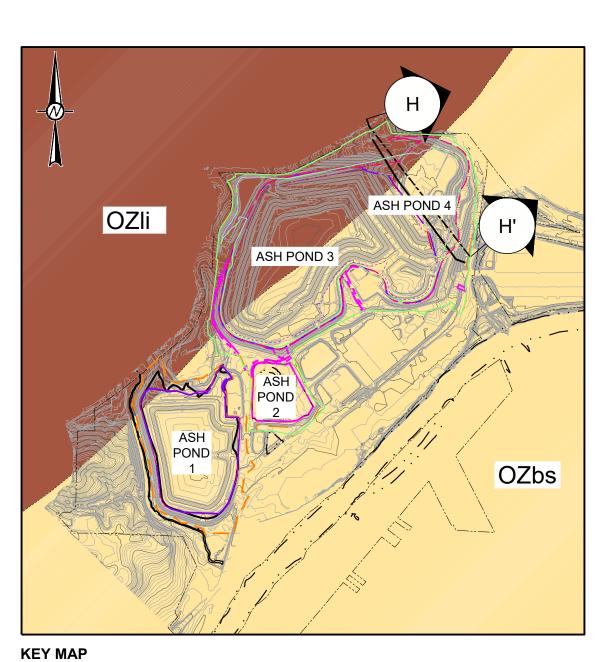
1.THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS WERE PROVIDED BY GEORGIA POWER. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS IS AUGUST 2022. GEORGIA STATE PLANE WEST SURVEY FEET.

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 GEOLOGIC MAPPING, OCTOBER 2016.

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

FOR PERMITTING PURPOSES
NOT FOR CONSTRUCTION



4	2023/03/20	UPDATED TOPO & WATER LEVEL TO 09/2022	DLP	CRP	LS	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
\triangle	2020/10/20	FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION	DLP	CCP	BAS	TIR / GLH
REV	DATE	REVISION DESCRIPTION	DES	CADD	СНК	RVW
CLIENT	г					

GEORGIA POWER COMPANY
PLANT MCDONOUGH



PROJECT

HYDROGEOLOGIC ASSESSMENT REPORT (HAR)
PLANT MCDONOUGH-ATKINSON

ASH POND 1

GEOLOGIC CROSS-SECTION SCHEMATIC H-H' SHEET 8

CONSULTANT

YYYY-MM-DD

DESIGNED

DLP

PREPARED

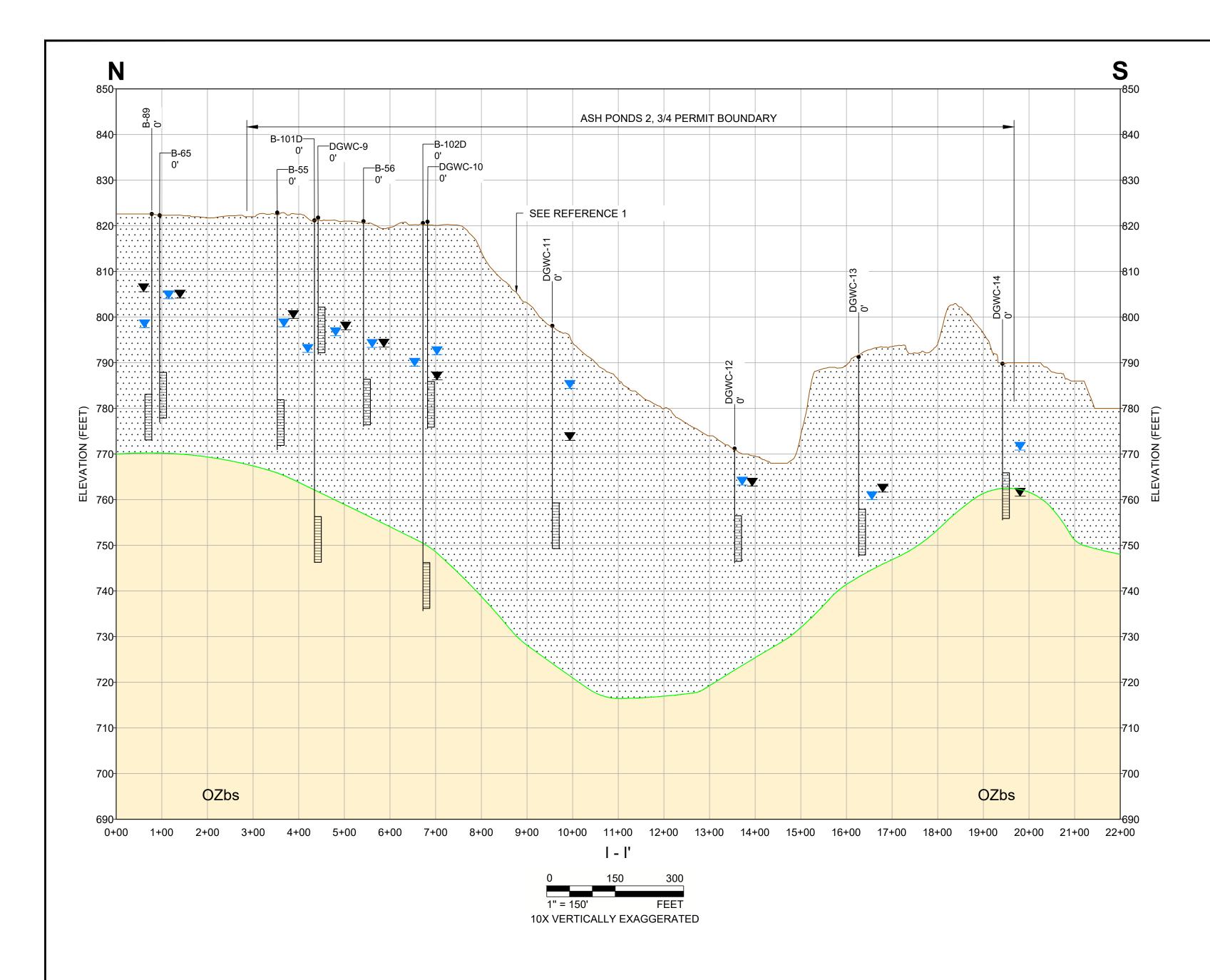
CHECKED

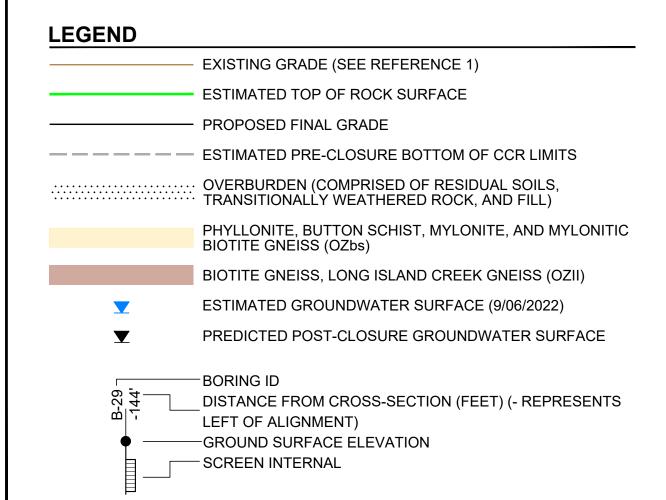
DLP

REVIEWED / APPROVED

RNQ / GLH

PROJECT NO. REV. SHEET 4 GW-3h





NOTE

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

REFERENCES

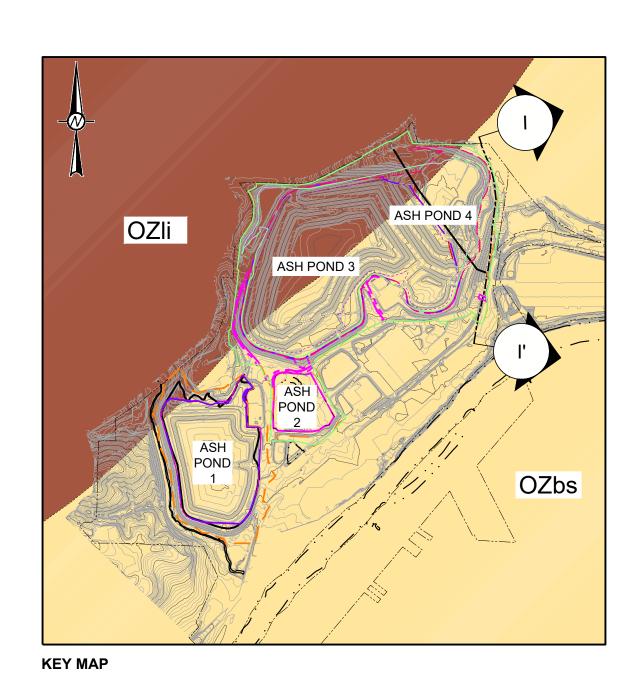
1.THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS WERE PROVIDED BY GEORGIA POWER. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS IS AUGUST 2022. GEORGIA STATE PLANE WEST SURVEY FEET.

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 GEOLOGIC MAPPING, OCTOBER 2016.

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

FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION



4	2023/03/20	UPDATED TOPO & WATER LEVEL TO 09/2022	DLP	CRP	LS	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
<u></u>	2020/10/20	FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION	DLP	CCP	BAS	TIR / GLH
REV	DATE	REVISION DESCRIPTION	DES	CADD	СНК	RVW

GEORGIA POWER COMPANY
PLANT MCDONOUGH



PROJECT

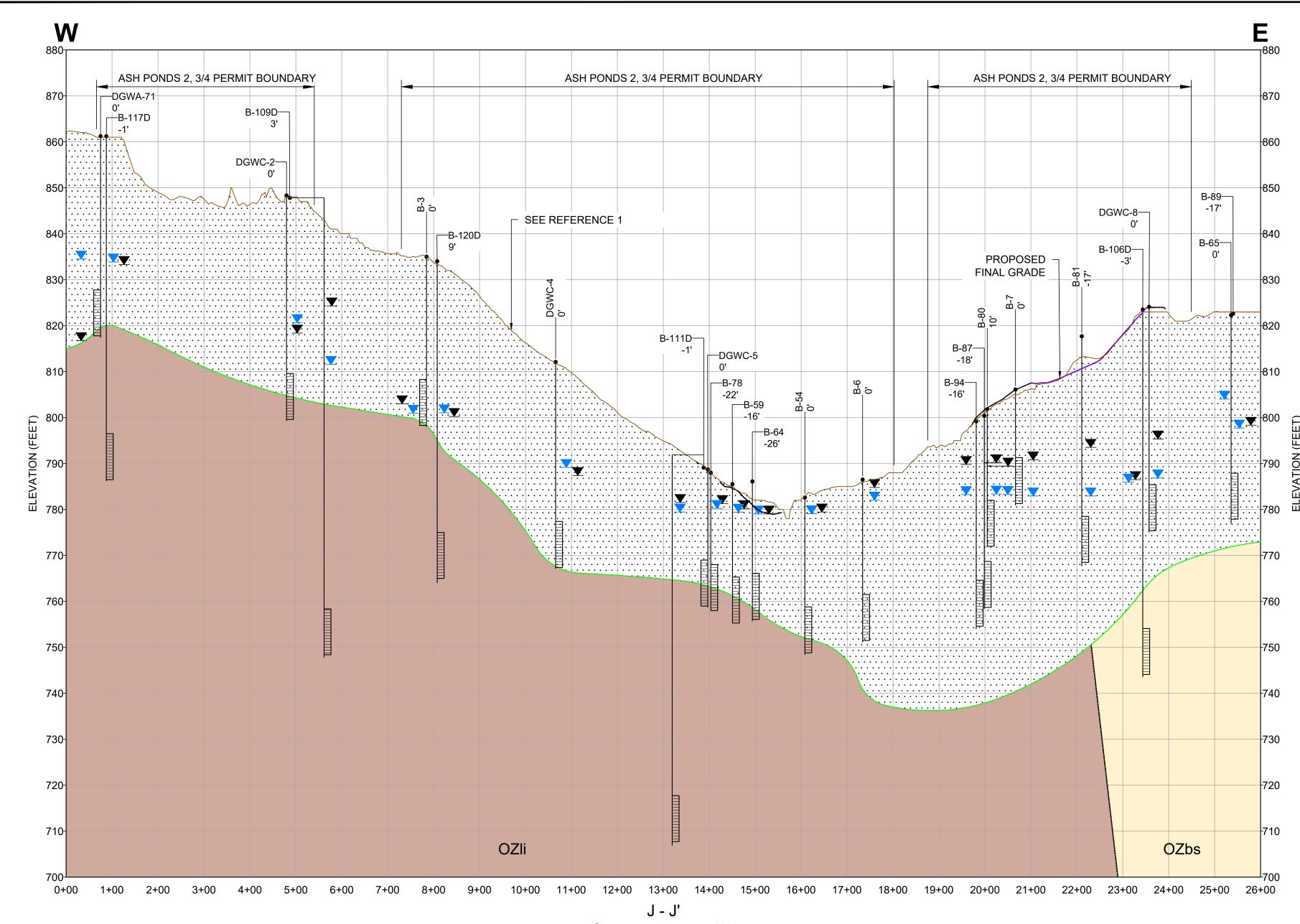
HYDROGEOLOGIC ASSESSMENT REPORT (HAR)
PLANT MCDONOUGH-ATKINSON

ASH POND 1

GEOLOGIC CROSS-SECTION SCHEMATIC I-I' SHEET 9

CONSULTANT	YYYY-MM-DD	2020/10/20	
	DESIGNED	DLP	
117	PREPARED	ССР	
	CHECKED	DLP	
•	REVIEWED / APPROVED	RNQ / GLH	
DDO IEST NO	DEV		OLIE

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





LEGEND

EXISTING GRADE (SEE REFERENCE 1) ESTIMATED TOP OF ROCK SURFACE

FINAL COVER SYSTEM

PROPOSED FINAL GRADE ————— ESTIMATED PRE-CLOSURE BOTTOM OF CCR LIMITS

OVERBURDEN (COMPRISED OF RESIDUAL SOILS, TRANSITIONALLY WEATHERED ROCK, AND FILL)

PHYLLONITE, BUTTON SCHIST, MYLONITE, AND MYLONITIC BIOTITE GNEISS (OZbs)

BIOTITE GNEISS, LONG ISLAND CREEK GNEISS (OZII) ESTIMATED GROUNDWATER SURFACE (9/06/2022)

> PREDICTED POST-CLOSURE GROUNDWATER SURFACE BORING ID

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

NOTE

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

REFERENCES

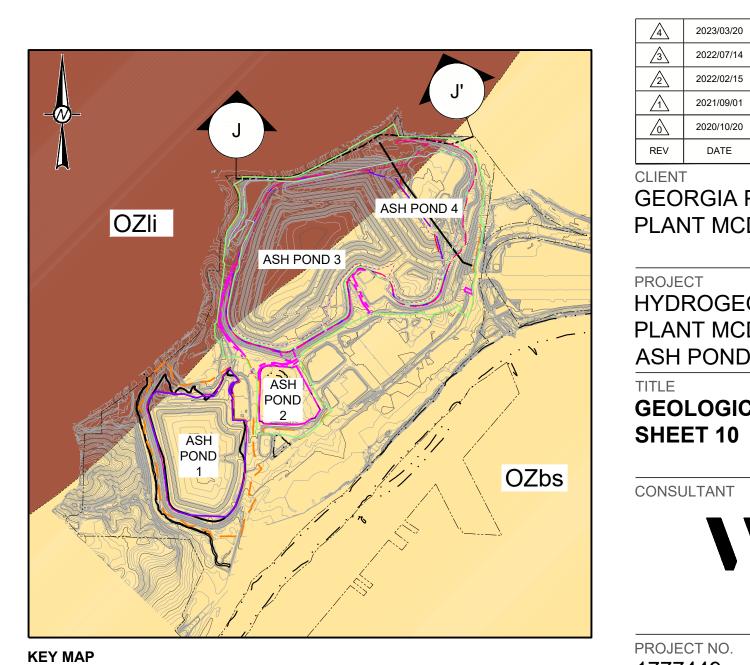
1.THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS WERE PROVIDED BY GEORGIA POWER. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS IS AUGUST 2022. GEORGIA STATE PLANE WEST SURVEY FEET.

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 GEOLOGIC MAPPING, OCTOBER 2016.

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

> FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION



4	2023/03/20	UPDATED TOPO & WATER LEVEL TO 09/2022	DLP	CRP	LS	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
<u></u>	2020/10/20	FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION	DLP	ССР	BAS	TIR / GLH
REV	DATE	REVISION DESCRIPTION	DES	CADD	СНК	RVW

GEORGIA POWER COMPANY PLANT MCDONOUGH

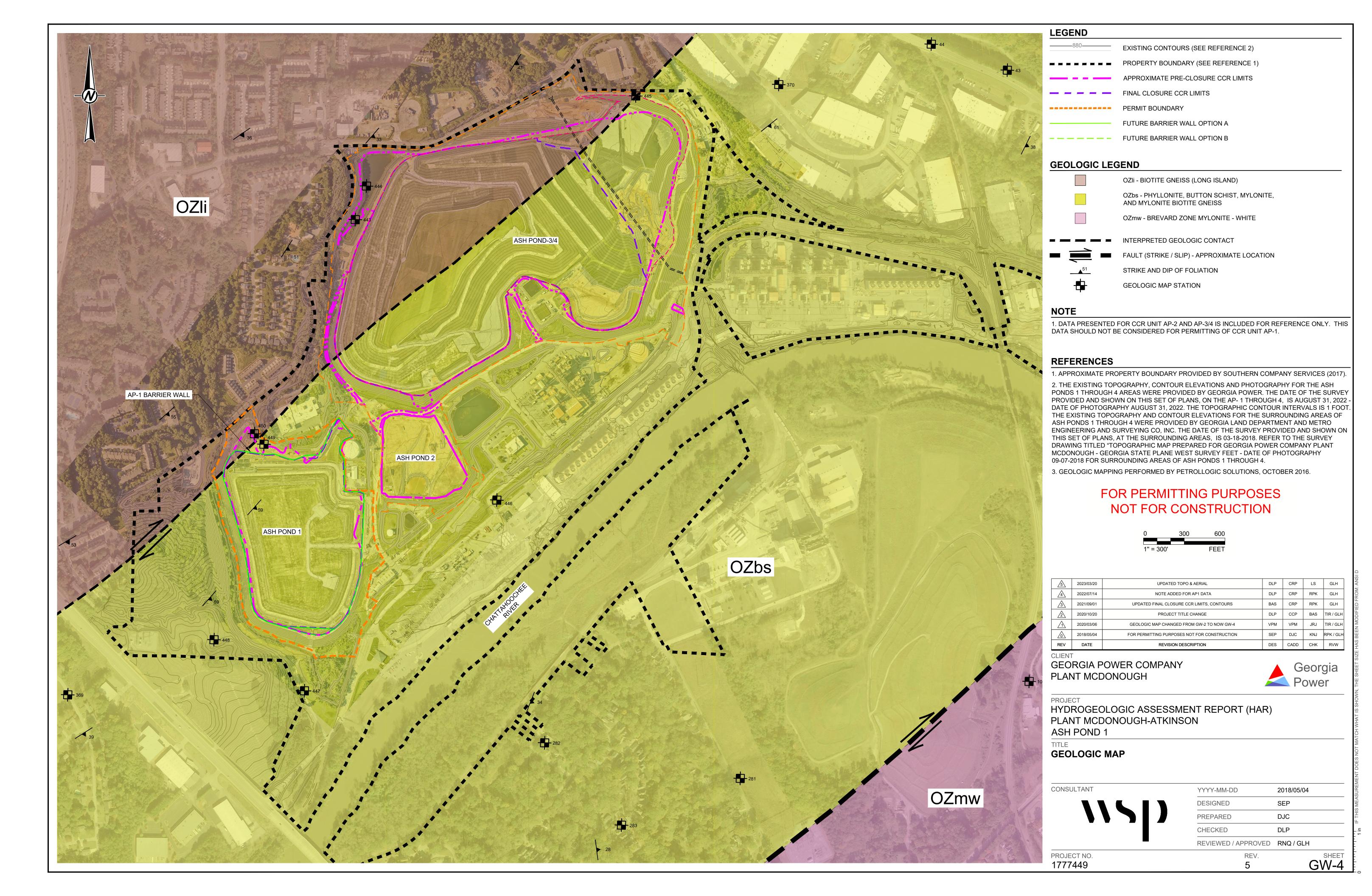


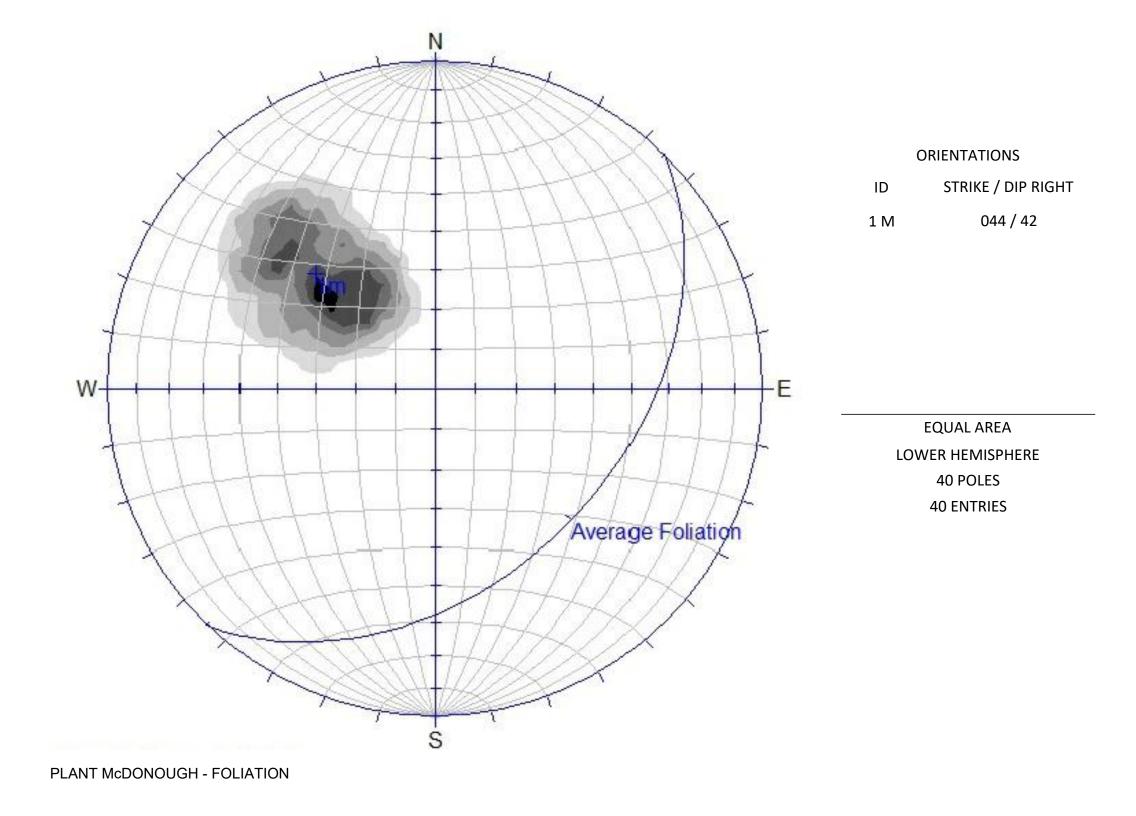
HYDROGEOLOGIC ASSESSMENT REPORT (HAR) PLANT MCDONOUGH-ATKINSON ASH POND 1

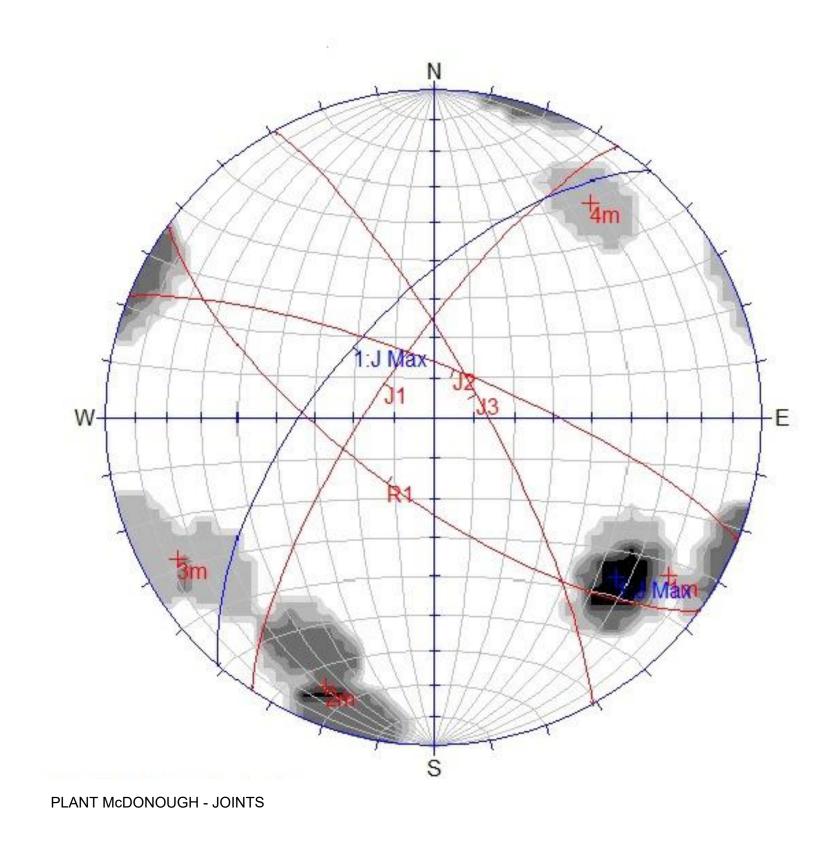
GEOLOGIC CROSS-SECTION SCHEMATIC J-J'

CONSULTANT	YYYY-MM-DD	2020/10/20
	DESIGNED	DLP
11711	PREPARED	CCP
	CHECKED	DLP
•	REVIEWED / APPROVED	RNQ / GLH

GLH PROJECT NO. REV. GW-3j 1777449







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

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

REFERENCES

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

3	2022/07/14	NOTE ADDED FOR AP1 DATA	DLP	CRP	RPK	GLH
2	2020/10/20	PROJECT TITLE CHANGE	DLP	CCP	BAS	TIR / GLH
\triangle	2020/03/06	DISCONTINUITY DATA FROM GEOLOGIC MAPPING CHANGED FROM GW-3 TO GW-5	VPM	VPM	JRJ	TIR / GLH
\triangle	2018/05/04	FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION	SEP	DJC	KNJ	RPK / GLH
REV	DATE	REVISION DESCRIPTION	DES	CADD	СНК	RVW

GEORGIA POWER COMPANY PLANT MCDONOUGH



PROJECT
HYDROGEOLOGIC ASSESSMENT REPORT (HAR) PLANT MCDONOUGH-ATKINSON ASH POND 1

DISCONTINUITY DATA FROM GEOLOGIC MAPPING

FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION

CONSULTANT	

YYYY-MM-DD	2018/05/04
DESIGNED	SEP
PREPARED	DJC
CHECKED	DLP
REVIEWED / APPROVED	RNQ / GLH

PROJECT NO. GW-5 1777449



PROPERTY BOUNDARY (SEE REFERENCE 1)

APPROXIMATE PRE-CLOSURE CCR LIMITS

1. REMOTE SENSING / LINEAMENT ANALYSIS WAS COMPLETED BY EXPERIENCED GOLDER PERSONNEL USING SHADED RELIEF MAPS GENERATED FROM DIGITAL ELEVATION DATA, AERIAL PHOTOGRAPHS, AND USGS TOPOGRAPHIC MAPS FROM 1954

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

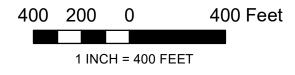
REFERENCE

1. APPROXIMATE PROPERTY BOUNDARY PROVIDED BY SOUTHERN COMPANY SERVICES (2017)

2. AERIAL IMAGE DATED NOVEMBER 2019 FROM GOOGLE EARTH AND AUGUST 31, 2022 FROM COOPER, BARNETTE & PAGE, INC. (CBP).

3. DIGITAL TOPOGRAHIC MAP OF THE 1954 NORTHWEST ATLANTA QUADRANGLE (1:24,000). PROJECTION: NAD 83 STATE PLANE FOR GEORGIA WEST IN FEET

FOR PERMITTING PURPOSES **NOT FOR CONSTRUCTION**



2	2023/3/15	UPDATED LEGEND & AERIAL	DLP	YCS	LS	GLH
\triangle	2020/10/20	UPDATED LEGEND & AERIAL	LS	VN	JDG	TIR / GLH
\triangle	2018/05/04		SEP	DJC	KNJ	RPK / GLH
REV	DATE	REVISION DESCRIPTION	DES	CADD	СНК	RVW

GEORGIA POWER COMPANY



PLANT MCDONOUGH- ATKINSON AP-1, AP-2, AP-3/4

GEOLOGICAL AND HYDROGEOLOGICAL REPORT

REMOTE SENSING LINEAMENT MAP / COMPARISON OF MEASURED DISCONTINUITIES AND LINEAMENTS



YYYY/MM/DD	2018/10/16
DESIGNED	BBW
PREPARED	JDG
CHECKED	DLP

REVIEWED / APPROVED RNQ/GLH

GW-6



EXISTING CONTOURS (SEE REFERENCE 2 & 3) PROPERTY BOUNDARY (SEE REFERENCE 1) APPROXIMATE PRE-CLOSURE CCR LIMITS FINAL CLOSURE CCR LIMITS PERMIT BOUNDARY FUTURE BARRIER WALL OPTION A FUTURE BARRIER WALL OPTION B GROUNDWATER SURFACE CONTOURS (FEET MSL) APPROXIMATE GROUNDWATER FLOW DIRECTION UPGRADIENT WELL (SEE REFERENCE 3) AP-1 MONITORING WELL (SEE REFERENCE 3)

AP-2, 3/4 MONITORING WELL (SEE REFERENCE 3)

ASSESSMENT WELLS (SEE REFERENCE 3 AND 4)

ABANDONED PIEZOMETER OR MONITORING WELL

PIEZOMETER (SEE REFERENCE 3 AND 4)

1. GROUNDWATER ELEVATIONS ARE BASED ON WATER LEVELS MEASURED ON SEPTEMBER,

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

REFERENCES

1. APPROXIMATE PROPERTY BOUNDARY PROVIDED BY SOUTHERN COMPANY SERVICES (2017).

2. THE EXISTING TOPOGRAPHY, CONTOUR ELEVATIONS AND PHOTOGRAPHY FOR THE ASH PONDS 1 THROUGH 4 AREAS WERE PROVIDED BY GEORGIA POWER. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS, ON THE AP- 1 THROUGH 4, IS AUGUST 31, 2022 - DATE OF PHOTOGRAPHY AUGUST 31,2022. THE TOPOGRAPHIC CONTOUR INTERVALS IS 1

THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS FOR THE SURROUNDING AREAS OF ASH PONDS 1 THROUGH 4 WERE PROVIDED BY GEORGIA LAND DEPARTMENT AND METRO ENGINEERING AND SURVEYING CO, INC. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS, AT THE SURROUNDING AREAS. IS 03-18-2018, REFER TO THE SURVEY DRAWING TITLED "TOPOGRAPHIC MAP PREPARED FOR GEORGIA POWER COMPANY PLANT MCDONOUGH - GEORGIA STATE PLANE WEST SURVEY FEET - DATE OF PHOTOGRAPHY 09-07-2018 FOR SURROUNDING AREAS OF ASH PONDS 1 THROUGH 4.

3. SCS PLANT MCDONOUGH HYDROGEOLOGICAL INVESTIGATION (2012 TO 2020).

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

5. COORDINATES SYSTEM: NAD 1983 STATE PLANE GEORGIA WEST (U.S. FEET); ELEVATIONS DISPLAY IN FEET REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (FEET NAVD88).

<u>6</u>	2023/03/20	UPDATED TOPO & WATER LEVEL TO 09/2022	DLP	CRP	LS	GLH
<u> </u>	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
\triangle	2020/03/06	UPDATED FOR AUGUST 2019	VPM	VPM	JRJ	TIR / GLH
\triangle	2022/01/10	FOR PERMITTING PURPOSES NOT FOR CONSTRUCTION	SEP	DJC	KNJ	RPK / GLH
REV	DATE	REVISION DESCRIPTION	DES	CADD	СНК	RVW

GEORGIA POWER COMPANY PLANT MCDONOUGH



HYDROGEOLOGIC ASSESSMENT REPORT (HAR) PLANT MCDONOUGH-ATKINSON

ASH POND 1

POTENTIOMETRIC SURFACE MAP - SEPTEMBER 09, 2022

CONSULTANT	
115])	

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

REV. GW-7

APPENDIX A
THREE-DIMENSIONSAL NUMERICAL GROUNDWATER MODELING SUMMARY REPORT



Appendix A-Three-Dimensional Numerical Groundwater Modeling Summary Report

Georgia Power- Plant McDonough, Cobb County, Georgia

Submitted to:

Georgia Power

Environmental Affairs 241 Ralph McGill Boulevard Atlanta, Georgia 30308

Submitted by:

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REV05 iii

1.0 INTRODUCTION

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

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

1.1 Site History

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

1.2 Current Conditions

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

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



2.0 GROUNDWATER MODEL CONSTRUCTION

2.1 Geologic and Hydrogeologic conditions

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

2.2 Model Code

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

2.3 Model Grid

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

2.4 Model Layers

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

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

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



2.5 **Boundary Conditions**

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

2.5.1 Drain Boundaries

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

2.5.2 Unused Model Cells

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

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

2.5.3 River Boundaries

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

2.5.4 Wall Boundaries

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

2.6 Recharge

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

- All areas outside of ponds,
- Capped ponds,



Uncapped ponds or uncapped portions of ponds.

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

2.6.1 Baseline Conditions Recharge

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

2.6.2 Closure Conditions Recharge

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

2.7 Aquifer Parameters

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

2.7.1 Hydraulic Conductivity

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

2.7.1.1 Model Hydraulic Conductivity

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

Table 2-1 - Model Hydraulic Conductivity

Zone	Layer	Hydraulic Conductivity (ft/d)	Source
Ash	1	0.55 (horizontal)	AP-3/4 CPT dissipation and aquifer testing
7.011	· ·	0.037 (vertical)	data (Golder,2016)
Overburden	1 & 2	0.70 (horizontal)	Historical slug testing
Overburden		0.14 (vertical)	(Golder, 2016)
PWR	3	0.2 (horizontal)	Model collection
PWK		0.02 (vertical)	Model calibration
Dadwaak	4	0.16 (horizontal)	Madalaslibration
Bedrock	4	0.016 (vertical)	Model calibration

Notes:

ft/d = feet per day

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

Ash - Limited to within footprint of ash ponds.

Overburden - Includes northern portion of AP-1 and fringes of AP-1 and AP-3/4 in Layer 1 and all of Layer 2.

- PWR Includes all of model layer 3.
- Bedrock Includes all of model layer 4.

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

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

3.0 MODEL CALIBRATION

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

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

3.1 Calibration Points

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

Table 3-1 - Calibration Targets

Target Name	Easting (NAD 83 ft)	Northing (NAD 83 ft)	Model Layer	Observed Head Aug. 2016 (ft) ^[1]	Computed Head (ft NAVD 88)	Weight	Group	Residual (ft)
USGS-10EE02	2204179.513	1395565.891	2	824	823.02	1	1	0.98
B25	2201479.84	1392826.91	2	821.63	811.78	1	1	9.85
B2	2202118.693	1393956.841	2	822.66	823.58	1	1	-0.92
В3	2202411.143	1394043.541	2	811.85	814.08	1	1	-2.23
B4	2202662.203	1394170.481	2	797.89	797.51	1	1	0.38
B5	2202962.793	1394309.251	2	785.98	789.55	1	1	-3.57



Target Name	Easting (NAD 83 ft)	Northing (NAD 83 ft)	Model Layer	Observed Head Aug. 2016 (ft) ^[1]	Computed Head (ft NAVD 88)	Weight	Group	Residual (ft)
В6	2203255.163	1394424.071	2	787.4	787.50	1	1	-0.10
В7	2203595.173	1394373.411	2	799.54	802.44	1	1	-2.90
В8	2203881.823	1394325.091	2	812	808.59	1	1	3.41
В9	2204166.953	1394056.261	2	810.4	805.77	1	1	4.63
B10	2204197.803	1393818.471	2	802.79	798.70	1	1	4.09
B11	2204167.653	1393547.501	2	791.49	789.44	1	1	2.05
B12	2204125.013	1393151.161	2	765.72	767.96	1	1	-2.24
B13	2204084.663	1392881.611	2	760.19	770.78	1	1	-10.59
B14	2204013.213	1392575.341	2	770.41	772.35	1	1	-1.94
B15	2203675.773	1392544.701	2	786.06	789.44	1	1	-3.38
B16	2203313.213	1392596.211	2	802.6	802.75	1	1	-0.15
B17	2203049.043	1392645.881	2	809.35	809.35	1	1	0.00
B18	2202874.993	1392521.151	2	809.19	809.90	1	1	-0.71
B19	2202875.673	1392380.731	2	804.25	805.67	1	1	-1.42
B20	2202315.153	1392164.351	2	802.21	806.60	1	1	-4.39
B21	2202062.543	1392068.121	2	802.74	802.95	1	1	-0.21
B22	2201790.513	1392124.821	2	805.02	802.35	1	1	2.67
B23	2201582.863	1392242.101	2	804.61	802.52	1	1	2.09
B24	2201451.513	1392480.231	2	806.65	805.11	1	1	1.54
B27	2201744.773	1393423.511	2	830.16	827.61	1	1	2.55
B28	2201677.593	1391970.421	2	793.3	796.47	1	1	-3.17
B29	2201420.25	1391891.93	3	790.87	788.62	1	1	2.25
B31	2200926.823	1392035.971	3	764.17	773.46	1	1	-9.29
B37	2200919.393	1390483.941	2	753.01	751.89	1	1	1.12
B38	2201147.653	1390364.531	2	751.24	749.57	1	1	1.67
B39	2201538.453	1390303.391	2	751.82	752.07	1	1	-0.25
B40	2201826.763	1390625.631	2	760.98	759.75	1	1	1.23
B41	2201749.843	1390922.381	3	774.74	766.81	1	1	7.93
B42	2201866.973	1391328.161	2	778.08	778.91	1	1	-0.83

Notes:

ft = feet

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

NAVD 88 = North American Vertical Datum of 1988

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

3.2 Comparison of Observed and Predicted Heads

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

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



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

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

3.3 Sensitivity Analysis

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

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

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

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

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

Table 3-2: PEST Sensitivity Results

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

4.0 FLOW MODEL RESULTS

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

4.1 Baseline Conditions Model

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

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

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

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



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

4.2 Closure Conditions Model

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

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

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

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

5.0 SUMMARY OF GROUNDWATER MODEL FINDINGS

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

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



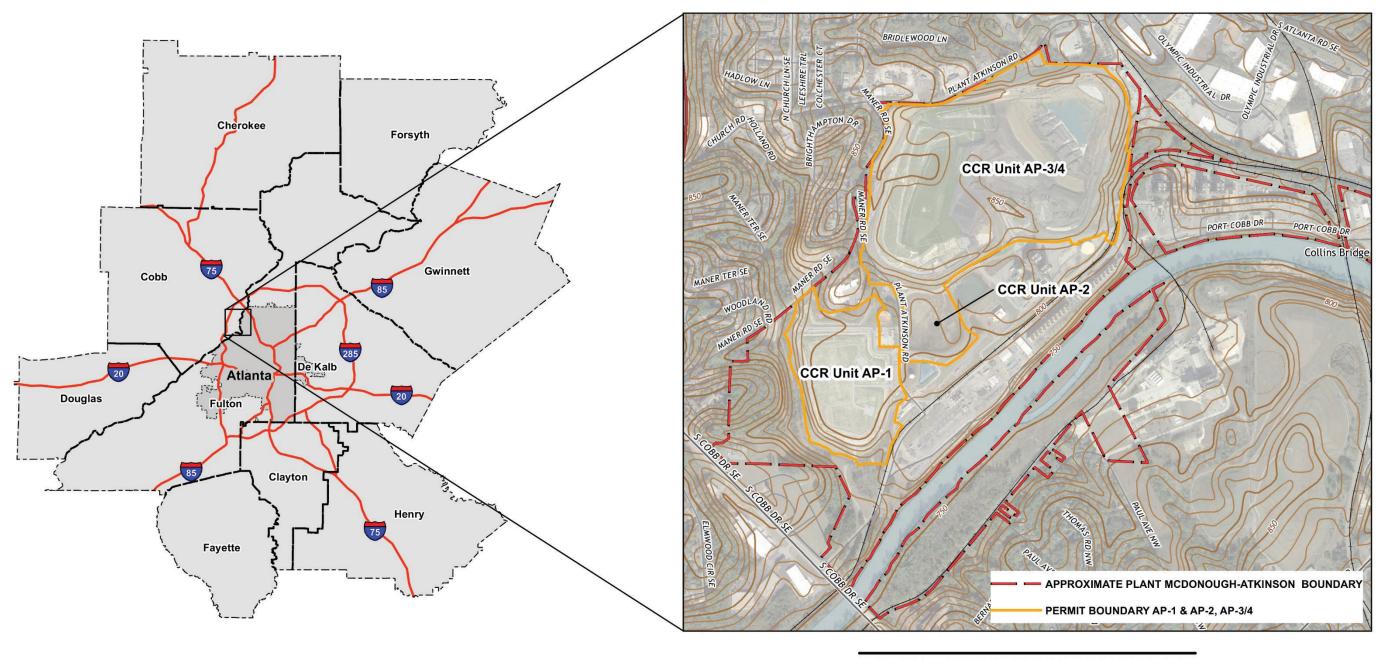
capped and a wall is installed around AP-1. Water levels are predicted to drop up to 10 ft, in the AP-1 area and up to 40 ft in the AP-3/4 area.

6.0 REFERENCES

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



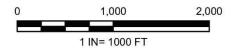
Figures



SITE VICINITY MAP

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

SITE LOCATION MAP



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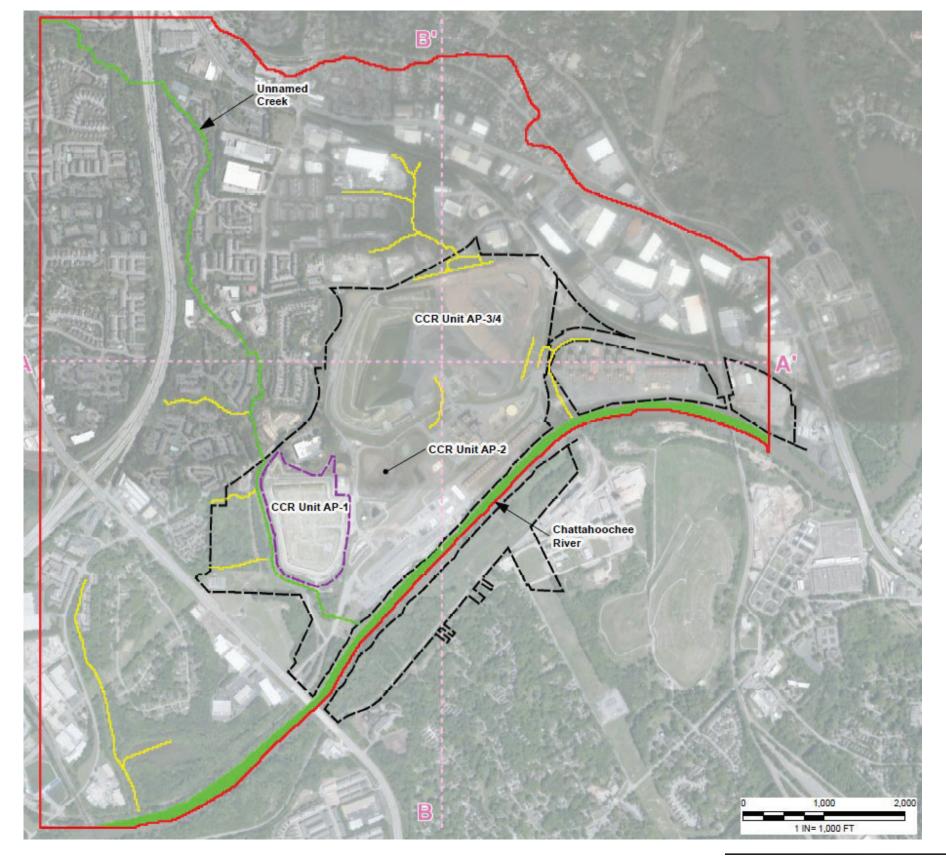
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TITLE

SITE LOCATION MAP

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Legend

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

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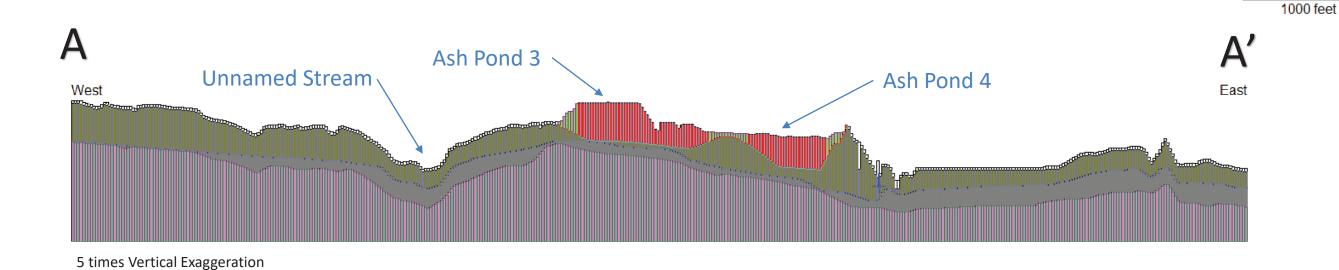
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PLANT MCDONOUGH		

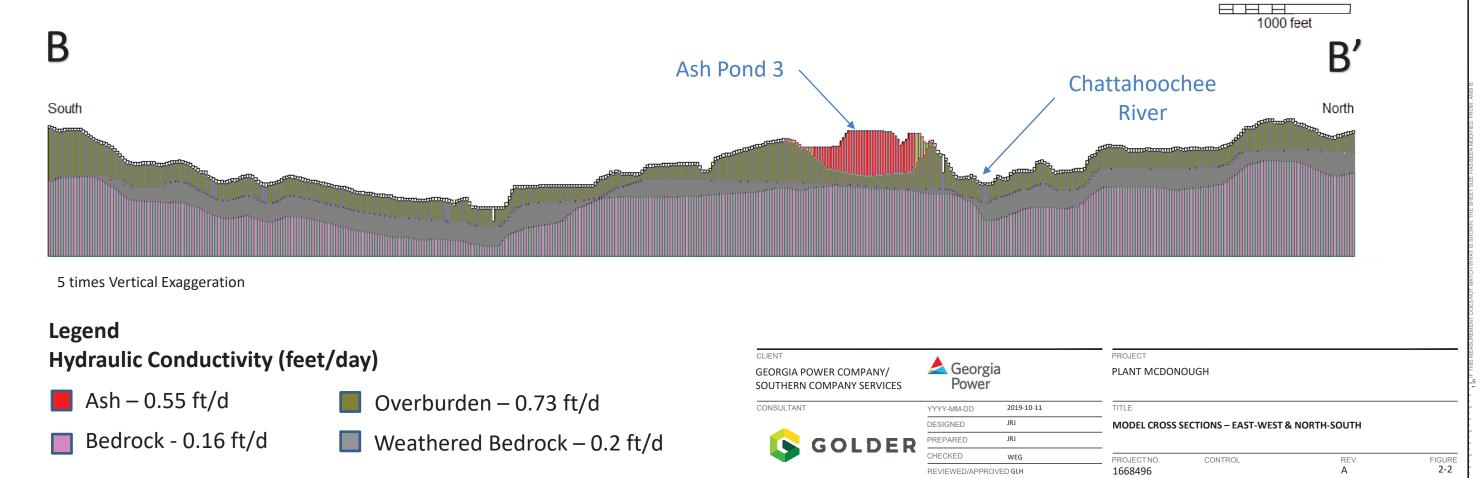
MODEL DOMAIN AND BOUNDARY CONDITIONS

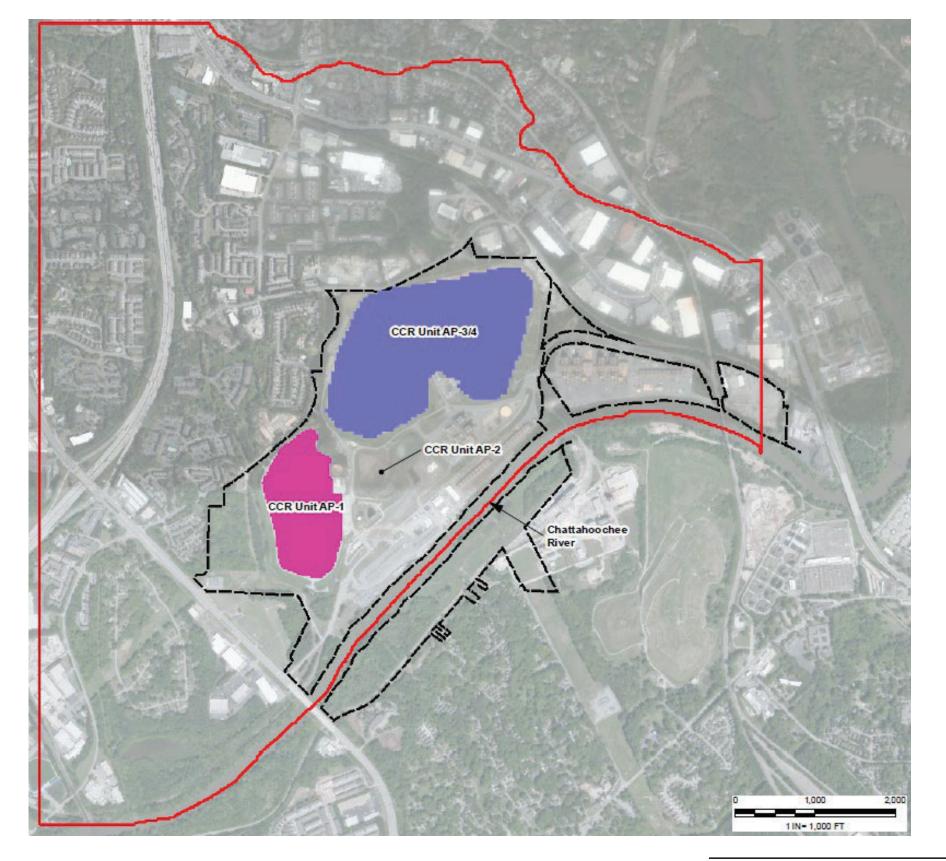
PROJECTNO. CONTROL 1668496	REV. A	FIGURE 2-1
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Model Cross Section – West to East (Row 210)



Model Cross Section – South to North (Column 250)







Legend

Ash Pond 1: No Recharge

Ash Ponds 3 & 4: Recharge = 10.73 in/yr

Rest of Model Domain:
Recharge = 2.41 in/yr

— Active Model Boundary

Plant Boundary (Approximate)

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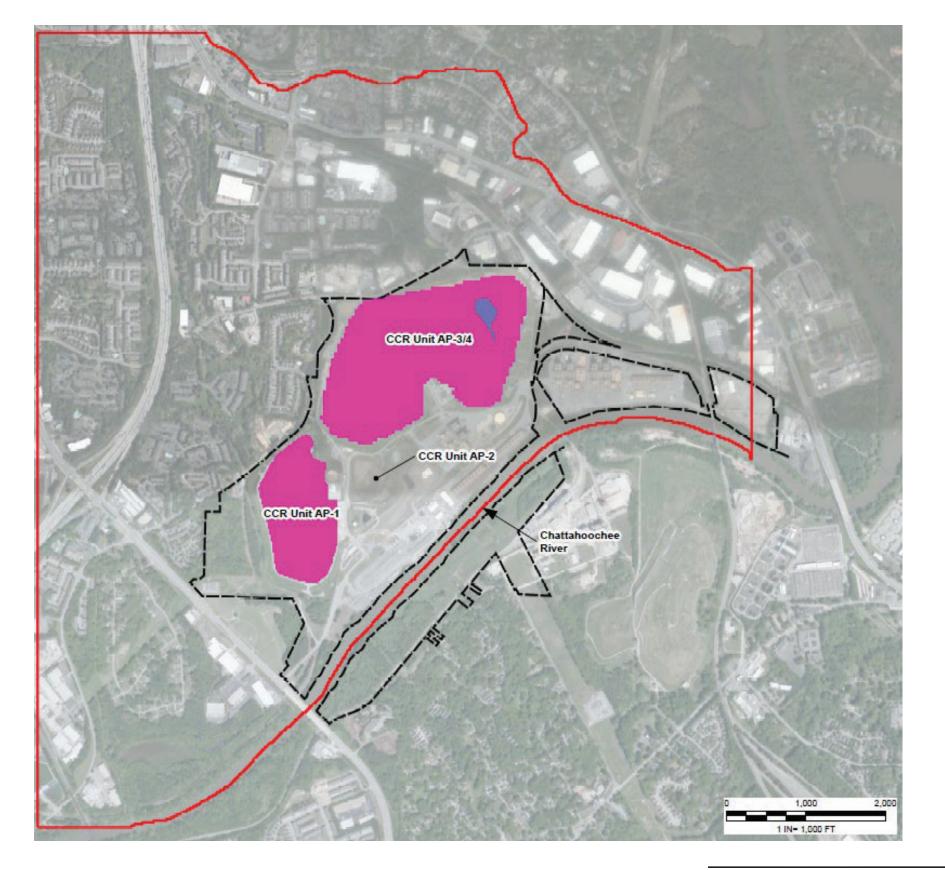
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PLANT MCDONOUGH		

FIGURE 2-3

PROJECTNO. CONTROL REV. A





Legend

No Recharge

Recharge = 10.73 in/yr

Rest of Model Domain: Recharge = 2.41 in/yr

— Active Model Boundary

Plant Boundary (Approximate)

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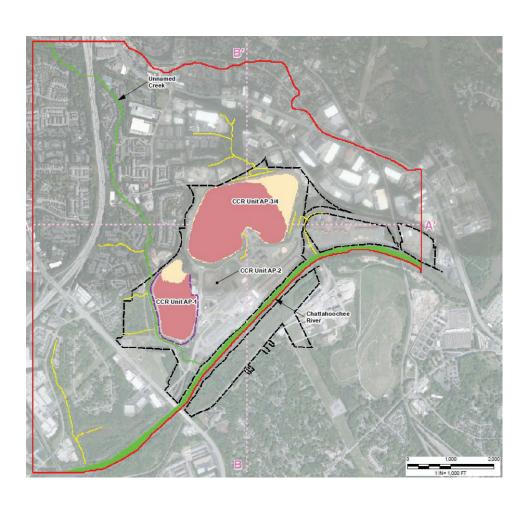
AP-1 BARRIER WALL CLOSURE MODEL RECHARGE ZONES (LAYER 1)

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CCR Unit AP-2 CCR Unit AP-2 CCR Unit AP-2 Challanconine River

Base Model - Layer 1 Hydraulic Conductivity



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

Legend

Ash (Model Zone 1)K_{xy} = 0.73 ft/d

 $K_z = 0.14 \text{ ft/d}$

Ash (Model Zone 4)

 $K_{xy} = 0.55 \text{ ft/d}$ $K_7 = 0.037 \text{ ft/d}$

Overburden (Model Layer 2 - not depicted)

 $K_{xy} = 0.73 \text{ ft/d}$ $K_z = 0.14 \text{ ft/d}$

Saprolite (Model Layer 3 - not depicted)

 $K_{xy} = 0.2 \text{ ft/d}$ $K_z = 0.02 \text{ ft/d}$

Bedrock (Model Layer 4 - not depicted)

 $K_{xy} = 0.16 \text{ ft/d}$ $K_z = 0.016 \text{ ft/d}$

Active Model Boundary

Plant Boundary (Approximate)

Notes:

 K_{xy} = Horizontal and transverse hydraulic conductivity K_z = Vertical hydraulic conductivity

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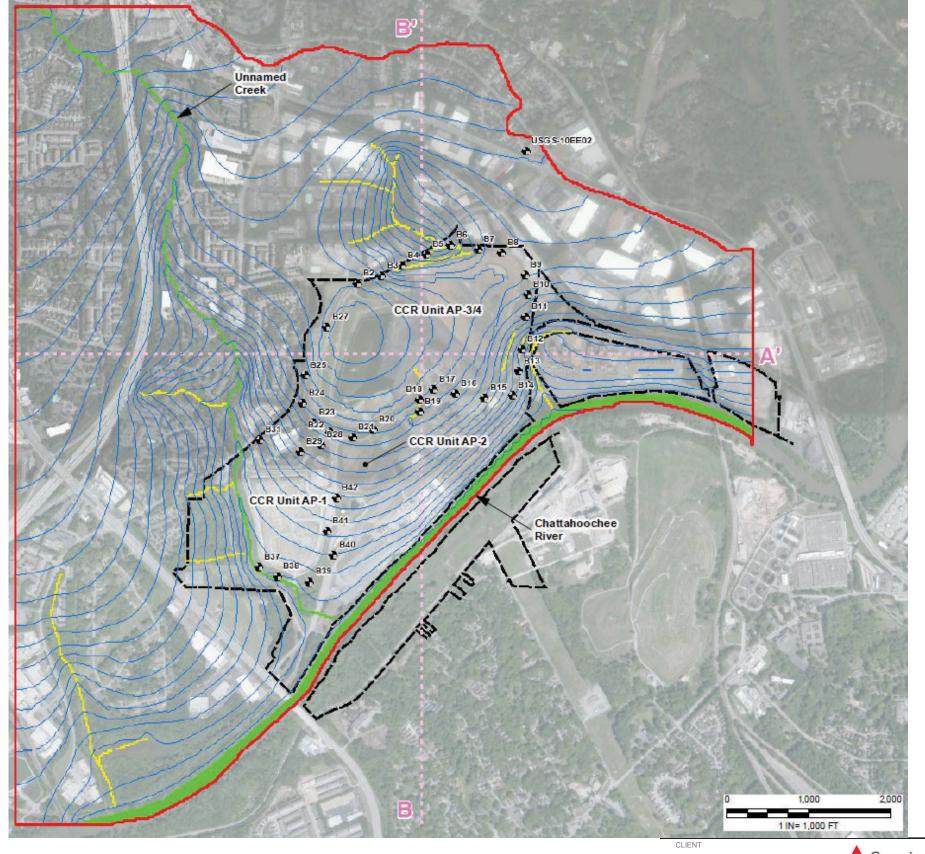
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PLANT MCDONOUGH

TITLE

MODEL LAYER 1 HYDRAULIC CONDUCTIVITY

PROJECTNO. CONTROL REV. F 1668496 A





Legend

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

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PLANT MCDONOUGH

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

PROJECTNO. CONTROL REV. FIG. 1668496 A 3

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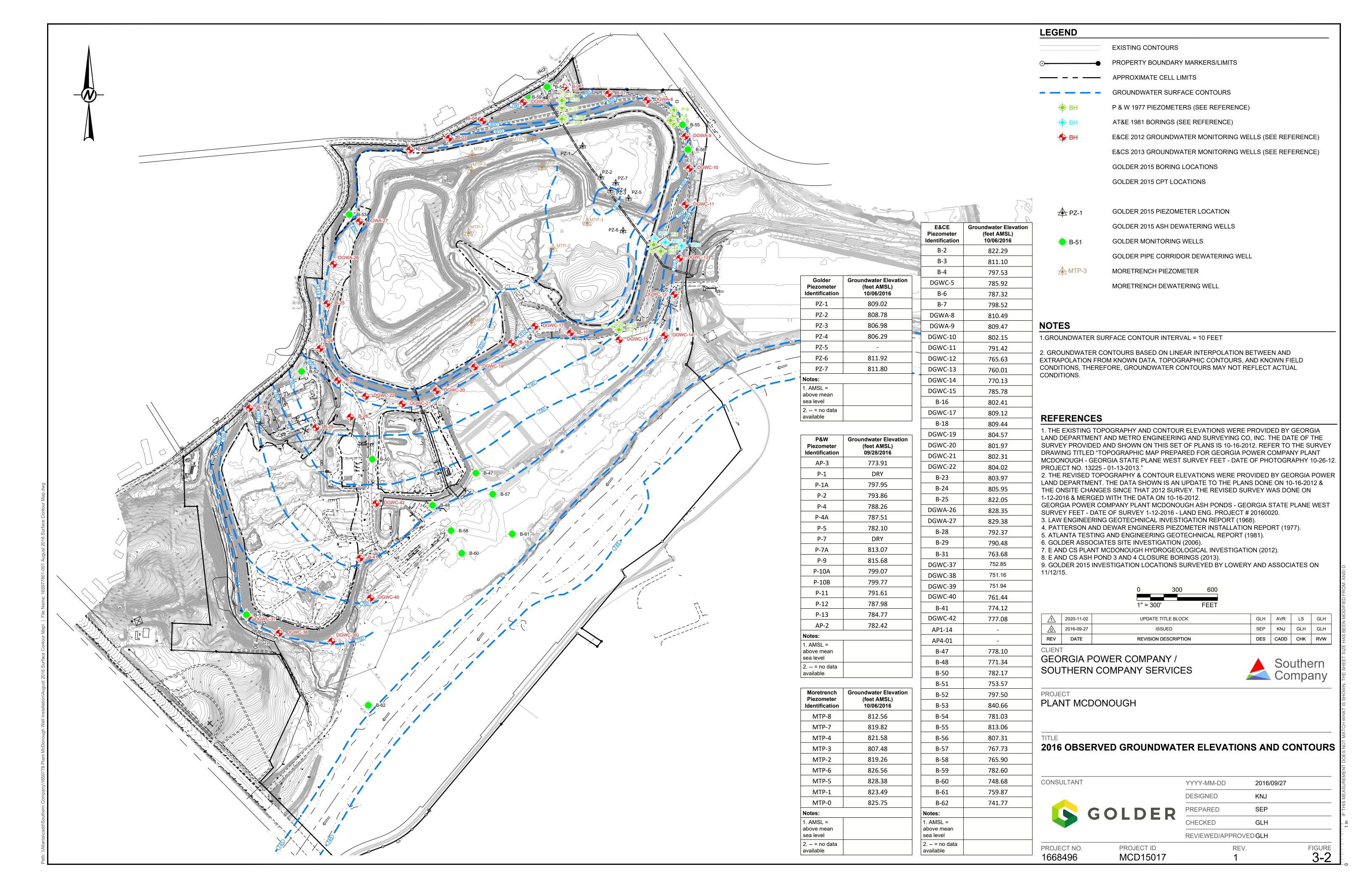
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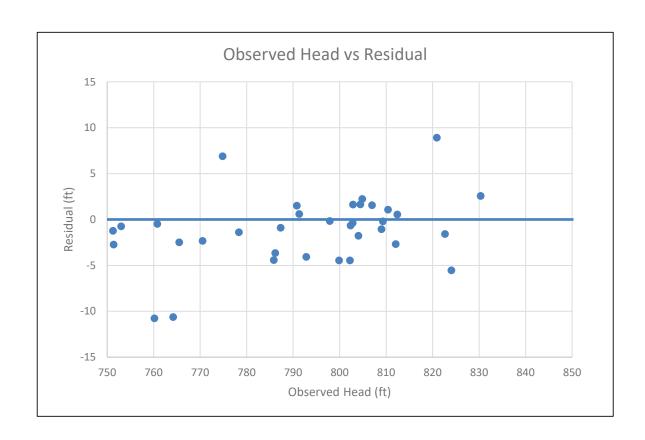
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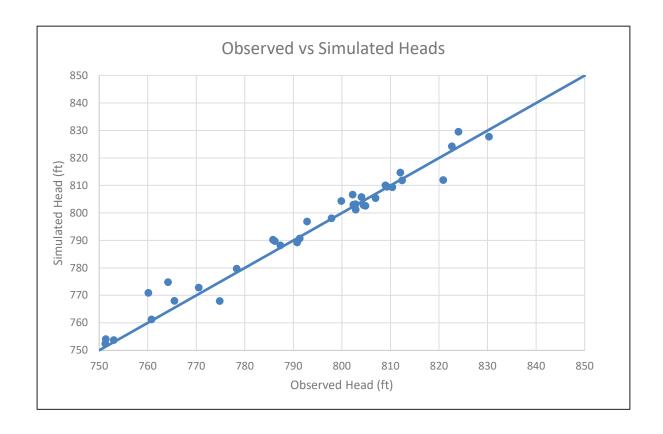
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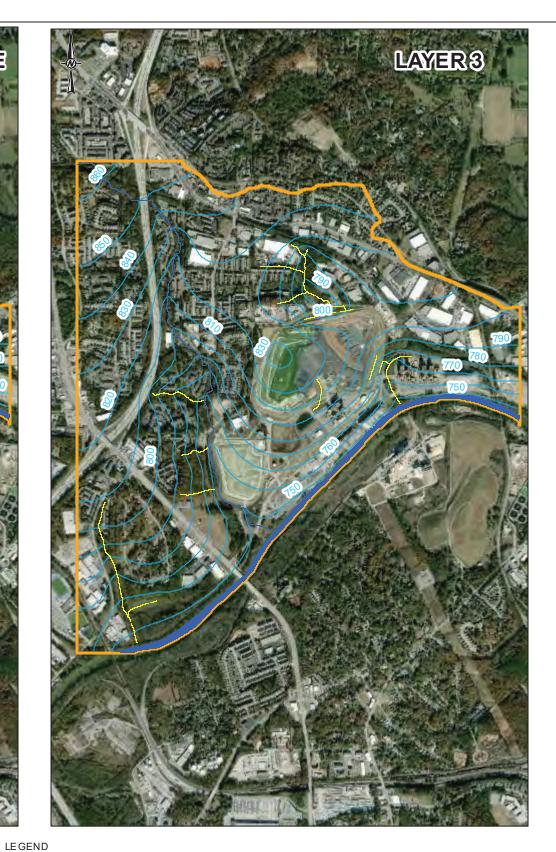


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MODEL CALIBRATION SUMMARY

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NOTES:

River Boundary Conditions Drain Boundary

Groundwater Elevation Contour (ft)

Model Area

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

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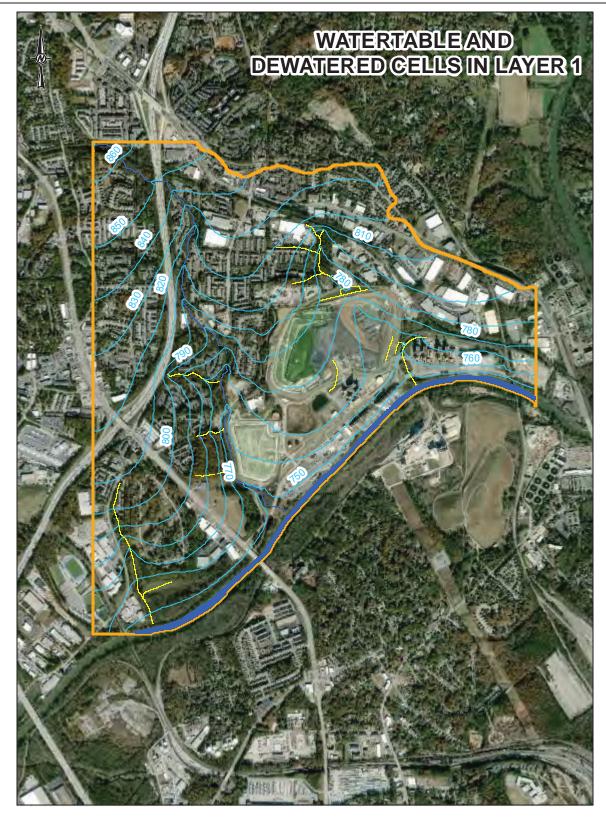
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PROJECT PLANT MCDONOUGH

Baseline Conditions Modeled Groundwater Elevation Contours

FIGURE 4-1

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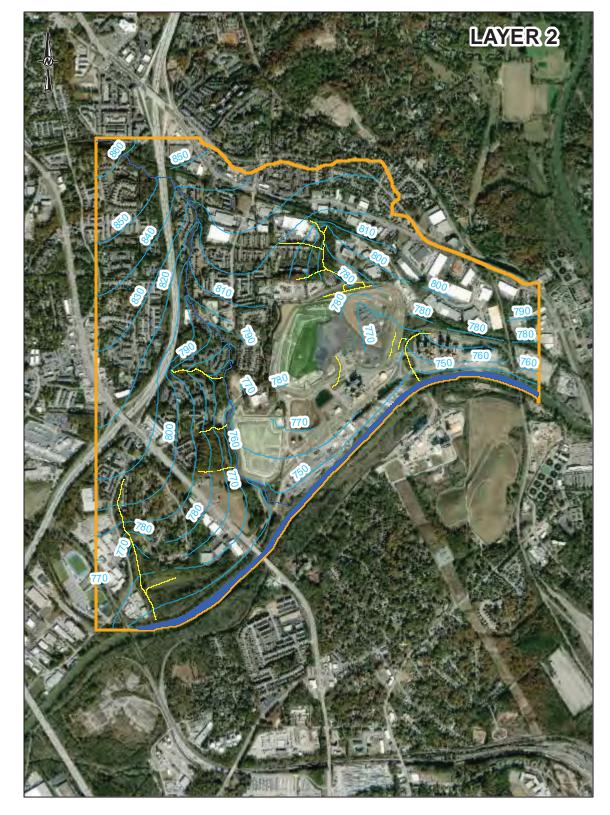
River Boundary Conditions

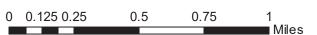
Drain Boundary

Groundwater Elevation Contour (ft)

Model Area

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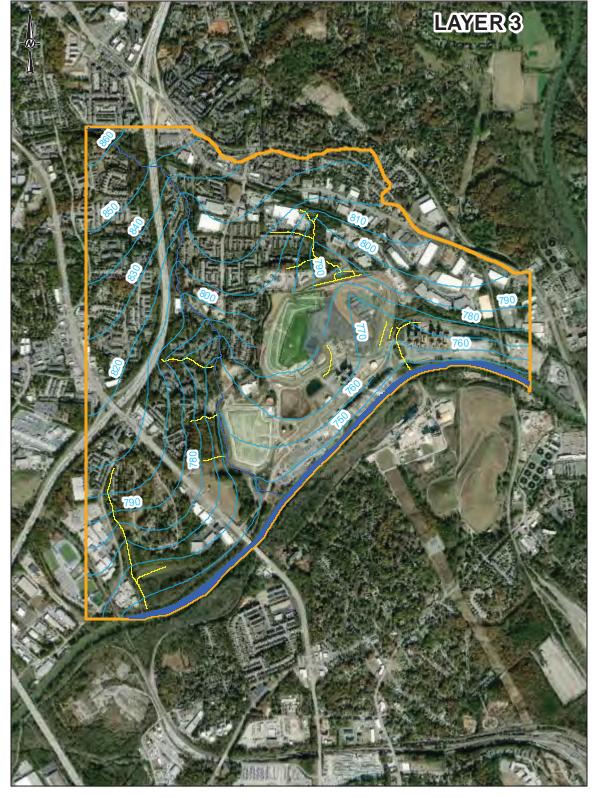
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Closure Conditions Model Conditions Water Table and Model Layer 2 Modeled Groundwater Elevation Contours

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FIGURE 4-2



LEGEND

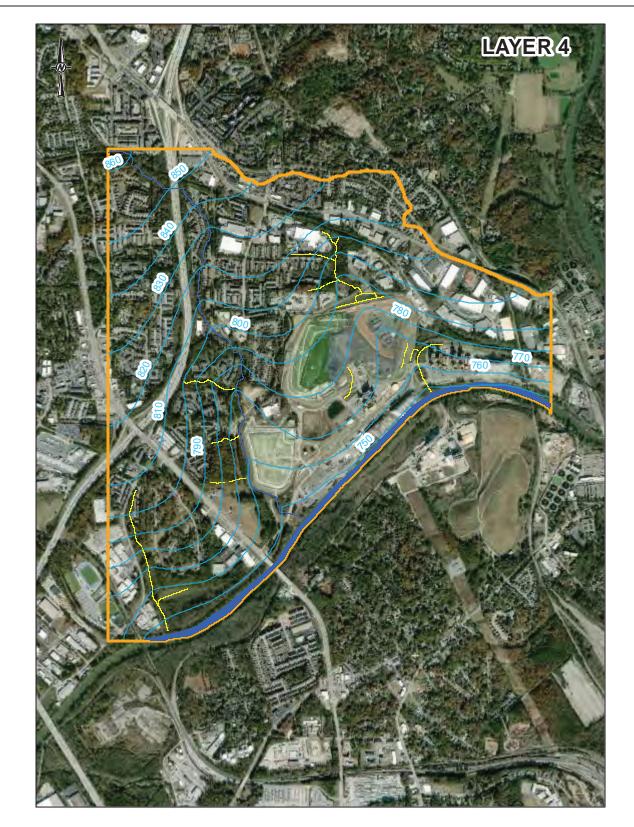
River Boundary Conditions

Drain Boundary

Groundwater Elevation Contour (ft)

Model Area

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





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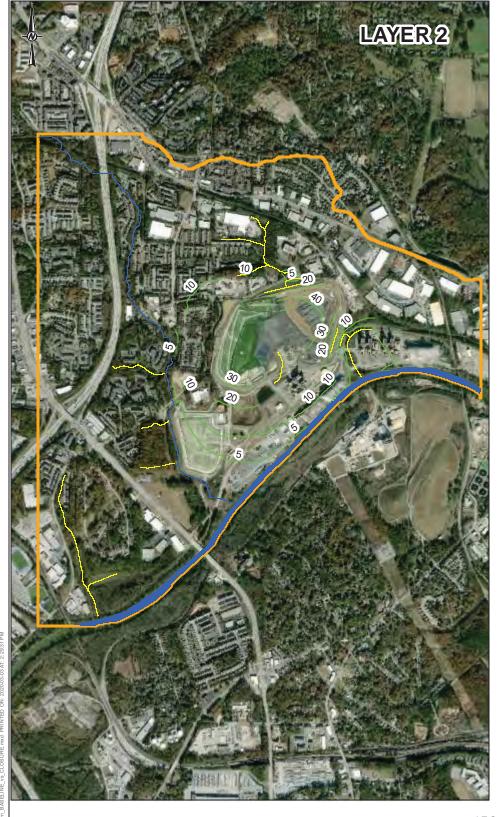
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Closure Conditions Model Conditions Model Layer 3 and 4
Modeled Groundwater Elevation Contours

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FIGURE 4-3

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NOTES:

LEGEND

River Boundary Conditions

Drain Boundary

—— Drawdown (ft)

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

Model Area

0 0.125 0.25 0.5 0.75 1 Miles

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Closure Conditions Model versus Baseline Modeled Groundwater Elevation Change

PROJECTNO. PHASE REV. 1661841 3 0

REV. FIGURE 0 4-4



REPORT

Three-Dimensional Numerical Groundwater Modeling Summary Report Addendum

Georgia Power - Plant McDonough, Cobb County, Georgia

Submitted to:

Georgia Power

Environmental Affairs 241 Ralph McGill Boulevard Atlanta, Georgia 30308

Submitted by:

Golder Associates Inc. 5170 Peachtree Road Building 100 Suite 300, Atlanta, Georgia, USA 30341 +1 770 496-1893 Project No. 1777449 Rev0 November 22, 2021

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		Addendum Closure Model	
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Figure 2 – AP-1 Model Boundary Conditions

Figure 3 – Closure Conditions Model Domain Groundwater Table

Figure 4 – AP-1 Closure Conditions Groundwater Table

Figure 5 – AP-1 Closure Conditions Groundwater Elevation (Layer 2)

Figure 6 – AP-1 Closure Conditions Groundwater Elevation (Layer 3)

Figure 7 – AP-1 Closure Conditions Groundwater Elevation (Layer 4)

Figure 8 – AP-1 Groundwater Flow Transect Locations



1.0 INTRODUCTION

This *Three-Dimensional Numerical Groundwater Modeling Summary Report Addendum* (Addendum) was prepared by Golder Associates Inc. (Golder) to document updates to the steady state numerical groundwater flow model associated with the Advanced Engineering Method (AEM) at CCR Unit Ash Pond 1 (AP-1) at the Georgia Power Company (Georgia Power) Plant McDonough-Atkinson (Plant McDonough; Site) located in Cobb County, Georgia (see Figure 1).

AP-1 is currently capped and in the process of closure to minimize infiltration and erosion and to meet or exceed the requirements of § 257.102(d)(3)(ii). As discussed in the Plant McDonough AP-1 Solid Waste Handling Permit Application submitted to the Georgia Environmental Protection Division (EPD) in September 2021 (Golder, 2021a), the AP-1 closure will include an AEM consisting of a fully encompassing subsurface vertical barrier wall (barrier wall) constructed from the ground surface to the top of partially weathered rock (PWR). Predicted post-closure groundwater flow conditions for AP-1 were previously simulated using a Closure Model that is documented in the Model Report submitted to EPD in 2020 as an Appendix to the Hydrogeological Assessment Report (HAR) (Golder, 2020a). The HAR was submitted to EPD as Revision 03 in September 2021 (Golder, 2021b).

This Addendum documents revised post-closure groundwater flow model predictions based on updates to the AP-1 closure-by-removal area grading and subsurface barrier wall alignment, as documented in the Plant McDonough-Atkinson Coal Combustion Residual (CCR) Surface Impoundments (CCR Unit AP-1 and CCR Unit AP-2, CCR Unit AP-3/4) Permit applications (AP-1 Permit (Golder, 2021a) and AP-2, AP-3/4 Permit (Golder, 2020b with 2021 revisions). The updated model is hereafter referred to as the Addendum Closure Model.

The Addendum Closure Model, which focuses on AP-1, also includes updates to AP-2 and AP-3/4 closure designs (also located in the Closure Model domain) based on the November 2021 AP-2, AP-3/4 Permit application Response to EDP Comments and revised Closure Drawings. Revised closure design for AP-2 and AP-3/4 include backfilling of AP-2 with soil, minor grading changes in the CCR excavation portion of AP-3/4, and the as-built depth of the AP-3/4 underdrain.

The following sections provide a brief overview of the previously submitted Closure Model and describe model updates and results of the Addendum Closure Model.

1.1 Closure Model

The conceptual site model (CSM) and Baseline and Closure Models construction, calibration, and results were previously documented in the Three-Dimensional Numerical Groundwater Modeling Summary Report Revision 3 (Model Report), included as Appendix A of the HAR (Golder, 2021b).

The Baseline and Closure Models presented in the Model Report are as follows:

- The Baseline Model is a calibrated groundwater flow model that simulates August 2016 steady state flow conditions, after the initial cover installation at AP-1 and prior to the final cover installation at AP-3/4. This model serves as the basis for the predictive Closure Model.
- The Closure Model is a modified version of the Baseline Model that simulates final cover installation at AP-1 over a consolidated CCR footprint and installation of a fully encompassing barrier wall reflecting the original 2018 AP-1 Permit Closure Design barrier alignment and depth; closure of AP-2 by removing CCR



without backfilling; and installation of final cover at AP-3/4 over a consolidated footprint and a proposed AEM underdrain.

1.2 Addendum Closure Model

The objective of this addendum is to document the results of the Addendum Closure Model. The Addendum Closure Model updates focus primarily on the incorporation of the updated barrier wall design for AP-1, but they also include updates to cover alignments and/or grading at AP-2 and AP-3/4. Updates incorporated into the Addendum Closure Model are as follows:

- AP-1: Updated geometry of the final cover system and updated alignment of the fully encompassing subsurface barrier wall based on the November 2021 Closure Drawings as part of the Permit application. The proposed barrier wall will extend from the ground surface (top of Model Layer 1) to the top of PWR (Model Layer 3) along the alignment from the 2021 AP-1 Permit application, as shown in Figure 2.
 - The barrier wall is simulated in the Addendum Closure Model using Horizontal-Flow-Barrier (HFB) model boundary conditions and are assigned the same wall thickness and hydraulic conductivity as in the previous Closure Model, which is consistent with the expected wall construction.
- AP-2: Updated grading based on backfilling with soil. The ground surface (top of Layer 1) in the model within AP-2 is updated to reflect backfilling with soil¹.
- AP-3/4: Updated alignments for the final cover system and the underdrain AEM to reflect as-built conditions². The AP-3/4 AEM underdrain is simulated using drain model boundary conditions, and the drain stage and hydraulic conductivity are updated to reflect as-built conditions.

Additionally, all areas with final cover are assigned a recharge of zero, consistent with the Closure Model, and all AP-1 CCR (Layer 1) outside the limits of the 2021 Permit barrier wall alignment were removed from the Addendum Closure Model consistent with the proposed barrier wall construction plans.

Results of the Addendum Closure Model are compared to results of the Baseline and Closure Models documented in the 2020 Model Report. The following metrics are used to evaluate AP-1 and AP-3/4 post-closure predictions³: (i) maximum height of the potentiometric surface above the bottom of AP-1; (ii) volume of CCR below the potentiometric surface; (iii) percent reduction in volume of CCR below the potentiometric surface; and (iv) percent reduction in AP-1 downgradient groundwater flow.

³ The Addendum Closure Model predicts that AP-3/4 CCR will desaturate due to the presence of the underdrain AEM in the as-bult configuration.



¹ AP-2 soil backfill was assigned the same properties as Overburden (see Model Report). Flow fields proximal to AP-2 are unchanged as compared to the Closure Model.

² AP-3/4 temporary dewatering wells are not included in the Addendum Closure Model, as they will only be used during construction and for a temporary period at the beginning of post closure. This approach is consistent with the Closure Model submitted to EPD in 2020.

2.0 PREDICTIVE SIMULATION AND RESULTS

Simulated model-wide water table elevation contours (10-ft contour interval) for the Closure Model and Addendum Closure Model are presented in Figure 3. Predicted post-closure water levels across the Site are similar in the Closure Model and Addendum Closure Model, as depicted in Figure 3.

Review of simulated more detailed groundwater elevation contours (2-ft contour interval) near AP-1 in Layers 1 through 4 (Figures 4 through 7, respectively) indicates water levels in AP-1 decreased by approximately one to two feet in the Addendum Closure Model compared to the Closure Model.

The predicted reduction in saturated volume of AP-1 CCR in the Addendum Closure Model as compared to the Baseline Model is 31%, as summarized in Table 1. The predicted reductions in simulated flow across the western and southern side of AP-1 in overburden (Layer 2) in the Addendum Closure Model as compared to the Baseline Model are 84% and 72%, respectively, as summarized in Table 1⁴. The predicted reduction in saturated volume of AP-3/4 CCR in the Addendum Closure Model as compared to the Baseline Model is 100%.

Plant McDonough CCR Unit Addendum Closure Conditions are predicted to reduce the potentiometric surface elevation within the units, the volume of saturated CCR, and flow across the Unit boundaries including the elimination of saturation and flow across CCR in Unit AP-3/4. These reductions are more pronounced in the Addendum Closure Model and result in more favorable predicted post-closure conditions with respect to closure objectives.

3.0 REFERENCES

Golder, 2020a. Appendix A -Three-Dimensional Numerical Groundwater Modeling Summary Report, Revision 5, Golder Associates Inc. November 2020.

Golder, 2020b. Plant McDonough-Atkinson CCR Surface Impoundments (CCR Unit AP-2, Combined CCR Unit AP-3/4) Cobb County, Georgia Part A Section 2 – Permit Application Revision 1, Golder Associates Inc. November 2020, with 2021 Revisions.

Golder, 2021a. Plant McDonough-Atkinson CCR Surface Impoundments (CCR Unit AP-1) Cobb County, Georgia Part A Section 2 – Permit Application, Golder Associates Inc. September 2021.

Golder, 2021b. Hydrogeologic Assessment Report, Plant McDonough-Atkinson Ash Pond 1, Ash Pond 2, and Ash Pond 3/4, Revision 3, Golder Associates Inc. September 2021.

⁴ Flow estimates were calculated in the model.



TABLE



Groundwater Model Addendum Plant McDonough-Atkinson

Model Scenario	CCR Unit Conditions	Maximum Height of Potentiometric Surface Above Bottom of Unit (feet)	Volume of CCR Below the Potentiometric Surface (cubic yards)	Percent (%) Reduction in Volume of CCR Below the Potentiometric Surface	Percent (%) Reduction in Downgradient Groundwater Flux Across A Transect	Percent (%) Reduction in Downgradient Groundwater Flux Across B Transect
	CCR Unit AP-1 Results					
Baseline	Cover installed	16.0	205,800	-	-	-
Closure	Cover installed, fully encompassing barrier wall	13.0	163,100	21%	74%	70%
Addendum Closure	Cover installed, fully encompassing barrier wall with updated alignment	12.0	142,300	31%	84%	72%
CCR Unit AP-3/4 Results						
Baseline	AP-3/4 Pre-Closure Conditions	49.2	1,528,300	-	-	-
Closure (4)	Consolidated CCR Footprint, Cover installed, AEM Underdrain	1.0	200	99.99%	~100%	
Addendum Closure	Consolidated CCR Footprint, Cover installed, AEM Underdrain with As-Built Conditions	0.0	0	100%	100%	

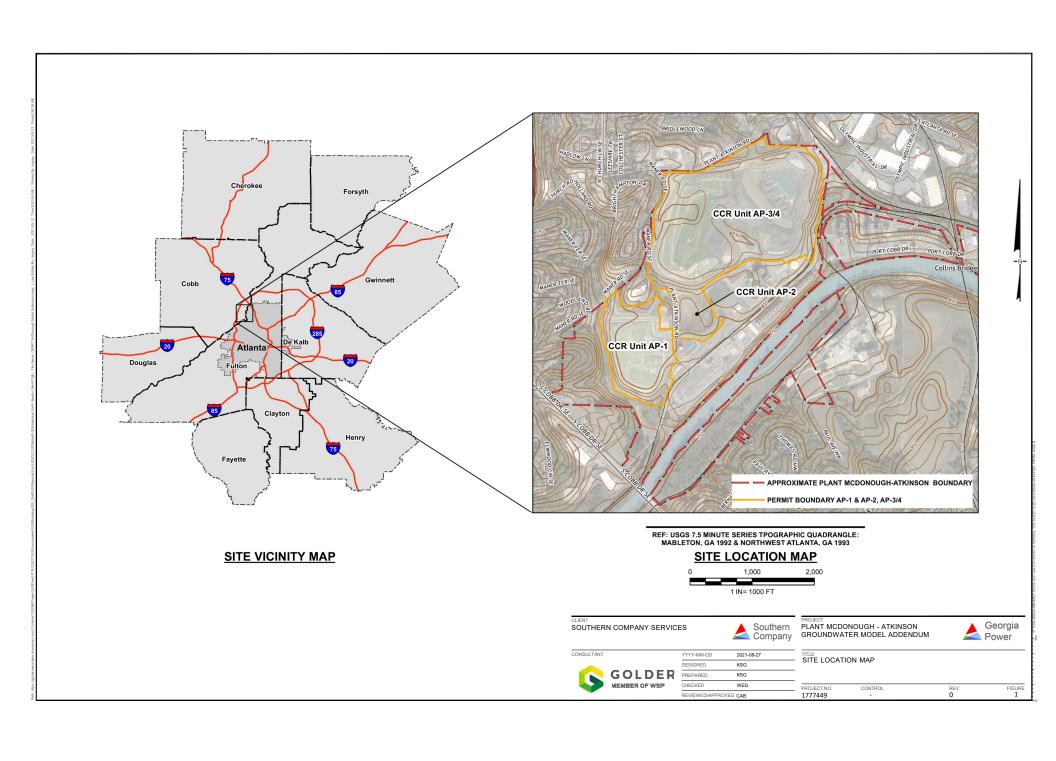
Notes:

- 1. These values were obtained from groundwater flow modeling results. It is noted that groundwater flow models are necessarily simplified mathematical representations of complex natural systems. Because of this, all groundwater models have limits to their accuracy.
- 2. These model results were intended for use as relative comparisons between scenarios, and not as precise predictions of post-closure conditions.
- 3. Flux estimates were calculated in the model as the volume of water passing through a vertical plane per unit time. Transect locations are depicted in Figure 8. AP-3/4 downgradient flux is shown to reduce by 100% due to the complete desaturation of the CCR in AP-3/4.
- 4. The Closure Model indicated de minimis saturated CCR in AP-3/4 because of the geometric conceptualization of the underdrain model boundary condition. The Addendum Closure Model boundary conditions represent the as-built underdrain condition and geometry and predicts complete de-saturation of CCR in AP-3/4.



FIGURES

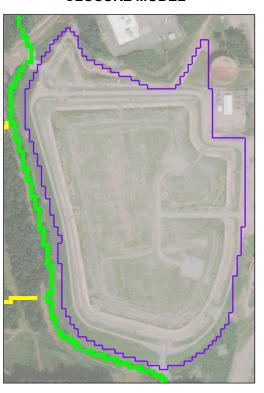




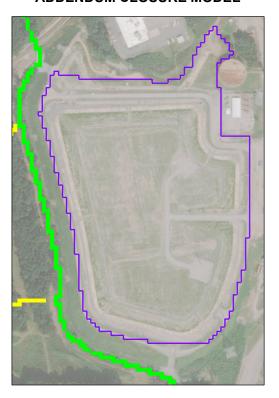
BASELINE MODEL

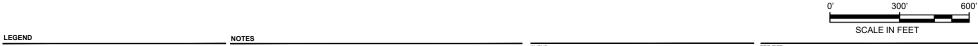


CLOSURE MODEL



ADDENDUM CLOSURE MODEL





DRAIN BOUNDARY CONDITION
RIVER BOUNDARY CONDITION
BARRIER WALL BOUNDARY CONDITION

 GROUNDWATER MODEL CONSTRUCTION AND CALIBRATION ARE DESCRIBED IN REFERENCE 1.

REFERENCES

 HYDROGEOLOGICAL ASSESSMENT REPORT GEORGIA POWER COMPANY PLANT MCDONOUGH-ATKINSON, APPENDIX A, GOLDER ASSOCIATES INC. 2021.

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PROJECT PLANT MCDONOUGH - ATKINSON GROUNDWATER MODEL ADDENDUM

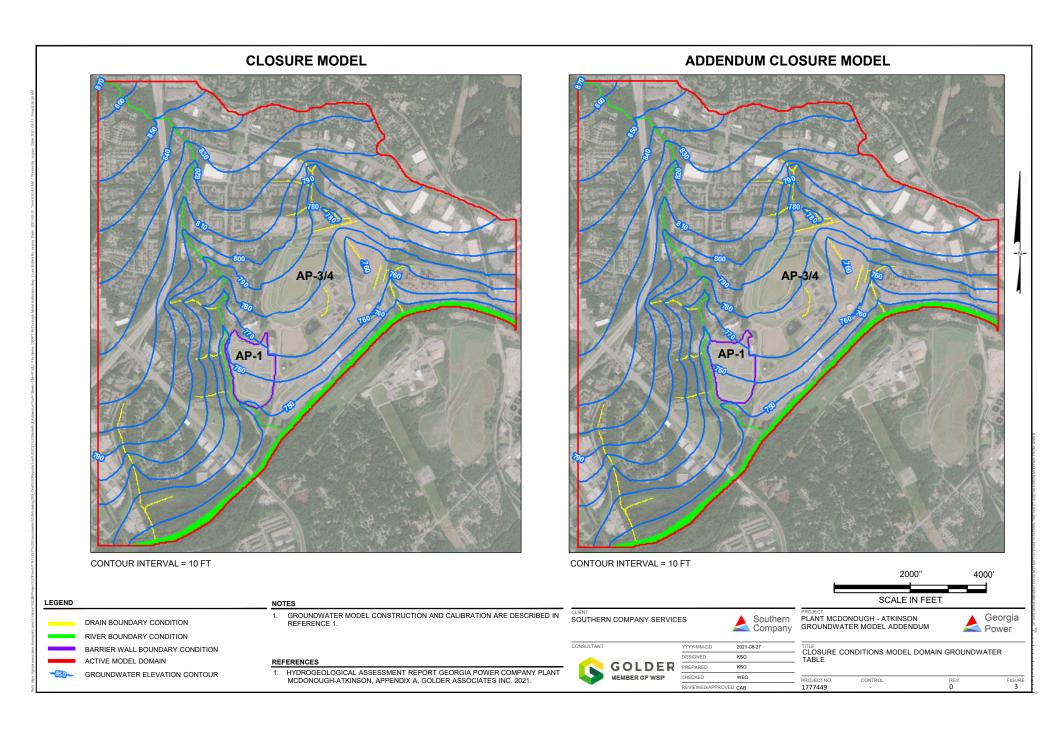


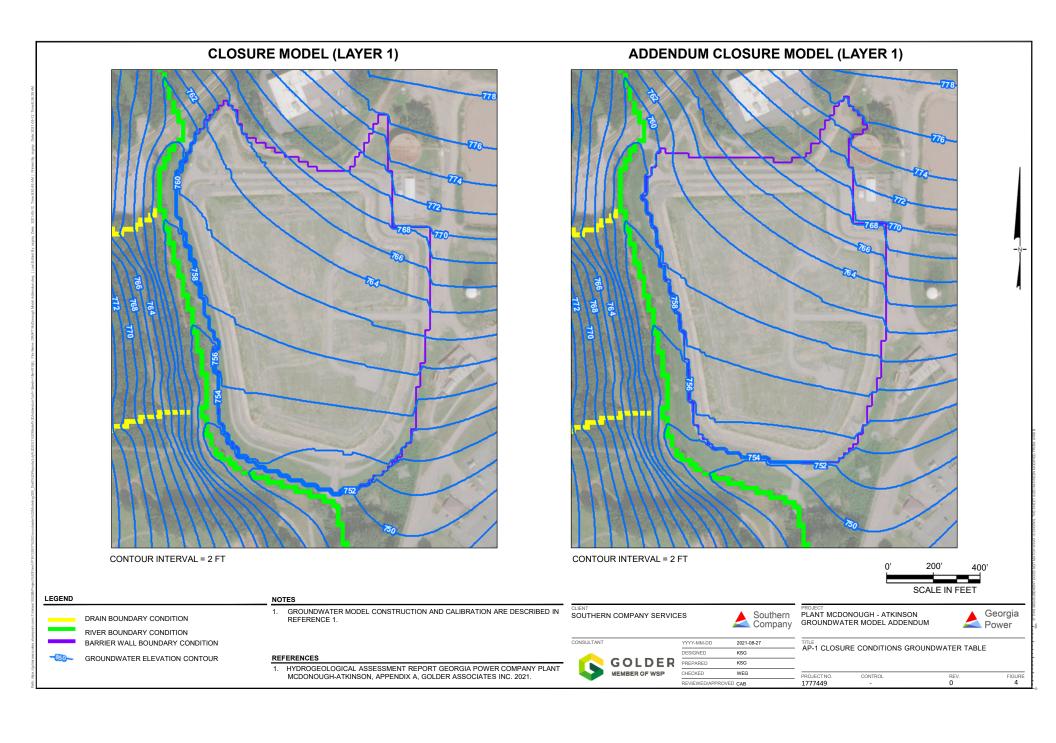
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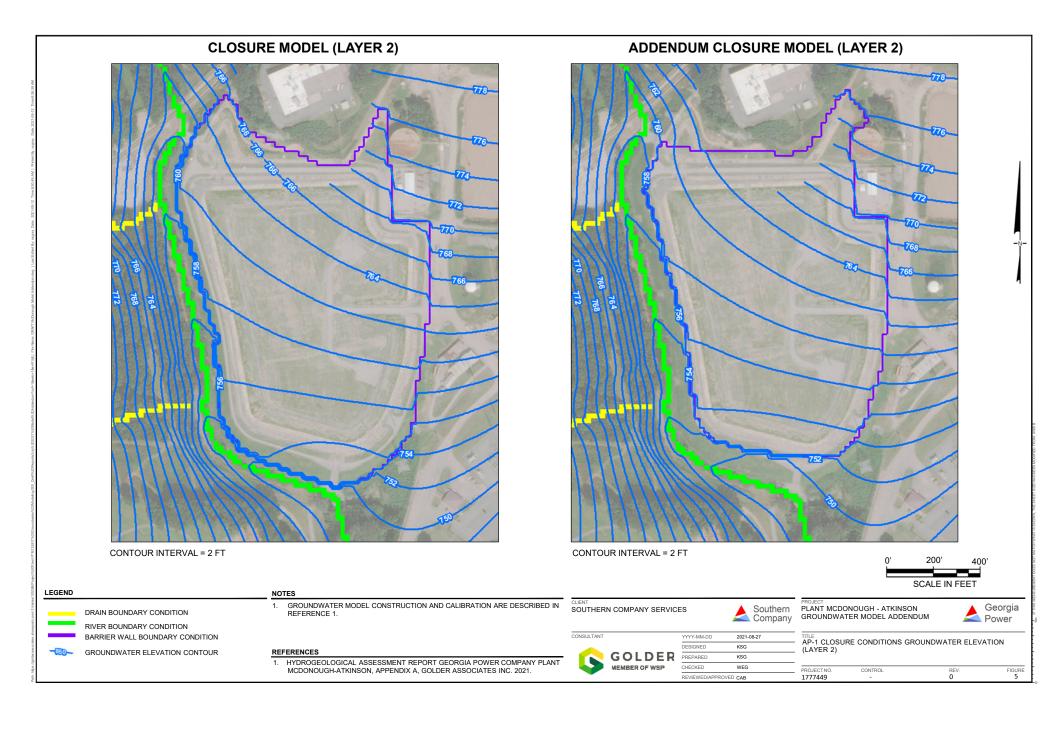
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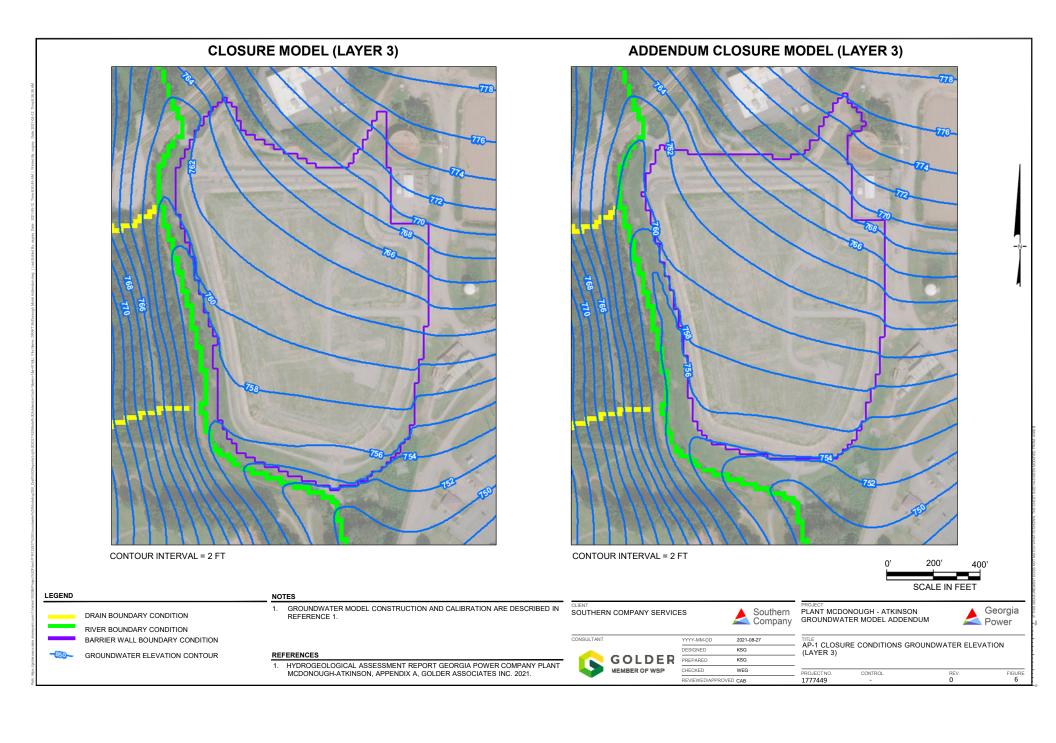
AP-1 MODEL BOUNDARY CONDITIONS

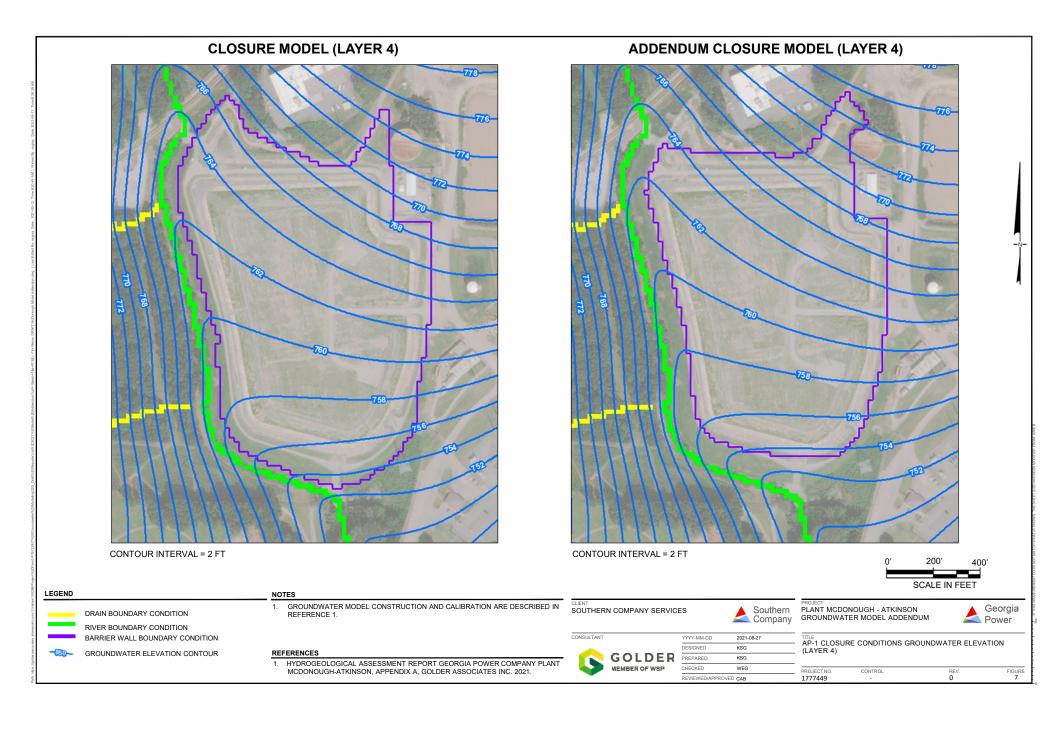
PROJECTNO.	CONTROL	REV.	FIGURE
1777449	-	0	2

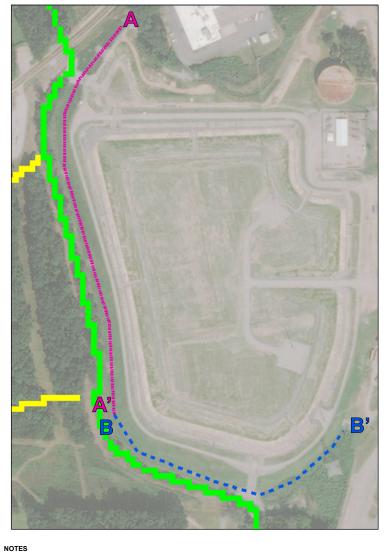


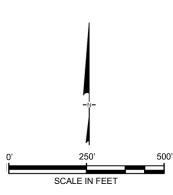












LEGEND

DRAIN BOUNDARY CONDITION
RIVER BOUNDARY CONDITION
BARRIER WALL BOUNDARY CONDITION

FLUX TRANSECT A-A'

FLUX TRANSECT B-B'

 GROUNDWATER MODEL CONSTRUCTION AND CALIBRATION ARE DESCRIBED IN REFERENCE 1.

REFERENCES

 HYDROGEOLOGICAL ASSESSMENT REPORT GEORGIA POWER COMPANY PLANT MCDONOUGH-ATKINSON, APPENDIX A, GOLDER ASSOCIATES INC. 2021.

CLIENT SOUTHERN COMPANY SERVICES



ern PLANT MCDONOUGH - ATKINSON
anv GROUNDWATER MODEL ADDENDUM



CONSULTANT



 YYYY-MM-DD
 2021-08-27

 DESIGNED
 KSG

 PREPARED
 KSG

 CHECKED
 WEG

 REVIEWED/APPROVED CAB

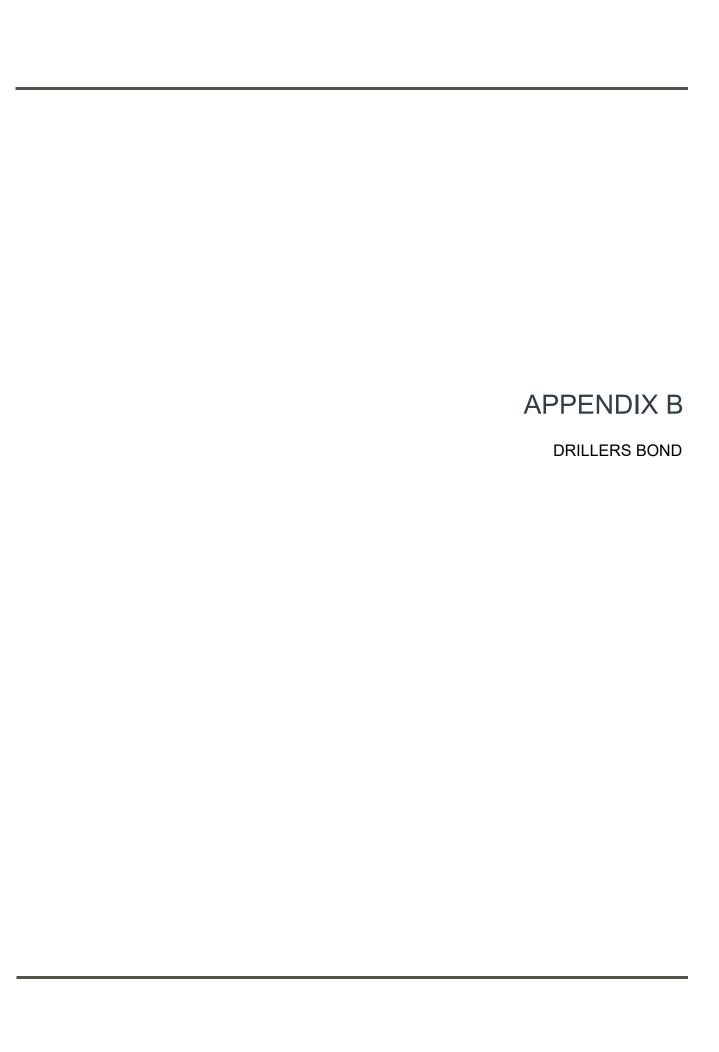
AP-1 GROUNDWATER FLOW TRANSECT LOCATIONS

PROJECTNO.	CONTROL	REV.	FIGUI
1777449	-	0	8



golder.com

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PERFORMANCE BOND FOR WATER WELL CONTRACTORS

AND DRILLERS

Bond No. 4993104

WATER WELL CONTRACTOR OR DRILLER

KNOW ALL HEN BY THESE PRESENTS.

as Principal, and SAFECO INSURANCE CUMPANY UF AMERICA INC. , as Surety, are held and firmly bound unto the Director of the Muviroumental Protection Division ("Director"), Department of Natural Masources, 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, edulalistrators, successors and assigns, jointly and severally, by these presents.

WEEREAS, the Veter Well Standards Aut of 1985 (Ga. Lave 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.

MOW, THEREFORE, the conditions of this obligation are such that if the above bound Principal chall 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 auch procedures and standards upon discovery, irrespective of whether such discovery is made before completion of any wall 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 usive notice of any such amendment, adoption, or modification.

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

Unless sooner terminated, this bond shall terminate June 10, 2003

IN WITHESS WHEREOF the Principal and Sursty have decord these presents to be duly signed and scaled, this 30th day of October 2001 -

Principal, By: SAMU DADDE ID

ASSISTANT SECRETARY

Approved as to sufficiency and ascepted:

Environmental Protection Division,

Department of Matural Resources

SAFECO INSURANCE COMPANY OF AMERICA Turaty, by Samula Daniello (1.1.)

Sandra J. Mathis, Attorney-In-Fact



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

	4774		
NO.	6724	 	

That SAFECO INSURANCE COMPANY OF AMERICA and GENERAL INSURANCE COMPANY OF AMERICA, each a Washington corporation, does each hereby

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 2001 February Ra Bierson

R.A. PIERSON, SECRETARY

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 suthority 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 25, 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

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."

1. R.A. Picrson, 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-Lows, 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





RA Fierso

R.A. PIERSON, SECRETARY

AND DEILLES

BOND NO. 1450-17-087281

QORE, INC. WATER WELL CONTRACTOR OR DEILLER

THOU ALL MER BY THESE PRESENTS.

, as Principal. That we Gore, Inc. and Deployers Insurance of Wanten, A Hottogl Company , as the held and firmly bound unto the Director of the Environmental as Surery. Protection Division ("Director"), Department of Ratural Resources, State of Georgia and his successor or successors in office, as Coligee, in the full sum of 'Ten Thomsand and No/100 Dollars (\$ 10,000.00) for the payment of which well and truly to be made, we bind ourselves, our heirs, executors, administraturs, successors and sssigns, jointly and severally, by these presents.

P. 1192) (the "Act") requires that water well contractors and drillers file performance bonds with the Director to ensure compliance with the ACE; 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 sat forth in the Act as now or hereafter smended, 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 enendment 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 vater well contractor, date of licensure and shall continue in effect until terminated by expiration, murual agreement or cancellation upon 60 days written notice to Principal and Obliger; provided that the rights of the Obligue 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, sy:

Approved as to sufficiency and accepted:

Environmental Protection Division.

DIPLOTORS INSURANCE OF YOUSAU, A MUTUAL COMPANY Surecy, By Jacker S. 1 Wardown S. 1 Barbara S. HacArthur, Attorney-in-Fact

Department of Natural Resources '

i

FROM: LOGAN MARTIN Jul 23 02 09:03a PHONE NO. : 8 236 4015

Starr-Mathews Rome, GA 706-291-0579

Jul. 24 2002 06:14AM P2

Western Surety Company

CONTINUATION	CERTIFICATE
Western Surety Company hereby continues in for-	ce Bond No68616636
briefly described as Water Well Contractor	rillian assum an Tanamerea
for EVERETT ENVIRONMENTAL, INC.	
	, as Principal,
in the sum of \$TEN_THOUSAND_AND_NO/100	Dollars, for the term beginning
	June 30, 2003, subject to all
the covenants and conditions of the original bond refer	rred to above.
This continuation is issued upon the express con	dition that the liability of Western Surety Company
under said Bond and this and all continuations thereo	f shall not be cumulative and shall in no event exceed
the total sum above written.	
Dated this07day ofMarch,	2002
Manufactures of the state of th	WESTERN SURETY COMPANY
SEA THE SEA TH	By Stephen T. Pate, Executive Vice President

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

KIONGOGGGGG HARTARN LARES, CEMPANY & UNA UP AMERICA & OLDESY PERBANA

Form 90-A-4-2001

FROM : LOGAN MARTIN Jul 23 02 09:03a

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

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

p.4

GNA SURETY

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

Transaction Report & Involce

Principal Information: EVERETT ENVIRONMENTAL, INC.

ID: 003019252

P.O. BOX 763 ARMUCHEE, GA 30105-0763



STARR-MATHEWS AGENCY INC P 0 B0X 1642 ROME GA 30162-1642

Agency Code: 10-01912

Transaction Description: RENEWAL

68616636

Written By:

Number:

WESTERN SURETY COMPANY Description: WATER WELL CONTRACTOR

Obligee:

DEPT. OF NATURAL RESOURCES 206 BUTLER ST., STE. 1346 ATLANTA, GA 30334

Effective Date:

07-01-2002 06-30-2003 610,000.00

Expiration Date: Current Penalty: Renewal Method:

CC

Transaction Effective Date: 07/01/2002

SF

PREHIUM

8200.00 3 20.000X

Gross Premium Charge: Commission Amount:

\$200.00 \$40.00 \$160.00

Net Premium Due:

Change Detail:

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

CNA Surety

INVOICE

EFFECTIVE DATE ANNIVERSARY DATE FILE NO. 0601 68616636 07-01-02 06-30 INCIPAL EVERETT ENVIRONMENTAL, INC. P.O. BOX 763 ARMUCHEE, GA 30105-0763 03-07-02 06-30-03 PRINCIPAL

PROCESS DATE

PENALTY \$10,000.00

RISK STATE DESCRIPTION

STATE OF GEORGIA

GA HATER WELL CONTRACTOR

SF

AGENCY CODE 10-01912

CHARGE

\$200.00

Your agent is:

STARR-MATHEWS AGENCY INC P 0 BOX 1642 ROME GA 30162-1642

FROM : LOGAN MARTIN

Jul 23 02 09:03a Sta

PHONE NO. : 8 236 4015

Starr-Mathews Rome, GA

Jul. 24 2002 06:15AM P3

706-291-0579

Sioux Falls

p.3



POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS:

O. J. T. D. L.

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, Oldahoma, Oragon, 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 I, Pate	of :	10100X 1 Ella
State of	South Dakota	its regularly elected	Executive Vice President ,
as Attorneysin-	Fact, with full power and auth	nority hereby conterred upon hi	m to sign, execute, acknowledge and deliver for
and op it bent	as Surety and as its act and	d deed, all of the following class	ses of documents to-wit:
igelik bolides it indentifications it	reals and wind a subject of a series of the subject of the subjec	ose or damage caused by the misc emnity may be tawfully given; and	given in any action or proceeding in any court of law or conduct of their employees; official, bail, and surely and with full power and authority to execute consents and any, and to compromise and settle any and all claims of the corporation of the by-laws of Western Surely and of the corporation shall be executed in the corporation.
Company Guyja	strigible		
name of the Com Board of Directo Attorneys-in-Fact seal is not neces	pands, policies, undertakings, re ipany by the President, Secretary re, may authorize. The Presiden	owers of Attorney, or order dustants, , any Assistant Secretary, Treasure at, any Vice President, Secretary, a with to issue bonds, policies, or und s, policies, undertakings, Powers of	ins of the corporation shall be executed in the corporate in, or any Vice President, or by such other officers as the inny Assistant Secretary, or the Treasurer may appropriate fertakings in the name of the Company. The corporate of Attorney or other obligations of the corporation. The
in Wilmon	Whereat the said WEOTES	ON CHEETY COMPANY has	caused these presents to be executed by its
Executive Vice	President with the corporat	te seal affixed this 07	day of March 2002
ATTEST	J. Nelson	W E stant Secretary	STERN, SURETY COMPANY Stephen T. Pate, Executive Vice President
STATE OF SO	UTH DAKOTA		
COUNTY OF N	22 6		
On this	07 day of	(arch , 2002	, before me, a Notary Public, personally appeared
who, being by	me duly sworn, acknowledge	d that they signed the above Po	ower of Attorney as <u>Executive Vice President</u> DMPANY, and acknowledged said instrument to
	secretary, respectively, of the sect and dead of said Corpo		Digit Fite 1. 21 to doleto into age a sale and amount
	i act aug geog of said ootbo		
r	D. KRELL NOTARY PUBLIC GEA	1	Al Krall Notary Publi
2,000	, hhhhhhhhhadhhhhhhhhad mmission Expires November 3	** T	

, X

Cello 122



Bond Number K08315607

Performance Bond For Water Well Contractors And Drillers

SA	FECO	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)

SAFECQ Insurance Company of America

By

D-Ann Kleidosty, Attorney-In-Fact

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

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

pm ÉST on any business day.

validity of this Power of Attorney between 9:00 am and -30 pm ES

1-610-832-8240

confirm the

2

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. Ogte; 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

W. Davenport, Assistant Secretary

STATE OF WASHINGTON COUNTY OF KING

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.



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 Imitation 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 surely 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







David M. Carey, Assistant Secretary

Cells 9=10

S	AFECO	Insurance	Company	of America
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, 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)

SAFECQ Insurance Company of America

By

D-Ann Kleidosty, Attorney-In-Fact

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

Certificate No. 6125754

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

POWER OF ATTORNEY

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

all of the city of Atlanta state of GA each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surely and as its act and deed, any and all undertakings, bonds, recognizances and other surely 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

Assistant Secretary

STATE OF WASHINGTON COUNTY OF KING

ö

rate

interest

for mortgage,

Not valid

er of creun, value guarantees. 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.



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 Saleco 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 surely 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





David M. Carev. Assistant Secretary

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

day.

POA - FNICA, GICA & SICA MS 12874 041012 - 3 Company Southern Company Services, Inc. 30 Ivan Allen Jr. Boulevard NW Atlanta, Georgia 30308



May 2, 2011

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

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

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

Please let us know if you need additional information.

Sincerely,

Clementine Broaders

Southern Company Services, Inc. Risk Management Department

/cb

Enclosure

cc: Stacy Sprayberry, SCS



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

Barbara S. MacArthur, Attorney-In-Fact

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of credit,

value

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 Sefece Insurance Company of America (the "Company), a Washington stock insurance company, pursuant to and by subboilty 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

each individually if there be more than one named, its true and levelul attorney in fact to make, execute, seal, acknowledge and deliver, for and on its behalf as underplangs, bonds, recognizances and other surely obligations, in pursuance of these presents, shell be as binding upon the Company as if they had been duty aigned 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 imay presente, shall appoint such attorneys in fact, as may be necessary to act in behalf of the Corporation to make, execute, seel, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys infact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their algorithms and accounted, such instruments shall be as binding as it signed by the president and altested 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 Bylines, Garnet W. Ellott, Assistant Secretary of Saleco Insurance Company of America, is authorized to appoint such afformeys 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 loice and effect.

A WITNESS WHEREOF, this Power of Attorney has been subscribed by an suthcritized officer or official of the Company and the corporate seel of Salsco Insurance Company of America has been affixed thereto in Phyricutti Meeting Pennsylvania this. 14th day of Cotober 2010



BAFECO INSURANCE COMPANY OF AMERICA

wo solis Garnet W. Elliott, Assistant Sech

COMMONWEALTH OF PENNSYLVANIA COUNTY OF MONTGOMERY

On this 14th day of

On this 14th day of October , 2010 , before me, a Notary Public, personally came Gamet W. Elliott, to me forcer, and acknowledged that he is an Assistant Secretary of Safaco 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.

Ligave Nazionio subscribed my name and affixed my notarial seal at Plymouth Meeting, Pennsylvania, on the day and year IN TESTIMONY WHEREOF MONNE first above written, Notatel Supi to Pastolia, Notary Public In Two, Nordgravery County in Two, Nordgravery County in Two, Nordgravery County in Two, Nordgravery County in Two

outh Two, N

CERTIFICATE

I the undersigned, Assists a 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 t do further carify that the officer or official who executed the said power of afformation as a 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 duty called and held on the 18th day of September, 2009.

VOTED that the facelmile 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.

MONY WHEREOF, I have hereunto subscribed my nar fixed the corporate seal of the said company, this

ant Secretary

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MARSH

Barbara S. MacArthur Assistant Vice President

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

April 21, 2011

Ms. Clementine B. Broaders

Southern Company Services 30 Ivan Allen Jr. Blvd. NW

RECEIVED

APR 9 6 2011

Risk Management Department

Subject:

Bin SC1404

Atlanta, GA 30308

Renewal Continuation Certificate

to regular, company, the

Principal:

Southern Company Services, Inc. State of Georgia - Dept. of Natural Resources

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

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

THE RESERVE OF THE PARTY OF THE

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
	RENEWAL	REMIT IN: UNITED STA	TES DOLLARS
ē.	Obligee(s): Geor Bond Amount: \$10		ces
221			
25	MacArthur/Atlant	a/Surecy	
		12	
Please indicat on your remitt	e Invoice # 382424 ance to:		N .
Marsh USA Inc. P.O. Box 10035 Atlanta, GA 30	7 384-0357	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.



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

Barbara S. MacArthur, Attorney-In-Fact

business day

On any

EST

confirm the validity of 10-832-8240 between

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

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This Power of Altorney limits the acts of those nersed herein, and they have no authority to bind the Company except in the manner and to the extern harein 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 jawful attorney in fact to make, execute, seal, acknowledge and deliver, for and on is behalf as undertakings, bonds, recognizances and of set study collections, in pursuance of these presents, shall be as binding upon the Company as if they had been truly 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;

AFITICLE IV - Execution of Contracts: Section 12. Surety Bonds and Underlaidings. Any officer or other official of the Corporation authorized for that purpose in witing 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 trained of the Corporation to make, execute, seel, acknowledge and deliver as surely any and all undertaidings, bonds, recognizances and other surely obligations. Such atomeys-infact, 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 chalman 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. Elflott, 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 aurety this Power of Attorney 9:00 am and 4:30 pm E 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 2010



SAFECO INSURANCE COMPANY OF AMERICA

Grand W. Elith Garnet W. Elliott, Assistant Secretary

COMMONWEALTH OF PENNSYLVANIA COUNTY OF MONTGOMERY

. 2010 , before me, a Notary Public, personally came Garnet W. Elliott, to me known, and _ day of On this 14th October acknowledged that he is an Assistant Secretary of Safsoo 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 OF Characteristic subscribed my name and affixed my notarial seal at Plymouth Meeting, Pennsylvania, on the day and year direction of said corporation.

IN TESTIMONY WHEREOR CHIONWEA

first above written.

Toyan Populate, Notely Public Pernouth Top., Noregomery County Ley Commission Expires May, 28, 2019

CERTIFICATE

I, the undersigned, Assistant Courts 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 Sateco 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 surely bonds, shall be valid and binding upon the company with the same force and effect as though manually affixed.

tred the corporate seel of the said company, this IMONY WHEREOF, I have hereunto subscribed my nem

ent Secretary

Bond Number	KO8418809
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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 Longvear 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.
C	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.
C	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 abligee and beneficiaries under this bond which arose prior to such termination shall continue.
J	The bond is effective July 1, 2010 and unless sooner terminated, this bond shall terminate une 30, 2011. In Witness Thereof the Principal and Surety have caused these present to be uly signed and sealed, this 6th day of, July 20 10. Nichael C. Rice dba Boart Longyear Company
Р	RINCIPAL, BY (L.S.)
Ŵ	URETY BY: Line True Company URETY BY: Line True Company URETY BY: Line True True True True True True True Tru
	Cynthla L. Choren, Attorney-In-Fact Non-Resident License No. 747470 GEORGIA REGISTERED AGENT N/A SEAL:

F	
•	ACKNOWLEDGMENT BY SURETY
STATE OF County of	Missouri St. Charles St. Charles
On thisappeared _	6th day of July , 2010 , before me personally Cynthia L. Choren , known to me to be the Attorney-in-Fact of
	Westchester Fire Insurance Company
IN WITNE	, the corporation of the within instrument, and acknowledged to me that such corporation executed the same. 2SS_WHEREOF, I have hereunto set my hand and affixed my official seal, at my office in the aforesaid day and year in this certificate first above written.
My Commis (Scal)	sion Expires: November 5, 2011 DEBRA C. SCHNEIDER Notary Public in the State of Missouri County of St. Charles Notary Public in the State of Missouri County of St. Charles 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 win.

"RESOLVED, that the following authorizations relate to the execution, for and on behalf of the Company, of bends, undertakings, recognizances, contracts and other written consultances of the Company entered into the ordinary course of business (each a "Written Company entered into the ordinary course of business (each a "Written Company entered into the ordinary course of business (each a "Written Company entered into the ordinary course of business (each a "Written Company entered into the ordinary course of business (each a "Written Company entered into the ordinary course of business (each a "Written Company entered into the ordinary course of business (each a "Written Company entered into the ordinary course of business (each a "Written Company entered into the ordinary course of business (each a "Written Company entered into the ordinary course of business (each a "Written Company entered into the ordinary course of business (each a "Written Company entered into the ordinary course of business (each a "Written Company entered into the ordinary entered into the or

- [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 heal of the Company or otherwise.
- (2) Each duly appointed attention in fact of the Company is hardly authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise, to the exact due such section is authorized by the grant of powers provided for in such persons written appaiancem as such attention.
- (3) Esch of the Chairman, the Prevident and the Vice Previdents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the ottomory-in-fact of the Company with full power and authority to parcein, for and on heralf of the Company, maker the scal of the Company or the company or may be specified in such written appointment, which appointment, which appointment, which appointment, which appointment, which appointment of the Company or may be specified in such written.
- (4) Each of the Chairman, the Presidents and Vice Presidents of the Company in hereby suitorized, for and an helpful of the Company, to delegate in writing any other officer of the Company the authority to execute, for and on helpful of the Company, under the Company's seed 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 the Company as are specified in such written delegation, which specification may be by general type or class of Written Commitments or the Company as are specified in such written delegation, which specification may be by
- (5) The alguagase of any officer or other person executing any Written Commission or appointment or appointment or delegation pursuant to this Resolution, and the seal of the Company, may be uffixed by fassimile on such Written Convenient or delegation.

FURTHER RESOLVED, that the furngoing Resolution shall not be decreed to be an exclusive statement of the powers and authority of officers, employees and other persons to set 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 valuity granted or verted.

PURTMER 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 said on lashalf of the Company, Written Commitments and appointments and delegations, in berely resoluted.

Does hereby nominate, constitute and appoint Cynthia L Choren, Debra C Schneider, Heldi A Nothelsen, JoAnn R Frank, Karen L Rolfler, Pameta A Beclman, 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 set 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

At in M. Aten

COMMONWEALTH OF PENNSYLVANIA COUNTY OF PHILADELPHIA SS.

On this I day of December, AD. 2009 before me, a Notary Public of the Commonwealth of Fennsylvania 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 berounto set my hand and affixed my official seal at the City of Philadelphia the day and year first above written.

HOTARIAL SEAL

KAREN E BRANDT, Normy Public
City of Philodelphia, Phila. County
Lty Construction Eugles Suprember 26, 2010

President States

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 hereumo subscribed my name as Assistant Secretary, and affixed the corporate seal of the Corporation, this 6thday of July, 2010.

William L. Keliy, Assisjani Recretary

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: Katu

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 Katie Snider, Attorney-in-Fact

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 of bonds, undertakings, recognizances, contracts and other written commitments of the Company

- (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.
- 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 appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
- 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

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

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Surviva III

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

Jame & Brandt

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

In witness whereof, I have hereunto subscribed my name as Assistant Secretary, and affixed the corporate seal of the Corporation, this 26" day of Moy, 2015.



William L. Kelly, Assistant Decretary

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



, Surety upon SAFECO Insurance Company of America a certain Bond No. 4993104 dated effective June 30, 1987 (MONTH-DAY-YEAR) Southern Company Services, Inc. on behalf of (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) June 30, 2017 and ending on (MONTH-DAY-YEAR) \$10,000.00 Amount of bond 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. April 07, 2016 Signed and dated on (MONTH-DAY-YEAR) SAFECO Insurance Company of America

D-Ann Kleidosty, Attorney-in-Fact

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

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

Certificate No. 7310252

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

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That First National Insurar	nce Company of America, (General Insurance Com	pany of America, and Safeco	Insurance Company of
America are corporations duly organized under the laws of the State of New H	ampshire (herein collectivel)	y called the "Companies	s"), pursuant to and by authorit	y 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 <a href="https://linear.com/lin







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

By: Afavil

David M. Carey, Assistant Secretary

STATE OF PENNSYLVANIA COUNTY OF MONTGOMERY

88

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.



Notarial Seal Teresa Pastella, Notary Public Plymouth Twp., Montgomery County My Commission Expires March 28, 2017

COMMONWEALTH OF PENNSYLVANIA

Member, Pennsylvania Association of Notaries

By: Lucisa 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-infact 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

the day of

20 16

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.

1928 UNAMPER OF THE PROPERTY O





Gregory W. Davenport, Assistant Secretary

, Surety upon SAFECO Insurance Company of America a certain Bond No. 4993104 dated effective June 30, 1987 (MONTH-DAY-YEAR) Southern Company Services, Inc. on behalf of (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) June 30, 2017 and ending on (MONTH-DAY-YEAR) \$10,000.00 Amount of bond 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. April 07, 2016 Signed and dated on (MONTH-DAY-YEAR) SAFECO Insurance Company of America

D-Ann Kleidosty, Attorney-in-Fact

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

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

Certificate No. 7310252

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

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That First National Insurar	nce Company of America, (General Insurance Com	pany of America, and Safeco	Insurance Company of
America are corporations duly organized under the laws of the State of New H	ampshire (herein collectivel)	y called the "Companies	s"), pursuant to and by authorit	y 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 <a href="https://linear.com/lin







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

By: Afavil

David M. Carey, Assistant Secretary

STATE OF PENNSYLVANIA COUNTY OF MONTGOMERY

88

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.



Notarial Seal Teresa Pastella, Notary Public Plymouth Twp., Montgomery County My Commission Expires March 28, 2017

COMMONWEALTH OF PENNSYLVANIA

Member, Pennsylvania Association of Notaries

By: Lucisa Pastella Notary Public

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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-infact 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

the day of

20 16

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.

1928 UNAMPER OF THE PROPERTY O





Gregory W. Davenport, Assistant Secretary

GENERAL PURPOSE RIDER

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

NOW Therefore, it is agreed that:

The expiration date of the bond is hereby amended to:

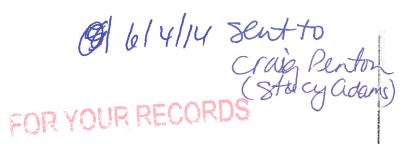
June 30, 2017

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



Bond Number 09157828

Performance Bond For Water Well Contractors And Drillers

Name of Water Well Contractor or Dri	ller Craig Penton dba	Terracon Consultan	ts, Inc.	
Know All Men By These Present				
That we Craig Penton dba Terracon Con EMPLOYEES, OFFICERS AND PAR as Surety, are held and firmly bound a Department of Natural Resources, Star Obligee, in the full sum of TWENTY To which will and truly to be made, we big jointly and severally, by the present.	TNERS, as Principa anto the Director of t ate of Georgia and h HOUSAND AND N	al, and <u>Fidelity and</u> the Environmental ils or her Success O/ 00 DOLLARS (Protection Division (Director or Successors in office \$20.000.00) for the paym	ector), e, as ent of
WHEREAS, the WATER WELL STAN requires that water well contractors an compliance with the ACT; and WHERI provisions of said ACT. NOW, THERE bound PRINCIPAL shall fully and faith and standards set forth in the ACT as promulgated pursuant thereto, including procedures and standards upon disconcompletion of any well subject to this beffect.	nd drillers file performed the above bound the above bound the condition of the durant the durant and hereafter and but not limited to very, irrespective of	mance bonds with nd PRINCIPAL is ns of this obligation ties and in all thing amended, and the the correction of a whether such dis	the director to ensure subject to the terms and on are such that if the abogs comply with the procedules and regulations any violation of such covery is made before	dures
And Surety, for value received, agrees adoption of new laws, rules or regulati hereby waive notice of any such amer	ons shall in anyway	discharge its obli		does
This bond shall be effective from date expiration, mutual agreement or cance provided that the rights of the obligee attermination shall continue.	ellation upon sixty (6	0) days written no	tice to Principal and Oblig	јее;
2015. In Witness Thereof the Princip		caused these p	oond shall terminate Jun resent to be duly signed	
PRINCIPAL, BY	2	(L.S.) T!T LE : _		
SURETY BY: Christy M. McCart, Attorney	-in-Fact	_		
GEORGIA REGISTERED AGENT	N/A	8	EAL:	
			Revised December:	—— 2012



Atlantic Specialty In	surance 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 particle (PRINCIPAL)	rtners
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	
provision that the Si not be cumulative an account of all defaul	this continuation certificate does not create a new obligation and is executed upon the urety's liability under said bond and this and all Continuation Certificates issued in conditated the said Surety's aggregate liability under said bond and this and all such Condits committed during the period (regardless of the number of years) said bond had be texceed the amount of said bond as hereinbefore set forth. May 9, 2019 (MONTH-DAY-YEAR)	nnection therewith shall tinuation Certificates on
	By Attorney-in-Fact Elizabeth R. Hahn Parker, Smith & Feek, Inc. Agent 2233 112th Ave NE Bellevue, WA 98004 Address of Agent (425) 709-3600 Telephone Number of Agent	



Power of Attorney

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

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

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

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

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

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

STATE OF MINNESOTA HENNEPIN COUNTY Om By Par

Paul J. Brehm, Senior Vice President

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

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

day of MCy . 201.9

This Power of Attorney expires October 1, 2019

Christopher V. Jerry, Secretary

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

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

McGriff, Seibels & Williams, Inc.

Agent

2211 7th Avenue South, Birmingham, AL 35233

Address of Agent

(205) 252-9871

Telephone Number of Agent



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

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

Certificate No: 8201221-016032

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That American States Insurance Company is a corporation duly organized under the laws of the State of Indiana, that First National
Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New
Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Anna Childress; Richard H.
Mitchell; Sam Audia; Mark W. Edwards, II; Alisa B. Ferris; Robert R. Freel; William M. Smith; Jeffrey M. Wilson

Mitchell; Sam Aud	ia; Mark W. Edwards,	II, Alisa B. Pellis, P	Cobert R. Freei,	William W. Simui, 30	mey W. Wilson		
all of the city of execute, seal, acknow of these presents and persons.	Birmingham vledge and deliver, for an d shall be as binding upo	state of don its behalf as sure on the Companies as	AL ety and as its act if they have bee	and deed, any and all ur	ndertakings, bonds, reci	ognizances and other su	awful attorney-in-fact to make, rety obligations, in pursuance ompanies in their own proper
IN WITNESS WHERI thereto this 8th		ney has been subscribe, 2019.	need by an authority of the composition of the comp	zed officer or official of	American State First National In General Insurar Safeco Insuran	corporate seals of the (s Insurance Company surance Company of An oce Company of America ce Company of America Affaire America Affaire America	
State of PENNSYLVA County of MONTGOM On this 8th day Company, First Natio to do, execute the for	MERY ss of May , 20 nal Insurance Company	of America, General Ir	surance Compa	ny of America, and Safe	co Insurance Company	of America, and that he,	of American States Insurance , as such, being authorized so
IN WITNESS WHERE	EOF, I have hereunto sub	scribed my name and	COMMONWEA Teresa Pa Upper Merion My Commissio Member, Pennsy	ial seal at King of Prussi LTH OF PENNSYLVANIA lotarial Seal satella, Notary Public Twp., Montgomery County n Expires March 28, 2021 vania Association of Notaries	By: Teresa Pastella	hastella In, Notary Public	e written.
Any officer or President may any and all und have full powed power or autho	other official of the Corp prescribe, shall appoint dertakings, bonds, recog r to bind the Corporation	oration authorized for such attorneys-in-fact, nizances and other su by their signature and sentative or attorney-i	r that purpose in , as may be nece urety obligations. d executed, such	n writing by the Chairm essary to act in behalf o Such attorney-in-fact, s in instruments shall be as	an or the President, and the Corporation to man bject to the limitations binding as if signed b	nd subject to such limita- like, execute, seal, acknows set forth in their respect by the President and atte	pany, First National Insurance follows: ation as the Chairman or the owledge and deliver as surety citive powers of attorney, shall sted to by the Secretary. Any Chairman, the President or by

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

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. Liewellyn, 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









Renee C. Llewellyn, Assistant Secretary

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 hand 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

Attorney-in-Fact Je frey 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



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

Certificate No: 8201221-016032

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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

these presents and srsons.	Birmingham edge and deliver, for and shall be as binding upo	state of on its behalf as sure	AL ty and as its act s				ne named, its true	and lawful attorney	-in-fact to make
		il die Companies as	if they have been	and deed, any and all u n duly signed by the pr	ndertakings esident and	s, bonds, reco d attested by	ognizances and other of the secretary of	ner surety obligation	ns, in pursuance
NEW UNIS OIL O	OF, this Power of Attorn day of May	ey has been subscribe. 2019 . ANCE COMPANIES OF THE PORT OF THE	NCE COMPANIA CORPORA 1923	zed officer or official of	Am Firs Ge	nerican State st National In neral Insurar	s Insurance Company Ince Company of Arrore Compa	any of America merica	we been affixed
ate of PENNSYLVAN unty of MONTGOME	RY ss	A A A A A A A A A A A A A A A A A A A	THAMPST ST	HAMPSTAN			, Assistant Secreta		
do, execute the foreg	May , 201 Il Insurance Company of poing instrument for the DF, I have hereunto substitution in the DF.	America, General Ins purposes therein cont	surance Compan ained by signing	on behalf of the corpora	co Insurano ations by hi	ce Company mself as a du	of America, and th uly authorized offic	at he, as such, beir er.	
	, (OF ARY PURE	COMMONWEAL N Teresa Pa Upper Merion To My Commission	LTH OF PENNSYLVANIA otarial Seal stella, Notary Public wp., Montgomery County i Expires March 28, 2021 rania Association of Notaries	By:	Teresa	Pastella , Notary Public		
	is made and executed General Insurance Comp								tional Insurance
Any officer or other President may preany and all unde have full power to power or authority	FFICERS: Section 12. Finer official of the Corprescribe, shall appoint strakings, bonds, recogn bind the Corporation by granted to any represers granting such powers.	oration authorized for uch attorneys-in-fact, izances and other sur by their signature and entative or attorney-in	as may be nece rety obligations.	ssary to act in behalf or Such attorney-in-fact, s instruments shall be as	f the Corpo ubject to the binding as	oration to ma ne limitations s if signed by	ke, execute, seal, set forth in their r y the President and	acknowledge and of espective powers of d attested to by the	deliver as surety of attorney, shall a Secretary. Any

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, Liewellyn, Assistant Secretary

SAFECO Insuranc	e 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 s	aid 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	
that the Surety's liabile and that the said Sure committed during the	is continuation certificate does not create a new obligation and is executed upon the express concity under said bond and this and all Continuation Certificates issued in connection therewith shalety's aggregate liability under said bond and this and all such Continuation Certificates on acception (regardless of the number of years) said bond had been and shall be in force, shall not in a shereinbefore set forth.	ll not be cumulative ount of all defaults
Signed and dated on	June 05, 2019 (MONTH-DAY-YEAR)	
	SAFECO Insurance.Company of America	
	By ForetteM. Jones	
	Loretta M. Jones, Attorney-in-Fact	



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

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

Certificate No: 8200528-969358

business day

on any

EST

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 state of each individually if there be more than one named, its true and lawful attorney-in-fact to make, Knoxville TN 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

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

David M. Carey, Assistant Secretary

State of PENNSYLVANIA County of MONTGOMERY

confirm the validity of this Power of Attorney 10-832-8240 between 9:00 am and 4:30 pm 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

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-infact 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









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

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



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	
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אמור	State of PENNSYLVANIA Countly of MONTGOMERY ss	A) ver
noisal	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.	ney (PO
כ	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.	호
s, interest late	Consideressable of Perroylvania - Natary Seel Teresa Pastella, Natary Natar	or bond and/or Power of Attorney (POA) verification inquiries, lease call 610-832-8240 or email HOSUR@libertymutual.com
rericy rate	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.	bond and/ ise call 61
ns	Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surely any and all undertakings, bonds, recognizances and other surely 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.	L 0
	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-infact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surely any and all undertakings, bonds, recognizances and other surely 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 surely bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.)
	 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.	
	1929 1928 19	
	The same	
	and the same of th	

CONTINUATION

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

Attorney-in-Fact

effrey M. Wilson, Attorney-in-Fact

McGriff Insurance Services, Inc.

Agent

2211 7th Avenue South, Birmingham, AL 35233

Address of Agent

(205) 252-9874

Telephone Number of Agent



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

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

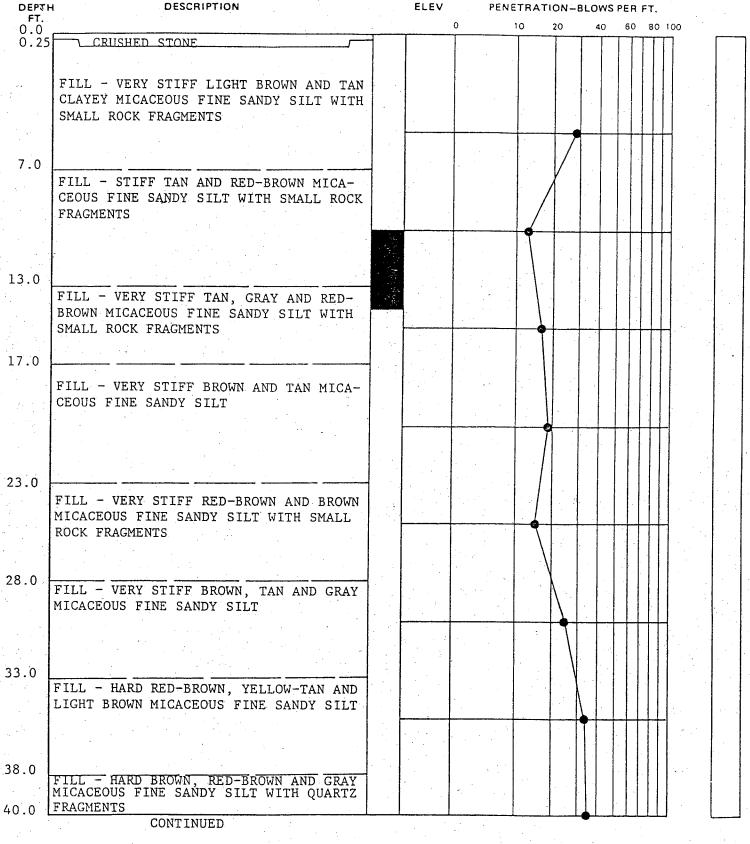
Certificate No: 8205019-016032

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	1 .
	General Insurance Company of America	SE
20	Safeco Insurance Company of America	E 9
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ō	TO THE PARTY OF TH	호
5	David M. Carey, Assistant Secretary	eat
음		1
ō	State of PENNSYLVANIA ss	Ne Ve
7	County of MONTGOMERY 3	85
Ž	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	000
ž	Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and the head of the the h	E
2	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.	a ie
ō	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.	e c
Ę	a PAGE	A P
_	Constronvesith of Pennsylvania - Notary Seal Toronso Pestello Notary Public	50
S	Torresa Pastella, Notary Public Morphysiology County Torresa Pastella, Notary Public Torresa P	82 e
merest la	OF OF My Commission number 1780-1880 Bay: Teresa Pastella, Notary Public Stephen Person Number 1880-1880 Bay: Teresa Pastella, Notary Public Teresa Pastella, Notary Public	199
≡	Member Pennsylvaria Association of Notanes Teresa Pastella, Notary Public	F 85
Ę	TARY PUB	응은
<u>a</u>	This Power of Altorney is made and executed pursuant to and by authority of the following By-law and Authorizations of American States Insurance Company, First National Insurance	99
ું	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:	20
ē	ARTICLE IV - OFFICERS: Section 12. Power of Attorney.	or bond and/or Power of Attorney (POA) verification inquiries, lease call 610-832-8240 or email HOSUR@libertymutual.com
Sure	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	ea
٥	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	L a
	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	1)
	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	1
	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	1
	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	1
	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	1
	the same force and effect as though manually affixed.	
	1, 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.	
	6. 1800 00 1	
	INSURANCE COMPANY STATE COMPAN	
	(S)	
	[1929] [[1928] [1923] [[1953]	
	O WOLAND AS STANDS BY STANDS BY	
	Renee C, Liewellyn, Assistant Secretary	
	The man	
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atlanta testing & engineering

BORING AND SAMPLING MEETS ASTM D-1586 PORE 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

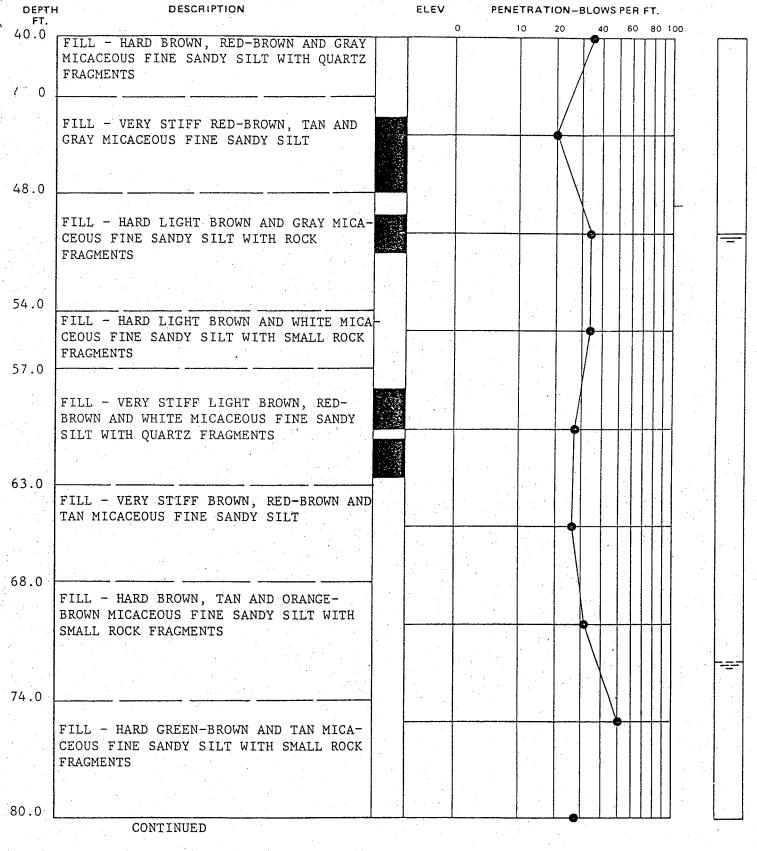
TEST BORING RECORD

BORING NO. ____AP-1 (pg. 1 of 3)

DATE DRILLED ___8/13-14/81

LAB NO. _____80500 _____

JOB NO. _____4083 _____



BORING 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

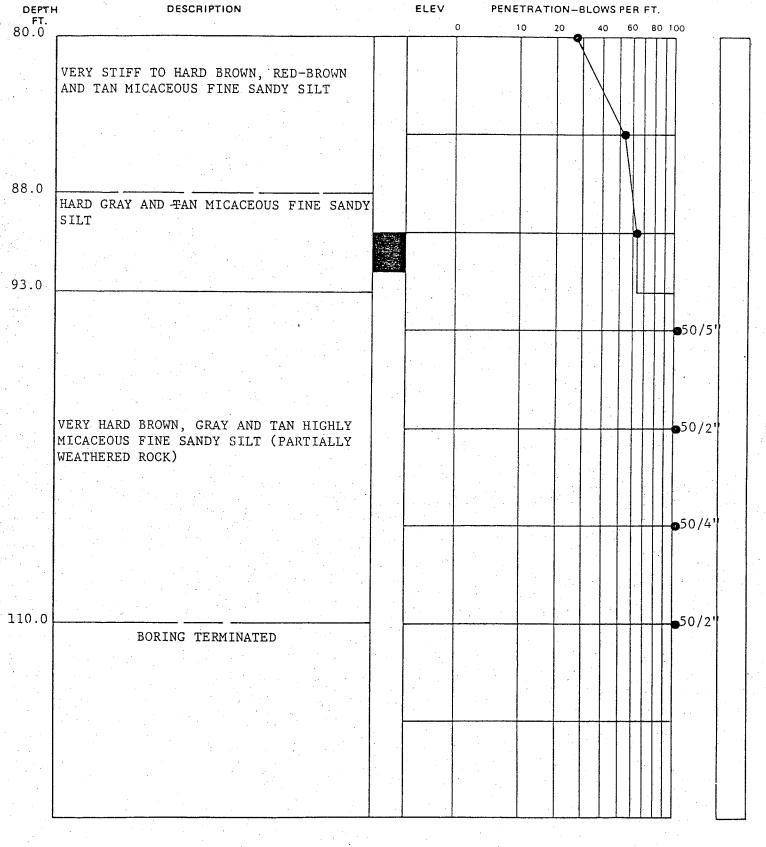
TEST BORING RECORD

BORING NO. AP-1 (pg. 2 of 3)

DATE DRILLED 8/13-14/81

LAB NO. 80500

ATE 117



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

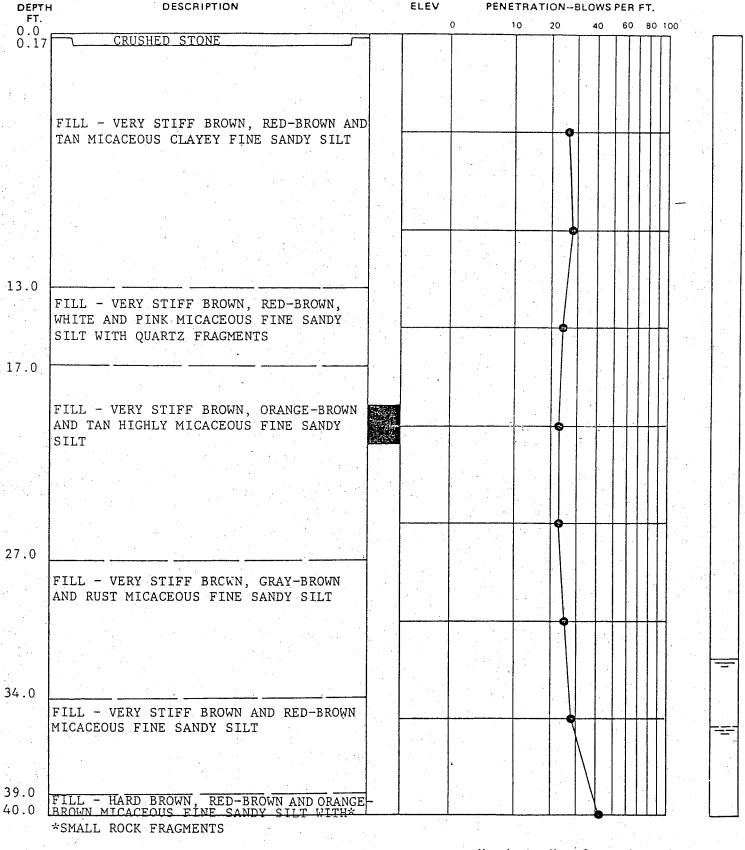
BORING NO. AP-1 (pg. 3 of 3)

DATE DRILLED 8/13-14/81

LAB NO. 80500

JOB NO. 4083

ATE 117



CONTINUED

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

atlanta testing & engineering

JOB NO._

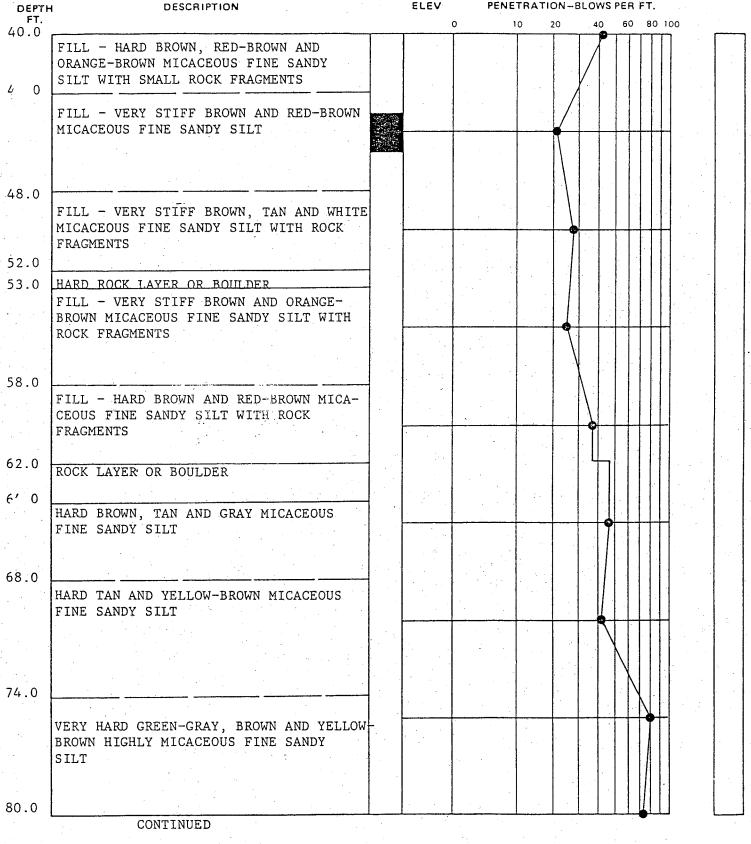
TEST BORING RECORD

BORING NO. AP-2 (pg. 1 of 3)

DATE DRILLED 8/19-20/81

LAB NO. 4083

ATE 117



CORING 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

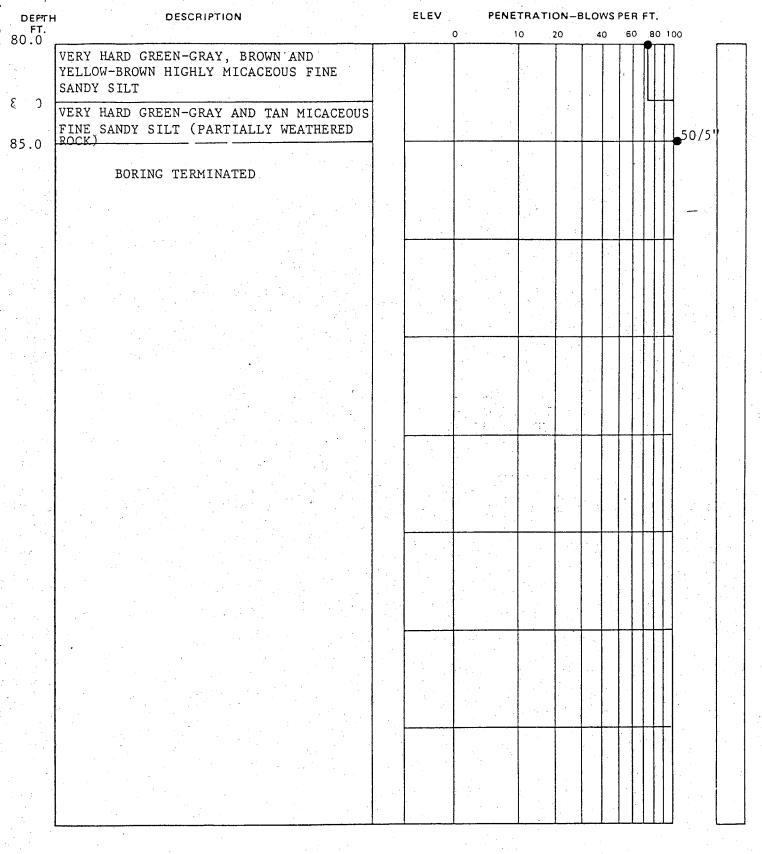
TEST BORING RECORD

BORING NO. AP-2 (pg. 2 of 3)

DATE DRILLED 8/19-20/81

LAB NO. 80500

JOB NO. 4083



BORING 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.

HE STATE

UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

■ WATER TABLE, 24 HR.
■ WATER TABLE, 1 HR.
■ LOSS OF DRILLING WATER

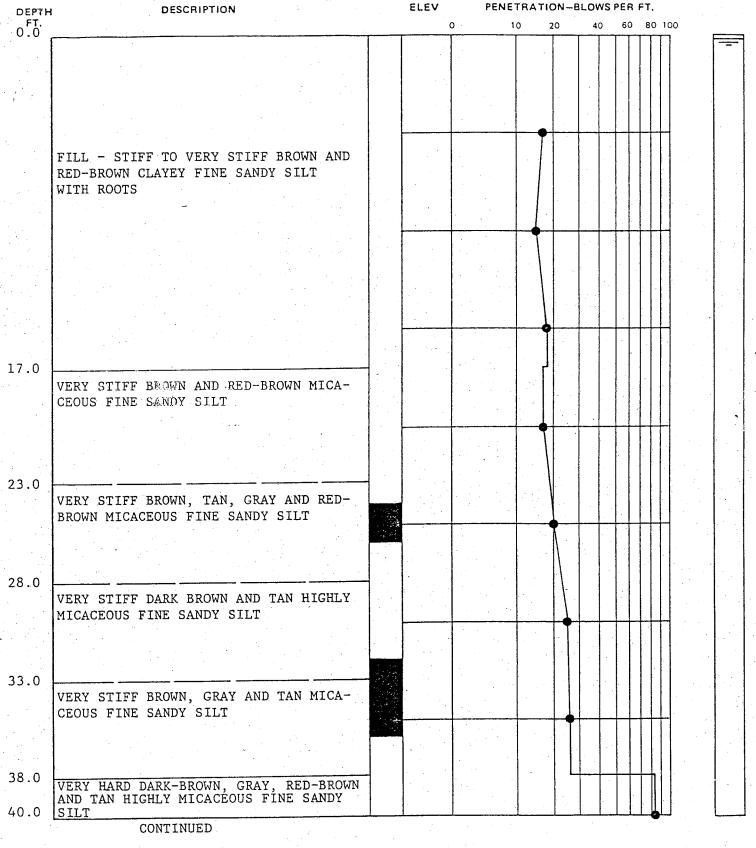
TEST BORING RECORD

BORING NO. ___AP-2 (pg. 3 of 3)

DATE DRILLED_8/19-20/81

LAB NO. ____80500 ____ATE 117

JOB NO. ____4083 ___



CORING AND SAMPLING MEETS ASTM D-1586 CORE 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 ATE 117

JOB NO. 4083

BORING AND SAMPLING MEETS ASTM D-1586 "ORE DRILLING MEETS ASTM D-2113

INETRATION 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

2012 GEOTECH ENGINEERING LOGS - ESEE2012DATABASE.GDT - 3/14/13 16:02 - T.\ESEE MAJOR PROJECTS\PROJECTS

LOG OF TEST BORING

BORING AP3-08 PAGE 1 OF 1 ES 2207

		COMPANY							
		THERN COMPANY SE TH SCIENCE AND ENV	RVICES, INC. VIRONMENTAL ENGI				3 and 4 Closur Donough		
		·	COMPLETED _2/13/					S: N:1,393,8	39.37 E:2,202,026.83
			ılting EC						
								-	BEARING
					C	OMP	DI	ELAYED	
N	OTES								
DEPTH (ft)	GRAPHIC LOG	STRAT	TA DESCRIPTION		SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	C	COMMENTS
DEP.	GRA			ELEV		SAMPLI (i	PERCENT RECOVERY (RQD)		
20: 15: 15: 10: 15: 10: 15: 10: 15: 10: 15: 10: 15: 10: 15: 10: 15: 10: 10: 15: 10: 10: 10: 10: 10: 10: 10: 10: 10: 10		Coal Combustion B - gray, moist, loose	yproduct (ASH)	821.6					/ till natural soil - ash e no recovery.
		Silt (ML) - tan, moist, dense							

Bottom of borehole at 25.0 feet.

2012 GEOTECH ENGINEERING LOGS - ESEE2012DATABASE.GDT - 3/14/13 16:02 - T.\ESEE MAJOR PROJECTS\MCDONOUGH ATKINSOM2012\ES2207 ASH PONDCLOSURES AP1-3-4ASH

Silt (ML)

- tan, moist, dense

LOG OF TEST BORING

BORING AP3-09 PAGE 1 OF 1 ES 2207

Terminated due to refusal at 18 feet.

PROJECT Ash Pond 3 and 4 Closure Borings SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **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 CHECKED BY _____ ANGLE ____ BEARING __ DRILLED BY B. Ozment LOGGED BY G. Dyer BORING DEPTH 18 ft. GROUND WATER DEPTH: DURING COMP. DELAYED NOTES GRAPHIC LOG SAMPLE DEPTH (ft.) SAMPLE TYPE NUMBER **BLOW** COUNTS (N-VALUE) STRATA DESCRIPTION COMMENTS **PERCENT RECOVERY** (RQD) ELEV Coal Combustion Byproduct (ASH) poor recovery till natural soil - ash - gray, moist, loose inferred where no recovery. 9 825.9

822.9

Bottom of borehole at 18.0 feet.

2012 GEOTECH ENGINEERING LOGS - ESEE2012DATABASE.GDT - 3/14/13 16:02 - T.\ESEE MAJOR PROJECTS\MCDONOUGH ATKINSOM2012\ES2207 ASH PONDCLOSURES AP1-3-4ASH

LOG OF TEST BORING

BORING AP3-10 PAGE 1 OF 1 ES 2207

Terminated due to refusal at 15 feet.

PROJECT Ash Pond 3 and 4 Closure Borings SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **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 CHECKED BY _____ ANGLE ____ BEARING DRILLED BY B. Ozment LOGGED BY G. Dyer BORING DEPTH 15 ft. GROUND WATER DEPTH: DURING COMP. DELAYED NOTES GRAPHIC LOG SAMPLE DEPTH (ft.) SAMPLE TYPE NUMBER **BLOW** COUNTS (N-VALUE) STRATA DESCRIPTION COMMENTS **PERCENT RECOVERY** (RQD) ELEV Coal Combustion Byproduct (ASH) poor recovery till natural soil - ash - gray, moist, loose inferred where no recovery. 9

825.1

Silt (ML) - tan, moist, dense

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 PONDCLOSURES AP1-3-4ASH

LOG OF TEST BORING

BORING AP3-11 PAGE 1 OF 1 ES 2207

PROJECT Ash Pond 3 and 4 Closure Borings SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **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 CHECKED BY _____ ANGLE ____ BEARING DRILLED BY B. Ozment LOGGED BY G. Dyer BORING DEPTH 20 ft. GROUND WATER DEPTH: DURING COMP. DELAYED **NOTES** GRAPHIC LOG SAMPLE DEPTH (ft.) SAMPLE TYPE NUMBER **BLOW** COUNTS (N-VALUE) STRATA DESCRIPTION COMMENTS **PERCENT RECOVERY** (RQD) ELEV Coal Combustion Byproduct (ASH) poor recovery till natural soil - ash - gray, moist, loose inferred where no recovery. 9 836.0 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/ES2227 ASH PONDCLOSURES AP1-3-44SH

Silt (ML)

LOG OF TEST BORING

BORING AP3-H01 PAGE 1 OF 1

ES 2207 PROJECT Ash Pond 3 and 4 Closure Borings SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **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 ANGLE BEARING CHECKED BY ___ BORING DEPTH 9 ft. GROUND WATER DEPTH: DURING COMP. DELAYED NOTES GRAPHIC LOG SAMPLE DEPTH (ft.) SAMPLE TYPE NUMBER **BLOW** COUNTS (N-VALUE) STRATA DESCRIPTION COMMENTS **PERCENT RECOVERY** (RQD) ELEV 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 831.1

830.6

- tan, moist, dense, silty, micaceous residual soil Bottom of borehole at 9.0 feet.



2012 GEOTECH ENGINEERING LOGS - ESEE2012DATABASE.GDT - 3/14/13 16:02 - T:ESEE MAJOR PROJECTSI/PROJECTSI/MCDONOUGH ATKINSOM/2012/ES2207 ASH PONDCLOSURES AP1-3-4/ASH

BORING AP3-H02 PAGE 1 OF 1

ES 2207 LOG OF TEST BORING PROJECT Ash Pond 3 and 4 Closure Borings SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **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** GRAPHIC LOG SAMPLE DEPTH (ft.) SAMPLE TYPE NUMBER **BLOW** COUNTS (N-VALUE) STRATA DESCRIPTION COMMENTS **PERCENT RECOVERY** (RQD) ELEV 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 Terminated at 17 ft due to limits of hand auger equipment. 824.1

Bottom of borehole at 17.0 feet.

Silt (ML)

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 PONDCLOSURES AP1-3-4ASH

LOG OF TEST BORING

BORING AP3-H03 PAGE 1 OF 1 ES 2207

PROJECT Ash Pond 3 and 4 Closure Borings SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **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 **BEARING** DRILLED BY B. Gallagher LOGGED BY B. Gallagher CHECKED BY ANGLE BORING DEPTH 5.2 ft. GROUND WATER DEPTH: DURING COMP. DELAYED **NOTES** GRAPHIC LOG SAMPLE DEPTH (ft.) SAMPLE TYPE NUMBER **BLOW** COUNTS (N-VALUE) STRATA DESCRIPTION COMMENTS **PERCENT RECOVERY** (RQD) ELEV Coal Combustion Byproduct (ASH) - gray, moist, loose, fly ash - with layers of brown sandy soil from 3.5 to 4.5 ft

837.3

836.8

- tan, moist, dense, silty, micaceous residual soil

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/ES2227 ASH PONDCLOSURES AP1-3-4 ASH

LOG OF TEST BORING

BORING AP3-H04 PAGE 1 OF 1 ES 2207

PROJECT Ash Pond 3 and 4 Closure Borings SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **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 **BEARING** DRILLED BY B. Gallagher LOGGED BY B. Gallagher CHECKED BY ANGLE BORING DEPTH 7.5 ft. GROUND WATER DEPTH: DURING COMP. DELAYED **NOTES** GRAPHIC LOG SAMPLE DEPTH (ft.) SAMPLE TYPE NUMBER **BLOW** COUNTS (N-VALUE) STRATA DESCRIPTION COMMENTS **PERCENT RECOVERY** (RQD) ELEV Coal Combustion Byproduct (ASH) - gray, wet, loose, fly ash 837.0 Silt (MH) - tan, moist, medium dense, low plasticity, residual soil

830.5

Bottom of borehole at 7.5 feet.

2012 GEOTECH ENGINEERING LOGS - ESEE2012DATABASE.GDT - 3/14/13 16:02 - T.:ESEE MAJOR PROJECTS/PROJECTS/MCDONOUGH ATKINSON/2012/ES2227 ASH PONDCLOSURES AP1-3-4 ASH

LOG OF TEST BORING

BORING AP3-H05 PAGE 1 OF 1 ES 2207

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

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 GRAPHIC LOG SAMPLE DEPTH (ft.) SAMPLE TYPE NUMBER **BLOW** COUNTS (N-VALUE) STRATA DESCRIPTION COMMENTS **PERCENT RECOVERY** (RQD) Coal Combustion Byproduct (ASH) 837.3 լ- gray, wet, loose, fly ash Silt (MH) - tan, moist, medium dense, low plasticity, residual soil 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 PONDCLOSURES AP1-3-4ASH

Silt (MH)

LOG OF TEST BORING

BORING AP3-H06 PAGE 1 OF 1 ES 2207

PROJECT Ash Pond 3 and 4 Closure Borings SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **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 ANGLE BEARING DRILLED BY B. Gallagher LOGGED BY B. Gallagher CHECKED BY ___ BORING DEPTH 8.3 ft. GROUND WATER DEPTH: DURING COMP. DELAYED **NOTES** GRAPHIC LOG SAMPLE DEPTH (ft.) SAMPLE TYPE NUMBER **BLOW** COUNTS (N-VALUE) STRATA DESCRIPTION COMMENTS **PERCENT RECOVERY** (RQD) ELEV Coal Combustion Byproduct (ASH) - gray, wet, loose, fly ash 830.5

830.0

- tan, moist, medium dense, low plasticity, residual soil Bottom of borehole at 8.3 feet.

2012 GEOTECH ENGINEERING LOGS - ESEE2012DATABASE.GDT - 3/14/13 16:02 - T.\ESEE MAJOR PROJECTS\MCDONOUGH ATKINSOM2012\ES2207 ASH PONDCLOSURES AP1-3-4ASH

LOG OF TEST BORING

BORING AP3-H11 PAGE 1 OF 1 ES 2207

PROJECT Ash Pond 3 and 4 Closure Borings SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **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 **BEARING** DRILLED BY B. Gallagher **ANGLE** LOGGED BY B. Gallagher CHECKED BY _ BORING DEPTH 13.5 ft. GROUND WATER DEPTH: DURING 3.5 ft. COMP. 11 ft. DELAYED **NOTES** SAMPLE DEPTH (ft.) SAMPLE TYPE NUMBER **BLOW** GRAPHIC LOG COUNTS **£** (N-VALUE) DEPTH STRATA DESCRIPTION COMMENTS **PERCENT RECOVERY** (RQD) ELE\ Coal Combustion Byproduct (ASH) - gray, moist, loose, fly ash with numerous layers of bottom ash \bigtriangledown - fly ash with very few layers of bottom ash below 3 ft perched water in fly ash from 3.5 to 4.0 ft. 9 difficult drilling below 11 ft due to - with layers of bottom ash and some organic materials squeeze. (roots, pine straw, etc) below 11 ft terminated due to dense natural soil and squeeze in overlying ash. 827.2 Silty Sand (SM)

826.5

Bottom of borehole at 13.5 feet.

1- tan, moist, dense, sandy residual soil, little mica

SOUTHERN COMPANY

GEOTECH ENGINEERING LOGS - ESEE DATABASE. GDT - 8/26/20 20:43 - \\ALTRCFP01\LAPARKER\$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

DATE	STAF	RTED 10/2/2012	COMPLETED		ROUND E	ELEVATIO	ON <u>848</u>	.3 ft	COORI	DINATES N 1393958 E 2202119.5
CONT	RACT	OR SCS Field Service	es	METHOD _4	.25" Hollow	Stem Aug	er w/pilot	bit; HQ Rock C	ore E (QUIPMENT CME 550
DRILL	ED B	Y S. Denty	LOGGED BY	R. Tinsley	СН	ECKED B	Υ		BOI	RING DEPTH _54.4 ft
GROU	ND W	ATER DEPTH: DURING	3 42 ft.	COMP	D	ELAYED	27.8 ft.	after 24 hrs.		
NOTES	8 W	ell installed. Refer to we	ell data sheet.							
DEPTH (ft)	GRAPHIC LOG	MATE	RIAL DESCRIPT	ION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML) - Gravel surface w	ith some vegetal	ion.						
		- brown, medium s fragments.	stiff, SILT with m	ica and quartz						
5		- CL-ML: dark red,	stiff, SILT/CLA	/; micaceous		SS -1	4.5	4-6-9 (15)		2.5YR.
10		- reddish brown, d and relict bedding.	ry, medium stiff,	SILT with mica		SS -2	9.5	4-4-4 (8)		saprolite (gneiss).
15		- medium stiff, SA distinct banding	A with mica, qua	rtz and feldspar;		SS -3	14.5	2-3-3 (6)		saprolite.
20		- light yellowish bro grain, SILT with m	own, medium sti ica, quartz, and	f, fine to coarse eldspar		SS -4	19.5	1-3-2 (5)		saprolite; distinct color change from red to tan with micas.
						SS	24.5	2-3-5		

BORING B-02 Page 2 of 3

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING PROJECT Plant McDonough Hydrogeological Investigation

	EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING				Cobb C	ounty, GA		
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
	Ш	Silt (ML)(con't) - damp, medium stiff, SAA		-5		(8)		upper saprolite.
		Ā						
30		- gray and white, dry, very hard, SILT; gneiss saprolite		SS -6	29.5	6-15-25 (40)		lower saprolite.
PDATED.				00		0.27.40		
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.
9501501		- pale brown, dry, very hard, pulverized SILT with gneiss fragments		SS -8	39.5	50 (0)		10YR.
1 JAN 1 C4: U2		Gneiss - dark gray, hard, slightly weathered, augen gneiss with iron staining along partings. - extremely weathered and broken gneiss	804.2	RC -1	44.1			H2O on augers when pulled.
S - ESEE DATABASE		- gray, hard, slightly weathered, staining along vertical fractures		RC -2	49.4			
		 dark gray, weathered augen gneiss and mica schist with chlorite. Quartz layers at 50 ft, 52.8 ft and 54.1 ft.; Deformed and folded about 3 inches. Schist: hard, slightly weathered, with chlorite 		_				
		(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 MATERIAL DESCRIPTION COMMENTS

SAMPLE TYPE NUMBER SAMPLE DEPTH (ft.) ELEVATION RECOVERY % (RQD) GRAPHIC LOG BLOW COUNTS (N VALUE) DEPTH (ft) Bottom of borehole at 54.4 feet. 55 60 GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:43 - \\ALTRCFP01\LAPARKER\$\DESKTOP\GPC\MV LOGS_SURVEY UPDATED.GPJ 65 70 75 80

WELL CONSTRUCTION LOG

Southern Company Generation

WELL CONSTRUCTION LOG	Southern Company Ge	neration	
PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services		WELL
Hydrogeologic Investigation	DRILLER: S. Denty		NAME
LOCATION: Ash Pond	RIG TYPE: CME550		
LOGGER: Rhonda Tinsley	DRILLING METHODS: HS Auger/HQ Rock Core		DGWA-2/B-2
DATE CONSTRUCTED: 10/2/2012	N: 1393958 E:2202119.5		
		DEPTH	ELEVATION
		FEET	FT, MSL
	TOP OF RISER	-2.6	850.88
	2" Threaded Riser Cap	-2.0	030.00
I ⊢	2 Threaded Riser Cap		
1			
l.aa			
4 ft x 4 ft concrete pad			
	GROUND SURFACE	0.0	848.3
	PROTECTIVE CACING		
\`\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	PROTECTIVE CASING		
	SIZE: 4" x 4"		
	TYPE: aluminum		
	POTTOM OF CROUT		
Ĭ	BOTTOM OF GROUT		1
	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	817.3
	ANNULAR SEAL		
	TYPE: PelPlug TR-30 3/8"		
	bentonite pellets; 5-gallon buckets		
	AMOUNT: 1.75 buckets		
	TOP OF FILTER PACK	35.1	813.2
	FILTER PACK		
	TYPE: Filtersil #61		
	Size 1A; 50 lbs/bag		
	AMOUNT: 2.5 Bags		
	PLACEMENT: Poured		
	BOTTOM OF RISER / TOP OF SCREEN	38.7	809.7
	SCREEN		
	DIA: 2" prepack (3.45" OD)		
	TYPE: Schedule 40 PVC		
	OPENING WIDTH: 0.01 inch		
	OPENING TYPE: Slotted		
	SLOT SPACING: 0.1 inch		
	20-2010	40.7	700 7
Flush threaded and see	BOTTOM OF SCREEN	48.7	799.7
Flush-threaded end cap —	DOTTOM OF CASINO	49.0	799.3
	BOTTOM OF CASING	4 8.0	188.3
HOLE DIA: 7	inch (auger)		
	8 inch (HQ core)		
<u>. </u>			



GEOTECH ENGINEERING LOGS - ESEE DATABASE. GDT - 8/26/20 20:43 - \\ALTRCFP01\LAPARKER\$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

DATE	STA	RTE	.D 10/2/2012	COMPLETED		OUND I	ELEVATION	ON <u>835</u>	ft	COORI	DINATES N 1394045.1 E 2202411.5
											QUIPMENT CME 550
					COMP.					_ во	RING DEPTH 42 ft.
			nstalled. Refer to w			b	ELATED		arter 24 ms.		
						7	ЭÉ	표		%	
DEPTH (ft)	GRAPHIC LOG		MATE	RIAL DESCRIPT	ION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY (RQD)	COMMENTS
	Ш		Silt (ML) - Grass								
			- brownish yellow,	, dry, SILT							
5							SS -1	4.5	3-2-3 (5)		
			- brownish yellow, with relic bedding.	dry, medium stif	f, SILT saprolite						upper saprolite.
10			- pale brown and with occasional fra	white, medium st agments.	iff, mottled; SAA		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		Ā	- mottled deep rec coarse grains of a	d and gray, damp angular quartz; gr	stiff, SILT; with eiss saprolite.		SS -4	19.5	1-6-5 (11)		upper saprolite.
25			Silt (ML)			810.5	SS	24.5	6-6-8		



BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

EAF	EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING		LO	CATION	Cobb C	ounty, 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) - gray and white, stiff, micaceous SILT; weathered; contains fine to coarse-grained quartz and feldspar fragments		-5		(14)		good relic banding; lower saprolite.
		- SAA						
30				SS -6	29.5	9-7-7 (14)		
JPDATED.GPJ		- Refusal @ 32.2'. Start coring @ 32'. Gneiss - gray and white, hard, slightly weathered, augen gneiss; water (iron, manganese) staining along partings.	802.8	RC -1	32.0			
GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 2043 - WATRCFP01/LAPARKER\$NDESKTOP/GPC/MW LOGS_SURVEY UPDATED.GPJ 1		 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			
01/LAPARKER\$\DESK-	\ -\\\-\\\\-\\\\\-\\\\\\\\\\\\\\\\\\\\		793.0					
TRCFP		Bottom of borehole at 42.0 feet.						
13 - 13 -								
707 07 07 45								
VSE.GD	•							
MTAB/								
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WELL CONSTRUCTION LOG

Southern Company Generation

WELL CONSTRUCTION LOG	Southern Company Ge	eneration	1				
PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services		WELL				
Hydrogeologic Investigation							
LOCATION: Ash Pond	RIG TYPE: CME550						
LOGGER: Rhonda Tinsley	DRILLING METHODS: HS Auger/HQ Rock Core		B-3				
DATE CONSTRUCTED: 10/3/2012	N: 1394045.1 E:2202411.5						
		DEPTH	ELEVATION				
		FEET	FT, MSL				
	TOD OF BISED	-2.78	837.78				
 	TOP OF RISER	-2.70	037.70				
I ⊢	2" Threaded Riser Cap						
I I I							
l III							
4 ft x 4 ft concrete pad							
	GROUND SURFACE	0.0	835.0				
	PROTECTIVE CACING						
	PROTECTIVE CASING						
	SIZE: 4" x 4"						
	TYPE: aluminum						
	POTTOM OF CROUT						
	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	815.0				
	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	810.8				
	FILTER PACK						
	TYPE: Filtersil #61						
	Size 1A; 50 lbs/bag						
	AMOUNT: 2.5 Bags						
	PLACEMENT: Poured						
	BOTTOM OF RISER / TOP OF SCREEN	26.7	808.4				
	SCREEN	20.1	000.4				
	DIA: 2" prepack (3.45" OD)						
	TYPE: Schedule 40 PVC						
	OPENING WIDTH: 0.01 inch						
	OPENING TYPE: Slotted						
	SLOT SPACING: 0.1 inch						
	BOTTOM OF SCREEN	36.7	798.4				
Flush-threaded end cap							
	BOTTOM OF CASING	37.0	798.0				
HOLE DIA: 7 in							
3.8	inch (HQ core)						



GEOTECH ENGINEERING LOGS - ESEE DATABASE. GDT - 8/26/20 20:43 - \\ALTRCFP01\LAPARKER\$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

ITRACTO	SCS Field Services	METHOD _4.2	25" Hollo	w Stem A	uger w/p	ilot bit E	QUIPM	ENT CME 550
LED BY	S. Denty LOGGED B	Y R. Tinsley	СН	ECKED E	Y		_ во	RING DEPTH 46 ft.
	TER DEPTH: DURING 23 ft.		D	ELAYED	12.2 ft.	after 24 hrs.		
S We	Il installed. Refer to well data sheet.				т			
GRAPHIC LOG	MATERIAL DESCRI	PTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
	Silt (ML) - Thin topsoil with vegetation brown, SILT							
	- yellowish brown, stiff, SILT sapprominent.	prolite, relic bedding		SS -1	4.5	3-3-6 (9)		10YR; upper saprolite.
 	- olive gray, medium stiff, SILT s coarse-grained fragments. ▼	saprolite with fine to		SS -2	9.5	2-3-3 (6)		5YR; lower saprolite.
 	- damp, medium stiff, SAA			SS -3	14.5	2-2-4 (6)		
 	- wet, hard, SAA			SS -4	19.5	6-12-23 (35)		
	$ar{ar{ u}}$							WT @ 23'.

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

EA	KIH 50	CIENCE AND ENVIRONMENTAL ENGINEERING	LO	CATION	Cobb C	ounty, 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) - very stiff, SAA		-5		(23)		
30	 	- hard, SAA		SS -6	29.5	10-18-23 (41)		
30KVEY UPDATED.GPJ		- very stiff, SAA		SS -7	34.5	6-11-13 (24)		
25 - SAEL DATABASE GOT - SAEL DATABASE GOT - SAEL TROPPOULLAPARRERS/NDESK OPPIGATORY COPIE - SAEL DATABASE GOT - SAEL DATABASE	 			SS -8	39.5	5-6-5 (11)		
40		- stiff, SAA		-0		(11)		
45	-	- hard, SAA Bottom of borehole at 46.0 feet.	766.1	SS -9	44.5	25-45 (45)		
A I ABAGE. GI		BORROTT OF BOTCHOIC AL 40.0 feet.						
50								
	-							
ECH ENGINE								

WELL CONSTRUCTION LOG

Southern Company Generation

WELL CONSTRUCTION LOG	Southern Company Ge	eneration	า
PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services		WELL
Hydrogeologic Investigation	DRILLER: S. Denty		NAME
LOCATION: Ash Pond	RIG TYPE: CME550		
LOGGER: Rhonda Tinsley	DRILLING METHODS: HS Auger		DGWC-4/B-4
DATE CONSTRUCTED: 10/3/2012	N: 1394171.5 E:2202662.4		
		DEPTH	ELEVATION
		FEET	FT, MSL
	TOD OF BIOFIE	2.0	01/1 05
	TOP OF RISER	-2.8	814.85
	2" Threaded Riser Cap		
4 ft x 4 ft concrete pad			
	GROUND SURFACE	0.0	812.1
	1 667		
	PROTECTIVE CASING		
	SIZE: 4" x 4"		
	TYPE: aluminum		
	POTTOM OF OPOUT		
	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		
	POTTOM OF PIOED / TOP OF COPESIA	247	777 5
	BOTTOM OF RISER / TOP OF SCREEN	34.7	777.5
	SCREEN DIA: 2" prepack (3.45" OD)		
	TYPE: Schedule 40 PVC		
	OPENING WIDTH: 0.01 inch		
	OPENING TYPE: Slotted		
	SLOT SPACING: 0.1 inch		
	525. 51.7(51.45. 0.1 mon		
	BOTTOM OF SCREEN	44.7	767.5
Flush-threaded end cap	DOTTOM OF GOINER		. 57.10
	BOTTOM OF CASING	45.0	767.1
		-	
HOLE DIA:	7 inch		



SOUTHERN COMPANY

GEOTECH ENGINEERING LOGS - ESEE DATABASE. GDT - 8/26/20 20:43 - \"ALTRCFP01\"LAPARKER\$\"DESKTOP\GPC;WW LOGS_SURVEY UPDATED.GPJ

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

	ED 10/3/2012 COMPLETED						
	SCS Field Services						
	S. Denty LOGGED BY					_ BO	RING DEPTH 30 ft.
	ER DEPTH: DURING 16 ft.	COMP.	DELAYED	0 ft. af	ter 100 hrs.		
IES Well	installed. Refer to well data sheet.			т			
(ft) GRAPHIC LOG	MATERIAL DESCRIPTION	NO	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
	Silt (ML)						
	- reddish brown, SILT						
7 (2) (3) 7 (3) (4) 7 (4) (4) 7 (4) (5) 7 (5) (5)	Silty Sand (SM) - olive gray, damp, very loose, silty SILT	784 SAND to sandy	2 SS -1	4.5	WH-WH-WH (0)		
	Silt (ML)	779	2 SS -2	9.5	WH-WH-WH		
	- yellowish to light brown, damp, ver mica (gneiss)	y soft, SILT with					upper saprolite.
 5			SS -3	14.5	2-2-4 (6)		
	- greenish gray, wet, medium stiff, s saprolite with relic structure (gneiss)	andy SILT).					lower saprolite.
) 	- medium stiff, SAA		SS -4	19.5	1-2-3 (5)		lower saprolite.
 5	- very hard, SAA; slightly less weath	ered	SS	24.5	50		

SOUTHERN COMPANY

35

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GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:43 - \\ALTRCFP01\LAPARKER\$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING PROJECT Plant McDonough Hydrogeological Investigation

EAI	EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING			CATION	Cobb C	ounty, GA		
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
30		Gneiss - black (biotite) and white, hard, slightly weathered, AUGEN GNEISS with water staining along foliations (approx. 45 degrees).	763.3 758.7	RC -1	24.9	(0)		lower saprolite.

Bottom of borehole at 30.0 feet.

WELL CONSTRUCTION LOG

Southern Company Generation

WELL CONSTRUCTION LOG	Southern Company Ge	eneratio	า WELL			
PROJECT: Plant McDonough						
Hydrogeologic Investigation	DRILLER: S. Denty		NAME			
LOCATION: Ash Pond	RIG TYPE: CME550					
LOGGER: Rhonda Tinsley	DRILLING METHODS: HS Auger/HQ Rock Core		DGWC-5/B-5			
DATE CONSTRUCTED: 10/4/2012	N: 1394306.3 E:2202965.1					
		DEPTH	ELEVATION			
		FEET	FT, MSL			
l —	¬	0.0	704.75			
	TOP OF RISER	-3.0	791.75			
	2" Threaded Riser Cap					
4 ft x 4 ft concrete pad						
	GROUND SURFACE	0.0	788.7			
	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	776.7			
	ANNULAR SEAL					
	TYPE: PelPlug TR-30 3/8"					
	bentonite pellets; 5-gallon buckets					
	AMOUNT: 2 buckets					
	PLACEMENT: Tremie					
	TOP OF FILTER PACK	16.0	772.7			
	FILTER PACK					
	TYPE: Filtersil #61					
	Size 1A; 50 lbs/bag					
	AMOUNT: 1.5 Bags					
	PLACEMENT: Tremie					
	DOTTOM OF DIOED / TOD OF CORES	10.7	760.4			
	BOTTOM OF RISER / TOP OF SCREEN SCREEN	19.7	769.1			
	DIA: 2" prepack (3.45" OD)					
	TYPE: Schedule 40 PVC					
	OPENING WIDTH: 0.01 inch					
	OPENING WIDTH: 0.01 IIICH OPENING TYPE: Slotted					
	SLOT SPACING: 0.1 inch					
	BOTTOM OF SCREEN	29.7	759.1			
Flush-threaded end cap		2				
	BOTTOM OF CASING	30.0	758.7			
HOLE DIA: 7						
3.8	8 inch (HQ core)					
			-			



BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

											DINATES N 1394419.5 E 2203266.5	
CONTRACTOR SCS Field Services METHOD 4.25" Hollow DRILLED BY S. Denty LOGGED BY G. Dyer CHI											ENI _CME 550 RING DEPTH _35.8 ft	
GROUND WATER DEPTH: DURING COMP DELAYED _7 ft. after 3 hrs												
			nstalled. Refer to we									
DEPTH (ft)	GRAPHIC LOG		MATER	RIAL DESCRIPT	TION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS	
			- red-brown, damp, approximately 50% silt, 10% organics.	, very loose, silty fine-grained sa	nd, 20% clay, 20%							
5		¥.	silt (ML) - red-tan, damp, cla - gray to brownish y CLAY; 60% silt, 30 small (1 to 2 mm) o	yellow, stiff, clay	/ey SILT to silty nd/gravel; contains	783.0	SS -1	4.5	4-4-8 (12)		A horizon of residual soil.	
10			- tan-brown w/oran clayey SILT, micac grained sand				SS -2	9.5	1-1-1 (2)		B horizon of residual soil.	
15			- tan-brown, very m CLAY; 55% clay, 4 grained sand	noist, very soft, o 0% silt, approxi	clayey SILT to silty mately 5% fine-		SS -3	14.5	1-1-1 (2)		B horizon of residual soil.	
20			- olive gray to tan weathered with sor clay, 5% fine-grain	ne relic structur			SS -4	19.5	3-5-6 (11)		Top of upper saprolite zone.	
25							SS	24.5	12-32-46			

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

L									
	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		SS -6	29.5	50 (0)		lower saprolite.
TED.GPJ			- 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						
- NALTRCFP01/LAPARKER\$(DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ	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.
8		İ	Bottom of borehole at 35.8 feet.						
Α.									
C									
P G	• • • • • • •	†							
Δ <u>Υ</u>									
DES	40								
(ER\$	40	1							
PARF									
01/LA									
RCFP									
- WALT									
0:44									
3/20 2									
ابع	45								
- 8/2									
.GDT - 8/2									
BASE.GDT - 8/2									
DATABASE.GDT - 8/2									
ESEE DATABASE.GDT - 8/2									
GS - ESEE DATABASE.GDT - 8/2	45								
NG LOGS - ESEE DATABASE.GDT - 8/2	45								
VEERING LOGS - ESEE DATABASE.GDT - 8/2	45								
ENGINEERING LOGS - ESEE DATABASE.GDT - 8/2	45								
GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44	45								

WELL CONSTRUCTION LOG

Southern Company Generation

WELL CONSTRUCTION LOG	1 ,						
PROJECT: Plant McDonough	OJECT: Plant McDonough DRILLING CO.: SCS Field Services						
Hydrogeologic Investigation	DRILLER: S. Denty		NAME				
LOCATION: Ash Pond	RIG TYPE: CME550						
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger		B-6				
DATE CONSTRUCTED: 10/9/2012	N: 1394419.5 E: 2203266.5						
			ELEVATION				
		FEET	FT, MSL				
		ļ					
	TOP OF RISER	-3.0	789.47				
	2" Threaded Riser Cap						
I [7	ļ					
		ļ					
		ļ					
4 ft x 4 ft concrete pad		ļ					
	GROUND SURFACE	0.0	786.5				
	PROTECTIVE CASING						
	SIZE: 4" x 4"						
	TYPE: aluminum	ļ					
	BOTTOM OF GROUT	ļ					
	y BOTTOM OF GROOT						
	BACKFILL MATERIAL	ļ					
	TYPE: Portland cement/bentonite	ļ					
	grout						
	AMOUNT: 5 bags cement	ļ					
	7.5 lbs bentonite	ļ					
	RISER CASING	ļ					
	DIA: 2 inch	ļ					
	TYPE: Schedule 40 PVC						
	JOINT TYPE: Flush Threaded	ļ					
		ļ					
	TOP OF SEAL	16.8	769.7				
	ANNULAR SEAL						
	TYPE: PelPlug TR-30 3/8"	ļ					
	bentonite pellets; 5-gallon buckets	ļ					
	AMOUNT: 2 buckets	ļ					
	PLACEMENT: Tremie	ļ					
	TOP OF FILTER PACK	21.7	764.8				
	FILTER PACK						
	TYPE: Filtersil #61						
	Size 1A; 50 lbs/bag AMOUNT: 6 Bags						
	AMOUNT: 6 Bags PLACEMENT: Tremie						
	I LAGEIVILIVI. HEIIIIE						
	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						
	5001-01	25.0	754 5				
Flush-threaded end cap	BOTTOM OF SCREEN	35.0	751.5				
I lusti-tilleaueu ellu cap	BOTTOM OF CASING	35.4	751.1				
	2011011 0/101110						
		İ					
HOLE DI.	A: 7 inch	İ					



BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

DATE	STAR	TED 10/9/2012	COMPLETED	10/9/2012 G	ROUND E	LEVATION	ON <u>806</u>	i.1 ft	COOR	DINATES N 1394374.6 E 2203596.1
									PMENT CME 550	
						CHECKED BY BORING DEPTH _26 ft.				
		ATER DEPTH: DUR		COMP	D	ELAYED	3.8 ft. a	after 18 hrs.		
	GRAPHIC LOG	ell installed. Refer to	weil data sneet. 'ERIAL DESCRIP'	TION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		with trace sand; - red to red-tan,	rown, damp, very organic rich damp, soft, clayey							O Horizon.
5		Fat Clay (CH) - tan, brown and CLAY; micaceo	d orange, damp, m us; relic foliations;	edium stiff, silty 60% clay, 40% silt	801.6	SS -1	4.5	3-3-3 (6)		A-B Horizon / residual soils.
10			noist, soft, clayey S caceous; contains	SILT with trace fine manganese	796.6	SS -2	9.5	1-1-2 (3)		becomes very moist at 8.5'. residual soil.
15			y moist, soft, claye e gravel; micaceou ning			SS -3	14.5	1-1-3 (4)		residual soil.
20			enish), wet, mediu s; contains relic so			SS -4	19.5	1-1-5 (6)		saturated from 18.5 to 19.5'. residual soil.
25			n-brown, wet, stiff nanganese and m			SS	24.5	7-7-8		

SOUTHERN COMPANY

BORING LOG

PROJECT Plant McDonough Hydrogeological Investigation

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING LOCATION Cobb County, GA SAMPLE TYPE NUMBER SAMPLE DEPTH (ft.) ELEVATION RECOVERY % GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION COMMENTS weathered gneissic fragments; relic structures preserved insome instances Silt (ML)(con't) (15) upper saprolite. 780.1 Bottom of borehole at 26.0 feet. 30 GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER\$\DESKTOP\GPC\MW LOGS. SURVEY UPDATED.GPJ 35 40 45 50

WELL CONSTRUCTION LOG	Southern Company Ge	eneration	
PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services		WELL
Hydrogeologic Investigation LOCATION: Ash Pond	DRILLER: S. Denty RIG TYPE: CME550		NAME
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger		B-7
DATE CONSTRUCTED: 10/9/2012	N: 1394374.6 E:2203596.1		
		DEPTH	ELEVATION
		FEET	FT, MSL
	_		
_	TOP OF RISER	-3.1	809.16
	2" Threaded Riser Cap		
4 ft x 4 ft concrete pad			
4 if X 4 if concrete pau	GROUND SURFACE	0.0	806.1
	SKOND CHANGE	0.0	000.1
	PROTECTIVE CASING		
	SIZE: 4" x 4" TYPE: aluminum		
	iffe. alumnum		
٠٠;	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	798.5
	TYPE: PelPlug TR-30 3/8"		
	bentonite pellets; 5-gallon buckets		
	AMOUNT: 1.75 buckets		
	PLACEMENT: Poured	40.7	700.4
	TOP OF FILTER PACK FILTER PACK	12.7	793.4
	TYPE: Filtersil #61		
	Size 1A; 50 lbs/bag		
	AMOUNT: 7 Bags		
	PLACEMENT: Poured		
	BOTTOM OF RISER / TOP OF SCREEN	14.8	791.3
	SCREEN	-	-
	DIA: 2" prepack (3.45" OD)		
	TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch		
	OPENING WIDTH: 0.01 Inch OPENING TYPE: Slotted		
	SLOT SPACING: 0.1 inch		
	BOTTOM OF SCREEN	24.8	781.3
Flush-threaded end cap	BOTTOM OF CASING	25.2	780.9
	BOTTOM OF GAOING	20.2	. 55.5
HOLE DIA: 7	7 inch		



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

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

DATE	STAR	TED 10/10/2012	COMPLETED		OUND E	ELEVATIO	ON <u>824</u>	.1 ft (COORI	DINATES N 1394322.2 E 2203882.1
CONT	RACT	OR SCS Field Services	3	METHOD _4.25	5" Hollov	w Stem Au	ıger w/p	ilot bit E0	QUIPM	ENT CME 550
DRILL	ED BY	S. Denty	LOGGED BY	G. Dyer	СН	ECKED B	Y		ВО	RING DEPTH 49.1 ft.
		ATER DEPTH: DURING			D	ELAYED	17.04 f	t. after 18 hrs.		
NOTES	S W	ell installed. Refer to wel	l data sheet.							
DEPTH (ft)	GRAPHIC LOG	MATER	AL DESCRIPT	ION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
	Ш	Silt (ML)								
5]					SS -1	4.5	WH-WH-WH (0)		
		- tan-brown, dry, ve contains little quartz silt, 10% clay, 5% s	sand, no relic s	SILT; micaceous; structures; 85%						residual soil.
	.									
10		- tan to reddish brov contains mica flake iron content and soi	s and trace quai	rtz sand; higher		SS -2	9.5	3-3-5 (8)		residual soil.
15		- red-brown, damp, contains trace of sc percent, more plasti	hist-derived gra	T; micaceous; vel; higher clay		SS -3	14.5	WH-1-2 (3)		residual soil.
		⊼								
20		Por Language Miles	and a facility of	Look the Leave		SS -4	19.5	20-16-10 (26)		transition to upper caprolite and
		- olive brown with bl damp, very stiff, sar micaceous; highly w contains sand and of white bleached quar	ndy SILT with clar eathered origin gravel derived fro	ay; very al structure;						transition to upper saprolite and higher moisture content.
25						SS	24.5	5-7-6		



BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

EAF	KIH SC	IENCE AND ENVIRONMENTAL ENGINEERING	LO	CATION	Cobb C	ounty, 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	SS -9	44.5	17-50 (50)		transitioning to partially weathered rock.
50	100	Bottom of borehole at 49.1 feet.	775.0					

WELL CONSTRUCTION LOG	Southern Company Ge	eneration	า
PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services		WELL
Hydrogeologic Investigation	DRILLER: S. Denty		NAME
LOCATION: Ash Pond	RIG TYPE: CME550		
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger		DGWC-8/B-8
DATE CONSTRUCTED: 10/10/2012	N: 1394322.2 E:2203882.1		E. E. (A.E. O.)
		DEPTH	ELEVATION
		FEET	FT, MSL
	_		
	TOP OF RISER	-2.3	826.38
	2" Threaded Riser Cap		
I 🗆			
1 1			
4 ft x 4 ft concrete pad			
	GROUND SURFACE	0.0	824.1
	\$\frac{1}{2}\frac{1}{2}		
	PROTECTIVE CASING		
	SIZE: 4" x 4" TYPE: aluminum		
	(3) ITPE. aluminum		
	BOTTOM OF GROUT		
	, Derrom er erkeer		
	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		
	OONT THE Hash Inicaded		
	TOP OF SEAL	34.8	789.3
	ANNULAR SEAL		
	TYPE: PelPlug TR-30 3/8"		
	bentonite pellets; 5-gallon buckets		
	AMOUNT: 1 bucket		
	PLACEMENT: Tremie w/water	00.0	707.0
	TOP OF FILTER PACK FILTER PACK	36.8	787.3
	TYPE: Filtersil #61		
	Size 1A; 50 lbs/bag		
	AMOUNT: 7 Bags		
	PLACEMENT: Poured w/water		
	BOTTOM OF RISER / TOP OF SCREEN	38.7	785.4
	SCREEN		
	DIA: 2" prepack (3.45" OD)		
	TYPE: Schedule 40 PVC		
	OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted		
	SLOT SPACING: 0.1 inch		
	OLOT OF ACITYO, U. I HIGH		
	BOTTOM OF SCREEN	48.7	775.4
Flush-threaded end cap	2333. 36NEEN		
·	BOTTOM OF CASING	49.1	775.0
HOLE DIA:	/ Inch		



BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

DATE	STAF	RTEI	1 0/10/2012	COMPLETED	10/10/2012 0	GROUND E	ELEVATION	ON <u>821</u>	.8 ft	COOR	DINATES N 1394055.9 E 2204170
			SCS Field Service								•
			S. Denty							_ BO	RING DEPTH 30.1 ft.
			R DEPTH: DURING		_ COMP	D	ELAYED	7.2 ft. a	after 15 hrs.		
DEPTH (ft)	GRAPHIC LOG		nstalled. Refer to we	en data srieet.	TION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
			Silt (ML)								no residual soil; low area previously excavated
5		Ā	- red-brown, dry, s structures; soil is b but rubs to fine silt	onded and mod	elict schistose derately competent		SS -1	4.5	4-6-9 (15)		upper saprolite.
10			- brown-tan, dry, v schistose or gneiss more competent; r manganese nodule	sic structure; ro ubs to fine silt v	ck fragments are vith clay; contains		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	a Z V		Silty Gravel (GM)	1		797.3	SS	24.5	51-15-25		



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

35

40

45

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BORING LOG

SOUTHERN COMPANY SERVICES, INC. FARTH SCIENCE AND ENVIRONMENTAL ENGINEERING PROJECT Plant McDonough Hydrogeological Investigation

LOCATION	Cobb County, GA
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EA	RTH SCI	ENCE AND ENVIRONMENTAL ENGINEERING	LO	CATION	Cobb C	ounty, GA		
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
30	50-00-00-00-00-00-00-00-00-00-00-00-00-0	Silty Gravel (GM)(con't) - brown-black, damp, hard, silty GRAVEL; contains few rock fragments; crumbles to gravely silt to silty gravel; manganese staining	791.7	-5 SS -6	29.5	(40) 50 (0)		H2O return when pulling augers.
		- very hard, partially weathered rock; schist fragments; crumbles to gravel with minor silt; micaceous Bottom of borehole at 30.1 feet.						

WELL CONSTRUCTION LOG	Southern Company Ge	eneration	
PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services		WELL
Hydrogeologic Investigation	DRILLER: S. Denty		NAME
LOCATION: Ash Pond	RIG TYPE: CME550		
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger		B-9
DATE CONSTRUCTED: 10/10/2012	N: 1394056.26 E:2204166.95		
		DEPTH	ELEVATION
		FEET	FT, MSL
	TOP OF RISER	-3.1	824.39
	2" Threaded Riser Cap	-	
	- Imeaca I was ap		
4 ft x 4 ft concrete pad			
	GROUND SURFACE	0.0	821.3
	Since in the second sec	0.0	021.0
	PROTECTIVE CASING		
	SIZE: 4" x 4"		
	TYPE: aluminum		
	* : /		
	BOTTOM OF GROUT		
	DAGWELL MATERIAL		
	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		
		45.0	000.0
	TOP OF SEAL	15.0	806.3
	ANNULAR SEAL		
	TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets		
	AMOUNT: 1 bucket		
	PLACEMENT: Poured		
	TOP OF FILTER PACK	17.5	803.8
	FILTER PACK		
	TYPE: Filtersil #61		
	Size 1A; 50 lbs/bag		
	AMOUNT: 7 Bags		
	PLACEMENT: Poured w/water		
	POTTOM OF BICER / TOP OF CORES	19.6	801.7
	BOTTOM OF RISER / TOP OF SCREEN SCREEN	19.0	001.7
	DIA: 2" prepack (3.45" OD)		
	TYPE: Schedule 40 PVC		
	OPENING WIDTH: 0.01 inch		
	OPENING TYPE: Slotted		
	SLOT SPACING: 0.1 inch		
	BOTTOM OF SCREEN	29.6	791.7
Flush-threaded end cap		20.0	704.0
	BOTTOM OF CASING	30.0	791.3
HOLE DIA:	7 inch		
HOLE DIA.	7 IIIOII		



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

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

DATE	STAF	RTED _10/11/2012	COMPLETED		OUND I	ELEVATIO	ON <u>820.</u>	9 ft	COORI	DINATES N 1393818.3 E 2204201.1
CONT	RACT	OR SCS Field Service	es	METHOD _4.25	5" Hollo	w Stem Au	uger w/pil	lot bit E	QUIPM	ENT _CME 550
DRILL	ED BY	S. Denty	LOGGED BY	G. Dyer	СН	ECKED B	Y		_ во	RING DEPTH 46 ft.
		ATER DEPTH: DURING			D	ELAYED				
NOTES	S W	ell installed. Refer to we	ell data sheet.							
DEPTH (ft)	GRAPHIC LOG	MATER	RIAL DESCRIPT	ION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
	Ш	Silt (ML)								
						SS		2-2-2		
5	$\ \ \ $		" " O" T			-1	4.5	(4)		residual soil.
		- red to red-brown, mica flakes; few al grains; soil is mode	ngular to sub-ang	gular quartz						residuai soii.
	$\ \ \ $									
10		- tan-brown with bl SILT with fine to m contains few quart mica; rubs to silt a manganese stainir	nedium-grained s z gravels and hig nd fine to mediu	and and gravel; hly weathered		SS -2	9.5	2-4-4 (8)		residual soil.
۸۲						SS -3	14.5	3-4-5		
15		- stiff, SAA; less sa cemented/bonded	and and gravel; b	petter		-3		(9)		
	$\ \ \ $									
	$\ \ \ $									
	$\ \ \ $									
20		- medium stiff, SA	A; softer			SS -4	19.5	1-2-4 (6)		
25						SS	24.5	2-3-4		

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

MATERIAL DESCRIPTION Bill (ML)/con1) - very damp, medium stiff, SAA - stiff, SAA; contains highly weathered schist fragments - stiff, SAA; contains highly weathered schist fragments; samples crumble and rub to dayey silf. - hard, SAA: more rock fragments; less weathered - hard, SAA: more rock fragments; less weathered - wet, hard, gravelly SILT; prevalent relict structures Bottom of borehole at 46.0 feet. - 59. - 59. - 59.			IENCE AND ENVIRONMENTAL ENGINEERING	LO	CATION	Cobb C	county, GA		
- very damp, medium stiff, SAA - stiff, SAA; contains highly weathered schist fragments - stiff, SAA; contains highly weathered schist fragments - brown, very damp, very stiff, gravelly SILT with day; contains highly weathered schist fragments; samples crumble and rub to clayey silt. - brown, very damp, very stiff, gravelly SILT with day; contains highly weathered schist fragments; samples crumble and rub to clayey silt. - hard, SAA; more rock fragments; less weathered - wet, hard, gravelly SILT; prevalent relict structures - wet, hard, gravelly SILT; prevalent relict structures - Bottom of borehole at 46.0 feet.	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
- stiff, SAA; contains highly weathered schist fragments - stiff, SAA; contains highly weathered schist fragments - brown, very damp, very stiff, gravelly SILT with day; contains highly weathered schist fragments; samples crumble and rub to clayey silt. - hard, SAA; more rock fragments; less weathered - hard, SAA; more rock fragments; less weathered - wet, hard, gravelly SiLT; prevalent relict structures - wet, hard, gravelly SiLT; prevalent relict structures - Bottom of borehole at 46.0 feet.			Silt (ML)(con't) - very damp, medium stiff, SAA		-5		(7)		
- stiff, SAA; contains highly weathered schist fragments - brown, very damp, very stiff, gravelly SILT with clay; contains highly weathered schist fragments; samples crumble and rub to clayey silt. - brown, very damp, very stiff, gravelly SILT with clay; contains highly weathered schist fragments; samples crumble and rub to clayey silt. - hard, SAA; more rock fragments; less weathered - hard, SAA; more rock fragments; less weathered - wet, hard, gravelly SILT; prevalent relict structures - wet, hard, gravelly SILT; prevalent relict structures - Bottom of borehole at 46.0 feet.					SS	29.5	4-5-5		
- brown, very damp, very stiff, gravelly SILT with clay; contains highly weathered schist fragments; samples crumble and rub to clayey silt. - hard, SAA; more rock fragments; less weathered - hard, SAA; more rock fragments; less weathered - wet, hard, gravelly SILT; prevalent relict structures - wet, hard, gravelly SILT; prevalent relict structures Bottom of borehole at 46.0 feet.					-0		(10)		upper saprolite.
- hard, SAA; more rock fragments; less weathered - hard, SAA; more rock fragments; less weathered - hard, SAA; more rock fragments; less weathered - wet, hard, gravelly SILT; prevalent relict structures - wet, hard, gravelly SILT; prevalent relict structures - Bottom of borehole at 46.0 feet.	35		- brown, very damp, very stiff, gravelly SILT wtih clay; contains highly weathered schist fragments; samples crumble and rub to clayey silt.		SS -7	34.5	7-8-9 (17)		upper saprolite.
- wet, hard, gravelly SILT; prevalent relict structures 774.9 Bottom of borehole at 46.0 feet.	40		- hard, SAA; more rock fragments; less weathered		SS -8	39.5	6-12-16 (28)		lower saprolite.
	45			774.9		44.5			lower saprolite.
	50								

Hydrogeologic Investigation DRILLER: S. Denty NAME LOCATION: Ash Pond RIG TYPE: CME550	WELL CONSTRUCTION LOG	Southern Company Ge	eneration	
LOCATION: Ash Pond	PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services		WELL
DATE CONSTRUCTED: 10/11/2012 N: 1393818.3 E:2204201.1 TOP OF RISER 2-2.6 823.55 2" Threaded Riser Cap 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 lnch TYPE: Schedule 40 PVC JOINT TYPE: Filtersii #61 Size 14", 50 lbs/bags AMOUNT: 6.75 Bags PLACEMENT: Poured w/water BOTTOM OF FILTER PACK TYPE: Filtersii #61 Size 14", 50 lbs/bags AMOUNT: 6.75 Bags PLACEMENT: Poured w/water BOTTOM OF RISER 32.1 788.8 FILTER PACK TYPE: Filtersii #61 Size 14", 50 lbs/bags AMOUNT: 1 bucket PLACEMENT: Poured w/water BOTTOM OF RISER 17 DO P SCREEN 35.0 785.9 SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Schedule BOTTOM OF SCREEN 45.0 775.9 BOTTOM OF CASING 45.4 775.5				NAME
DATE CONSTRUCTED: 10/11/2012 N: 1393818.3 E:2204201.1 DEPTH SELEVATION FEET FT, MSL				
A fit x 4 fit concrete pad GROUND SURFACE 0.0 823.55 2" Threaded Riser Cap PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum BOTTOM OF GROUT BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 6 bags cement 9 los bentonite RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded ANNULAR SEAL TYPE: PelPlug 1R-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured TOP OF FILTER PACK TYPE: Filtersil #61 Size 1A: 50 lbsheap AMOUNT: 6.75 Bags PLACEMENT: Poured w/water BOTTOM OF RISER / TOP OF SCREEN 35.0 785.9 SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Solted SLOT SPACING: 0.1 inch SLOT SPACING: 0.1 inch BOTTOM OF SCREEN 45.0 775.9 BOTTOM OF CASING 45.4 775.5	LOGGER: Greg Dyer			DGWC-10/B-10
### TOP OF RISER -2.6 823.55 ### TOP OF RISER -2.6 823.55 ### TOP OF RISER -2.6 823.55 ### TOP OF RISER -2.6 823.55 ### PROTECTIVE CASING ### SIZE: 4" x 4" ### TYPE: Portland cement/bentonite ### TYPE: Portland cement/bentonite ### TYPE: Portland cement/bentonite ### TYPE: Schedule 40 PVC ### JOINT TYPE: Flush Threaded ### TYPE: PelPlug TR-30 3/8" ### Dentonite pellets; 5-gallon buckets ### AMNULAR SEAL ### TYPE: PelPlug TR-30 3/8" ### Dentonite pellets; 5-gallon buckets ### AMOUNT: 1 bucket ### TYPE: Pilersil if61 ### Size 14: 50 lbs/bag ### AMOUNT: 6.75 Bags ### PLACEMENT: Poured wwater ### DITCH OF RISER 7 TOP OF SCREEN 35.0 785.9 ### SOTTOM OF RISER 7 TOP OF SCREEN 35.0 785.9 ### SOTTOM OF SCREEN 45.0 ### TYPE: Schedule 40 PVC ### OPENING WIDTH: 0.01 inch ### OPENING TYPE: Solited ### Soliter Schedule 40 PVC ### OPENING WIDTH: 0.01 inch ### Soliter Schedule 40 PVC ### OPENING WIDTH: 0.01 inch ### OPENING WIDTH: 0.01 i	DATE CONSTRUCTED: 10/11/2012	N: 1393818.3 E:2204201.1		
### TOP OF RISER -2.6 823.55 2" Threaded Riser Cap PROTECTIVE CASING SIZE: 4" x4" TYPE: aluminum BOTTOM OF CROUT 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 29.8 791.1 ANNULAR SEAL TYPE: Pellyug TR-30 3/8" bentonite pellets; 6-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured TOP OF FILTER PACK TYPE: Filtersil #61 Size 1A. 50 lbs/bag AMOUNT: 6.75 Bags PLACEMENT: Poured wiwater BOTTOM OF FIRSER / TOP OF SCREEN 35.0 785.9 **SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING TYPE: Solted SLOT SPACING: 0.1 inch BOTTOM OF SCREEN 45.0 775.9 Flush-threaded end cap BOTTOM OF SCREEN 45.0 775.5			DEPTH	ELEVATION
4 ft x 4 ft concrete pad 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 ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 6-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured TOP OF FILTER PACK TYPE: Filtersil #61 Size 1A: 50 lbs/bag AMOUNT: 6.75 Bags PLACEMENT: Poured w/water BOTTOM OF RISER/TOP OF SCREEN 35.0 785.9 SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING TYPE: Solted SLOT SPACING: 0.1 inch OPENING TYPE: Solted SLOT SPACING: 0.1 inch BOTTOM OF SCREEN 45.0 775.9			FEET	FT, MSL
4 ft x 4 ft concrete pad 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 ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 6-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured TOP OF FILTER PACK TYPE: Filtersil #61 Size 1A: 50 lbs/bag AMOUNT: 6.75 Bags PLACEMENT: Poured w/water BOTTOM OF RISER/TOP OF SCREEN 35.0 785.9 SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING TYPE: Solted SLOT SPACING: 0.1 inch OPENING TYPE: Solted SLOT SPACING: 0.1 inch BOTTOM OF SCREEN 45.0 775.9				
4 ft x 4 ft concrete pad 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 ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 6-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured TOP OF FILTER PACK TYPE: Filtersil #61 Size 1A: 50 lbs/bag AMOUNT: 6.75 Bags PLACEMENT: Poured w/water BOTTOM OF RISER/TOP OF SCREEN 35.0 785.9 SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING TYPE: Solted SLOT SPACING: 0.1 inch OPENING TYPE: Solted SLOT SPACING: 0.1 inch BOTTOM OF SCREEN 45.0 775.9		TOP OF PISEP	-2.6	823 55
GROUND SURFACE 0.0 820.9 PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum BOTTOM OF GROUT BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 6 bags cement 3 lbs bentonite RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded TOP OF SEAL 29.8 791.1 ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured TOP OF FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 6.75 Bags PLACEMENT: Poured w/water BOTTOM OF RISER/TOP OF SCREEN 35.0 785.9 SCREEN DIA: 2' prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING TYPE: Slotted SLOT SPACING: 0.1 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch BOTTOM OF CASING 45.4 775.5		, -	-2.0	020.00
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 TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured TOP OF FILTER PACK TYPE: Filtersil #61 Size 1A: 50 lbs/bag AMOUNT: 6.75 Bags PLACEMENT: Poured w/water BOTTOM OF RISER / TOP OF SCREEN 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 45.0 775.5	I ⊢	2 Threaded Riser Cap		
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 TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured TOP OF FILTER PACK TYPE: Filtersil #61 Size 1A: 50 lbs/bag AMOUNT: 6.75 Bags PLACEMENT: Poured w/water BOTTOM OF RISER / TOP OF SCREEN 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 45.0 775.5				
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 TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured TOP OF FILTER PACK TYPE: Filtersil #61 Size 1A: 50 lbs/bag AMOUNT: 6.75 Bags PLACEMENT: Poured w/water BOTTOM OF RISER / TOP OF SCREEN 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 45.0 775.5				
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 TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured TOP OF FILTER PACK TYPE: Filtersil #61 Size 1A: 50 lbs/bag AMOUNT: 6.75 Bags PLACEMENT: Poured w/water BOTTOM OF RISER / TOP OF SCREEN 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 45.0 775.5				
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum BOTTOM OF GROUT BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 6 bags cement 9 libs bentonite RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded TOP OF SEAL ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured PLACEMENT: Poured TOP OF FILTER PACK TYPE: Filtersil #61 Size 14, 50 lbs/bag AMOUNT: 6.75 Bags PLACEMENT: Poured w/water BOTTOM OF RISER / TOP OF 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 BOTTOM OF SCREEN Flush-threaded end cap BOTTOM OF CASING 45.4 775.5				
SIZE: 4" x 4" TYPE: aluminum BOTTOM OF GROUT BACKFILL MATERIAL TYPE: Portland coment/bentonite grout AMOUNT: 6 bags cement 9 libs bentonite RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded TOP OF SEAL 79PE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured TOP OF FILTER PACK TYPE: Filtersil #61 Size 14; 50 lbs/bag AMOUNT: 6.75 Bags PLACEMENT: Poured w/water BOTTOM OF RISER / TOP OF 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 BOTTOM OF SCREEN Flush-threaded end cap BOTTOM OF SCREEN 45.0 775.9	<u> </u>	GROUND SURFACE	0.0	820.9
SIZE: 4" x 4" TYPE: aluminum BOTTOM OF GROUT BACKFILL MATERIAL TYPE: Portland coment/bentonite grout AMOUNT: 6 bags cement 9 libs bentonite RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded TOP OF SEAL 79PE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured TOP OF FILTER PACK TYPE: Filtersil #61 Size 14; 50 lbs/bag AMOUNT: 6.75 Bags PLACEMENT: Poured w/water BOTTOM OF RISER / TOP OF 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 BOTTOM OF SCREEN Flush-threaded end cap BOTTOM OF SCREEN 45.0 775.9		PROTECTIVE CASING		
TYPE: aluminum 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 TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured TOP OF FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 6.75 Bags PLACEMENT: Poured w/water BOTTOM OF RISER / TOP OF 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 T75.9 Flush-threaded end cap				
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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 ANNULAR SEAL TYPE: PellPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured TOP OF FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 6.75 Bags PLACEMENT: Poured w/water BOTTOM OF RISER / TOP OF SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch BOTTOM OF SCREEN 45.0 775.9		TYPE: aluminum		
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AMOUNT: 1 bucket PLACEMENT: Poured TOP OF FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 6.75 Bags PLACEMENT: Poured w/water BOTTOM OF RISER / TOP OF SCREEN 35.0 785.9 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 45.0 775.9 Flush-threaded end cap BOTTOM OF CASING 45.4 775.5		TYPE: PelPlug TR-30 3/8"		
PLACEMENT: Poured TOP OF FILTER PACK 32.1 788.8 FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 6.75 Bags PLACEMENT: Poured w/water BOTTOM OF RISER / TOP OF SCREEN 35.0 785.9 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 45.0 775.9 Flush-threaded end cap BOTTOM OF CASING 45.4 775.5				
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TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 6.75 Bags PLACEMENT: Poured w/water BOTTOM OF RISER / TOP OF SCREEN 35.0 785.9 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 45.0 775.9 BOTTOM OF CASING 45.4 775.5			32.1	788.8
Size 1A; 50 lbs/bag AMOUNT: 6.75 Bags PLACEMENT: Poured w/water BOTTOM OF RISER / TOP OF SCREEN 35.0 785.9 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 45.0 775.9 BOTTOM OF CASING 45.4 775.5]	
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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 45.0 775.9 BOTTOM OF CASING 45.4 775.5		DOTTOM OF BIOER / TOR OF CORES!	25.0	705.0
DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch BOTTOM OF SCREEN 45.0 775.9 BOTTOM OF CASING 45.4 775.5			35.0	700.9
TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch BOTTOM OF SCREEN 45.0 775.9 BOTTOM OF CASING 45.4 775.5				
OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch BOTTOM OF SCREEN 45.0 775.9 BOTTOM OF CASING 45.4 775.5				
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SLOT SPACING: 0.1 inch BOTTOM OF SCREEN 45.0 775.9 BOTTOM OF CASING 45.4 775.5				
Flush-threaded end cap BOTTOM OF SCREEN 45.0 775.9 BOTTOM OF CASING 45.4 775.5]	
Flush-threaded end cap BOTTOM OF CASING 45.4 775.5]	
Flush-threaded end cap BOTTOM OF CASING 45.4 775.5		BOTTOM OF SCREEN	45.0	775.9
BOTTOM OF CASING 45.4 775.5	Flush-threaded end cap	301.21		
HOLE DIA: 7 inch		BOTTOM OF CASING	45.4	775.5
HOLE DIA: 7 inch				
HOLE DIA: 7 inch				
	HOLE DIA	A: 7 inch		



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

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

	R SCS Field Services							
	S. Denty LOGGED BY						_ BUF	RING DEPTH 51 II.
	TER DEPTH: DURING 25 ft. installed. Refer to well data sheet.		ں	ELATED				
			Z	'PE	РТН	4 (i)	%,	
GRAPHIC LOG	MATERIAL DESCRIP	TION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY 9 (RQD)	COMMENTS
Ш	Silt (ML)							
	- brownish red, medium stiff, fine micaceous; slightly bonded	SILT with clay;		SS -1	4.5	2-3-4 (7)		
	- brownish red, very stiff, fine SIL micaceous; 10% clay	Γ with clay; very		SS -2	9.5	12-12-15 (27)		
	- damp, stiff, SAA; 20% clay; con gravel	ains small schist		SS -3	14.5	5-6-6 (12)		
	- tan, damp, stiff, SAA			SS -4	19.5	4-5-7 (12)		
				SS	24.5	5-8-11		

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

EAR	KIH SC	IENCE AND ENVIRONMENTAL ENGINEERING	LO	CATION	Cobb C	ounty, 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, wet, very stiff, SAA; contains fine sand and small schist fragments		-5		(19)		
				SS -6	29.5	5-6-8		
30		- stiff, SAA		-6	29.5	(14)		
				SS -7	34.5	6-8-14		
35		- very stiff, SAA		-7	34.5	(22)		
				SS -8	39.5	12-20-25		
35 40 45 50		- hard, SAA		-8		(45)		
				SS -9	44.5	26-50		
45		- gray, very hard, SAA; contains schist gravel throughout		-9		(50)		
50				SS -10	49.5	50 (0)		
		- dark gray, very hard, SAA	747.1			(♥)		
		Bottom of borehole at 51.0 feet.						

WELL CONSTRUCTION LOG	Southern Company Ge	<u>1</u>	
PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL	
Hydrogeologic Investigation	DRILLER: S. Denty		NAME
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	ELEVATION
		FEET	FT, MSL
		ı	
	TOP OF RISER	-2.5	800.57
		-2.5	800.57
l	2" Threaded Riser Cap	ı	
		ı	
		ı	
		ı	
4 ft x 4 ft concrete pad		ı	
	GROUND SURFACE	0.0	798.1
		ı	
	PROTECTIVE CASING	ı	
	SIZE: 4" x 4"	ı	
	TYPE: aluminum	ı	
	POTTOM OF OPOUT	i	
	BOTTOM OF GROUT		
	BACKFILL MATERIAL	ı	
	TYPE: Portland cement/bentonite	ı	
	grout	i	
	AMOUNT: 7 bags cement	ı	
	10.5 lbs bentonite	ı	
	RISER CASING	ı	
	DIA: 2 inch	ı	
	TYPE: Schedule 40 PVC	ı	
	JOINT TYPE: Flush Threaded	ı	
	<u> </u>	ı	
		ı	
	TOP OF SEAL	33.9	764.2
	ANNULAR SEAL		
	TYPE: PelPlug TR-30 3/8"	i	
	bentonite pellets; 5-gallon buckets	ı	
	AMOUNT: 1 bucket	ı	
	PLACEMENT: Tremie	ı	
	TOP OF FILTER PACK	36.2	761.9
	FILTER PACK	·	
	TYPE: Filtersil #61	1	
	Size 1A; 50 lbs/bag	1	
	AMOUNT: 7 Bags	1	
	PLACEMENT: Tremie	1	
		1	
	BOTTOM OF RISER / TOP OF SCREEN	38.8	759.3
	SCREEN		
	DIA: 2" prepack (3.45" OD)	İ	
	TYPE: Schedule 40 PVC	1	
	OPENING WIDTH: 0.01 inch	1	1
	OPENING TYPE: Slotted	İ	
	SLOT SPACING: 0.1 inch	İ	
	BOTTOM OF SCREEN	48.8	749.3
Flush-threaded end cap —		40.4	740.0
	BOTTOM OF CASING	49.1	749.0
		1	
HOLE DIA:	7 inch	1	
HOLE DIA:	/ IIIGII	1	
			ı



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

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

ITRACTO	SCS Field Ser	vices	METHOD _	4.25" Hollo	v Stem A	uger w/p	ilot bit E	QUIPM	ENT CME 550
LED BY	S. Denty	LOGGED BY	K. Byrd	СНІ	ECKED E	BY		BOI	RING DEPTH 26 ft.
UND WAT	ER DEPTH: DUR	ING 9 ft.	COMP	DI	ELAYED				
ES Well	installed. Refer to	well data sheet.				_			
GRAPHIC LOG	MAT	TERIAL DESCRIPT	ΓΙΟΝ	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
	Silt (ML)								
 	- brown/tan, dar micaceous	mp, soft, SILT with	some clay;		SS -1	4.5	1-2-2 (4)		
					UD	7.0			
					-1	7.0			
<u>Z</u>	Lean Clay (CL - red/orange/ligi) ht brown, wet, very e mica and fine san	soft, CLAY; d grains	761.7	SS -2	9.5	WH-WH-WH (0)		
	Silt (ML) - yellowish oran very fine-graine	ge, wet, medium s d	tiff, sandy SILT;	756.7	SS -3	14.5	WH-WH-7 (7)		
	- light to olive gr contains heavily	ray, wet, very stiff, v weathered schist	SILT; micaceous fragments	;	SS -4	19.5	6-11-8 (19)		
				746 2	SS	24.5	2-2-3		

Page 2 of 2

SOUTHERN ZZ COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC. FARTH SCIENCE AND ENVIRONMENTAL ENGINEERING PROJECT Plant McDonough Hydrogeological Investigation

	KIHS	CIENCE AND ENVIRONMENTAL ENGINEERING	CATION	Cobb County, GA				
DEPTH (#)	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 GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - "\ALTRCFP01\LAPARKER\$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ 35 40 45 50

WELL CONSTRUCTION LOG	Southern Company Generation								
PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services		WELL						
Hydrogeologic Investigation	DRILLER: S. Denty		NAME						
LOCATION: Ash Pond	RIG TYPE: CME550								
LOGGER: Kinsey Byrd	DRILLING METHODS: HS Auger		DGWC-12/B-12						
DATE CONSTRUCTED: 10/15/2012	N: 1393149.4 E:2204128.3								
		DEPTH	ELEVATION						
		FEET	FT, MSL						
			,						
	_								
l <u> </u>	TOP OF RISER	-2.7	773.86						
 <u> </u>	2" Threaded Riser Cap								
4 ft x 4 ft concrete pad									
	GROUND SURFACE	0.0	771.2						
	PROTECTIVE CASING								
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	SIZE: 4" x 4"								
	TYPE: aluminum								
	\$\frac{1}{2}\frac{1}{2								
	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	761.0						
	ANNULAR SEAL								
	TYPE: PelPlug TR-30 3/8"								
	bentonite pellets; 5-gallon buckets								
	AMOUNT: 1 bucket								
	PLACEMENT: Tremie								
	TOP OF FILTER PACK	12.6	758.6						
	FILTER PACK								
	TYPE: Filtersil #61		1						
	Size 1A; 50 lbs/bag		1						
	AMOUNT: 2.5 Bags; 50 lbs/bag								
	PLACEMENT: Tremie								
	_		1						
	BOTTOM OF RISER / TOP OF SCREEN	14.7	756.5						
	SCREEN								
	DIA: 2" prepack (3.45" OD)		1						
	TYPE: Schedule 40 PVC								
	OPENING WIDTH: 0.01 inch		1						
	OPENING TYPE: Slotted		1						
	SLOT SPACING: 0.1 inch		1						
	223 . 51 7.61.10. 0.1 111011								
	BOTTOM OF SCREEN	24.7	746.5						
Flush-threaded end cap	BOTTOM OF SCILEN		7-10.0						
and the same same same	BOTTOM OF CASING	25.1	746.1						
	23.1331 3.13.110		1						
			1						
HOLE DIA	x: 7 inch								
, ===									
			•						



BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

	OR SCS Field Services METHOD 4.2						
	S. Denty LOGGED BY G. Dyer TER DEPTH: DURING COMP.					_ BOI	RING DEPTH 46 ft.
	Il installed. Refer to well data sheet.		LLAILD	20.731	<u>t. artor 50 m</u> 3.		
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 9.0 ft						
		791 9	99		21 50		
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		

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

5	MKII S	CIENCE AND ENVIRONMENTAL ENGINEERING	LU	CATION	Copp C	ounty, GA		-
DEPTH	GRAPHIC		ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)(con't) - SAA		-4		(53)		
30	···	- SAA		SS -5	29.5	14-20-28 (48)		
OGS_SURVEY UPDATED.GPJ	 	- moist, very hard, SAA with more competent schist fragments		SS -6	34.5	12-50 (50)		
GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - NALTRCFP01/LAPARKER\$/DESKTOP/GPCMW LOGS_SURVEY UPDATED.GPJ GP	···	- very hard, SAA; more sandy silt and less schist fragments		SS -7	39.5	18-29-50 (79)		
T - 8/26/20 20:44 - \\ALTRCFP01\(\)		- gray-brown, saprock/pwr; limited recovery as top of rock was encountered	745.3	SS -8	44.5	50 (0)		saprock/top of rock transition.
BASE.GDI	.	Bottom of borehole at 46.0 feet.						
SEE DATA								
- S50 - 50	_							
NEERING 								
ECH ENG								
GEOT								

WELL CONSTRUCTION LOG	Southern Company Generation							
PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services		WELL					
Hydrogeologic Investigation	DRILLER: S. Denty		NAME					
LOCATION: Ash Pond	RIG TYPE: CME550							
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger		DGWC-13/B-13					
DATE CONSTRUCTED: 11/29/2012	N: 1392881.1 E:2204084.6							
		DEPTH	ELEVATION					
		FEET	FT, MSL					
			,					
	7	0.0	7044					
	TOP OF RISER	-2.8	794.1					
	2" Threaded Riser Cap							
4 ft x 4 ft concrete pad								
	GROUND SURFACE	0.0	791.3					
	PROTECTIVE CASING							
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	্রি SIZE: 4" x 4"							
	₹∰ TYPE: aluminum							
	<u> </u>							
	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	762.3					
	ANNULAR SEAL							
	TYPE: PelPlug TR-30 3/8"							
	bentonite pellets; 5-gallon buckets							
	AMOUNT: 1 bucket							
	✓ PLACEMENT: Poured							
	TOP OF FILTER PACK	31.2	760.1					
	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	757.9					
	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	43.4	747.9					
Flush-threaded end cap		40.0	747.5					
	BOTTOM OF CASING	43.8	747.5					
HOLEDIA	7 inch							
HOLE DIA:	/ IIICH							



BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

		TED <u>12/18/2012</u> COMPLETED <u>12/18/2012</u> GR						
		DR _SCS Field Services METHOD _4.25 _T. Milam LOGGED BY _G. Dyer						QUIPMENT CME 550 RING DEPTH 34.3 ft.
		TER DEPTH: DURING COMP					_ 60	14.5 IL.
		Il 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						
5								
	===							
10		Silt (ML) - tan with green and red-orange mottling, damp, soft, SILT; trace of schistose bedding; trace schist fragments; slightly micaceous and quartzose	780.8	SS -1	9.5	1-2-2 (4)		residual soil.
								upper saprolite.
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.
20		Silty Gravel (GM) - brown, tan and silver, dry, very hard, SAPROCK;	770.3	SS -3	19.5	16-50 (50)		
	1000 TO TO TO TO TO TO TO TO TO TO TO TO TO	predominately schist fragments; moderately weathered						saprock/pwr.
	90 H	- SAA; softer zone from 23' to 24'	765.5					
25	///	Schist	100.0	SS	24.5	50		



BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

EAF	RTH SCII	ENCE AND ENVIRONMENTAL ENGINEERING	LO	CATION	Cobb C	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 (<i>con't</i>) - 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.	700.0	1				
•••••	<u> </u>							
•••••	†							
•••••	†							
40								
	<u> </u>							
45								
•••••								
50	1							
50	†							
•••••	†							
	-							

WELL CONSTRUCTION LOG	Southern Company Ge		
PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL	
Hydrogeologic Investigation	DRILLER: T. Milam		NAME
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	ELEVATION
		FEET	FT, MSL
	TOP OF RISER	-2.6	792.4
	2" Threaded Riser Cap	-2.0	102.4
	2 Threaded Riser Cap		
4 # 4 #			
4 ft x 4 ft concrete pad		0.0	700.0
	GROUND SURFACE	0.0	789.8
	PROTECTIVE CASING		
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	SIZE: 4" x 4"		
	TYPE: aluminum		
	\$\frac{1}{2}\tag{1.11 \tag{1.5}}		
	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		
	JOINT TYPE: Flush Threaded		
	TOP OF SEAL	12.5	777.3
	ANNULAR SEAL	12.0	
	TYPE: PelPlug TR-30 1/4"		
	bentonite pellets; 5-gallon buckets		
	AMOUNT: 0.75 bucket		
	PLACEMENT: Poured/tremie pipe		
	TOP OF FILTER PACK	15.5	774.3
	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	765.9
	SCREEN	20.8	100.8
	DIA: 2" prepack (3.45" OD)		
	TYPE: Schedule 40 PVC		
	OPENING WIDTH: 0.01 inch		
	OPENING TYPE: Slotted		
	SLOT SPACING: 0.1 inch		
	BOTTOM OF SCREEN	33.9	755.9
Flush-threaded end cap —		04.5	
	BOTTOM OF CASING	34.3	755.5
HOLE DIA: 7 inc	sh (auger)		
	nch (HQ core)		
3.01			<u>I</u>

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

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

DATE	STAR	TED _11/29/2012	TED _11/29/2012 G	ROUND I	ELEVATION	ON <u>821</u>	.5 ft	COORI	DINATES N 1392544.1 E 2203679
CONT	RACTO	OR SCS Field Services	METHOD _4.:	25" Hollo	w Stem A	uger w/pi	lot bit E	QUIPM	ENT CME 550
DRILL	ED BY	S. Denty LOGGED	BY G. Dyer	СН	ECKED B	Y		ВО	RING DEPTH 67.2 ft.
		TER DEPTH: DURING		D	ELAYED				
NOTE	S We	Il installed. Refer to well data shee	t.			_			
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCI	RIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft	to 9.0 ft						
5									
		Silt (ML)		812.5	SS		2.4.2		
10		- tan-red, dry, soft, SILT; abou schistose rock fragments; sligl	t 3% clay; few		-1	9.5	2-1-2 (3)		residual soil.
		Somstood rook magmonto, siigi	iny miodocodo						
15		- light tan, dry, medium stiff, S	II T. homoonoous silt		SS -2	14.5	2-3-4 (7)		residual soil.
		(no clay or sand); slightly mica fragments near base of sample	ceous; trae gneiss						
					SS	40 =	19-35-38		
20	$\left\{ \left\ \cdot \right\ \right\ $	- gray to brown, dry, very hard SILT; saprolite; fragmented so	il largely consistent of		-3	19.5	(73)		
		moderately to highly weathered	d rock						
					SS	24.5	14-24-27		

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

		CIENCE AND ENVIRONMENTAL ENGINEERING	LO	CATION	N 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.
ALI RCPOINCAPARRES, DESA LOPIGP COMM LOGS, SURVEY OF DATE (1972)	 	- 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.
454 - WAL 1 - 8/20/20 20:44 - WAL 1 -		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.
442- 76-01-043- EOEE DALIABASE GEO - 8/20/20/20/20/20		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.
3	<u> </u>	(Continued Next Page)						



BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

				0, 111011	00000	ourity, GA		
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
55	20-20-20-30-30-30-30-30-30-30-30-30-30-30-30-30	Silty Gravel (GM) - dark green and black, damp, very hard, weathered schist GRAVEL	─ 767.0	-10	54.5	50 (0)		more competent saprock.
60 		- very hard, SAA; damp to dry		SS -11	59.5	50 (0)		
- NALTRCFP01/LAPARKER\$/DESKTOP\GPCIMW LOGS_SURVEY UPDATED.GPJ	10000000000000000000000000000000000000	- very hard, SAA		SS -12	64.5	50 (0)		
∑	000		754.3					
P\GF		Bottom of borehole at 67.2 feet.	701.0					
SKTC	+							
\$\DE								
¥ 70								
APA	7							
	+							
11								
	-							
0 20:4								
75 75								
GDT -								
BASE								
DATA	1							
ESE	1							
- s ₉	+							
9 80	_							
GEOTECH ENGINEERING LOGS - ESEE DATABASE, GDT - 8/26/20 20:44								
<u> </u>	+							
OTE								
<u>Б</u>								

WELL CONSTRUCTION LOG	Southern Company Ge	eneration	
PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services		WELL
Hydrogeologic Investigation	DRILLER: S. Denty		NAME
LOCATION: Ash Pond	RIG TYPE: CME550		
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger		DGWC-15/B-15
DATE CONSTRUCTED: 11/29/2012	N: 1392544.1 E:2203679.0		
		DEPTH	ELEVATION
		FEET	FT, MSL
	TOP OF RISER	-3.0	824.5
I —		-3.0	024.5
I ⊢	2" Threaded Riser Cap		
111			
111			
111			
4 ft x 4 ft concrete pad			
	GROUND SURFACE	0.0	821.5
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	PROTECTIVE CASING		
	SIZE: 4" x 4"		
	TYPE: aluminum		
	POTTOM OF OPOUT		
	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		
	<u> </u>		
	TOP OF SEAL	52.4	769.1
	ANNULAR SEAL		
	TYPE: PelPlug TR-30 3/8"		
	bentonite pellets; 5-gallon buckets		
	AMOUNT: 1 bucket		
	PLACEMENT: Poured		
	TOP OF FILTER PACK	54.5	767.0
	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	764.8
	SCREEN		
	DIA: 2" prepack (3.45" OD)		
	TYPE: Schedule 40 PVC		
	OPENING TYPE: Cletted		
	OPENING TYPE: Slotted		
	SLOT SPACING: 0.1 inch		
		66.7	7540
Flush threeded and acr	BOTTOM OF SCREEN	66.7	754.8
Flush-threaded end cap	POTTOM OF CASING	67.1	754.4
	BOTTOM OF CASING	07.1	104.4
HOLE DIA:	7 inch		
I IOLE DIA.			
]

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

	DR SCS Field Services METHOD 4						·
	T. Milam LOGGED BY G. Dyer TER DEPTH: DURING COMP					_ 80	RING DEPTH 46 ft.
	Il installed. Refer to well data sheet.			1			
(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					
)	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		



BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

EAF	ARTH SCIENCE AND ENVIRONMENTAL ENGINEERING			CATION	Cobb C			
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.
40		- 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 Bottom of borehole at 46.0 feet.	777.6	SS -8	44.5	5-9-8 (17)		
		DOLLOTTI OF DOLETIONE AL 40.0 TEEL.						
50								

WELL CONSTRUCTION LOG	Southern Company Generation						
PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services		WELL				
Hydrogeologic Investigation	DRILLER: T. Milam		NAME				
LOCATION: Ash Pond	RIG TYPE: CME550						
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger		B-16				
DATE CONSTRUCTED: 12/19/2012	N: 1392595.1 E:2203315.4						
		DEPTH	ELEVATION				
		FEET	FT, MSL				
	TOP OF RISER	-2.9	826.47				
	2" Threaded Riser Cap	-2.3	020.47				
l I⊢	2 Tilleaded Risel Cap						
l III							
l III							
4 6 4 6							
4 ft x 4 ft concrete pad		0.0	000.0				
	GROUND SURFACE	0.0	823.6				
	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						
	JOINT TYPE: Flush Threaded						
	TOP OF SEAL	26.5	797.1				
	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	794.4				
	FILTER PACK						
	TYPE: Filtersil #61						
	Size 1A; 50 lbs/bag						
	AMOUNT: 4.5 Bag PLACEMENT: Poured w/water						
	PLACEIVIENT: Poured w/water						
	BOTTOM OF RISER / TOP OF SCREEN	33.4	790.2				
	SCREEN	55.4	100.2				
	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	780.2				
Flush-threaded end cap	DOTTOM OF GASING	43.7	779.9				
	BOTTOM OF CASING	40.1	נוש.ש				
HOLE DIA:	7 inch						
		_					

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

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

DATE S	TAR	TED <u>1/9/2012</u> COMPLETED <u>1/9/2012</u> GR (OUND I	ELEVATION	DN <u>834</u>	.2 ft	COORI	DINATES N 1392645.6 E 2203051
CONTR	ACT	OR SCS Field Services METHOD 4.25	5" Hollo	w Stem A	uger w/pi	ilot bit E	QUIPM	ENT CME 550
DRILLE	D BY	S. Denty LOGGED BY G. Dyer	СН	ECKED E	SY		ВО	RING DEPTH 46 ft.
ROUNI	D WA	TER DEPTH: DURING COMP	D	ELAYED				
NOTES	We	ell installed. Refer to well data sheet.						
DEPTH (ft)	GKAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
	Д {}	- Vacuum excavation from 0 ft to 15.0 ft						
=	*							
10	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\							
								
		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.
				SS	24.5	3-5-6		

BORING LOG

SOUTHERN COMPANY SERVICES, INC.

PROJECT Plant McDonough Hydrogeological Investigation

EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING 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.	
				SS	29.5	2-3-6			
30		- green to mottled green, black, yellow and tan, wet, stiff, SILT with fine sand; trace unweathered quartz		-4	29.5	(9)		upper saprolite.	
		gravel within weathered relic structure; heavy manganese oxide staining; micaceous							
	$\ \ \ $								
				99		4-6-9			
35	$\ \ \ $	wat stiff CAA, mare competed trace muite		SS -5	34.5	(15)			
		 wet, stiff, SAA; more cemented; trace pyrite in/around weathered zones 							
	$\ \ \ $			SS		19-50			
40	$\ \ \ $	- dark green and tan, very moist, very hard, SILT with		-6	39.5	(50)		lower saprolite.	
		gravel; micaceous; quartz sand; relict structures intact; trace manganese oxides; highly to slightly weathered schist fragments						ione, captone.	
• • • • • • • •		-							
	$\ \ \ $	- green-gray, very moist, hard, SILT with clay;		SS -7	44.5	16-19-20			
45	$\ \ $	micaceous; trace quartz sand; relict structures but highly weathered; black manganese oxides		-7	44.5	(39)		lower saprolite.	
	Ш	Bottom of borehole at 46.0 feet.	788.2						
	•								
50									
	İ								
•••••	+								
•••••	-								

	WELL CONSTRUCTION LOG Southern Company Generation							
PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services		WELL					
Hydrogeologic Investigation	DRILLER: S. Denty		NAME					
LOCATION: Ash Pond	RIG TYPE: CME550		DOMO 17/D 17					
LOGGER: Greg Dyer DATE CONSTRUCTED: 1/9/2013	DRILLING METHODS: HS Auger N: 1392645.6 E:2203051.0		DGWC-17/B-17					
DATE CONSTRUCTED. 1/9/2013	N. 1392043.0 E.2203031.0	DEDTU	EL EVATION					
			ELEVATION					
		FEET	FT, MSL					
_	TOP OF RISER	-2.8	837.05					
	2" Threaded Riser Cap							
4 ft x 4 ft concrete pad								
	GROUND SURFACE	0.0	834.2					
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	PROTECTIVE CASING		ļ					
	SIZE: 4" x 4"							
	TYPE: aluminum							
	BOTTOM OF GROUT							
Y	BOTTOW OF GROOT		<u> </u>					
	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	804.2					
	ANNULAR SEAL	00.0	004.2					
	TYPE: PelPlug TR-30 1/4"							
	bentonite pellets; 5-gallon buckets							
	AMOUNT: 1 bucket							
	PLACEMENT: Poured							
	TOP OF FILTER PACK	32.0	802.2					
	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	800.0					
	SCREEN	J7.L	000.0					
	DIA: 2" prepack (3.45" OD)							
	TYPE: Schedule 40 PVC							
	OPENING WIDTH: 0.01 inch							
	OPENING TYPE: Slotted							
	SLOT SPACING: 0.1 inch							
	BOTTOM OF SCREEN	44.2	790.0					
Flush-threaded end cap —	BOTTOM OF COMMO	// E	700 7					
	BOTTOM OF CASING	44.5	789.7					
HOLE DIA	A: 7 inch							
			-					



BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

ONTRACT	OR SCS Field Services METHOD 4.2	5" Hollov	v Stem A	uger w/pi	ilot bit E	QUIPM	ENT CME 550
RILLED BY	S. Denty LOGGED BY G. Dyer	CHE	CKED E	BY		_ во	RING DEPTH 31 ft.
	ATER DEPTH: DURING COMP	DE	ELAYED	11 ft. a	fter 24 hrs.		
OTES We	ell installed. Refer to well data sheet.			т			
(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 18.0 ft						
	$ar{m{\Lambda}}$						
5							
 =>=	Silt (ML)	805.9					
20	- 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 saprolititransition.
25			SS	24.5	3-5-6		



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.

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

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WELL CONSTRUCTION LOG	Southern Company Generation					
PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services		WELL			
Hydrogeologic Investigation	DRILLER: S. Denty		NAME			
LOCATION: Ash Pond	RIG TYPE: CME550		D 40			
LOGGER: Greg Dyer DATE CONSTRUCTED: 1/9-10/2013	DRILLING METHODS: HS Auger N: 1392521 E:2202875.5		B-18			
DATE CONSTRUCTED: 1/9-10/2013	N: 1392521 E:2202875.5	DEDTU	ELEVATION			
			ELEVATION			
		FEET	FT, MSL			
	_					
<u> _ </u>	TOP OF RISER	-2.7	826.56			
	2" Threaded Riser Cap					
4 ft x 4 ft concrete pad						
	GROUND SURFACE	0.0	823.9			
	PROTECTIVE CASING					
	SIZE: 4" x 4" TYPE: aluminum					
	i i i i i i i i i i i i i i i i i i i					
	BOTTOM OF GROUT					
	BOTTOM OF GROOT					
	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					
	JOHN TIFE. Hush Illieaded					
	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			
Flush-threaded end cap	BOTTOM OF COREEN	52.T				
	BOTTOM OF CASING	32.6	791.3			
HOLE DIA:	7 inch					

Page 1 of 2

SOUTHERN COMPANY

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

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

DATE STARTED 3/12/2013 COMPLETED 3/12/2013 GROUND ELEVATION 822.9 ft COORDINATES N 1392342.6 E 220 CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit EQUIPMENT CME 550									
							BORING DEPTH 41 ft.		
	ER DEPTH: DURING						_ 60	1411t.	
	installed. Refer to well data sheet.			LLAILD					
				Й	Ŧ		%		
(f) GRAPHIC LOG	MATERIAL DESCRIPTION		ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY 9 (RQD)	COMMENTS	
	Fill (ML) - SILT								
5								Vaccum excavation from 0 ft to 10 ft. Soil identified based on observation during vacuum excavation.	
	Silt (ML)		816.9						
) 	- olive, tan, moist, medium stiff, SI and clay; micaceous; with iron oxid	LT with fine sand le staining		SS -1	10.0	5-4-4 (8)		residual soil.	
]]]]									
5	- wet, medium stiff			SS -2	14.5	2-3-3 (6)			
))	- moist, very stiff, more iron oxide	staining below 19 ft		SS -3	19.5	2-4-6 (10)			
··· 5				SS	24.5	3-3-4			

Page 2 of 2

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.

PROJECT Plant McDonough Hydrogeological Investigation

		CIENCE AND ENVIRONMENTAL ENGINEERING	LC	CATION	Cobb C	County, GA		
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
	Ш	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		
30		- brown, wet, stiff, micaceous SILT		-5	20.0	(2)		
35				SS -6	34.5	4-5-8 (13)		
40	-		781.9					
		Bottom of borehole at 41.0 feet.	701.8	4				
45								
•••••								
•••••								
50								

WELL CONSTRUCTION LOG	eneratio		
PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services		WELL
Hydrogeologic Investigation	DRILLER: S. Denty		NAME
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	ELEVATION
		FEET	FT, MSL
	TOP OF RISER	-2.6	825.46
	2" Threaded Riser Cap	-2.0	023.40
	Z Tilleaded Risel Cap		
4.50 - 4.50			
4 ft x 4 ft concrete pad		0.0	000.0
	GROUND SURFACE	0.0	822.9
	PROTECTIVE CASING		
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	SIZE: 4" x 4"		
	TYPE: aluminum		
	;;/: alanımam		
	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		
	JOHNT TTT E. Tidsit Tilleaded		
	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		
	. E. CEMENT. HOME		
	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		
Clubb throughod	BOTTOM OF SCREEN	39.4	783.5
Flush-threaded end cap —	BOTTOM OF CASING	39.8	783.1
	BOTTOM OF CASING	53.0	700.1
HOLE DIA:	: 7 inch		
		_	



GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - NALTRCFP01/LAPARKER\$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

DATE	STAF	RTED 3/4/2012	COMPLETED	3/4/2012	GROUND I	ELEVATION	ON <u>819</u>	.8 ft	COORI	DINATES N 1392164.5 E 2202315.6
CONT	RACT	FOR SCS Field Service	ces	METHOD	4.25" Hollo	w Stem A	uger w/p	ilot bit E	QUIPM	ENT CME 550
DRILL	ED B	Y S. Denty	LOGGED BY	R. Tinsley	СН	ECKED E	BY		_ BO	RING DEPTH 41 ft.
		ATER DEPTH: DURIN		COMP	D	ELAYED				
NOTES	<u>s w</u>	/ell installed. Refer to w	vell data sheet.				т			
DEPTH (ft)	GRAPHIC LOG	MATE	RIAL DESCRIP	TION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		- ☑ - Vacuum excavat	tion from 0 ft to 1	10 ft						
	===	_								
	_									
10					809.8		10.0	2-2-5		
		Silt (ML)				-1	10.0	(7)		
• • • • • • • •		- yellowish red, m	edium stiff, mica	ceous SILT						
						SS -2	14.5	4-4-5 (9)		
15		- light olive brown	, stiff, micaceous	s SILT (saprolite	e)	-2		(9)		
• • • • • • • •		with relict bedding	}							
• • • • • • •										
						SS -3	19.5	4-7-9		
20		- mottled light oliv	e brown and red	dish brown, very	/	-3	19.5	(16)		
		stiff, micaceous S saprolite	SILT; interbedded	l schist and gne	iss;					
25						SS	24.5	4-6-8		

Page 2 of 2

SOUTHERN Z COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES. INC.

PROJECT Plant McDonough Hydrogeological Investigation

EAF	SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING			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) - olive green, stiff, SAA		-4		(14)					
	$\ \ \ $			SS	00.5	6-9-10					
30	-	- stiff, SAA		SS -5	29.5	(19)					
	Ш										
	$\ \ \ $										
ļ	$\ \ $										
				SS -6	34.5	3-4-5					
35	$\ \ $	- stiff, SAA with heavy staining		-6		(9)					
¦											
40				SS -7	39.5	5-7-7 (14)					
		- SAA	778.8								
		Bottom of borehole at 41.0 feet.									
45											
ļ											
50											
ļ											
	<u> </u>										

WELL CONSTRUCTION LOG	eneratio		
PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services		WELL
Hydrogeologic Investigation	DRILLER: S. Denty		NAME
LOCATION: Ash Pond	RIG TYPE: CME550		
LOGGER: Rhonda Tinsley	DRILLING METHODS: HS Auger		DGWC-20/B-20
DATE CONSTRUCTED: 3/5/2013	N: 1392164.5 E:2202315.6		
		DEPTH	ELEVATION
		FEET	FT, MSL
	TOP OF RISER	-2.3	822.14
	2" Threaded Riser Cap	-2.5	022.14
	Z Threaded Riser Cap		
4 ft x 4 ft concrete pad			
	GROUND SURFACE	0.0	819.8
4	PROTECTIVE OF ONLY		
	PROTECTIVE CASING		
	SIZE: 4" x 4"		
	TYPE: aluminum		
	POTTOM OF CROUT		
	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	795.1
	ANNULAR SEAL		
	/ TYPE: PelPlug TR-30 3/8"		
	bentonite pellets; 5-gallon buckets		
	AMOUNT: 1 bucket		
	TOP OF FILTER PACK	26.7	793.1
	FILTER PACK		
	TYPE: Filtersil #61		
	Size 1A; 50 lbs/bag		
	AMOUNT: 6.5 Bags		
	PLACEMENT: Tremie		
	POTTOM OF DIOFE (TOD OF CORTES)	20.4	700 7
	BOTTOM OF RISER / TOP OF SCREEN	29.1	790.7
	SCREEN DIA: 2" prepack (3.45" OD)		
	TYPE: Schedule 40 PVC		
	OPENING WIDTH: 0.01 inch		
	OPENING WIDTH: 0.01 Inch OPENING TYPE: Slotted		
	SLOT SPACING: 0.1 inch		
	OLOT OF ACITYO, U.T IIIOT		
	BOTTOM OF SCREEN	39.1	780.7
Flush-threaded end cap	BOTTOW OF SCREEN	55.1	700.7
an oadod ond oap	BOTTOM OF CASING	39.7	780.1
	3.1.1.1.1.0.1.0.1.0.1.0.1.0.1.0.1.0.1.0.		
HOLE DIA:	7 inch		
			<u> </u>
		_	



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BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

DATE	STAR	TED _10/31/2012	ROUND I	ELEVATION	ON <u>813</u>	.5 ft	COORI	DINATES N 1392067.5 E 2202063.5
		OR SCS Field Services METHOD 4.28						
		S. Denty LOGGED BY D. Brooks					_ BO	RING DEPTH 69.1 ft.
		TER DEPTH: DURING COMP ell installed. Refer to well data sheet.	D	ELAYED				
DEPTH (ft)		MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		- Vacuum excavation form 0 ft to 9.5 ft						
10		Clayey Silty Sand (SC-SM) - orange and tan, moist, loose, silty, clayey SAND; micaceous; fine to very fine-grained	804.0	SS -1	9.5	3-3-4 (7)		
15		Silty Sand (SM) - tan, orange and black, damp, loose, silty SAND; micaceous; very fine-grained	799.0	SS -2	14.5	4-3-6 (9)		
20		- tan, orange and black, damp, medium dense, silty SAND; micaceous; fine-grained		SS -3	19.5	6-10-20 (30)		upper saprolite.
				SS	24.5	10-16-18		



SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

No. No.									
- hard, SAA - hard, SAA - hard, SAA - hard, SAA - tan and orange, damp, very stiff, silty SAND with gravel; relic structure present; fine to medium-grained saprolite.	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
30 - tan and orange, damp, very stiff, silty SAND with gravel; relic structure present; fine to medium-grained saprolite.			Silty Sand (SM)(con't)		-4		(34)		
- tan and orange, damp, very stiff, silty SAND with gravel; relic structure present; fine to medium-grained			- hard, SAA						
SS 34.5 18-22-20 (42) - clive, orange and black, hard, SAA - clive and black, very hard, SAA SS 77 39.5 18-25-45 (70) - clive and black, very hard, SAA - clive and black, very hard, SAA - clive and tan, damp, hard, slity SAND; relict structure, fine-grained - hard, SAA - hard, SAA			- 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.
- olive and black, very hard, SAA - olive and tan, damp, hard, silty SAND; relict structure; fine-grained SS	V LOGS_SURVEY UPDATED.G		- olive, orange and black, hard, SAA		SS -6	34.5	18-22-20 (42)		lower saprolite.
SS 44.5 9-16-21 (37) - olive and tan, damp, hard, silty SAND; relict structure; fine-grained SS 49.5 16-21-19 (40) - hard, SAA	POTILAPARKERS/DESKTOP/GPC/MV		- olive and black, very hard, SAA		SS -7	39.5	18-25-45 (70)		
SS 49.5 16-21-19 (40)	3ASE.GDT - 8/26/20 20:44 - MALITICH		- olive and tan, damp, hard, silty SAND; relict structure; fine-grained		SS -8	44.5	9-16-21 (37)		saprolite.
	engineering Logs - esee DATA		- hard, SAA		SS -9	49.5	16-21-19 (40)		
	GEOTECH		(Continued Next Pere)						



SOUTHERN COMPANY SERVICES, INC.

PROJECT Plant McDonough Hydrogeological Investigation

No. No.			ENCE AND ENVIRONMENTAL ENGINEERING	LO	CATION	Cobb C	County, GA		
Schist - black and gray, SCHIST SAPROCK saprock or schist like MYLONITE; weathering and iron and manganese staining along foliations RC 2 64.1 Bottom of borehole at 69.1 feet.	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
Schist - black and gray, SCHIST SAPROCK saprock or schist like MYLONITE; weathering and iron and manganese staining along foliations RC 2 64.1 Bottom of borehole at 69.1 feet.	55	111	Silty Sand (SM)(con't)		SS -10	54.5	50 (0)		
Schist - black and gray, SCHIST SAPROCK saprock or schist like MYLONITE; weathering and iron and manganese staining along foliations RC -2 64.1 Bottom of borehole at 69.1 feet.			- very hard, SAA		-10		(0)		
Schist - black and gray, SCHIST SAPROCK saprock or schist like MYLONITE; weathering and iron and manganese staining along foliations RC -2 64.1 Bottom of borehole at 69.1 feet.									
- black and gray, SCHIST SAPROCK saprock or schist like MYLONITE; weathering and iron and manganese staining along foliations RC 2 64.1 Bottom of borehole at 69.1 feet.	60		Schist	753.4	RC -1	60.1			
			black and gray, SCHIST SAPROCK saprock or schist like MYLONITE; weathering and iron and						
70 Bottom of borehole at 69.1 feet. 75	65				RC -2	64.1			
70 Bottom of borehole at 69.1 feet. 75									
70 Bottom of borehole at 69.1 feet. 75									
70 		///	Bottom of borehole at 69.1 feet.	744.4					
	70								
	75								
80	'.Ÿ								
80									
80	• • • • • • • •								
80									
<u>ou</u> 									
	80								

DATE CONSTRUCTED: 10/31/2012 N: 1392067.5 E:2202063.5 DEPTH FEET TOP OF RISER -2.8 2" Threaded Riser Cap 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	WELL NAME
LOCATION: Ash Pond LOGGER: Dustin Brooks DRILLING METHODS: HS Auger/HQ Rock Core DATE CONSTRUCTED: 10/31/2012 DEPTH FEET	NAME
DRILLING METHODS: HS Auger/HQ Rock Core DATE CONSTRUCTED: 10/31/2012 N: 1392067.5 E:2202063.5 DEPTH FEET TOP OF RISER -2.8 2" Threaded Riser Cap 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	
A ft x 4 ft concrete pad PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum BOTTOM OF GROUT BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 15 bags cement 20 libs bentonite RISER CASING DIA: 2 inch	
A ft x 4 ft concrete pad 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	WC-21/B-21
4 ft x 4 ft concrete pad GROUND SURFACE 0.0 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	
4 ft x 4 ft concrete pad GROUND SURFACE 0.0 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	VATION
4 ft x 4 ft concrete pad GROUND SURFACE 0.0 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	FT, MSL
2" Threaded Riser Cap GROUND SURFACE 0.0 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	,
2" Threaded Riser Cap GROUND SURFACE 0.0 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	
4 ft x 4 ft concrete pad GROUND SURFACE 0.0 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	816.28
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	
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	
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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	
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	813.5
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	
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 15 bags cement 20 lbs bentonite RISER CASING DIA: 2 inch	
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TYPE: Portland cement/bentonite grout AMOUNT: 15 bags cement 20 lbs bentonite RISER CASING DIA: 2 inch	
TYPE: Portland cement/bentonite grout AMOUNT: 15 bags cement 20 lbs bentonite RISER CASING DIA: 2 inch	
grout AMOUNT: 15 bags cement 20 lbs bentonite RISER CASING DIA: 2 inch	
AMOUNT: 15 bags cement 20 lbs bentonite RISER CASING DIA: 2 inch	
20 lbs bentonite RISER CASING DIA: 2 inch	
RISER CASING DIA: 2 inch	
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
Flush-threaded end cap	
BOTTOM OF CASING 69.0	744.5
	744.5
	744.5
HOLE DIA: 7 inch (auger)	744.5
3.8 inch (HQ core)	744.5



GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - NALTRCFP01/LAPARKER\$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

DATE	STA	RTED 10/25/2012	COMPLETED		OUND E	ELEVATION	ON <u>813</u>	.7 ft (COORI	DINATES N 1392126.3 E 2201791.9
		FOR SCS Field Service								
									_ во	RING DEPTH 59.5 ft.
		ATER DEPTH: DURING		COMP	D	ELAYED				
NOTES	3 W	/ell installed. Refer to we	ell data sheet.				т			
DEPTH (ft)	GRAPHIC LOG	MATER	RIAL DESCRIPT	ION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		- Vacuum excavatio	on from 0 ft to 9	.5 ft						
	=>=									
		-								
10		Silt (ML) - brown, very stiff,	SILT; micaceou	S	804.2	SS -1	9.5	6-9-9 (18)		upper saprolite.
						00		0.0.5		
15		- tan, very moist, m fine sand and mica	nedium stiff, SIL	T; contains very		SS -2	14.5	3-3-5 (8)		
20			A			SS -3	19.5	10-11-15 (26)		
 25						SS	24.5	3-4-4		



SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

		DENOE AND ENVIRONMENTAL ENGINEERING		CATION				
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)(con't) - brown, medium stiff, SILT; contains fine sand and mica		-4		(8)		
30		- dark brown to dark gray, wet, hard, weathered schist		SS -5	29.5	10-16-19 (35)		lower sparolite.
35	 	- very hard, SAA		SS -6	34.5	50 (0)		
ACFPONLAPARKERS/DESK 10P/GP/C		- brown to orange, wet, very hard		SS -7	39.5	10-15-50 (65)		
ABASE. GDI - 8/26/20 20:44 - MALIN		- black, weathered schist Schist - very weathered SCHIST wtih mud in fractures	769.2	SS -8 RC -1	44.5 44.8	50 (0)		
GEOLECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - WAL IRCHOTTLAPARKEESK LOFIGER CONVEY COESE SURVEY OF DATABASE.GDT - 8/26/20 20:44 - WAL IRCHOTTLAPARKEESK LOFIGER CONVEY COESE SURVEY OF DATABASE.GDT - 8/26/20 20:44 - WAL IRCHOTTLAPARKEESK LOFIGER CONVEY COESE SURVEY OF DATABASE.GDT - 8/26/20 20:44 - WAL IRCHOTTLAPARKEESK LOFIGER CONVEY COESE SURVEY OF DATABASE.GDT - 8/26/20 20:44 - WAL IRCHOTTLAPARKEESK LOFIGER CONVEY COESE SURVEY OF DATABASE.GDT - 8/26/20 20:44 - WAL IRCHOTTLAPARKEESK LOFIGER CONVEY COESE SURVEY OF DATABASE.GDT - 8/26/20 20:44 - WAL IRCHOTTLAPARKEESK LOFIGER CONVEY COESE SURVEY OF DATABASE.GDT - 8/26/20 20:44 - WAL IRCHOTTLAPARKEESK LOFIGER CONVEY COESE SURVEY OF DATABASE.GDT - 8/26/20 20:44 - WAL IRCHOTTLAPARKEESK LOFIGER CONVEY COESE SURVEY		Gneiss - very fractured BIOTITE GNEISS with schist-like features; red staining	764.2	RC -2	49.5			
3	11 7	(Continued Next Page)						

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

HUMBER AND ENVIRONMENTAL ENGINEERING

MATERIAL DESCRIPTION

MATERIAL DESCRIPTION

STANDARD ((t)) - GNEISS (mylonite); fractures throughout; stained

LOCATION Cobb County, GA

HUMBER AND ENVIRONMENTS

COMMENTS

COMMENTS

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60 Bottom of borehole at 59.5 feet. GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER\$\DESKTOP\GPC\MW LOGS. SURVEY UPDATED.GPJ 65 70 75 80

WELL CONSTRUCTION LOG	Southern Company Ge	eneratio	n
PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services		WELL
Hydrogeologic Investigation	DRILLER: S. Denty		NAME
LOCATION: Ash Pond	RIG TYPE: CME550		DOMO 00/D 00
LOGGER: Cale Sellers DATE CONSTRUCTED: 10/25/2012	DRILLING METHODS: HS Auger/HQ Rock Core		DGWC-22/B-22
DATE CONSTRUCTED: 10/25/2012	N: 1392126.3 E:2201791.9	DEDTIL	EL EL MEION
		DEPTH	ELEVATION
		FEET	FT, MSL
	_		
 	TOP OF RISER	-2.9	816.59
 	2" Threaded Riser Cap		
 			
 			
111			
4 ft x 4 ft concrete pad			
	GROUND SURFACE	0.0	813.7
	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	44.0	709.1
	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		
	OLOT OF ACINO. U.T HIGH		
	BOTTOM OF SCREEN	59.7	754.0
Flush-threaded end cap			
	BOTTOM OF CASING	60.0	753.7
HOLE DIA: 7 in	ch (auger)		
	inch (HQ core)		
5.0	inon (nacoord)		1



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

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

NTRACT	OR SCS Field Services	METHOD 4.2	25" Hollow	Stem Auge	er w/pilot l	bit; HQ Rock Co	ore EQ	UIPMENT CME 550
ILLED BY	S. Denty LOGGED	BY C. Sellers	СН	ECKED E	Y		_ BOF	RING DEPTH 59.4 ft.
	ATER DEPTH: DURING		D	ELAYED				
TES We	ell installed. Refer to well data shee	et.			_			
(ft) GRAPHIC LOG	MATERIAL DESC	RIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
	- Vaccum excavation from 0 ft	to 9.5 ft						
<u> </u>								
=====								
0	Silt (ML) - dark brown, wet, medium stil gravel (schist)	if, clayey SILT with	806.2	SS -1	9.5	3-3-3 (6)		
 5	- dark gray, very soft, clayey S	ILT; contains wood		SS -2	14.5	WH-1-1 (2)		
0	- light purple.gray, stiff, SILT;	very fine-grained		SS -3	19.5	1-3-7 (10)		
			791.2	SS	24.5	10-14-16		



SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

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) - light tan, damp, medium dense, silty SAND; fine to very fine-grained; micaceous		-4		(30)		
30 		- dark gray to brown, loose, angular gravel at top of sample; saprolite at bottom		SS -5	29.5	7-5-2 (7)		
GPCMW LOGS_SURVEY UPDAT		- dark gray to brown, very dense, saprolite		SS -6	34.5	13-17-50 (67)		
ALTRCFP01/LAPARKER\$(DESKTOP		- light tan to white, very dense, saprolite (silty); micaceous		SS -7	39.5	50 (0)		
:.GDT - 8/26/20 20:44 - W		- no sample obtained		SS -8	44.5			
ATABASE		Gneiss	768.6	RC -1	47.1			
GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - NALTRCFP01/LAPARKER\$/DESKTOP/GPC/MW LOGS_SURVEY UPDATED.GPJ		- weathered GNEISS; vertical fractures and red staining throughout		RC -2	49.4			
<u></u>	.	(Continued Next Page)						



SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA SAMPLE TYPE NUMBER SAMPLE DEPTH (ft.) ELEVATION RECOVERY % GRAPHIC LOG MATERIAL DESCRIPTION COMMENTS RC -3 54.4 Gneiss(con't) 55 - light gray, GNEISS; some fractures

DEPTH (ft) 756. Bottom of borehole at 59.4 feet. 60 GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER\$\DESKTOP\GPC\MW LOGS. SURVEY UPDATED.GPJ 65 70 75 80

WELL CONSTRUCTION LOG	Southern Company Ge	eneration		
PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services		WELL	
Hydrogeologic Investigation	DRILLER: S. Denty		NAME	
LOCATION: Ash Pond	RIG TYPE: CME550		DCMC 33/B 33	
LOGGER: Cale Sellers DATE CONSTRUCTED: 10/25/2012	DRILLING METHODS: HS Auger/HQ Rock Core N: 1392239.7 E:2201582.0		DGWC-23/B-23	
BATE GONGTINGGTED. 10/20/2012	14. 1002200.7 E.2201002.0	DEPTH	ELEVATION	
		FEET	FT, MSL	
		1221	F1, WIGE	
	TOP OF RISER	-2.7	818.37	
	2" Threaded Riser Cap			
4.6 - 4.6 1				
4 ft x 4 ft concrete pad	OPOUND OUDEACE	0.0	815.7	
	GROUND SURFACE	0.0	010.7	
	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	772.8	
222	ANNULAR SEAL			
	TYPE: PelPlug TR-30 3/8"			
	bentonite pellets; 5-gallon buckets			
	AMOUNT: 0.25 bucket			
	PLACEMENT: Tremie	40.0	700.0	
	TOP OF FILTER PACK FILTER PACK	46.8	768.9	
	TYPE: Filtersil #61		1	
	Size 1A; 50 lbs/bag		1	
	AMOUNT: 1 Bag			
	PLACEMENT: Tremie		1	
	BOTTOM OF RISER / TOP OF SCREEN	49.8	765.9	
	SCREEN DIA: 2" prepack (3.45" OD)			
	DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC			
	OPENING WIDTH: 0.01 inch		1	
	OPENING TYPE: Slotted		1	
	SLOT SPACING: 0.1 inch		1	
	BOTTOM OF SCREEN	59.8	755.9	
Flush-threaded end cap	POTTOM 07 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	60.4	755.6	
	BOTTOM OF CASING	60.1	755.6	
			1	
HOLE DIA: 1	7 inch (auger)		1	
	3.8 inch (HQ core)		<u> </u>	



SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

		TED						
DRILL	ED BY	S. Denty LOGGED BY C. Sellers	СН	ECKED E	BY		 _ BO	RING DEPTH 79.1 ft.
ROU	ND WA	TER DEPTH: DURING COMP	D	ELAYED				
NOTE	S We	ll installed. Refer to well data sheet.				T		
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	\ \{\}							
			809.8		9.5	WH-1-1		
		Silt (ML) - light gray, very soft, SILT with very fine to fine- grained sand		-1		(2)		
				SS -2	14.5	3-4-6 (10)		
		- stiff, SAA; very micaceous						
				SS -3	19.5	5-4-4		
		- light tan to brown, medium stiff, SILT; very fine to fine-grained; micaceous; 2" quartz		-3	18.5	(8)		
25				SS	24.5	19-37-50		



SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

	U		N O	YPE	EPTH	တွ 🛈	% X	
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);		-4		(87)		
		banding						
30				SS -5	29.5	50 (0)		
	$\ \ \ $							
	.]							
	.							
JPDATE	.			66		50		
35	-	- SAA		SS -6	34.5	50 (0)		
ng sp		- 5741						
O 	.							
P\GPC	.							
ESKTO	.			SS	00.5	50		
40.	-			SS -7	39.5	50 (0)		
-APAR	-							
SFP01/								
MALTR(
- 50:44				SS -8	44.5	50 (0)		
45 45	-			-8		(0)		
IGDI								
ABASE								
E DAT								
SS 50				SS -9	49.5	50 (0)		
GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - NATTRCFP01/LAPARKER\$\text{NDESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ}} G	1	- SAA; contains gneiss fragments				(0)		
NEERS NEERS								
T ENGIL								
EOTECI								
<u>ت ا</u>	1111	(Continued Next Page)						

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

EARTH	SCIENCE AND ENVIRONMENTAL ENGINEERING	LO	CATION	Cobb County, GA					
DEPTH (ft)	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS		
	Silt (ML)(con't) - SAA		SS -10	54.5	50 (0)				
60 /	Gneiss - light gray to orange, highly weathered, GNEISS; highly fractured, vertical and horizontal	760.2	RC -1	59.1					
PCMW LOGS SURVEY UPDA	- light gray with red staining, SAA		RC -2	64.1					
CFP01/LAPARKER\$(DESKTOP)G	- SAA		RC -3	69.1					
ASE GDI - 8/26/20 20:44 - NALI'R			RC -4	74.1					
GEOTECH ENGINEERING LOGS - ESEE DATABASE. GDT - 826/20 20:44 - NALTRCFPO1/LAPARKERS/DESKTOP/GPC/MW LOGS_SURVEY UPDATED GPJ 02 92 93 94 95 96 96 96 97 97 98 98 98 98 98 98 98 98	Bottom of borehole at 79.1 feet.	740.2							
GEOTECH ENGIN									

WELL CONSTRUCTION LOG	Southern Company Ge	1	
PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services		WELL
Hydrogeologic Investigation	DRILLER: S. Denty		NAME
LOCATION: Ash Pond	RIG TYPE: CME550		
LOGGER: Cale Sellers	DRILLING METHODS: HS Auger/HQ Rock Core N: 1392479.9 E:2201450.0		B-24
DATE CONSTRUCTED: 10/24/2012	N: 1392479.9 E:2201450.0	DEDTIL	ELEVATION.
			ELEVATION
		FEET	FT, MSL
	TOP OF RISER	-2.8	822.11
	2" Threaded Riser Cap		
l I [
4 ft x 4 ft concrete pad			
	GROUND SURFACE	0.0	819.3
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	PROTECTIVE CASING		
	SIZE: 4" x 4"		
	TYPE: aluminum		
	POTTOMOS OPOUT		
	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	758.5
	ANNULAR SEAL	00.0	730.3
	TYPE: PelPlug TR-30 3/8"		
	bentonite pellets; 5-gallon buckets		
	AMOUNT: 0.25 bucket		
	PLACEMENT: Poured		
	TOP OF FILTER PACK	65.9	753.4
	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	751.0
	SCREEN	00.5	731.0
	DIA: 2" prepack (3.45" OD)		
	TYPE: Schedule 40 PVC		
	OPENING WIDTH: 0.01 inch		
	OPENING TYPE: Slotted		
	SLOT SPACING: 0.1 inch		
	BOTTOM OF SCREEN	78.3	741.0
Flush-threaded end cap —	2077011070107	70.4	740.0
	BOTTOM OF CASING	79.1	740.2
HOLE DIA: 7	inch (auger)		
	.8 inch (HQ core)		
		_	



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

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

DATE	STAR	FED <u>10/23/2012</u>	COMPLETED _	10/24/2012 GRO	OUND E	LEVATIO	ON <u>833</u>	.5 ft (COORI	DINATES N 1392813.3 E 2201502.7
CONT	RACTO	OR SCS Field Services	3	METHOD 4.25"	Hollow :	Stem Auge	er w/pilot b	bit; HQ Rock Co	re EC	UIPMENT CME 550
DRILL	ED BY	S. Denty	LOGGED BY _	B. Gallagher	_ СНІ	ECKED B	Y		ВО	RING DEPTH _54.8 ft
GROU	ND WA	TER DEPTH: DURING		COMP	D	ELAYED				
NOTE	S We	ll installed. Refer to well	l data sheet.				_			
DEPTH (ft)	GRAPHIC LOG	MATERI	AL DESCRIPTI	ON	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavatio	n from 0 ft to 9.9	5 ft						
5	<pre>} </pre>									
10		Silt (ML)			824.0	SS -1	9.5	1-2-2 (4)		no recovery.
15		- tan, dry, very hard, 1 inch lense of white	, saprolite; mica e feldspar at 14.	ceous, sandy with 8 ft.		SS -2	14.5	22-50 (50)		
20		- black and white, ve saprolite	ery hard, SAA; w	veathered gneiss		SS -3	19.5	18-36-50 (86)		
						SS	24.5	25		



SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

(#) (#) 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	200 5	-4 DC		(0)		
Gneiss	806.5	RC -1	27.0			
- black and white, medium hard to hard, weathered - two 1/2"augens and weathered joints at soft, weathered and broken from 29.1 t	: 28.5 ft o 30.2 ft	RC -2	29.8			
- joint filled with secondary minerals form 30.7 ft - slightly weathered joints at 31.0, 31.3, a						
- 3 inch weathered soft zone @ 34.5 ft		RC -3	34.8			
- 1/4" augen with four slightly weathered foliation from 32.3 to 33.0 ft - 3 inch weathered soft zone @ 34.5 ft - 2" quartzite at 42 ft; very little staining; fractures from 40ft to 42ft	vertical	RC -4	39.8			
- SAA		RC -5	44.8			
- SAA - SAA - SAA - SAA - weathered; staining in and around fract	ures	RC -6	49.8			
W / / (Continued Next F						



SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA SAMPLE TYPE NUMBER SAMPLE DEPTH (ft.) RECOVERY % (RQD) ELEVATION GRAPHIC LOG MATERIAL DESCRIPTION COMMENTS

DEPTH (ft) 778.7 55 Bottom of borehole at 54.8 feet. 60 GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER\$\DESKTOP\GPC\MV LOGS_SURVEY UPDATED.GPJ 65 70 75 80

WELL CONSTRUCTION LOG	Southern Company Generation					
PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services		WELL			
Hydrogeologic Investigation	DRILLER: S. Denty		NAME			
LOCATION: Ash Pond	RIG TYPE: CME550					
LOGGER: B. Gallagher	DRILLING METHODS: HS Auger/HQ Rock Core		B-25			
DATE CONSTRUCTED: 10/24/2012	N: 1392813.3 E:2201502.7					
		DEPTH	ELEVATION			
		FEET	FT, MSL			
	¬	0.0	000.54			
l	TOP OF RISER	-3.0	836.54			
I ⊢	2" Threaded Riser Cap					
4 ft x 4 ft concrete pad						
	GROUND SURFACE	0.0	833.5			
	PROTECTIVE CASING					
	SIZE: 4" x 4"					
	TYPE: aluminum					
	3					
Y	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					
	<u> </u>					
	TOP OF SEAL	40.1	793.4			
	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	791.1			
	FILTER PACK					
	TYPE: Filtersil #61					
	Size 1A; 50 lbs/bag					
	AMOUNT: 1 Bag; 50 lbs/bag					
	PLACEMENT: Tremie					
		44.4	700 4			
	BOTTOM OF RISER / TOP OF SCREEN	44.4	789.1			
	SCREEN DIA: 3" proposit (3.45" OD)					
	DIA: 2" prepack (3.45" OD)					
	TYPE: Schedule 40 PVC					
	OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted					
	SLOT SPACING: 0.1 inch					
	GLOT GFACING, U.T IIIGI					
	BOTTOM OF SCREEN	54.4	779.1			
Flush-threaded end cap	BOTTOW OF SCREEN	J 4 .4	118.1			
I Idon-tilleddod elid cap	BOTTOM OF CASING	54.8	778.7			
	BOTTOM OF GAGING	31.0				
HOLE DIA: 7 ir	nch (auger)					
	inch (HQ core)					
	,					



SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

		OR SCS Field Services METHOD 4.2 S. Denty LOGGED BY Sellers/Byrd/Galla					_	QUIPMENT CME 550 RING DEPTH 49.3 ft.
		ATER DEPTH: DURING COMP					_ 60	49.51t.
		ell installed. Refer to well data sheet.			1		1	
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						
			044.4	00		440		
10		Silt (ML) - tan with white, pink and dark brown layering, stiff, sandy SILT; heavily weathered; micaceous; finegrained	841.1	SS -1	9.5	4-4-6 (10)		
15		- stiff, SAA; heavily weathered gneiss		SS -2	14.5	3-5-9 (14)		
20		- dry, very hard, SAA; more compact wtih better foliation than previous samples; less sand		SS -3	19.5	17-24-27 (51)		
 25				ss	24.5	50		



GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - "NALTRCFP01/LAPARKER\$\DESKTOP\GPC\MW LOGS SURVEY UPDATED.GP.

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BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA SAMPLE TYPE NUMBER SAMPLE DEPTH (ft.) ELEVATION GRAPHIC LOG RECOVERY (RQD) DEPTH (ft) MATERIAL DESCRIPTION **COMMENTS** (0)Silt (ML)(con't) - dry, very hard, SAA; powdered rock 824.6 RC 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 RC 28.9 across foliation at 28'; slight staining on joint across foliation from 28.6' to 28.7' - stain on joints, one joint on foliation and one joint across foliation at 29.3' to 29.7' - 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' RC - slightly stained joints on foliation at 33.1', 33.6', and 33.9 34.1' to 34.7' 35 - stained, leached, weathered zone with many 1/4" quartz phenocysts from 35.8' to 36.6' RC 39.0 - soft weathered zone with staining from 39.0' to 39.7' 40

RC

801.3

44.1

Bottom of borehole at 49.3 feet.

- heavily stained, soft joints across foliation at 41.3'

- weathered broken zone from 43.6' to 44.1'

- below 44.1' heavily stained with many quartz

- stained joint across foliation at 45.5'

- 1/2" augen at 42.0'

WELL CONSTRUCTION LOG	Southern Company Ge									
PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services		WELL							
Hydrogeologic Investigation	DRILLER: S. Denty	NAME								
LOCATION: Ash Pond	RIG TYPE: CME550									
LOGGER: Ben Gallagher	DRILLING METHODS: HS Auger/HQ Rock Core		B-26							
DATE CONSTRUCTED: 10/23/2012	N: 1393105.6 E:2201550.4									
			ELEVATION							
		FEET	FT, MSL							
	TOP OF RISER	-3.0	853.6							
	2" Threaded Riser Cap									
	1 1									
4 ft x 4 ft concrete pad										
	GROUND SURFACE	0.0	850.6							
	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	20 E	000.4							
	TOP OF SEAL ANNULAR SEAL	30.5	820.1							
	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	20.0	044 7							
	BOTTOM OF RISER / TOP OF SCREEN SCREEN	38.9	811.7							
	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							
Flush-threaded end cap										
	BOTTOM OF CASING	49.3	801.3							
HOLE DIA: 7 i	inch (auger)									
	B inch (HQ core)									
3.6										



SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

CONTRACTOR SCS Field Services METHOD 4.25" Hollow Stem Auger w/pilot bit EQUIPMENT CME 550								
RILLED BY	S. Denty LOGGED BY C. Sellers/K. Byrd	CHECKED E	BY		_ во	RING DEPTH 34.4 ft.		
	TER DEPTH: DURING COMP	DELAYED						
OTES Wel	Il installed. Refer to well data sheet.		_		T			
DEPTH (ft) GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS		
5	- Vacuum excavation from 0 ft to 9.5 ft							
10	Gneiss - dark gray, biotite GNEISS; heavily weathered	SS -1	9.5	50 (0)				
15	- tan brown, weathered GNEISS; reddish brown quartz vein at 14.5'; sparse mica	SS -2	14.5	9-22-44 (66)				
20	- SAA; micaceous	SS -3	19.5	6-9-14 (23)		oxidation features.		
25		RC -1	24.4					

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

EAF	RTH SCI	ENCE AND ENVIRONMENTAL ENGINEERING	LOCATION Cobb County, GA					
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION		SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	
•••••		Gneiss(con't) - GNEISS; micaceous flakes; fractures and iron (red) staining						only fragments recovered; started coring.
				DO.				90% feldspar layers, 3.5" thick @ 25 ft and 29 ft.
30		- SAA; feldspar throughout		RC -2	29.4			
35		Bottom of borehole at 34.4 feet.						
40								
40	1							
45								
50								

WELL CONSTRUCTION LOG								
PROJECT: Plant McDonough DRILLING CO.: SCS Field Services								
Hydrogeologic Investigation	DRILLER: S. Denty		NAME					
LOCATION: Ash Pond	RIG TYPE: CME550							
LOGGER: C. Sellers/K. Byrd	DRILLING METHODS: HS Auger		B-27					
DATE CONSTRUCTED: 10/16/2012	N: 1393423.51 E:2201744.77		İ					
		DEPTH	ELEVATION					
		FEET	FT, MSL					
			İ					
	TOD OF DIOPE	2.2	850.29					
l I 🗖	TOP OF RISER	-3.3	000.29					
l IH	2" Threaded Riser Cap		İ					
			İ					
			İ					
l								
4 ft x 4 ft concrete pad								
	GROUND SURFACE	0.0	846.9					
			l l					
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	PROTECTIVE CASING		l l					
	SIZE: 4" x 4"		İ					
	TYPE: aluminum		1					
[BOTTOM OF GROUT							
	7 BOTTOW OF GROUT							
	BACKFILL MATERIAL							
	TYPE: Portland cement/bentonite							
	grout		1					
	AMOUNT: 5.5 bags cement							
	8 lbs bentonite							
	RISER CASING							
	DIA: 2 inch		1					
	TYPE: Schedule 40 PVC							
	JOINT TYPE: Flush Threaded							
			1					
	TOP OF SEAL	17.0	829.9					
	ANNULAR SEAL							
	TYPE: PelPlug TR-30 3/8"							
	bentonite pellets; 5-gallon buckets							
	AMOUNT: 0.5 bucket							
	PLACEMENT: Tremie	24.0	005.0					
	TOP OF FILTER PACK FILTER PACK	21.0	825.9					
	TYPE: Filtersil #61		ĺ					
	Size 1A; 50 lbs/bag		ĺ					
	AMOUNT: 0.5 Bag filter pac							
	0.5 bag hole							
	PLACEMENT: Tremie							
	BOTTOM OF RISER / TOP OF SCREEN	24.0	822.9					
	SCREEN							
	DIA: 2" prepack (3.45" OD)		ĺ					
	TYPE: Schedule 40 PVC							
	OPENING WIDTH: 0.01 inch							
	OPENING TYPE: Slotted							
	SLOT SPACING: 0.1 inch		ĺ					
			ĺ					
	BOTTOM OF SCREEN	34.0	812.9					
Flush-threaded end cap —			010 =					
	BOTTOM OF CASING	34.4	812.5					
HOLE DIA:	7 inch							
HOLL DIA.	, mon							



SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

		S Control LOGGED BY D Brooks					_	-
		S. Denty LOGGED BY D. Brooks ER DEPTH: DURING COMP.					_ 80	RING DEPTH 94.3 ft.
		nstalled. Refer to well data sheet.						
DEPTH (ft) GRAPHIC	507	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
	<u></u>	- Vacuum excavation from 0 ft to 9.5 ft						
5								
			803.8	SS				
10 /	1.1.	Gneiss - no recovery; encountered boulder Silty Sand (SM)	802.3	-1	9.5			
15 15 15 17		- green and black, saprolite; relict structure present		SS -2	14.5			
20	在	- brown and tan, damp, silty SAND; micaceous; fine grained	}-	SS -3	19.5			
25	1 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			SS	24.5	4-5-7		



SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

						ounty, OA		-
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
	1.1.1	Silty Sand (SM)(con't)		-4		(12)		
		- SC-SM: tan, orange, and black, damp, medium dense, silty, clayey SAND; fine to very fine-grained						
30		- medium dense, SAA; micaceous; clay content increases		SS -5	29.5	7-7-7 (14)		
DATE	1::1::1: 1::1::1:							
실 		Cité (MIL)	778.8	SS -6	34.5	5-16-23		
35		Silt (ML) - green and black, damp, hard, sandy SILT; relict		<u>-</u> ხ		(39)		
GPCMW LOGS		structure present						
01 40		- tan, orange, and black, stiff, sandy SILT; micaceous; some relict structure		SS -7	39.5	5-5-6 (11)		
GEOTIECH ENGINEERING LOGS - ESEE DATABASE, GDT - 8/26/20 20:44 - NALTRO-POTILAPARKEE/SKTOP/GP/CMW LOGS. SURVEY UPDATED.GPJ 6								
- 44				SS -8	44.5	7-16-20		
45	$\{ $	- hard, SAA		-8	44.5	7-16-20 (36)		
78-10								
ge.gr								
TABA								
E DA								
				SS -9	49.5	20-20		
S 50 S 50 S 50 S 50 S 50 S 50 S 50 S 50		- very hard, SAA		-9	10.0	(20)		
	$\ \ \ $							
OTECH ENG								
<u>ы</u>	ШШ							



SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

	EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING			LU	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)		
-	60		Gneiss - black and gray, mylonite GNEISS (schistic zone); weathering noted along small joints and along foliations (saprock), otherwise fresh; no staining seen	754.1	RC -1	59.2			
OCIMW LOGS SURVEY UPDATED GPJ	65		- black and gray, hard, mylonite GNEISS; fresh		RC -2	64.3			
\\ALTRCFP01\LAPARKER\$\DESKTOP\GPC\MW LOGS_	70		- SAA		RC -3	69.3			
	75		- SAA		RC -4	74.3			
GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/28/20 20:44	80		- SAA with small iron-stained joint at 83'		RC -5	79.3			
			(Continued Next Page)						

SOUTHERN ZOMPANY

BORING LOG

PROJECT Plant McDonough Hydrogeological Investigation

SO	UTHER RTH SC	IN COMPANY SERVICES, INC. CIENCE AND ENVIRONMENTAL ENGINEERING		_		ounty, GA	ogeolo	gicai irivestigatiori
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		- black and gray, hard, GNEISS; fresh	719.0	RC -7	89.3			
95		Bottom of borehole at 94.3 feet.	7 10.0					
2	.]							

GEOTECH ENGINEERING LOGS - ESEE DATABASE. GDT - 8/26/20 20:44 - NALTRCFP01/LAPARKER\$(DESKTOP)GPC/MW LOGS_SURVEY UPDATED.GPJ 100 105 110

Hydrogeologic Investigation DRILLER: S. Denty MCOCATION. Ash Pond RIG TYPE: CMESS DATE CONSTRUCTED: 10/31/2012 N: 1391967.4 E: 2201679.2 DEPTH FEET FT. TOP OF RISER -2.8 811 2" Threaded Riser Cap 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 ANNULAR SEAL TYPE: PollPlug TR:30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 0.5 bag filter pac 0.5 bag hole PLACEMENT: Tremie TOP OF FILTER PACK TYPE: Filtersil# 61 Size 14; 50 lbs/bag AMOUNT: 0.5 Bag filter pac 0.5 bag hole PLACEMENT: Ternie BOTTOM OF RISER 170 PO F SCREEN 59.0 FILTER PACK TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch OPENING TYPE: Slotted	WELL CONSTRUCTION LOG	Southern Company Ge	eneration	
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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 FILTER PACK TYPE: Filtersii #61 Size 1A; 50 lbs/bag AMOUNT: 0.5 Bag filter pac 0.5 bag hole PLACEMENT: Tremie BOTTOM OF RISER / TOP OF 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 74 Flush-threaded end cap				
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TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 0.5 bucket PLACEMENT: Tremie TOP OF 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 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 Flush-threaded end cap				
bentonite pellets; 5-gallon buckets AMOUNT: 0.5 bucket PLACEMENT: Tremie TOP OF 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 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 74		/		
AMOUNT: 0.5 bucket PLACEMENT: Tremie TOP OF FILTER PACK 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 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 74				
FILTER PACK 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 75 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 74				
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 75 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 74		PLACEMENT: Tremie		
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 75 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 74			55.6	757.7
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 75 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 74				
AMOUNT: 0.5 Bag filter pac 0.5 bag hole PLACEMENT: Tremie BOTTOM OF RISER / TOP OF SCREEN 59.0 75 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 74				
0.5 bag hole PLACEMENT: Tremie BOTTOM OF RISER / TOP OF SCREEN 59.0 75 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 74				
PLACEMENT: Tremie BOTTOM OF RISER / TOP OF SCREEN 59.0 75 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 74				
BOTTOM OF RISER / TOP OF SCREEN 59.0 75 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 74				
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 74			59.0	754.3
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 74			20.0	
TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch BOTTOM OF SCREEN 69.0 74				
OPENING TYPE: Slotted SLOT SPACING: 0.1 inch BOTTOM OF SCREEN 69.0 74				
SLOT SPACING: 0.1 inch BOTTOM OF SCREEN 69.0 74 Flush-threaded end cap				
BOTTOM OF SCREEN 69.0 74 Flush-threaded end cap				
Flush-threaded end cap		SLOT SPACING: 0.1 inch		
Flush-threaded end cap			00.0	7440
	Flush throaded and ass	BOTTOM OF SCREEN	69.0	744.3
BOTTOM OF CASING 09.4 74	riusn-uireaded end cap	ROTTOM OF CASING	69 4	743.9
		BOTTOM OF CASING	30.4	, 40.0
1 I				
HOLE DIA: 7 inch (auger)	HOLE DIA: 7	7 inch (auger)		
3.8 inch (HQ core)	3	3.8 inch (HQ core)		



BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

	OR SCS Field Services METHOD 4.3						·
	/ S. Denty LOGGED BY G. Dyer					_ во	RING DEPTH 55.7 ft.
	ATER DEPTH: DURING COMP ell installed. Refer to well data sheet.	и	ELAYED				
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 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.
			SS	24.5	2-11-14		

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

		SIENCE AND ENVIRONMENTAL ENGINEERING		CATION	OODD O			-
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.
ALI RCFU ILAFARRESSI IOFIGE CIM		- dry, very hard, SAA		SS -7	39.5	50 (0)		saprock transition.
Secured Engineering Locas - Essec DATABASE, 601 - 9/20/20 20/44 - 1/44. RCFF0 IIAFARAREFSATIOF/GFCWW LOCAS - 50/40 - 1/44. RCFF0 IIAFARAREFSATIOF/GFCWW LOCAS - 50/40 - 1/44. RCFF0 IIAFARAREFSATIOF/GFCWW LOCAS - 50/40 - 1/44. RCFF0 IIAFARAREFSATIOF/GFCWW LOCAS - 50/40 - 1/44. RCFF0 IIAFARAREFSATIOF/GFCWW LOCAS - 50/40 - 1/44. RCFF0 IIAFARAREFSATIOF/GFCWW LOCAS - 50/40 - 1/44. RCFF0 IIAFARAFSATIOF/GFCWW LOCAS - 50/40 - 1/44. RCFF0 IIAFA		- 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.
5 [<u> 1111</u>							

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.

PROJECT Plant McDonough Hydrogeological Investigation

EAF	RTH SC	EIENCE AND ENVIRONMENTAL ENGINEERING	LO	CATION	Cobb C	ounty, 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	-9	54.5	50 (0)		
	Bottom of borehole at 55.7 feet.							

60 GEOTECH ENGINEERING LOGS - ESEE DATABASE, GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER\$\DESKTOP\GPC\MW LOGS SURVEY UPDATED.GPJ 65 70 75 80

WELL CONSTRUCTION LOG

WELL CONSTRUCTION LOG	1 7							
PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services		WELL					
Hydrogeologic Investigation	DRILLER: S. Denty		NAME					
LOCATION: Ash Pond	RIG TYPE: CME550		D 20					
LOGGER: Greg Dyer DATE CONSTRUCTED: 1/11/2013	DRILLING METHODS: HS Auger N: 1391890.0 E: 2201422.0		B-29					
BATE GOTTO TROOTED: 1// 11/2010	11. 100 1000.0	DEPTH	ELEVATION					
		FEET	FT, MSL					
			11, WOL					
	TOD OF BIOED	-2.9	016 12					
l I 🗆	TOP OF RISER 2" Threaded Riser Cap	-2.9	816.43					
I H	2 Threaded Riser Cap							
4 ft x 4 ft concrete pad								
	GROUND SURFACE	0.0	813.5					
	PROTECTIVE CASING							
	SIZE: 4" x 4"							
	TYPE: aluminum							
	BOTTOM OF GROUT							
	BOTTOM OF GROOT							
	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							
	525 . 5. 7.6 5. 1 mon							
	BOTTOM OF SCREEN	54.1	759.4					
Flush-threaded end cap —								
	BOTTOM OF CASING	54.4	759.1					
HOLE DIA:	7 inch							
1.022 57%								



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

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

DATE	STAR	TED <u>1/22/2013</u>	COMPLETED	<u>1/22/2013</u> GR	OUND E	ELEVATIO	DN <u>794</u>	.9 ft	COORI	DINATES N 1392034.3 E 2200928.5
CONT	RACT	OR SCS Field Service	es	METHOD 4.25	" Hollow	Stem Auge	er w/pilot l	bit; HQ Rock Co	re E G	QUIPMENT CME 550
DRILL	ED BY	S. Denty	LOGGED BY	B. Gallagher	СН	ECKED B	Y		BO	RING DEPTH 45.1 ft.
GROU	ND WA	TER DEPTH: DURING	.	COMP	D	ELAYED				
NOTE	S Dril	led near North Abutme	nt of Ash Pond 1	dike Well installed	. Refer t					
DEPTH (ft)	GRAPHIC LOG	MATER	RIAL DESCRIPT	ION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
	Ш	Silt (ML)								
										Vacuum excavation from 0 ft to 10 ft.
	$\ \ \ $									
5										
10						SS -1	10.0	8-7-6 (13)		
		- white and tan, m	nist foliated: san	rolite		-1		(13)		
		- Wille and tan, m	oist, rollated, sap	TORIC						
						SS		7-8-17		
. 15						-2	14.5	(25)		
• • • • • • • •										
						SS	40.5	7-17-12		
20						SS -3	19.5	(29)		
		- tan, damp, staine	ed below 20.5 ft							
	$\ \ \ $									
	$\ \ \ $									
	$\ \ \ $					_				
25						SS	24.5	3-6-12		

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

EA	EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING		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	768.4	-4 RC -1	26.0	(18)		
30		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			
SS_SURVEY UPDATED.GPJ		 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			
EOTECH ENGINEERING LOGS - ESEE DATABASE. GDT - 8/26/20 20:44 - NALTRCFPOT/LAPARKER\$\DESKTOP\GPC\MV LOGS_SURVEY UPDATED.GPU 9				RC -4	38.7			
(6/20 20:44 - \\ALTRCFP01\LAP,		Bottom of borehole at 45.1 feet.	749.8	RC -5	43.7			
BASE.GDT - 8//		BOLLOTT OF BOTCHOIC AL 43. FIEEL.						
- ESEE DATAL								
50 50								
ECH ENGINEE								
[a]								

WELL CONSTRUCTION LOG

Southern Company Generation

WELL CONSTRUCTION LOG Southern Company Generation							
PROJECT: Plant McDonough DRILLING CO.: SCS Field Services							
Hydrogeologic Investigation	DRILLER: S. Denty		NAME				
LOCATION: Ash Pond 1	RIG TYPE: CME550						
LOGGER: B. Gallagher	DRILLING METHODS: HS Auger/HQ Rock Core		B-31				
DATE CONSTRUCTED: 1/22/2013	N: 1392034.3 E:2200928.5						
		DEPTH	ELEVATION				
		FEET	FT, MSL				
	TOD OF BIOFR	0.6	707.47				
	TOP OF RISER	-2.6	797.47				
l	2" Threaded Riser Cap						
4 ft x 4 ft concrete pad							
	GROUND SURFACE	0.0	794.9				
	PROTECTIVE ALONG						
	PROTECTIVE CASING						
	SIZE: 4" x 4"						
	TYPE: aluminum						
	BOTTOM OF GROUT						
	BOTTOM OF GROUT						
	BACKFILL MATERIAL						
	TYPE: Portland cement/bentonite						
	grout						
	AMOUNT: 5 bags cement						
	8 lbs bentonite						
	RISER CASING						
	DIA: 2 inch						
	TYPE: Schedule 40 PVC						
	JOINT TYPE: Flush Threaded						
	TOP OF SEAL	25.7	769.2				
	ANNULAR SEAL						
	TYPE: PelPlug TR-30 1/4"						
	bentonite pellets; 5-gallon buckets						
	AMOUNT: 1/4 bucket						
	PLACEMENT: Poured	00.4	705.0				
	TOP OF FILTER PACK	29.1	765.8				
	FILTER PACK TYPE: Filtersil #61						
	Size 1A; 50 lbs/bag						
	AMOUNT: 1/2 Bags						
	PLACEMENT: Tremie						
	1 E TOLINETTI TIOTIIO						
	BOTTOM OF RISER / TOP OF SCREEN	34.7	760.2				
	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	44.7	750.2				
Flush-threaded end cap							
	BOTTOM OF CASING	45.1	749.8				
	th (a.c.a.a)						
HOLE DIA: 7 ind							
3.81	nch (HQ core)						

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

	CTOR SCS Field Services							·
	BY <u>S. Denty</u> LOGGED BY VATER DEPTH: DURING						_ 80	RING DEPTH 41 ft.
	Well installed. Refer to well data sheet.	_ 301111 .						
DEPTH (ft) GRAPHIC	MATERIAL DESCRIF	PTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
= 5	- Vacuum excavation fro 0 ft to 9.	0 ft						
	Silt (ML)		754.7	SS -1	9.5	1-1-3		
	- tan to mottled tan, brown and re with clay (about 5% clay); micace texture (highly weathered)	ed, damp, soft, SILT eous; trace schistose		-1		(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, s less clay	soft, SAA; softer;		SS -3	19.5	1-1-2 (3)		residual soil.
25				SS	24.5	2-2-4		



BORING LOG

Silt (ML)(cont) - green-gray, moist, medium stiff, SiLT; micaceous; lacks structure 30 - motified tan, green, and white-gray, very damp, stiff, sandy SiLT - brown, very hard, SiLT with gravel; saprolite; highly weathered schist fragments 35 - brown, very moist, very hard, sandy SiLT, sandy silt, saprolite; highly weathered schist fragments 80 - brown, very moist, very hard, sandy SiLT, sandy silt, saprolite; highly weathered schist fragments 80 - brown, very moist, very hard, sandy SiLT, sandy silt,	SOL	SOUTHERN COMPANY SERVICES, INC.			PROJECT Plant McDonough Hydrogeological Investigation							
Sitt (ML)/cort) - green-gay, most, medium stiff, SiLT; micaceous; lacks structure - mottled tan, green, and white-gray, very damp, stiff, - mottled tan, green, and white-gray, very damp, stiff, - mottled tan, green, and white-gray, very damp, stiff, - brown, vary hard, SiLT with gravel; saprolite; highly weathered schist fragments - brown, very moist, very hard, sandy SiLT, - brown, very moist, very hard, sandy SiLT, - brown, very moist, very hard, sandy SiLT, - brown of borehole at 41.0 feet. - Bottom of borehole at 41.0 feet.	EAF	RTHSC	EIENCE AND ENVIRONMENTAL ENGINEERING	LOCATION Cobb County, GA								
- motiled tan, green, and white-gray, very damp, stiff, - motiled tan, green, and white-gray, very damp, stiff, - motiled tan, green, and white-gray, very damp, stiff, - trown, very hard, SiLT with gravel; saprolite; highly weathered schist fragments - trown, very moist; very hard, sandy SiLT, weathered schist fragments - trown, very moist; very hard, sandy SiLT, weathered schist fragments - trown of borehole at 41.0 feet.	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS			
- mottled tan, green, and white-gray, very damp, stiff, sandy SILT - brown, very hard, SILT with gravet; saprolite; highly weathered schiat fragments - brown, very moist, very hard, sandy SILT, weathered schiat fragments - brown, very moist, very hard, sandy SILT, weathered schiat fragments - brown of borehole at 41.0 feet.			 green-gray, moist, medium stiff, SILT; micaceous; 		-4		(6)					
weathered schist fragments Bottom of borehole at 41.0 feet. 45 50			sandy SILT				(12)					
45 ————————————————————————————————————	40		weathered schist fragments	722.7		39.5	22-32-23 (55)		lower saprolite.			
45 		•										
45 												
45 												
50		İ										
	45	+										
	50	Ī										
	. <u>0</u> U											

WELL CONSTRUCTION LOG

Southern Company Generation

WELL CONSTRUCTION LOG	Southern Company Ge			
PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services		WELL	
Hydrogeologic Investigation	DRILLER: S. Denty		NAME	
LOCATION: Ash Pond	RIG TYPE: CME550		50000000000	
LOGGER: Greg Dyer DATE CONSTRUCTED: 11/28/2012	DRILLING METHODS: HS Auger N: 1390482.2 E:2200919.8		DGWC-37/B-37	
DATE CONSTRUCTED: 11/28/2012	N: 1390482.2 E:2200919.8	DEDTU	ELEVATION.	
			ELEVATION	
		FEET	FT, MSL	
	TOP OF RISER	- 2.5	766.21	
	2" Threaded Riser Cap			
4 ft x 4 ft concrete pad	L			
	GROUND SURFACE	0.0	763.7	
\\\\\\\\\\\\\	PROTECTIVE CASING			
	SIZE: 4" x 4"			
	TYPE: aluminum			
	BOTTOM OF GROUT			
	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	739.1	
	ANNULAR SEAL	24.0	700.1	
	TYPE: PelPlug TR-30 3/8"			
	bentonite pellets; 5-gallon buckets			
	AMOUNT: 1.5 buckets			
	PLACEMENT: Poured			
	TOP OF FILTER PACK	27.0	736.7	
	FILTER PACK			
	TYPE: Filtersil #61			
	Size 1A; 50 lbs/bag			
	AMOUNT: 6.75 Bags PLACEMENT: Poured w/water			
	FLACEIVIENT. Poured w/water			
	BOTTOM OF RISER / TOP OF SCREEN	29.3	734.4	
	SCREEN		7 0 7.7	
	DIA: 2" prepack (3.45" OD)			
	TYPE: Schedule 40 PVC			
	OPENING WIDTH: 0.01 inch			
	OPENING TYPE: Slotted			
	SLOT SPACING: 0.1 inch			
	BOTTOM OF SCREEN	39.3	724.4	
Flush-threaded end cap	DOTTOM OF CASINO	39.7	724.0	
	BOTTOM OF CASING	Jy.1	1 24.U	
HOLE DIA	A: 7 inch			
322 2#				



BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

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.										
		ATER DEPTH: DURING 13 ft.						_ 50	<u> 24.7 ft.</u>	
		ell installed. Refer to well data sheet.					- -	1		
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIP	TION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS	
	===	- Vacuum excavation from 0 ft to	9.0 ft							
	_									
5										
	===									
	=\=			745.7						
10		Silt (ML) - olive-gray to tan, moist, medium	stiff, SILT;		SS -1	9.5	2-3-4 (7)		residual soil.	
		micaceous; trace schist gravel; <5	5% clay							
		∇								
		-			99		WH-WH-1			
15		- more tan, wet, very soft, SAA			SS -2	14.5	(1)			
					00		245			
20		- tan-brown-gray, very moist, stiff,	SILT; micaceous;		SS -3	19.5	2-4-5 (9)		residual soil.	
		more prevalent schistose gravel								

WELL CONSTRUCTION LOC

WELL CONSTRUCTION LOG	Southern Company Ge	n		
PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL		
Hydrogeologic Investigation LOCATION: Ash Pond	DRILLER: S. Denty RIG TYPE: CME550		NAME	
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger		DGWC-38/B-38	
DATE CONSTRUCTED: 11/29/2012	N: 1390362.7 E:2201148.6			
		DEPTH	ELEVATION	
		FEET	FT, MSL	
	TOP OF RISER	-2.7	757.43	
4 ft x 4 ft concrete pad	2" Threaded Riser Cap GROUND SURFACE	0.0	754.7	
	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			
	Tolly I'll E. Flush I'll eaded			
	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 FILTER PACK	13.4	741.3	
	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			
Fluor throaded and any	BOTTOM OF SCREEN	24.7	730.0	
Flush-threaded end cap	BOTTOM OF CASING	25.0	729.7	
	20110 01 0/10/10		0	
HOLE DIA:	7 inch			
			i	



BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

DATE	STAI	RTED 10/6/2012 COM	IPLETED <u>10/6/2012</u> C	SROUND I	ELEVATION	ON _757	ft	COOR	DINATES N 1390303.6 E 2201540.1
CONT	RACT	OR SCS Field Services	METHOD _4	.25" Hollo	w Stem A	uger w/p	ilot bit E	QUIPM	IENT CME 550
DRILL	ED B	S. Denty LOG	GED BY G. Dyer	СН	ECKED E	BY		_ во	RING DEPTH _26 ft.
		ATER DEPTH: DURING 20		D	ELAYED				
NOTE	S W	ell installed. Refer to well data	a sheet.			_		Τ	
DЕРТН (ft)	GRAPHIC LOG	MATERIAL D	DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
	<u></u>	- Vacuum excavation fro	m 0 ft to 9.5 ft						
5									
<u>v</u>									water table in hydrovac hole at about 2 ft bgs.
	_								
•••••									
10		Elastic Silt (MH)		747.5	UD -1	9.5			
			medium plasticity, clayey						
15				741.8	SS -1	14.5	1-2-6 (8)		
		Silt (ML) - tan-brown, wet, mediur schist gravel at base	n stiff, sandy SILT; contains						residual soil.
					SS -2	19.5	2-2-5		
20		- mottled tan, orange and clayey SILT; micaceous	d brown, wet, medium stiff,		-2		(7)		residual soil/upper saprolite transition.
				732.5	_				
25		Lean Clay (CL)		702.0	SS	24.5	3-2-4		



SOUTHERN ZZ COMPANY

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

BORING LOG

	(COMPANY						
SO	UTHER	N COMPANY SERVICES, INC.	PR	OJECT _	Plant Mo	:Donough Hydr	ogeolo	gical Investigation
EAI	RTH SC	CIENCE AND ENVIRONMENTAL ENGINEERING	LO	CATION	Cobb C	ounty, GA		
DЕРТН (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,		-3		(6)		upper saprolite.
		low plasticity, silty CLAY; relict structures observed; highly weathered Lean Clay (CL)(con't) Bottom of borehole at 26.0 feet.	731.0)				
		Bottom of borefiole at 20.0 feet.						
30	-							
	1							
35	-							
40								
45								
45	1							
50								
	1							

WELL CONSTRUCTION LOG

Southern Company Generation

WELL CONSTRUCTION LOG	Southern Company Ge	eneration	
PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services		WELL
Hydrogeologic Investigation	DRILLER: S. Denty		NAME
LOCATION: Ash Pond	RIG TYPE: CME550		DOMO 00/D 00
LOGGER: Greg Dyer DATE CONSTRUCTED: 11/6/2012	DRILLING METHODS: HS Auger N: 1390303.6 E:2201540.1		DGWC-39/B-39
DATE CONSTRUCTED. 11/0/2012	N. 1390303.6 E.2201340.1	DEDTU	ELEVATION
		FEET	FT, MSL
	_		
	TOP OF RISER	-2.9	759.89
I I I	2" Threaded Riser Cap		
4 ft x 4 ft concrete pad			
	GROUND SURFACE	0.0	757.0
	PROTECTIVE CASING		
	SIZE: 4" x 4"		
	TYPE: aluminum		
	1;/		
	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	752.1
	ANNULAR SEAL	4.5	732.1
	TYPE: PelPlug TR-30 3/8"		
	bentonite pellets; 5-gallon buckets		
	AMOUNT: 3.5 buckets		
	PLACEMENT: Poured		
	TOP OF FILTER PACK	8.0	749.0
	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	746.2
	SCREEN		
	DIA: 2" prepack (3.45" OD)		
	TYPE: Schedule 40 PVC		
	OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted		
	SLOT SPACING: 0.1 inch		
	OLOT OF ACIINO. U.T IIIOIT		
	BOTTOM OF SCREEN	20.8	736.2
Flush-threaded end cap			
	BOTTOM OF CASING	21.2	735.8
HOLE DIA	· 7 inch		
HOLE DIA	. / 111011		
			i



BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

DATE STARTED _11/5/2012 COMPLETED _11/5/2012 GROUND ELEVATION _776.2 ft COORDINATES _N 1390625.7 E 2201825.9								
		OR SCS Field Services METHOD 4.						
		S. Denty LOGGED BY G. Dyer					_ BO	RING DEPTH 36 ft.
		TER DEPTH: DURING COMP	D	ELAYED				
NOTES	3 We	ell installed. Refer to well data sheet.					Τ	
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								
•••••								
			766.7	SS		2-4-5		
10		Silt (ML) - brown-tan, stiff, clayey, sandy SILT; damp to moist; contains micaceous fragments; manganese staining and nodules		-1	9.5	(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.
		g						
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		



SOUTHERN ZZ COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

•	DEPTH (ft)	GRAPHIC		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.
- \\ALTRCFP01\LAPARKER\$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ	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)		
LOGS			Bottom of borehole at 36.0 feet.				ļ.		
C/MW									
P\GP(
SKTC									
R\$\DE	40								
ARKE									
01/LAF									
IRCFP									
0 20:44	45								
8/26/2	∓У								
GDT -									
BASE.									
E DATA									
- ESE									
LOGS	50								
RING									
GINEE									
CH EN									
GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44									

WELL CONSTRUCTION LOG

Southern Company Generation

WELL CONSTRUCTION LOG	Southern Company Ge	eneration	
PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services		WELL
Hydrogeologic Investigation	DRILLER: S. Denty		NAME
LOCATION: Ash Pond	RIG TYPE: CME550		
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger		DGWC-40/B-40
DATE CONSTRUCTED: 11/5/2012	N: 1390625.7 E:2201825.9		
		DEPTH	ELEVATION
		FEET	FT, MSL
	TOP OF RISER	- 2.9	779.06
	2" Threaded Riser Cap	-2.5	119.00
I	2 Tilleaded Risel Cap		
111			
4 ft x 4 ft concrete pad			
	GROUND SURFACE	0.0	776.2
	DOCTOTIVE CACING		
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	PROTECTIVE CASING		
	SIZE: 4" x 4"		
	TYPE: aluminum		
	BOTTOM OF GROUT		
	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	757.2
	ANNULAR SEAL		
	/ TYPE: PelPlug TR-30 3/8"		
	bentonite pellets; 5-gallon buckets		
	AMOUNT: 1 bucket		
	✓ PLACEMENT: Poured		
	TOP OF FILTER PACK	21.4	754.8
	FILTER PACK		
	TYPE: Filtersil #61		
	Size 1A; 50 lbs/bag		
	AMOUNT: 0.5 Bag filter pac		
	6.5 bag hole		
	PLACEMENT: Poured w/water	04.5	7517
	BOTTOM OF RISER / TOP OF SCREEN	24.5	751.7
	SCREEN DIA: 2" prepack (3.45" OD)		
	DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC		
	OPENING WIDTH: 0.01 inch		
	OPENING WIDTH: 0.01 Inch OPENING TYPE: Slotted		
	SLOT SPACING: 0.1 inch		
	OLOT OF ACITYO, U. I HIGH		
	BOTTOM OF SCREEN	34.5	741.7
Flush-threaded end cap	BOTTOW OF SCREEN	57.5	171.1
an oadod ond oap	BOTTOM OF CASING	34.9	741.3
HOLE DIA:	7 inch		



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

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

DATE	STA	RTED	11/13/2012	COMPLETED	11/14/2012	GROUND	ELEVATION	ON 792	.4 ft	COORE	DINATES N 1390920.8 E 2201751.9
CONT	RAC	TOR _	SCS Field Service	es .	METHOD	4.25" Hollo	w Stem A	uger w/pi	ilot bit E	QUIPM	ENT _CME 550
DRILL	ED B	SY _S.	Denty	LOGGED BY	C. Sellers	СН	ECKED B	Y		BOI	RING DEPTH 61 ft.
			DEPTH: DURING		COMP	D	ELAYED				
NOTES	S V	Vell ins	stalled. Refer to we	ell data sheet.				_			
DEPTH (ft)	GRAPHIC)	MATER	RIAL DESCRIPT	TION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		= -	Vacuum excavatio	on from 0 ft to 9	.5 ft						
	⇒	=				782.9	y ss		WH-WH-1		
10		7 -	_ean Clay (CL) · light tan/orange, v ot)	very soft, silty Cl	_AY (fill for park		-1	9.5	(1)		
15			Silt (ML) no recovery medium stiff			777.9	SS -2	14.5	3-2-4 (6)		
20		-	brownish orange,	dry, stiff, clayey	r SILT with mica	a	SS -3	19.5	4-4-5 (9)		
							SS	24.5			



BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

		CIENCE AND ENVIRONMENTAL ENGINEERING		CATION	0000			
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				
	111	- iigiit tari, Oilli, fiileaceous						
30		- stiff, SAA; with very fine-grained sand		SS -5	29.5	2-4-9 (13)		
	1111							
PDATED.GPJ								
5 ≥ 35		∇		SS -6	34.5	2-2-3 (5)		
SURV	1111	rackrackrackrackrackrackrackrack		· ·		(0)		
ဖွဲ့ ၂	1111							
GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - NATTRCFP01/LAPARKER\$NDESKTOP/GPC/MW LOGS_SURVEY UPDATED.GPJ		- brown, wet, stiff, SILT with fine to very fine sand		SS -7	39.5	2-3-6 (9)		
1/LAP								
20 20:44 - WALTRCFP0				SS -8	44.5	2-5-7 (12)		
. 8/26/		- stiff, SAA						
TGD								
BASE								
<u></u>	$\ \ \ $							
- ESE	$\ \ $			SS	40 F	11-18-23		
50	-{	- light tan, damp, hard, sandy SILT (saprolite); fine to		SS -9	49.5	(41)		
INEERING I		very fine-grained sand						
CH ENG								
EOTE								
ت ــــــــــــــــــــــــــــــــــــ	ш	(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		Silt (ML)(con't)		-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)		
	Ш	Dettern of havehale at 61.0 feet	731.4					

Bottom of borehole at 61.0 feet.

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - NALTRCFP01/LAPARKER\$\DESKTOP\GPC\MW LOGS SURVEY UPDATED.GPJ

65

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75

80

WELL CONSTRUCTION LOG

Southern Company Generation

WELL CONSTRUCTION LOG	Southern Company Ge	eneratior	า
PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services		WELL
Hydrogeologic Investigation	DRILLER: S. Denty		NAME
LOCATION: Ash Pond	RIG TYPE: CME550		
LOGGER: Cale Sellers	DRILLING METHODS: HS Auger		B-41
DATE CONSTRUCTED: 11/14/2012	N: 1390920.8 E:2201751.9		
		DEPTH	ELEVATION
		FEET	FT, MSL
	TOP OF RISER	-2.8	795.2
	2" Threaded Riser Cap	-2.0	195.2
l I⊢	2 Threaded Riser Cap		
l			
4.6 4.6 1			
4 ft x 4 ft concrete pad		0.0	700.4
	GROUND SURFACE	0.0	792.4
	PROTECTIVE CASING		
\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	SIZE: 4" x 4"		
	TYPE: aluminum		
	\$\frac{1}{2}\frac{1}{2		
	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		
	OCHVI III E. Hash iiiicaaca		
	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	47.0	745.4
	TOP OF FILTER PACK FILTER PACK	47.3	745.1
	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
Flush-threaded end cap	BOTTOW OF SCREEN	JJ. 4	7 00.0
	BOTTOM OF CASING	60.0	732.4
HOLE DIA	A: 7 inch		



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

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

TE STARTI	ED _11/12/2012	ROUND I	ELEVATION	ON <u>802</u>	ft	COORDINA	ATES N 1391327.8 E 22018
	R SCS Field Services METHOD 4.3						
	S. Denty LOGGED BY C. Sellers					_ BORIN	G DEPTH <u>51 ft.</u>
	ER DEPTH: DURING 30 ft. COMP. installed. Refer to well data sheet.	u	ELAYED				
(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						
	Lean Clay (CL) - orange/tan, medium stiff, silty CLAY; micaceous; fine to very-fine grained	792.5	SS -1	9.5	1-2-4 (6)		
	Silt (ML) - tan/orange/some white, stiff, SILT with very fine sand; very micaceous; saprolite	787.5	SS -2	14.5	3-4-6 (10)		
 <u></u>	- SAA		SS -3	19.5	4-4-5 (9)		
			SS	24.5	1-3-4		

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

EAF	EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING				LOCATION Cobb County, GA						
DEPTH (ft)	GRAPHIC	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 30		□ - tan with black banding, wet, soft, SILT with very fine-grained sand		SS -5	29.5	1-2-2 (4)					
NWW LOGS_SURVEY UPDATE		- wet, hard, SILT with fine sand and some gravel; angular; saprolite		SS -6	34.5	7-22-26 (48)					
ALTRCFP01/LAPARKER\$\DESKTOP\GPC\WW LOGS_SURVEY UPDATED.GPJ		- tan, wet, very stiff, SILT with fine sand and angular gravel		SS -7	39.5	8-9-12 (21)					
3ASE.GDT - 8/26/20 20:44 - \\ALTRCF		- wet, very stiff, SAA		SS -8	44.5	5-9-14 (23)					
GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \(\)	9 (4) 14 (4) 14 (4) 14 (4)	Silty Sand (SM) - tan, damp, silty SAND Bottom of borehole at 51.0 feet.	752.5 751.0	SS -9	49.5						
GEOTECH ENG											

WELL CONSTRUCTION LOG

Southern Company Generation

WELL CONSTRUCTION LOG	Southern Company Ge	eneratio	
PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL	
Hydrogeologic Investigation	DRILLER: S. Denty		NAME
LOCATION: Ash Pond	RIG TYPE: CME550		D 01440 404D 40
LOGGER: Cale Sellers	DRILLING METHODS: HS Auger		DGWC-42/B-42
DATE CONSTRUCTED: 11/12/2012	N: 1391327.8 E:2201870.2		
		DEPTH	ELEVATION
		FEET	FT, MSL
	TOP OF RISER	-2.7	804.68
I [2" Threaded Riser Cap		
 	1		
4 ft x 4 ft concrete pad			
	GROUND SURFACE	0.0	802.0
	PROTECTIVE CASING		
	SIZE: 4" x 4"		
	TYPE: aluminum		
	POTTOM OF CROUT		
	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	00.2	700.0
	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		
	PLACEIVIEN I: Poured w/water		
	BOTTOM OF RISER / TOP OF SCREEN	39.9	762.1
	SCREEN	09.8	102.1
	DIA: 2" prepack (3.45" OD)		
	TYPE: Schedule 40 PVC		
	OPENING WIDTH: 0.01 inch		
	OPENING TYPE: Slotted		
	SLOT SPACING: 0.1 inch		
<u> </u>	BOTTOM OF SCREEN	49.9	752.1
Flush-threaded end cap		FO 4	754.0
	BOTTOM OF CASING	50.4	751.6
HOLE DI	A· 7 inch		
HOLL DI			
			l .

PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 28.80 ft LOCATION: Smyrna, GA

RECORD OF BOREHOLE DGWC-47/B-47

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: 794.3 TOC ELEVATION: 797.45 ft SHEET 1 of 1 DEPTH W.L.: 15.98 ELEVATION W.L.: 778.32 DATE W.L.: 6/23/2016 TIME W.L.: 15:56

SOIL PROFILE SAMPLES LEVATION (ft) DEPTH (ft) MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES WELL CONSTRUCTION Š ELEV. GRAPHIC LOG nscs TYPE SAMPLE REC DESCRIPTION **DETAILS** 핍 DEPTH (ft) 0.00 - 4.00 WELL CASING SILT; red brown, trace subrounded to subangular fine gravel, gray Portland Interval: 0'-28.8' Material: Schedule 40 PVC Type I/ Aluminum to white, dry (fill) Diameter: 2" Joint Type: Flush threaded with O-ring ML Casing 790.3 WELL SCREEN 790 Interval: 18.4'-28.4' Material: Schedule 40 PVC SILT; orange brown, some medium sand with black laminations, micaceous, stiff, dry to moist (saprolite) 5 Diameter: 2" Slot Size: 0.010" Portland ML End Cap: Schedule 40 PVC Type I/ Type II/ Bentonite FILTER PACK Interval: 16.35'-28.8' Type: Filtersil std61 Gel mix 785.3 9.00 - 10.00 785 9.00 784.3 ML FILTER PACK SEAL SILT; gray, some white and balck laminations, dry, stiff Interval: 11.3'-16.4' Type: 3/8" Bentonite Pellets 10 10.00 - 13.00 10.00 SILT and GRAVEL; fine to coarse gravel and cobbles/moderately GW-GM weathered rock (biotite schist), light brown silt and black with orange staining gravel, foliated, friable **ANNULUS SEAL** Interval: 0'-11.3' Type: Portland Type I/Type Íl/Gel Mix 13.00 - 20.00 13.00 3/8" GNEISS and weathered SCHIST; gray and white, foliated biotite Bentonite WELL COMPLETION 780 gneiss, some orange staining, trace pyrite and garnets (saprock) Pellets Pad: 4'x4'x4" Protective Casing: Aluminum 15 DRILLING METHODS PWR Soil Drill: Sonic Rock Drill: Sonic 775 774<u>.3</u> 20 20 00 - 28 80 20.00 Biotite GNEISS (competent rock); some orange staining at fractures; trace pyrite and garnets Filtersil std 0.010" slot _ 770 BR 25 GDT PIEDMONT. 765.5 Sump .GPJ Boring completed at 28.80 ft - 765 (5) 30 SURVEY UPDATED 760 35 BACKUP MCDONOUGH MASTER LIST 755 40 RECORD 750

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



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 30.00 ft LOCATION: Smyrna, GA

RECORD OF BOREHOLE DGWC-48/B-48

DRILL RIG: 100C Track Mounted Rig DATE STARTED: 6/21/16 DATE COMPLETED: 6/22/16 NORTHING: 1,391,314.60 EASTING: 2,202,290.20 GS ELEVATION: 785.2 TOC ELEVATION: 788.33 ft SHEET 1 of 1 DEPTH W.L.: 11.35 ELEVATION W.L.: 773.85 DATE W.L.: 6/23/2016 TIME W.L.: 9:55

SOIL PROFILE SAMPLES LEVATION (ft) DEPTH (ft) MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES WELL CONSTRUCTION Š GRAPHIC LOG ELEV. nscs SAMPLE REC DESCRIPTION **DETAILS** 핍 DEPTH (ft) 785 0.00 - 3.00 WELL CASING SILT; orange brown, micaceous, dry, very stiff (fill) Portland Interval: 0'-30' Material: Schedule 40 PVC Type I/ Aluminum ML Diameter: 2"
Joint Type: Flush threaded with O-ring Casing 782.2 3.00 SILT; oragnish brown to tan, laminations, trace to some medium to coarse sand, trace fine to coarse gravel, gray, subangular, WELL SCREEN Interval: 19.6'-29.6' Material: Schedule 40 PVC moist (saprolite) 5 - 780 Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC ML Portland FILTER PACK Interval: 17.6'-30' Type I/ Type II/ Bentonite Type: Filtersil std61 Gel mix FILTER PACK SEAL Interval: 12.1'-17.6' Type: 3/8" Bentonite Pellets 10 - 775 774.2 11.00 - 24.00 SILT; gray to blackish brown, some fine to coarse sand, laminations, stiff to very stiff, dry 11.00 **ANNULUS SEAL** Interval: 0'-12.1'
Type: Portland Type I/Type Íl/Gel Mix WELL COMPLETION 3/8" Pad: 4'x4'x4"
Protective Casing: Aluminum 15 Bentonite - 770 Pellets DRILLING METHODS Soil Drill: Sonic Rock Drill: Sonic ML 20 - 765 Filtersil std 761.2 24.00 - 30.00 biotite GNEISS; gray and white, orange staining, partially 24.00 0.010" slot _ GDT - 760 weathered bedrock, some clay, gray, micaceous PIEDMONT. BR .GPJ 755.2 (5) 30 -Sump - 755 Boring completed at 30.00 ft SURVEY UPDATED - 750 BACKUP MCDONOUGH MASTER LIST 745 RECORD

LOG SCALE: 1 in = 5.5 ft

DRILLING COMPANY: Cascade Drilling

DRILLER: Bill Lindsey

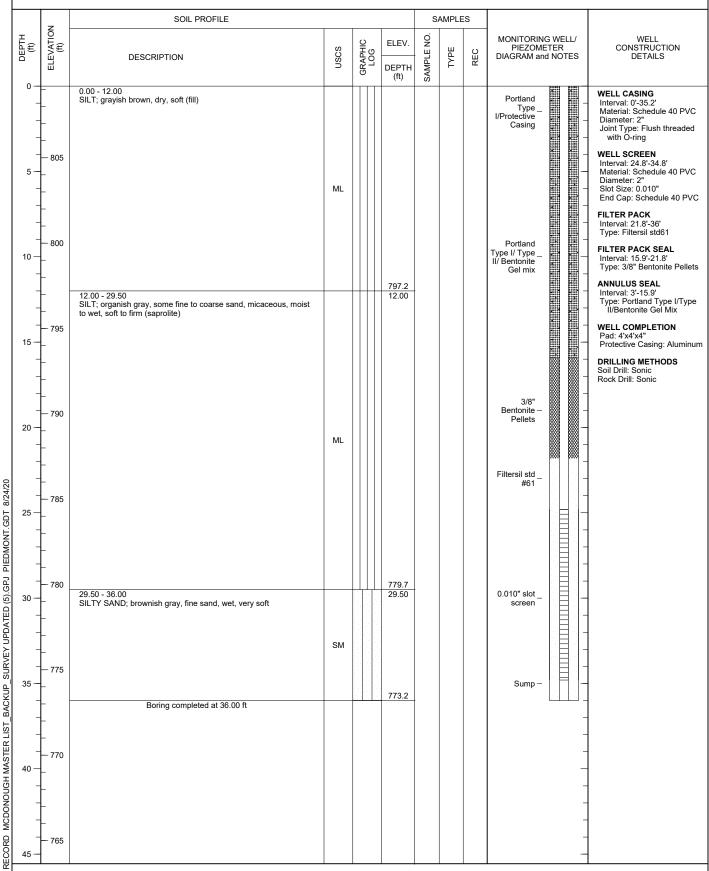
GA INSPECTOR: K. Jurinko, PG CHECKED BY: Rachel P. Kirkman, PG



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 36.00 ft LOCATION: Smyrna, GA

RECORD OF BOREHOLE B-50
DRILL RIG: 100C Track Mounted Rig
DATE STARTED: 6/24/16
NORTHING: 1,391
EASTING: 2,201,8 DATE COMPLETED: 6/24/16

NORTHING: 1,391,657.10 EASTING: 2,201,841.00 GS ELEVATION: 809.2 TOC ELEVATION: 809.67 ft SHEET 1 of 1 DEPTH W.L.: 20.8 ELEVATION W.L.: 788.4 DATE W.L.: 6/24/2016 TIME W.L.: 10:50



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



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DATE STARTED: 9/24/16 EASTING: 2,201,668.80 DRILLED DEPTH: 28.90 ft DATE COMPLETED: 9/24/16 COCATION: in the middle of the pond of the construction area of AP3

RECORD OF BOREHOLE DGWA-53/B-53 NORTHING: 1,393,472.80 EASTING: 2,201,668.80 GS ELEVATION: 841.3 TOC ELEVATION: 841.3

TOC ELEVATION: 844.26 ft

SHEET 1 of 1 DEPTH W.L.: 10.08 ELEVATION W.L.: 831.22 DATE W.L.: 10/6/2016 TIME W.L.: 1233

	z	SOIL PROFILE	Ε					SAMPLES			_		
(tt)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	DEPTH (ft)	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 -	- 840	0.00 - 3.50 SM, silt SAND, fine to medium grained, non-plastic, tan, non-cohesive, dry to	SM			1	00	2-4-6	10	1.50	CETCO puregold	WELL CASING Interval: 0-17.6' Material: Schedule 40 P	
-	-	moist, compact	Sivi		837.8						/ aluminum ====================================	Diameter: 2" Joint Type: Flush/Screw WELL SCREEN	
5 —	-	3.50 - 12.20 SM, silt SAND, fine to medium grained, non-plastic, tan, non-cohesive, dry to moist, compact to dense (saprolite).			3.50	2	8	4-6-6	12	1.50	0000 0000 0000 0000 0000 0000 0000 0000 0000	Interval: 17.6'-27.6' Material: Schedule 40 P Diameter: 2"	
-	— 835 –	Auger Refusal at 12.2									CETCO puregold casing CETCO puregold casing CETCO puregold casing CETCO puregold casing CETCO puregold casing CETCO puregold casing CETCO puregold casing CETCO puregold casing CETCO puregold casing CETCO puregold casing CETCO puregold casing CETCO casi	Slot Size: 0.010 End Cap: Schedule 40 I FILTER PACK Interval: 12'-28.9'	
-	-		SM			3	00	5-13-35	48	1.50	PEL-PLUG	Type: FilterSil FILTER PACK SEAL	
10 —	- 830							0 10 00		1.50	Bentonite pellets	Interval: 8'-12' Type: PEL-PLUG 3/8" Bentonite pellets	
	-	12.20 - 29.50 Bedrock; GNEISS; competent, thinly			829.1 12.20	_						ANNULUS SEAL Interval: 0'-8' Type: CETCO puregold grout (70:30)	
15 —	-	foliated.										WELL COMPLETION Pad: Protective Casing: 4"x4"	
-	— 825 –										FilterSil –	aluminum DRILLING METHODS Soil Drill: Hollow-stem at	
-	-											Rock Drill: HQ Core Bar	
20 —	- 820		BR										
-	-										0.010" slotted – – screen		
- 25 —	-												
	 815												
-	-				811.8	811.8							
30 —	- 810	Boring completed at 28.90 ft			29.50						_		
-	-										-		
35 —	-										-		
	— 805 —										-		
	-										-		
40 —	- - - 800										-		
	-										-		
45 —	-										_		
DRII	LLING	LE: 1 in = 5.5 ft COMPANY: Southern Company S S. Milam	Service	s		С	HEC	SPECTOR: KED BY: Tii 12/22/17				G	



RECORD OF BOREHOLE B-54

PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 34.20 ft 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: 782.6 SHEET 1 of 1
DEPTH W.L.: 4.56
ELEVATION W.L.: 778.04
DATE W.L.: 10/6/2016

LOCATION: Eastside of the stream north of AP4 TOC ELEVATION: 785.46 ft TIME W.L.: 839 SOIL PROFILE SAMPLES -:LEVATION (ft) DEPTH (ft) MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES WELL CONSTRUCTION SAMPLE NO GRAPHIC LOG ELEV. N-VALUE **BLOWS USCS** REC DESCRIPTION per 6 in **DETAILS** 핍 DEPTH 140 lb hammer 30 inch drop (ft) 0.00 - 13.50 WELL CASING Top 10' were Hydrovac for utilities. Portland Interval: 0'-23.8' Material: Schedule 40 PVC Type I/Type II/Gel Mix / – Diameter: 2 Joint Type: Flush/Screw 780 aluminum casing WELL SCREEN Interval: 23 8'-33 8' Material: Schedule 40 PVC 5 Diameter: 2 Slot Size: 0.010 End Cap: Schedule 40 PVC FILTER PACK Interval: 21.9'-34.2' Type: FilterSil 775 FILTER PACK SEAL Interval: 17.8'-21.9' Portland Type I/Type II/Gel Mix 10 Type: PEL-PLUG 3/8" Bentonite pellets **ANNULUS SEAL** Interval: 0-17.8'
Type: Portland Type I/Type 770 Íl/Gel Mix 769.1 13.50 - 28.50 0.83 13:30 - 28:30 SM, silty SAND, fine to coarse, non to low plasticity; white to gray, weathered, well foliated gneissic saprolite; cohesive, moist, w<PL, stiff. WELL COMPLETION 8 6-7-6 13 Pad: 2' x 2' concrete
Protective Casing: 4"x4"x5' 15 aluminum **DRILLING METHODS** Soil Drill: Hollow-stem auger 765 Rock Drill: HQ Core Barrell PEL-PLUG 3/8" 1.33 8 2 17 Bentonite 5-9-8 20 SM 760 FilterSil -0.00 1.50 00 3 4-5-11 15 25 PIEDMONT.GDT 755 754.1 753.6 GP-GMo U 28 50 - 29 00 4 8 21-50/1 71/7 <u>0.50</u> 0.58 0.010 Slotted (5).GPJ 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. 29.00 Screen 30 SURVEY UPDATED Auger Refusal at 29.0 BR 29.00 - 34.20 Bedrock; AUGEN GNEISS; fresh to slightly weathered, well foliated, gray, fine grained, 750 medium strong to strong, (locally contains pegamitite zones). 748.4 Boring completed at 34.20 ft BACKUP MCDONOUGH MASTER LIST 745 740

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Terracon
DRILLER: Shep Becker

RECORD

GA INSPECTOR: Michael Boatman, PG CHECKED BY: Timothy Richards, PG



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 52.00 ft LOCATION: West of the cement plant

RECORD OF BOREHOLE B-55

DRILL RIG: CME 55

DATE STARTED: 9/21/16

DATE COMPLETED: 9/22/16

RECORD OF BOREHOLE B-55

NORTHING: 1,394,142.60
EASTING: 2,204,147.90
GS ELEVATION: 822.9
GS ELEVATION: 822.9 TOC ELEVATION: 825.12 ft

SHEET 1 of 2 DEPTH W.L.: 12.05' ELEVATION W.L.: 810.85 DATE W.L.: 10/6/2016 TIME W.L.: 850

	7	SOIL PROFILE							SAMPLES				
DEPTH (#)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC	FOG	DEPTH (ft)	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 -	-	0.00 - 3.50 SM, silty SAND, non to low plasticity; red-brown; cohesive, moist, w <pl, soft.<="" td=""><td>SM</td><td></td><td></td><td></td><td>1</td><td>00</td><td>4-8-11</td><td>19</td><td>0.75 1.50</td><td>Portland</td><td>WELL CASING Interval: 0'- 41' Material: Schedule 40 PVC Diameter: 2</td></pl,>	SM				1	00	4-8-11	19	0.75 1.50	Portland	WELL CASING Interval: 0'- 41' Material: Schedule 40 PVC Diameter: 2
5	— 820 –	3.50 - 13.50 ML, SILT, trace to some sand and clay, non to low plasticity; light brown to				819.4 3.50	2	8	7-7-9	16	1.00 1.50	Portland Type I/Type II/Gel Mix / — aluminum casing	Joint Type: Flush/Screw WELL SCREEN Interval: 41' - 51' Material: Schedule 40 PVC Diameter: 2
-	-	red-brown to silverish gray; cohesive, dry to moist, w <pl, firm.<="" soft="" td="" to=""><td></td><td></td><td></td><td></td><td>3</td><td>00</td><td>7-11-12</td><td>23</td><td>1.33 1.50</td><td> </td><td>Slot Size: 0.010 End Cap: Schedule 40 PV FILTER PACK Interval: 39'-52'</td></pl,>					3	00	7-11-12	23	1.33 1.50		Slot Size: 0.010 End Cap: Schedule 40 PV FILTER PACK Interval: 39'-52'
10 —	815 - -		ML				4	00	5-8-11	19	1.50 1.50	Portland Type III/Gel Mix / - aluminum casing Portland Type III/Gel Mix / - III/Gel Mix / - III/Gel Mix Portland Type III/Gel Mix Portland Type III/Gel Mix	Type: FilterSil FILTER PACK SEAL Interval: 32'-39' Type: PEL-PLUG 3/8" Bentonite pellets
- - - -	- - - 810					809.4							ANNULUS SEAL Interval: 0'-32' Type: Portland Type I/Type II/Gel Mix
15 —	- - -	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, firm.<="" soft="" td="" to=""><td></td><td></td><td></td><td>13.50</td><td>5</td><td>00</td><td>8-17-24</td><td>41</td><td>1.50 1.50</td><td>Portland Type I/Type - S - S - II/Gel Mix</td><td>WELL COMPLETION Pad: 2' x 2' concrete Protective Casing: 4"x4"x5 aluminum</td></pl,>				13.50	5	00	8-17-24	41	1.50 1.50	Portland Type I/Type - S - S - II/Gel Mix	WELL COMPLETION Pad: 2' x 2' concrete Protective Casing: 4"x4"x5 aluminum
-	- 805		ML					_			1.50		DRILLING METHODS Soil Drill: Hollow-stem auge Rock Drill: N/A
20 -	-						6	8	9-10-11	21	1.50 1.50	-	
- - -	 800 	23.50 - 52.00 ML, SILT, some sand, non plastic; light				799.4 23.50	7	00	5-12-12	24	1.50		- - -
25 —	- - -	brown to tan to silverish gray, schist saprolite; cohesive, moist to wet (increases with depth), w <pl, firm.<="" soft="" td="" to=""><td></td><td></td><td></td><td></td><td></td><td></td><td>3-12-12</td><td>24</td><td>1.50</td><td></td><td></td></pl,>							3-12-12	24	1.50		
-	— 795 –						8	00	8-12-15	27	1.50 1.50		-
30 -	-												
35 —	— 790 – –		ML				9	8	9-14-17	31	1.50 1.50	PEL-PLUG 3/8" _ Bentonite pellets	
- - -	- - - 785											pellets	-
40	- - -						10	OO	10-12-16	28	1.50 1.50	FilterSil –	
- - - -	- 780 										1 50		
45 —	-	Log continued on next page					11	8	7-12-23	35	1.50 1.50		-
DRII	LLING	LE: 1 in = 5.5 ft COMPANY: Terracon Shep Becker					C	HECI	SPECTOR: KED BY: Tir 12/22/17				GOLDER



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 52.00 ft LOCATION: West of the cement plant

RECORD OF BOREHOLE B-55

DRILL RIG: CME 55
DATE STARTED: 9/21/16
DATE COMPLETED: 9/22/16

DATE COMPLETED: 9/22/16

ROBERT STARTED: 9/22/16

DATE COMPLETED: 9/22/16

ROBERT STARTED: 9/22/16

GS ELEVATION: 822.9
TOC ELEVATION: 825.12 ft

SHEET 2 of 2 DEPTH W.L.: 12.05' ELEVATION W.L.: 810.85 DATE W.L.: 10/6/2016 TIME W.L.: 850

	z -	SOIL PROFILE						SAMPLES				
	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC	DEPTH (ft)	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 - -	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, (continued)<="" firm.="" soft="" td="" to=""><td>ML</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>0.010 Slotted</td><td>WELL CASING Interval: 0'- 41' Material: Schedule 40 P\ Diameter: 2 Joint Type: Flush/Screw WELL SCREEN Interval: 41'- 51' Material: Schedule 40 P\ Diameter: 2 Slot Size: 0.010 End Cap: Schedule 40 P</td></pl,>	ML								0.010 Slotted	WELL CASING Interval: 0'- 41' Material: Schedule 40 P\ Diameter: 2 Joint Type: Flush/Screw WELL SCREEN Interval: 41'- 51' Material: Schedule 40 P\ Diameter: 2 Slot Size: 0.010 End Cap: Schedule 40 P
-	- 770 	Boring completed at 52.00 ft			770.9							FILTER PACK Interval: 39'-52' Type: FilterSil
55 —	-											FILTER PACK SEAL Interval: 32'-39' Type: PEL-PLUG 3/8" Bentonite pellets ANNULUS SEAL
- - -	- 765 -											Interval: 0'-32' Type: Portland Type I/Ty II/Gel Mix WELL COMPLETION
60 -	-										_	Pad: 2' x 2' concrete Protective Casing: 4"x4" aluminum DRILLING METHODS
†	- - 760 -										- - -	Soil Drill: Hollow-stem at Rock Drill: N/A
65 -	- - -										-	
70	- 755 -										-	
70 -	-										-	
75 —	750 										- - -	
- - -	- - - 745										- - -	
80 -	- - -										- - -	
+	- 740 -										- - -	
85 -	- - 										_ _ _	
90	735 - -										- -	
DRIL	LING	LE: 1 in = 5.5 ft COMPANY: Terracon Shep Becker			•	С	HEC	SPECTOR: KED BY: Tir			oatman, PG nards, PG	GOLDER



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 45.00 ft LOCATION: SW of the cement plant

RECORD OF BOREHOLE B-56

DRILL RIG: CME 55
DATE STARTED: 10/3/16
DATE COMPLETED: 10/3/16

DATE COMPLETED: 10/3/16

RECORD OF BOREHOLE B-56

NORTHING: 1,393,957.90
EASTING: 2,204,187.80
GS ELEVATION: 821.0 TOC ELEVATION: 823.59 ft

SHEET 1 of 1 DEPTH W.L.: 16.39 ELEVATION W.L.: 804.61 DATE W.L.: 10/6/2016 TIME W.L.: 900

	_	SOIL PROFILE							SAMPLES				
DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC	907	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	WELL CONSTRUCTION DETAILS
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.<="" td=""><td></td><td></td><td></td><td></td><td></td><td></td><td>30 mar drop</td><td></td><td></td><td>CETCO</td><td>WELL CASING Interval: 0'-34.6' Material: Schedule 40 PVC Diameter: 2 Joint Type: Flush/Screw</td></pl,>							30 mar drop			CETCO	WELL CASING Interval: 0'-34.6' Material: Schedule 40 PVC Diameter: 2 Joint Type: Flush/Screw
5 —	- - 815						1	8	2-5-5	10	1.08 1.50		WELL SCREEN Interval: 34.6'-44.6' Material: Schedule 40 PVC Diameter: 2 Slot Size: 0.010 End Cap: Schedule 40 PVC
-	-		ML										FILTER PACK Interval: 31.8' - 45' Type: FilterSil
10	- - - 810						2	OO	2-4-4	8	0.75 1.50	CETCO Figure 2014 - grout (70:30)	FILTER PACK SEAL Interval: 26.7'-31.8' Type: PEL-PLUG 3/8" Bentonite pellets
+	-	13.50 - 23.50				807.5 13.50						CETCO puregold – grout (70:30)	ANNULUS SEAL Interval: 0'-26.7' Type: CETCO puregold grout (70:30)
15	- - - 805	ML, SLT, 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.				13.30	3	00	3-5-11	16	1.50 1.50		WELL COMPLETION Pad: 2' x 2' concrete Protective Casing: 4"x4"x5 aluminum
+	-	Suii.	ML								4.50		DRILLING METHODS Soil Drill: Hollow-stem auge Rock Drill: N/A
20 —	- 800						4	8	3-5-9	16	1.50 1.50		-
1	- - -	23.50 - 45.00				797.5 23.50		00	7-8-14	22	1.33		-
25	- 795 	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)					5	Q	7-0-14	22	1.50	CETCO puregold grout (70:30) – / aluminum casing CETCO puregold – grout (70:30) Pentonite pellets PEL-PLUG 3/8" – Bentonite pellets	
30 —	-						6	00	7-6-12	18	1.33 1.50	3/8" _ Bentonite pellets	-
1	— 790 – –											-	
35	-		ML				7	8	7-8-14	22	1.00 1.50		_
1	785 											FilterSil –	- - -
40	- 700						8	00	14-32-50	82	1.00 1.50		-
1	780 										1.05	0.010" slotted – screen	
45	_	Boring completed at 45.00 ft		Ш		776	9	8	7-12-33	42	1.25 1.50		1



RECORD OF BOREHOLE B-57

PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 50.50 ft DRILL RIG: CME 55 DATE STARTED: 9/24/16 DATE COMPLETED: 9/24/16

LOCATION: North of the 4-wide construction trailer

NORTHING: 1,391,396.30 EASTING: 2,202,736.90 GS ELEVATION: 786.0 TOC ELEVATION: 789.04 ft SHEET 1 of 2 DEPTH W.L.: 21.49 ELEVATION W.L.: 764.51 DATE W.L.: 10/6/2016 TIME W.L.: 920

SOIL PROFILE SAMPLES -:LEVATION (ft) DEPTH (ft) MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES WELL CONSTRUCTION SAMPLE NO GRAPHIC LOG ELEV. N-VALUE **BLOWS** nscs REC DESCRIPTION per 6 in **DETAILS** 핍 DEPTH 140 lb hammer 30 inch drop (ft) 0.00 - 10.00 WELL CASING Boring was hydrovac'd to 10' bgs 785 Portland Interval: 0'-40' Material: Schedule 40 PVC (material appears to be SM-ML) Type I/Type II/Gel Mix / – Diameter: 2 Joint Type: Flush/Screw aluminum casing Interval: 40'-50' Material: Schedule 40 PVC 5 SM-ML Diameter: 2 Slot Size: 0.010 End Cap: Schedule 40 PVC 780 FILTER PACK Interval: 34.6'-50.5' Type: FliterSil FILTER PACK SEAL Interval: 29'-34.6' 776 Type: PEL-PLUG 3/8" 10 10.00 Bentonite pellets ML- Sandy Clayey SILT, fine to coarse sand, some fine gravel; reddish-brown to - 775 **ANNULUS SEAL** brown, dense, dry; micaceous, PWR Interval: 0'-29'
Type: Portland Type I/Type Íl/Gel Mix 1.00 WELL COMPLETION 1 00 4-10-14 24 Pad: 2' x 2' concrete
Protective Casing: 4"x4"x5' Portland Type I/Type II/Gel Mix 15 aluminum 770 **DRILLING METHODS** Soil Drill: Hollow-stem auger Rock Drill: HQ Core Barrell 1.00 8 2 11-24-50/5 74/11 20 ML 765 1.33 00 3 4-8-14 22 GDT 760 PIEDMONT. .GPJ 1.33 1.50 8 4-4-8 12 756 (5) 30 30.00 - 34.50 30.00 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 SURVEY UPDATED 755 PEL-PLUG 3/8" CL Bentonite 50/3 <u>0.00</u> 0.25 50/3 751.5 34.50 - 50.50 Bedrock; SCHIST; strong to very strong, 34.50 BACKUP light to dark gray with white and black laminations, sub-parallel; sightly weathered 750 top with red oxidation on fractured surfaces FilterSil to fresh and unfractured at the bottom. MCDONOUGH MASTER LIST BR 0.010 Slotted 745 Screen RECORD Log continued on next page

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Terracon
DRILLER: Shep Becker

GA INSPECTOR: Aubrey Ellis
CHECKED BY: Timothy Richards, PG

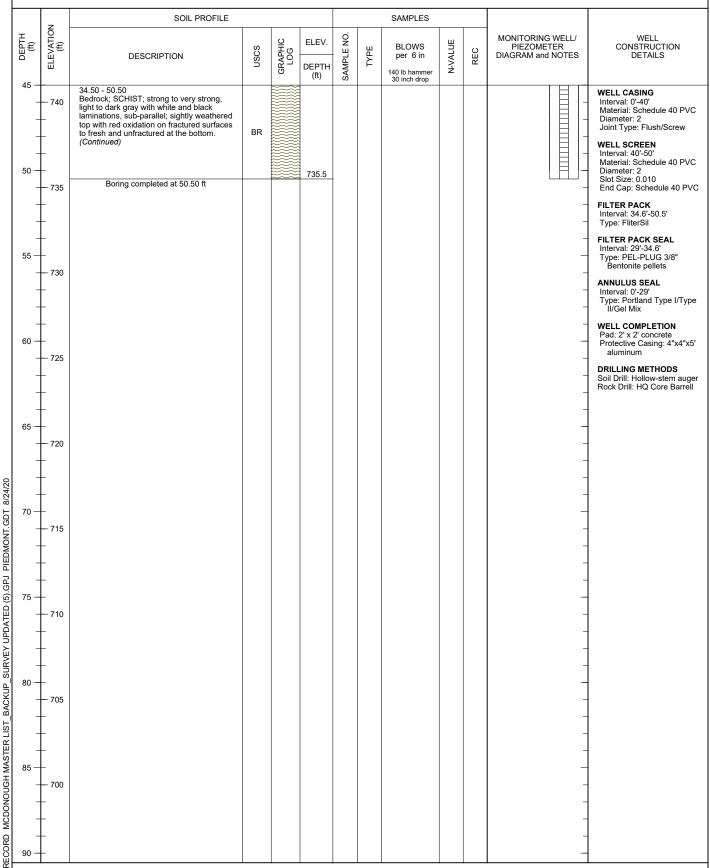


RECORD OF BOREHOLE B-57

PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 50.50 ft DRILL RIG: CME 55
DATE STARTED: 9/24/16
DATE COMPLETED: 9/24/16

LOCATION: North of the 4-wide construction trailer

NORTHING: 1,391,396.30 EASTING: 2,202,736.90 GS ELEVATION: 786.0 TOC ELEVATION: 789.04 ft SHEET 2 of 2 DEPTH W.L.: 21.49 ELEVATION W.L.: 764.51 DATE W.L.: 10/6/2016 TIME W.L.: 920



LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Terracon
DRILLER: Shep Becker

GA INSPECTOR: Aubrey Ellis
CHECKED BY: Timothy Richards, PG



PROJECT: Plant McDonough DRILL RIG: CME 55 NORTHING: 1,391,125.70 PROJECT NUMBER: 1668496.18 DATE STARTED: 9/22/16 EASTING: 2,202,426.50 DRILLED DEPTH: 45.00 ft DATE COMPLETED: 9/23/16 GS ELEVATION: 785.2 LOCATION: SW corner of the new overflow parking lot of the NEW admin building

SHEET 1 of 2 DEPTH W.L.: 22.30 ELEVATION W.L.: 762.9 DATE W.L.: 10/6/2016 TIME W.L.: 940

		SOIL PROFILE						SAMPLES				
DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0	785 - - -	0.00 - 13.50 Top 10' were Hydrovac for utilities.				0,		30 inch drop			CETCO puregold grout (70:30) – a	WELL CASING Interval: 0'- 34.5' Material: Schedule 40 PVC Diameter: 2 Joint Type: Flush/Screw
5 -	- - - 780										# # #	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
10 —	- - 775											FILTER PACK SEAL Interval: 24.1'-31.7' Type: PEL-PLUG 3/8" Bentonite pellets
-	- - -				771.7						-	ANNULUS SEAL Interval: 0'-24.1' Type: CETCO puregold grout (70:30)
15 -	_ _ 770	13.50 - 18.50 SC-SM, silty SAND/ clayly SAND, fine to coarse, low plasticity; red to red orang, fill; cohesive, moist, w <pl, firm.<="" soft="" td="" to=""><td>SC-SM</td><td></td><td>13.50</td><td>1</td><td>DO</td><td>5-6-7</td><td>13</td><td>1.50 1.50</td><td>*</td><td>WELL COMPLETION Pad: 2' x 2' concrete Protective Casing: 4"x4"x5' aluminum</td></pl,>	SC-SM		13.50	1	DO	5-6-7	13	1.50 1.50	*	WELL COMPLETION Pad: 2' x 2' concrete Protective Casing: 4"x4"x5' aluminum
=	-				766.7						CETCO	DRILLING METHODS Soil Drill: Hollow-stem auger Rock Drill: N/A
20 —	- - 765 - -	18.50 - 23.50 ML, SILT, trace sand, low to moderate plasticity; red orange, micaceous, fill; cohesive, moist, w <pl, firm.<="" soft="" td="" to=""><td>ML</td><td></td><td>18.50</td><td>2</td><td>OO</td><td>2-1-2</td><td>3</td><td>1.50 1.50</td><td>puregold – grout (70:30)</td><td></td></pl,>	ML		18.50	2	OO	2-1-2	3	1.50 1.50	puregold – grout (70:30)	
- 25 —	- - - - 760	23.50 - 28.50 ML, SILT, some fine sand, low plasticity; tan to white; cohesive, wet, w <pl (over="" saturated),="" soft.<="" td=""><td>ML</td><td></td><td>761.7 23.50</td><td>3</td><td>DO</td><td>2-3-3</td><td>6</td><td>1.50 1.50</td><td>CETCO puregold grout (70:30) —</td><td>-</td></pl>	ML		761.7 23.50	3	DO	2-3-3	6	1.50 1.50	CETCO puregold grout (70:30) —	-
-	- - -				756.7						PEL-PLUG 3/8" – Bentonite –	-
30 —	 755 	28.50 - 33.50 ML, SILT, non plastic; brown to silver, slight to deeply weathered, schistose gneiss saprolite; cohesive, wet, w <pl, firm="" stiff.<="" td="" to=""><td>ML</td><td></td><td>28.50</td><td>4</td><td>DO</td><td>4-7-9</td><td>16</td><td>1.50 1.50</td><td>pellets - - -</td><td></td></pl,>	ML		28.50	4	DO	4-7-9	16	1.50 1.50	pellets - - -	
-	-	33.50 - 45.00			751.7 33.50					4.50	FilterSil –	
35 —	_ _ 750	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="" stiff.<="" td="" to=""><td></td><td></td><td></td><td>5</td><td>00</td><td>1-4-7</td><td>11</td><td>1.50 1.50</td><td></td><td> - -</td></pl,>				5	00	1-4-7	11	1.50 1.50		 - -
-	-	Soft to Suif.									0.010 Slotted	-
40 —	_ 745		ML			6	OO	3-6-11	17	1.50 1.50		
-	- - -											-
-	-				740.2	7	00	3-7-12	19	1.50 1.50		_

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



PROJECT: Plant McDonough DRILL RIG: CME 55 NORTHING: 1,391,125.70 PROJECT NUMBER: 1668496.18 DATE STARTED: 9/22/16 EASTING: 2,202,426.50 DRILLED DEPTH: 45.00 ft DATE COMPLETED: 9/23/16 GS ELEVATION: 785.2 LOCATION: SW corner of the new overflow parking lot of the NEW admin building

SHEET 2 of 2 DEPTH W.L.: 22.30 ELEVATION W.L.: 762.9 DATE W.L.: 10/6/2016 TIME W.L.: 940

	z	SOIL PROFILE SAMPLES										
(#)	ELEVATION (ft)	DESCRIPTION	nscs	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	WELL CONSTRUCTION DETAILS
45 — - -	740 -				(ii)	S		30 inch drop			-	WELL CASING Interval: 0'- 34.5' Material: Schedule 40 PV Diameter: 2 Joint Type: Flush/Screw
50 —	- - - 735 -										- - -	WELL SCREEN Interval: 34.5'-44.5' Material: Schedule 40 PV Diameter: 2 Slot Size: 0.010 End Cap: Schedule 40 PV
-	-										- -	FILTER PACK Interval: 31.7'-45.' Type: FilterSil
55 —	- 730										- -	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)
0 —	- 725										- -	WELL COMPLETION Pad: 2' x 2' concrete Protective Casing: 4"x4") aluminum
-	- -										- - -	DRILLING METHODS Soil Drill: Hollow-stem au Rock Drill: N/A
5 —	- 720										- -	
-	-										- -	
0 -	- - - 715										_ _ _	
-	-										- -	
_	-										<u> </u>	
5 —	 710										_ _ _	
-	-										-	
0 -	705 										-	
-	-										- - -	
5 —	- 700 										_	
-	-										- -	
-	-										-	

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



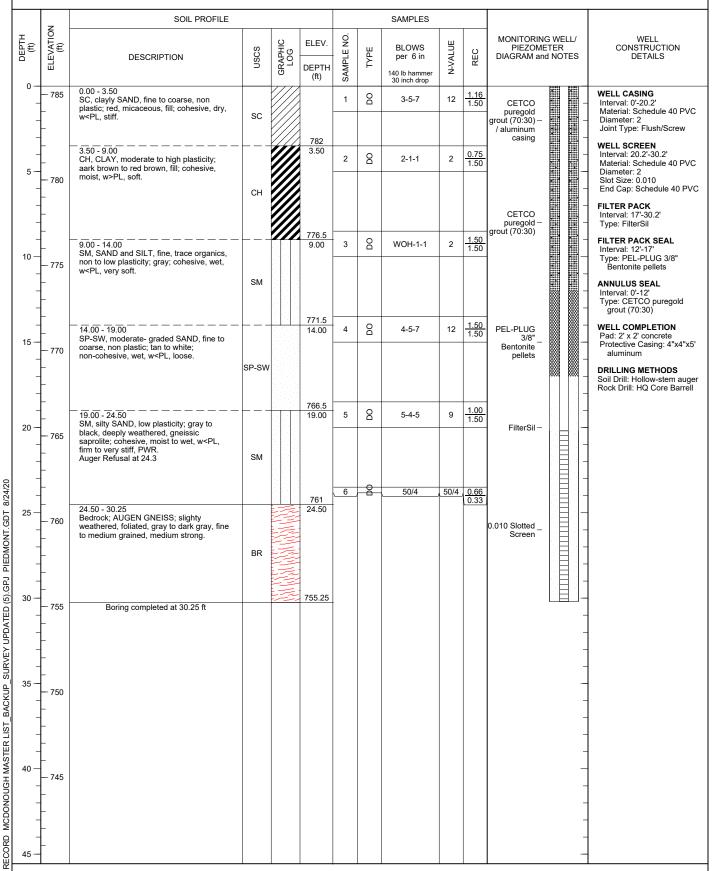
PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 30.25 ft

DRILL RIG: CME 55 DATE STARTED: 9/23/16 DATE COMPLETED: 9/23/16

LOCATION: westside of the stream north of AP4

NORTHING: 1,394,349.10 EASTING: 2,203,001.10 GS ELEVATION: 785.5 TOC ELEVATION: 788.00 ft

SHEET 1 of 1 DEPTH W.L.: 5.56 ELEVATION W.L.: 779.94 DATE W.L.: 10/6/2016 TIME W.L.: 828



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



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 49.80 ft

DRILL RIG: CME 55 DATE STARTED: 9/29/16 DATE COMPLETED: 9/29/16 LOCATION: Almost due south of B-58 ~ 300 to 400 feet

NORTHING: 1,391,100.70 EASTING: 2,202,881.60 GS ELEVATION: 779.2 TOC ELEVATION: 782.13 ft

SHEET 1 of 2 DEPTH W.L.: 33.35 ELEVATION W.L.: 745.85 DATE W.L.: 10/6/2016 TIME W.L.: 955

SOIL PROFILE SAMPLES LEVATION (ft) DEPTH (ft) MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES WELL CONSTRUCTION SAMPLE NO ELEV. GRAPHIC LOG N-VALUE **BLOWS** nscs REC DESCRIPTION per 6 in **DETAILS** 핍 DEPTH 140 lb hammer 30 inch drop (ft) 0.00 - 13.50 **WELL CASING** Top 10' were Hydrovac for utilities. CETCO Interval: 0'-39.3' Material: Schedule 40 PVC puregold grout (70:30) Diameter: 2 Joint Type: Flush/Screw / aluminum WELL SCREEN Interval: 39 3' - 49 3' 775 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' 770 10 Type: PEL-PLUG 3/8" Bentonite pellets **ANNULUS SEAL** Interval: 0'-30.2' Type: CETCO puregold grout (70:30) 765.7 13.50 - 23.50 0.66 1.50 7 WELL COMPLETION 765 SC-SM, clayey SAND - silty SAND; brown to red brown; non-cohesive, moist, loose. 00 4-3-4 Pad: 2' x 2' concrete
Protective Casing: 4"x4"x5' CETCO puregold grout (70:30) aluminum **DRILLING METHODS** Soil Drill: Hollow-stem auger Rock Drill: N/A SC-SM 1.33 8 760 5 2 3-2-3 20 755.7 23 50 - 28 50 1.50 1.50 00 755 CL, silty CLAY, low plasticity; contains 3 1-3-5 8 mica: moist. W<PL 25 PIEDMONT.GDT CL 28 50 - 33 50 28.50 .GPJ 1.50 1.50 SC-SM, clayey SAND - silty SAND, fine grained, low to non-plastic; brown to gray; non-cohesive, moist, compact. 8 750 4 2-8-10 18 (5) 30 SURVEY UPDATED SC-SM 745.7 PEL-PLUG 50/4 <u>0.33</u> 0.33 33.50 - 48.50 33.50 5 50/4 745 SM, silty SAND; brown to red brown, Bentonite pellets saprolite; non-cohesive, moist to wet (increases with depth), dense, PWR. 35 BACKUP MCDONOUGH MASTER LIST 50/4 0.33 6 8 50/4 740 SM FilterSil 50/4 0.25 50/4 RECORD 735 Log continued on next page

LOG SCALE: 1 in = 5.5 ft

DRILLING COMPANY: Southern Company Services

DRILLER: S. Milam

GA INSPECTOR: Nortey Yeboah CHECKED BY: Timothy Richards, PG



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 49.80 ft

RECORD OF BOREHOLE B-60
DRILL RIG: CME 55
DATE STARTED: 9/29/16
DATE COMPLETED: 9/29/16
GS ELEVATION: 7

LOCATION: Almost due south of B-58 ~ 300 to 400 feet

NORTHING: 1,391,100.70 EASTING: 2,202,881.60 GS ELEVATION: 779.2 TOC ELEVATION: 782.13 ft SHEET 2 of 2 DEPTH W.L.: 33.35 ELEVATION W.L.: 745.85 DATE W.L.: 10/6/2016 TIME W.L.: 955

SOIL PROFILE SAMPLES ELEVATION (ft) DEPTH (ft) MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES WELL CONSTRUCTION SAMPLE NO GRAPHIC LOG ELEV. N-VALUE **BLOWS** nscs REC DESCRIPTION per 6 in **DETAILS** DEPTH 140 lb hammer 30 inch drop (ft) 45 33.50 - 48.50 WELL CASING SM, silty SAND; brown to red brown, Interval: 0'-39.3' Material: Schedule 40 PVC saprolite; non-cohesive, moist to wet (increases with depth), dense, PWR. SM 0.010 Slotted Diameter: 2 Joint Type: Flush/Screw Screen (Continued) 730.7 WELL SCREEN 8 50/3 <u>0.16</u> 0.25 48.50 - 49.80 50/3 8 48.50 Interval: 39.3' - 49.3' SM 730 SM, silty SAND; gray to brown, saprolite, 729.4 Material: Schedule 40 PVC contains mica; non-cohesive, moist to wet (increases with depth), dense, PWR 50 Diameter: 2 Slot Size: 0.010 End Cap: Schedule 40 PVC Boring completed at 49.80 ft FILTER PACK Interval: 36.9'-50' Type: FilterSil FILTER PACK SEAL Interval: 30.2'-36.9' Type: PEL-PLUG 3/8" Bentonite pellets 725 55 **ANNULUS SEAL** Interval: 0'-30.2'
Type: CETCO puregold grout (70:30) WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 4"x4"x5' 720 60 aluminum **DRILLING METHODS** Soil Drill: Hollow-stem auger Rock Drill: N/A 715 65 710 SURVEY UPDATED (5).GPJ 705 75 700 80 BACKUP 695 690

LOG SCALE: 1 in = 5.5 ft

DRILLING COMPANY: Southern Company Services

DRILLER: S. Milam

PIEDMONT.GDT

MCDONOUGH MASTER LIST

RECORD

GA INSPECTOR: Nortey Yeboah CHECKED BY: Timothy Richards, PG



PROJECT: Plant McDonough DRILL RIG: CME 55 NORTHING: 1,390,957.80 PROJECT NUMBER: 1668496.18 DATE STARTED: 9/28/16 EASTING: 2,202,505.80 DRILLED DEPTH: 52.40 ft DATE COMPLETED: 9/29/16 GS ELEVATION: 779.0 LOCATION: SSW of B-57. on the NE corner of the switch yard TOC ELEVATION: 782.09 ft

SHEET 1 of 2 DEPTH W.L.: 22.25 ELEVATION W.L.: 756.75 DATE W.L.: 10/6/2016 TIME W.L.: 950

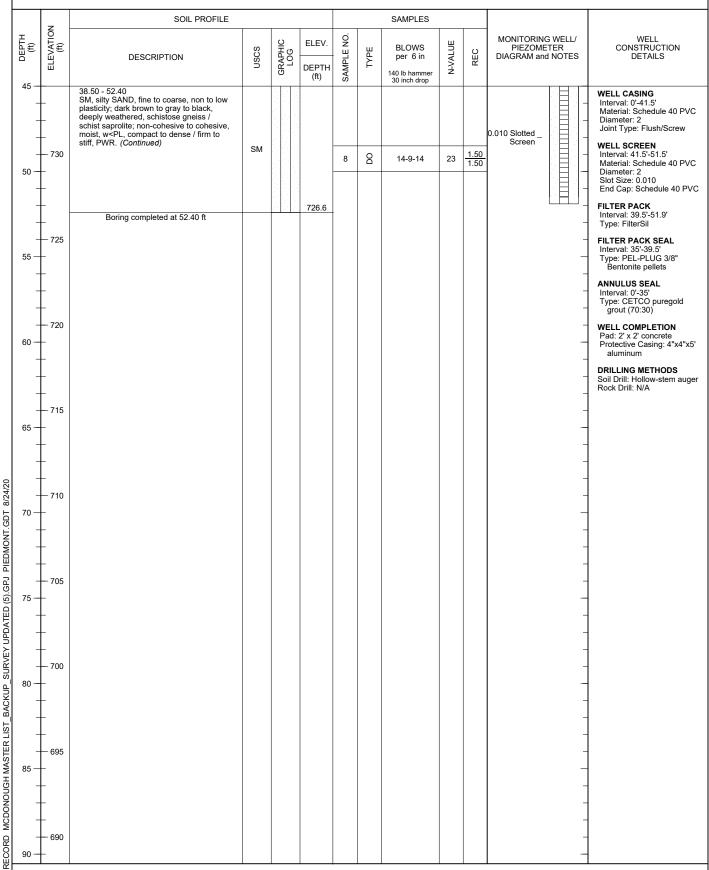
	z	SOIL PROFILE						SAMPLES				
(ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0 -	-	0.00 - 13.50 Top 10' were Hydrovac for utilities.						2.00			CETCO puregold grout (70:30) — / aluminum casing ————————————————————————————————————	WELL CASING Interval: 0'-41.5' Material: Schedule 40 F Diameter: 2 Joint Type: Flush/Screw
5 —	- 775 - - -										1	WELL SCREEN Interval: 41.5'-51.5' Material: Schedule 40 F Diameter: 2 Slot Size: 0.010 End Cap: Schedule 40 I FILTER PACK Interval: 39.5'-51.9'
10 -	- 770 - -										CETCO	Type: FilterSil FILTER PACK SEAL Interval: 35'-39.5' Type: PEL-PLUG 3/8" Bentonite pellets ANNULUS SEAL
†	- - - 765	13.50 - 18.50			765.5 13.50	1	OQ	3-4-6	10	1.50 1.50		Interval: 0'-35' Type: CETCO puregold grout (70:30) WELL COMPLETION
15 —	- - -	CL-CH, CLAY, trace sand and silt, fine to coarse, moderate plasticity; dark red brown, fill; cohesive, moist, w~PL, soft.	CL-CH			-	Q	U-1-U	10	1.50	 	Pad: 2' x 2' concrete Protective Casing: 4"x4 aluminum DRILLING METHODS Soil Drill: Hollow-stem a
20	- 760 -	18.50 - 23.50 SM, sittly SAND, fine, non to low plasticity, trace organics (tree root); dark gray to black; cohesive, dry to moist, w <pl, firm<="" td=""><td></td><td></td><td>760.5 18.50</td><td>2</td><td>00</td><td>5-8-13</td><td>21</td><td>1.50 1.50</td><td>CETCO CETCO</td><td>Rock Drill: N/A</td></pl,>			760.5 18.50	2	00	5-8-13	21	1.50 1.50	CETCO CETCO	Rock Drill: N/A
+	- - -	. , ,	SM		755.5						grout (70:30) =	
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.<="" td=""><td></td><td></td><td>23.50</td><td>3</td><td>DO</td><td>6-8-13</td><td>21</td><td>1.16 1.50</td><td></td><td></td></pl,>			23.50	3	DO	6-8-13	21	1.16 1.50		
30 -	- 750					4	DO	3-2-5	7	1.16 1.50		
30 7	-		ML									
35 —	- 745 					5	Od	3-3-5	8	1.00 1.50	PEL-PLUG 3/8" Bentonite pellets -	
+	- - - 740	38.50 - 52.40			740.5 38.50		DO	7 40 92	22	1.33	Bentonite pellets -	
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="" dense="" firm="" pwr.<="" stiff,="" td="" to=""><td>SM</td><td></td><td></td><td>6</td><td>٥</td><td>7-10-23</td><td>33</td><td>1.50</td><td>FilterSil —</td><td></td></pl,>	SM			6	٥	7-10-23	33	1.50	FilterSil —	
45	- 735 -					7	Og	6-19-50/3	69/9	1.25 0.75		
LOG		LE: 1 in = 5.5 ft COMPANY: Southern Company S	l Name					SPECTOR: (ED BY: Ti			oatman, PG	<u> </u>



PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILL RIG: CME 55
PROJECT NUMBER: 1668496.18
DATE STARTED: 9/
DRILLED DEPTH: 52.40 ft
DATE COMPLETED:
LOCATION: SSW of B-57. on the NE corner of the switch yard

DRILL RIG: CME 55
DATE STARTED: 9/28/16
DATE COMPLETED: 9/29/16

NORTHING: 1,390,957.80 EASTING: 2,202,505.80 GS ELEVATION: 779.0 TOC ELEVATION: 782.09 ft SHEET 2 of 2 DEPTH W.L.: 22.25 ELEVATION W.L.: 756.75 DATE W.L.: 10/6/2016 TIME W.L.: 950



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



SOUI	HERN A	DRILLI	NG L	.og			Hole No.	B-64	-
	o Serve Your Worl		AL SE	RVICES				1 of 2	
SITE _					HOLE DEPTH		SUF	RFELEV 786.10)
LOCATI		North of AP-4, near property line at Atkinson Rd		DINATES	33.8328			-84.474746	
ANGLE		BEARING	CONTR	RACTOR	SCS	DI	RILL NO.		
DRILLIN	IG METHOD				NO. U.				
CASING	SIZE	2" LENGTH 10'	co	RE SIZE	0.1.1	TOTAL 9	% REC		
WATER	TABLE DEPTH	4.9' BLS ELEV. 781.20' NAVD88 TI							
TYPE G	•	Bentonite QUANTITY						111010010	
DRILLEI	R	Milam RECORDER Abraham APPRO	OVED Sample		DRIL dard Penetration Test		IP. DATE	11/2/2010	
Depth	Elev.	Material Description, Classification and Remarks	No.		Blows	N	Comments	% Rec	RQD
0	786.10								
1	785.10								
2	784.10								
3	783.10								
4	782.10	LIVERS EVOLVATION							
5	781.10	HYDRO-EXCAVATION Hydrovac from land surface to 20-feet below land. No							
6	780.10	samples							
7	779.10								
8	778.10								
9	777.10								
10	776.10								
11	775.10								
12	774.10								
13	773.10								
14	772.10								
15	771.10								
16	770.10								
17	769.10								
18	768.10								
19	767.10								
20	766.10								
21	765.10								
22		SANDY SILT SAPROLITE Light gray sandy silt saprolite; minor quartz & feldspar	S-1	23.5 - 25	1-1-2			85	
23	763.10	grains, micaceous; oxidation along relict foliations; Fe stains; 2.5Y/6/1; SM.			_				

762.10

SOUTHERN COMPANY

DRILLING LOG GEOLOGICAL SERVICES

Hole No.

B-64

Sheet 2 of 2 Plant McDonough 31' SURF.ELEV. 786.10 SITE TOTAL DEPTH Standard Penetration Test Depth Elev. Material Description, Classification and Remarks Comments % Rec RQD From To Ν 761.10 25 SANDY SILT SAPROLITE 760.10 26 759.10 27 Light brown sandy silt saprolite; micaceous; 758.10 S-2 28.5 - 30 1-2-2 28 90 highly weathered biotite gneiss; quartz, _{757.10} feldspar, biotite, FeO; 2.5Y/8/1; SM. 29 756.10 30 END OF BORING AT 30.4-FT 755.10 REGOLITH WELL 31 733.10 732.10 54 731.10

WELL CONSTRUCTION LOG

Southern Company Generation

WELL CONSTRUCTION LOG	Southern Company Ge	si ici alioi	
PROJECT: Plant McDonough	DRILLING CO.: SCS, Inc. DRILLER: Milam		WELL NAME
North of AP-4, at Atkinson Rd LOCATION: 33.832856 / -84.474746	RIG TYPE: CME550		INAIVIE
LOGGER: Abraham	DRILLING METHODS: HSA		B-64
DATE CONSTRUCTED: 11/2/2016	BRILLING WETTIODS: TIGA		B-04
B, (12 GG) (G) (G) (G) (G) (G) (G) (G) (G) (G)		DEPTH	ELEVATION
		FEET	FT, MSL
		ILLI	I I, WIOL
Aft v Aft v All concrete mod	7		
4 ft x 4 ft x 4" concrete pad	GROUND SURFACE	0.0	786.10
	GROUND SURFACE	0.0	700.10
	PROTECTIVE CASING		
\	├ ं Flushmounted		
	;		
	BOTTOM OF GROUT	3.0	783.10
	BACKFILL MATERIAL		
	TYPE: Bentonite Grout mix AMOUNT: 1 x 50lbs		
	AWOUNT. TX SUIDS		
▼ 781.20	RISER CASING		
	DIA: 2-inch		
	TYPE: Schedule 40 PVC		
	JOINT TYPE: Flush Threaded		
	TOP OF SEAL	8.10	778.00
	ANNULAR SEAL		
	TYPE: 1/4" coated bentonite pellets		
	5-gal buckets		
	AMOUNT: 0.5 bucket PLACEMENT: Tremie		
	TOP OF FILTER PACK	16.50	769.60
	FILTER PACK	10.00	700.00
	TYPE: DSI Sand - 1A (20/40)		
	Drillers Services, Inc.		
	AMOUNT: 6 Bags		
	PLACEMENT: Tremie; wash with water		
	BOTTOM OF RISER / TOP OF SCREEN	20.00	766.10
	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	756.10
	BOTTOM OF WELL	30.40	755.70
HOLE DIA:	9 inch		
HOLL DIA.	o mon		
		l	<u> </u>

SOUT	HERN A	DRILLII	NG L	.OG			Hole No.	B-65	
Energy t	o Serve Your Worl	GEOLOGICA GEOLOGICA	L SE	RVICES			Sheet 1	of 2	
SITE _					HOLE DEPTH	50'	SUR		
LOCATI	ON North			DINATES	33.8328	62		-84.471389	
ANGLE			CONTR	RACTOR	SCS		ORILL NO.		
DRILLIN	IG METHOD	HSA NO. SAMPLES			NO. U.	D. SAMPI	LES	0	
CASING	SIZE	2" LENGTH 10'	_ co	RE SIZE	04415	TOTAL	% REC		
WATER	TABLE DEPTH	10.5' BLS _{ELEV.} 811.80 NAVD88							
TYPE G		QUANTITY	_		· DRIL				
DRILLE	R	Milam RECORDER Abraham APPROV	/ED		DRIL dard Penetration Test	LING CO	MP. DATE	11/15/2016	
Depth	Elev.	Material Description, Classification and Remarks	No.	From To	Blows	N	Comments	% Rec	RQD
0	822.30								
1	821.30								
2	820.30								
3	819.30								
4	818.30	HYDRO-EXCAVATION							
5	817.30	Hydrovac from land surface to 10-feet below land. No samples							
6	816.30	samples							
7	815.30								
8	814.30								
9	813.30								
10	812.30								
11	811.30								
12	810.30								
13	809.30	SILTY SAND SAPROLITE							
14	808.30	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	SILTY SAND SAPROLITE							
19		Blackish brown silty sand saprolite; large micas with a greenish tinge; highly oxidized with FeO parallel to	S-2	18.5-20	24-30-31	61		90	
20	802.30	foliations; 10YR/3/2; SM; damp to moist.							
21	801.30	CLAYEY SILT							
22	800.30	Dark gray to reddish brown silty sand saprolite; micas abundant; softer than interval above; few gravel-size	S-3	23.5 - 25	2-16-50/2			90	
23	799.30	rock fragments; FeO bands with minor MnO streaks;							

798.30

SOUTHERN COMPANY
Energy to Serve Your World

DRILLING LOG GEOLOGICAL SERVICES

Hole No. B-65
Sheet 2 of 2

SITE Plant McDonough TOTAL DEPTH 50' SURF.ELEV. 822.30

SITE _		Plant McDonough			TOTAL DEPTH	5	SURF.ELEV.	822	.30
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Stan From To	dard Penetration Test 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	S-4	28.5-30	50/2			90	
29	793.30	minor clay; few structures; 2.5Y/3/2; SM; saturated.							
30	792.30								
31	791.30								
		SILTY SAND SAPROLITE							
32	790.30	Dada assault and Edularian allegations and an in-	0.5	00.5.05	50/0				
33		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 Dark gray to reddish brown silty sand with	S-6	38.5 - 40	6-9-32			90	
38	784.30	minor clay; saprolite; saturated; 2.5YR/3/2		00.0	U-U-UZ				
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;		40				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

WELL CONSTRUCTION LOG	Southern Company Ger	leration	
	G CO.: SCS, Inc.		WELL
NE of AP-4 at Argos, near N corner parking lot DRILLER			NAME
	E: CME550		
	G METHODS: HSA		B-65
DATE CONSTRUCTED: 11/15/2016			
		DEPTH	ELEVATION
		FEET	FT, MSL
6 ft x 6 ft x 4" concrete pad			
manus munus	GROUND SURFACE	0.00	822.30
(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	GROUND SURFACE	0.00	022.30
	PROTECTIVE CASING		
	Flushmounted		
	riddiiilodiitod		
	BOTTOM OF GROUT	3.00	819.30
	BOTTOM OF GROOT	0.00	010.00
	BACKFILL MATERIAL		
	_TYPE: Bentonite Grout mix		
	AMOUNT: 3 x 50lbs		
	(1.5 bag bentonite; 1.5 bag grout)		
	(= = = = = = = = = = = = = = = = = =		
▼ 811.77	RISER CASING		
	DIA: 2-inch		
	TYPE: Schedule 40 PVC		
	JOINT TYPE: Flush Threaded		
	John The Lindon Impaged		
	TOP OF SEAL	26.80	795.50
	ANNULAR SEAL		
	TYPE: 1/4" coated bentonite pellets		
	5-gal buckets		
	AMOUNT: 0.5 bucket		
	PLACEMENT: Tremie		
	TOP OF FILTER PACK	31.80	790.50
	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	34.40	787.90
	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	44.40	777.90
	BOTTOM OF WELL	45.40	776.90
	TYPE: 1/4" coated bentonite pellets		
HOLE DIA: 9 inch	between 45.4' and 49.9'	4.5	
		49.90	772.40

SOUT	HERN A	DRILLI	NG L	OG			Hole No.	B-66	
Energy 1	COMPANY o Serve Your World		AL SE	RVICES			Sheet 1 of		
SITE _					HOLE DEPTH		SURFELE		
LOCATI		North of AP-4, near propertly line concrete pile		DINATES	33.8314			.470638	
ANGLE		BEARING	CONTR	ACTOR	SCS	DRI	ILL NO.		
DRILLIN	IG METHOD	HSA NO. SAMPLES						0	
CASING	-	2" LENGTH 10'							
		14.8' BLS ELEV. 798.50' NAVD88							
TYPE G	-	QUANTITY QUANTITY APPRO	M		· DRIL	LING START	11 DATE 11	/16/2016	
DRILLE		William RECORDER ADIAMAM APPRO	Sample	Stan	dard Penetration Test	LING COMP	Z. DATE		
Depth	Elev.	Material Description, Classification and Remarks	No.	From To	Blows	N	Comments	% Rec	RQD
0	813.30								
1	812.30								
2	811.30								
3	810.30								
4	809.30	HYDRO-EXCAVATION							
5	808.30	Hydrovac from land surface to 10-feet below land. No samples							
6	807.30	samples							
7	806.30								
8	805.30								
9	804.30								
10	803.30								
11	802.30								
12	801.30								
13	800.30	OLAVEY OUT							
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		organics absent.							
16	797.30								
17	796.30								
18	795.30	CLAYEY SILT							
19	794.30	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	reo along fracture fraces & reflectionations,							
21	792.30	CLAVEV SILT							
22	791.30	CLAYEY SILT Brownish gray with reddish streaks clayey silt grading to brownsh gray saprolite; 10YR/6/3; moist; FeO bands	S-3	3-4-9	3-4-9	14			
23	790.30	with minor MnO streaks along fracutre traces; distinct	J-J	3 -4- 8	J-4-9	14		90	
24		MnO layer at 25-ft parallel to foliation; fractures increase at 25-ft.							

SOUTHERN COMPANY

DRILLING LOG GEOLOGICAL SERVICES

Hole No. **B-66**Sheet 2 of 2

Plant McDonough 55.5 813.30 SITE TOTAL DEPTH SURF FLEV Standard Penetration Test No. RQD Depth Elev % Red Material Description, Classification and Remarks From To Blows Ν Comments 25 788.30 SILTY SAND 787.30 26 786.30 27 Medium to dark gray silty sand with minor 785.30 28 S-4 4-5-10 15 80 clay; 2.5Y/5/2; few brownish-black weathered minerals; micaceous texture; 784.30 29 MnO bands along fracture & foliations; 783.30 saprolite between 28 and 30 feet. 30 782.30 31 SILTY SAND SAPROLITE 32 781.30 S-5 7-9-16 780.30 Light to dark gray SILTY SAND; 5Y/5/3; 25 90 33 moist to wet saprolite; gravel-size rock frags; weathered feldspars & quartz; increasing 779.30 34 biotite & MnO at 35-feet. 778.30 35 777.30 36 776.30 37 S-6 Gravish brown - brownish-black SILTY SAND 6-8-10 18 90 775.30 with minor clay; 5Y/3/2; fewer rock 38 fragments than above; moist to wet. 774.30 39 773.30 40 772.30 41 771.30 42 SILTY SAPROLITE 43 770.30 Yellowish brown silt with minor clay saprolite; S-7 5-6-9 16 90 2.5Y/6/3; lighter than above; abundant MnO 44 streaks: wet but not saturated. 768.30 45 46 767.30 **SILTY SAND SAPROLITE** 47 766.30 Yellowish to blackish brown SILTY SAND 6-7-17 S-8 24 90 765.30 saprolite; 2.5Y/6/3; minor rock fragments; 48 saturated 764.30 49 50 763.30 51 762.30 761.30 52 SILTY SAND SAPROLITE 760.30 53 Yellowish brown silty sand saprolite; minor S-9 7-8-18 26 90 clay; 2.5/Y/6/3; abundant MnO streaks parallel to relict foliations; saturated. 759.30 54 758.30 55 757.30 END OF BORING; REGOLITH WELL

WELL CONSTRUCTION LOG

Southern Company Generation

WELL CONSTRUCTION LOG	Southern Company Genera	alion	1 \\/
PROJECT: Plant McDonough	DRILLING CO.: SCS, Inc. DRILLER: Wideman		WELL NAME
NE of AP-4 at Argos, nr concrete pile, ~250' NE of DGWC-10 LOCATION:33.831427 / -84.470638	RIG TYPE: CME 550		INAIVIE
LOGGER: Abraham	DRILLING METHODS: HSA		B-66
DATE CONSTRUCTED: 3/7/2016	BRIEDING WETTIODS: TIOA		5 00
5.112 GONGTHOOTES: 6,17,2010		DEPTH	ELEVATION
		FEET	FT, MSL
Locking Hinged Top			
1/4-inch Vent	TOP OF RISER	-1.89	815.19
1/4-inch Weep Hole	2" Threaded Riser Cap		
1.5. 1.5. 11	4		
4-ft x 4-ft x 4" concrete pad		0.00	040.00
	GROUND SURFACE	0.00	813.30
	PROTECTIVE CASING		
	THOTEOTIVE GAOING		
	BOTTOM OF PROTECTIVE CASING		
▼ 798.50'	BACKFILL MATERIAL		
<u> </u>	TYPE: Grout-bentonite mix		
	AMOUNT: 4 x 50 lbs		
	RISER CASING		
	DIA: 2-inch		
	TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
	JOHN HIFE. Flush Hileaded		
	TOP OF SEAL	37.60	775.70
	ANNULAR SEAL		
	TYPE: 1/4-inch coated bentonite pellets		
	5-gal buckets		
	AMOUNT: 0.5 bucket PLACEMENT: Tremie		
	TOP OF FILTER PACK	41.70	771.60
	FILTER PACK		111100
	TYPE: DSI Sand - 1A (20/40)		
	Drillers Services, Inc.		
	AMOUNT: 5 bags		
	PLACEMENT: Tremie; wash with water		
	BOTTOM OF RISER / TOP OF SCREEN	45.00	768.3
	SCREEN	+0.00	7 00.0
	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		
	SLOT LENGTH: 1.5-INCH BOTTOM OF SCREEN	55.00	758.30
	BOTTOWIOF SCREEN	00.00	7 00.00
	BOTTOM OF WELL	55.30	758.00
	_		
HOLE DI	A: 9"		
			<u> </u>

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

RECORD OF BOREHOLE DGWC-67/B-67

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

NORTHING: 1,390,953.80 EASTING: 2,200,830.70 GS ELEVATION: 767.0 TOC ELEVATION: 766.70 ft SHEET 1 of 2 DEPTH W.L.: 9.1 ELEVATION W.L.: 757.9 DATE W.L.: 3/14/17 TIME W.L.: 0850

SOIL PROFILE SAMPLES -:LEVATION (ft) DEPTH (ft) MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES WELL CONSTRUCTION SAMPLE NO ELEV. GRAPHIC LOG N-VALUE **BLOWS** nscs REC DESCRIPTION per 6 in **DETAILS** ᆸ DEPTH 140 lb hammer 30 inch drop (ft) 0 0.00 - 10.00 **WELL CASING** Silt and Clay with some sand and pebbles, brown, highly weathered mica schist, low plastic, cohesive, dry. Mounted -Interval: 0'-46.3' Material: Schedule 40 PVC Casing Diameter: 2"
Joint Type: Flush/Screw 765 WELL SCREEN Interval: 46 3'-56 3' GRAB Material: Schedule 40 PVC S1 5 ML Diameter: 2' 0.50 Slot Size: .010" End Cap: Schedule 40 PVC 760 FILTER PACK Interval: 44.0'-56.7' Type: FilterSil FILTER PACK SEAL Interval: 44.0'-41.8' CETCO 757 S2 puregold grout (70:30) 10 Type: PEL-PLUG 3/8" 0.50 10.00 Bentonite pellets Sandy Silt, sands fine, brown, highly weathered, micaceous, low plastic, **ANNULUS SEAL** cohesive, dry. Interval: 0'-41.8' Type: CETCO puregold 755 ML grout (70:30) 1.50 1.50 WELL COMPLETION S3 SPT 6-7-12 19 Pad: 4'x4' Concrete
Protective Casing: 8" Round 752 15 15.00 - 20.00 15.00 Flush Mount Sandy Silt, sands fine, brown, highly weathered, micaceous, low plastic, **DRILLING METHODS** cohesive, moist. 750 Soil Drill: Hollow-stem auger ML Rock Drill: N/A 1.50 SPI 50 **S4** 9-25-25 747 20 20.00 - 25.00 20.00 Sandy silt, sand f-m, brown to tan, highly weathered, micaceous, low-medium plasticity, cohesive, moist, sample spoon 745 wet. ML 8/24/20 1.16 1.50 S5 SPT 6-10-14 24 742 25 GDT 25.00 - 30.00 Saprolite, Sandy silt, sands fine to coarse, 25.00 PIEDMONT. brown to tan, highly weathered, micaceous, low plastic, cohesive, moist, 740 sample spoon wet. ML .GPJ S6 SPT 13-20-22 42 737 (5) 30 30.00 - 35.00 30.00 SURVEY UPDATED Saprolite, Sandy silt, sands fine to coarse, trace pebbles, reddish brown to tan, highly weathered, micaceous, low plastic, 735 cohesive, moist, sample spoon wet ML SPT 7-10-13 23 S7 35.00 - 40.00 35.00 BACKUP Saprolite, Sandy silt, sands fine to coarse, trace pebbles, reddish brown to tan, highly weathered, micaceous, low plastic 730 cohesive, moist, sample spoon wet. ML MCDONOUGH MASTER LIST 1.33 SPT 7-16-23 S8 39 40.00 - 45.00 40.00 Saprolite, Sandy silt, sands fine to medium, reddish brown to tan, highly PEL-PLUG weathered, micaceous, low plastic 3/8" 725 Bentonite cohesive, moist, sample spoon wet. ML pellets 1.16 1.50 RECORD S9 SP 12-15-18 33 722 Log continued on next page

LOG SCALE: 1 in = 5.5 ft

DRILLING COMPANY: Southern Company Services

DRILLER: S. Milam

GA INSPECTOR: Ben Hodges
CHECKED BY: Timothy Richards, PG



PROJECT: Plant McDonough DRILL RI PROJECT NUMBER: 1668496.18 DATE ST DRILLED DEPTH: 56.00 ft DATE CO

LOCATION: West Toe of AP-1

RECORD OF BOREHOLE DGWC-67/B-67

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

NORTHING: 1,390,953.80 EASTING: 2,200,830.70 GS ELEVATION: 767.0 TOC ELEVATION: 766.70 ft SHEET 2 of 2 DEPTH W.L.: 9.1 ELEVATION W.L.: 757.9 DATE W.L.: 3/14/17 TIME W.L.: 0850

SOIL PROFILE SAMPLES LEVATION (ft) DEPTH (ft) MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES WELL CONSTRUCTION SAMPLE NO GRAPHIC LOG ELEV. N-VALUE **BLOWS USCS** REC DESCRIPTION per 6 in **DETAILS** 핍 DEPTH 140 lb hammer 30 inch drop (ft) 45 45 00 - 50 00 45.00 **WELL CASING** Saprolite, silt and sand, sands fine to coarse, grey to brown, highly weathered, micaceous, low plastic, cohesive, moist, Interval: 0'-46.3' Material: Schedule 40 PVC Diameter: 2"
Joint Type: Flush/Screw 720 sample spoon wet. ML WELL SCREEN S10 50/4 <u>0.33</u> 0.33 50/4 Interval: 46 3'-56 3' Material: Schedule 40 PVC FilterSil -50 Diameter: 2' 50 00 - 55 00 50.00 Slot Size: .010" End Cap: Schedule 40 PVC Saprolite, silt and sand, sands fine to coarse, trace pebbles, grey to dark brown, highly weathered, micaceous, non plastic, 715 FILTER PACK noncohesive, moist, sample spoon wet. PWR Interval: 44.0'-56.7' Type: FilterSil .010" Slotted S S11 0.16 0.16 50/2 50/2 Schedule 40 PVC FILTER PACK SEAL Interval: 44.0'-41.8' Type: PEL-PLUG 3/8" 55 55.00 - 56.00 PWR Bentonite pellets Auger Refusal Boring completed at 56.00 ft **ANNULUS SEAL** Interval: 0'-41.8'
Type: CETCO puregold 710 grout (70:30) WELL COMPLETION Pad: 4'x4' Concrete
Protective Casing: 8" Round 60 Flush Mount **DRILLING METHODS** 705 Soil Drill: Hollow-stem auger Rock Drill: N/A 65 700 8/24/20 PIEDMONT.GDT 695 (5).GPJ SURVEY UPDATED 690 BACKUP 685 MCDONOUGH MASTER LIST 680 RECORD

LOG SCALE: 1 in = 5.5 ft

DRILLING COMPANY: Southern Company Services

DRILLER: S. Milam

GA INSPECTOR: Ben Hodges CHECKED BY: Timothy Richards, PG



RECORD OF BOREHOLE DGWC-68A/B-68A

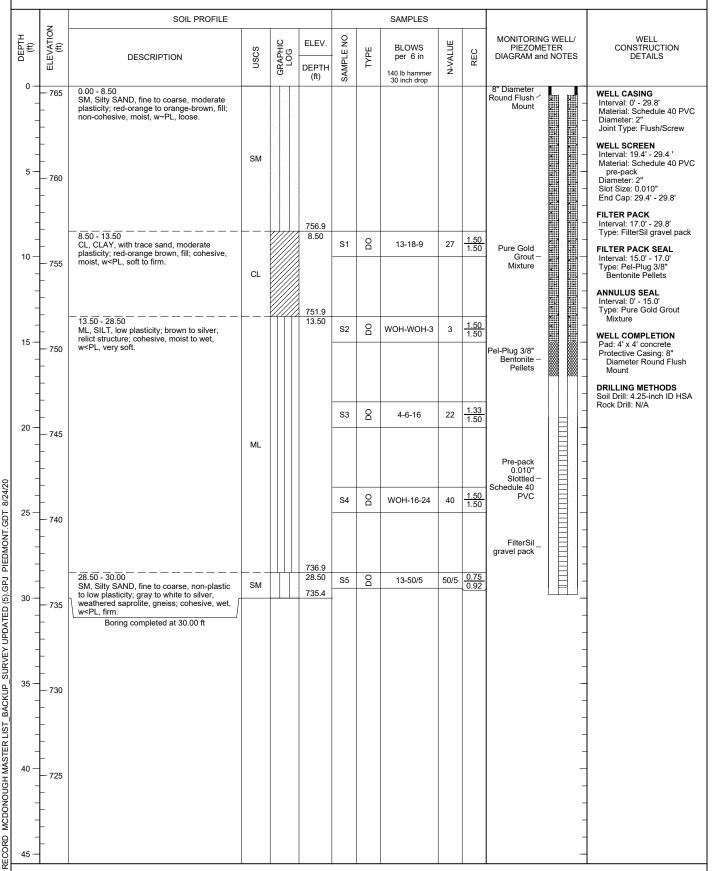
PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 30.00 ft LOCATION: ~15' East of B-68

DRILL RIG: Geoprobe 7822DT DATE STARTED: 4/19/17 DATE COMPLETED: 4/20/17

NORTHING: 1,391,301.20 EASTING: 2,200,734.90

GS ELEVATION: 765.4 TOC ELEVATION: 765.33 ft

SHEET 1 of 1 DEPTH W.L.: 18.8 ELEVATION W.L.: 746.6 DATE W.L.: 4/20/2017 TIME W.L.: 08:48



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

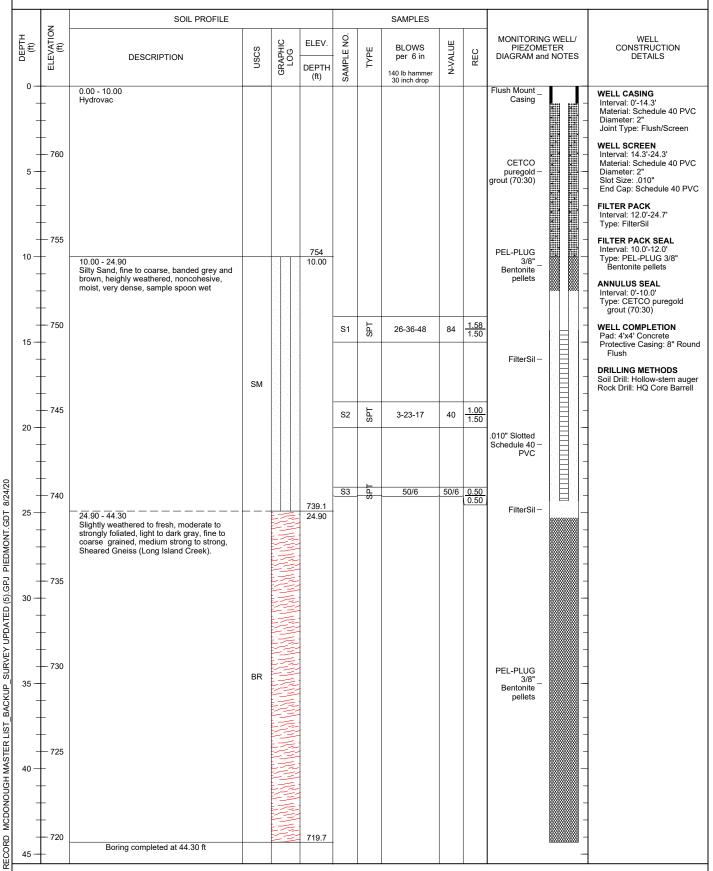


PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 44.30 ft LOCATION: West Toe of AP-1

RECORD OF BOREHOLE DGWC-69/B-69

DRILL RIG: Geoprobe
DATE STARTED: 3/15/17
DATE COMPLETED: 3/16/17

NORTHING: 1,391,585.00 EASTING: 2,200,657.10 GS ELEVATION: 764.0 TOC ELEVATION: 763.75 ft SHEET 1 of 1 DEPTH W.L.: 6.0 ELEVATION W.L.: 758 DATE W.L.: 3/17/17 TIME W.L.: 0840



LOG SCALE: 1 in = 5.5 ft

DRILLING COMPANY: Southern Company Services

DRILLER: Sean Denty

GA INSPECTOR: Ben Hodges
CHECKED BY: Timothy Richards, PG



SHEET 1 of 2

DEPTH W.L.: 42.9 ELEVATION W.L.: 762.9 DATE W.L.: 5/10/2017 TIME W.L.: 10:45

	7	SOIL PROFILE						SAMPLES				
DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	DEPTH (ft)	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 —	805 	0.00 - 5.00 CL-CH, low to high plasticity CLAY with trace fine sand; red orange; cohesive, moist	CL-CH									WELL CASING Interval: 0' - 59.3' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw WELL SCREEN Interval: 48.9' - 58.9'
5 —	_ 800 _	5.00 - 13.50 ML, SILT, trace fine sand, low plasticity; yellowish brown, contians mica; cohesive, moist, w <pl, soft.<="" td=""><td></td><td></td><td>800.8 5.00</td><td></td><td></td><td></td><td></td><td></td><td></td><td>Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 58.9' - 59.3' FILTER PACK Interval: 46.9' - 59.3'</td></pl,>			800.8 5.00							Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 58.9' - 59.3' FILTER PACK Interval: 46.9' - 59.3'
10 — -	- - - 795		ML								Pure Gold Grout — Mixture	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
-	-	13.50 - 28.50 ML, SILT, trace fine to coarse sand, non to			792.3 13.50	S1	00	6-7-7	14	0.83 1.50		Mixture WELL COMPLETION Pad: 4' x 4' concrete
15 — –	— 790 —	low plasticity; yellowish brown to orange brown, iron staining weathered, relict structure (gneissic); cohesive, moist, w <pl, soft.<="" td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Protective Casing: 4" x 4" x 5' Aluminum DRILLING METHODS Soil Drill: 8.25 Hollow-Stem Auger</td></pl,>										Protective Casing: 4" x 4" x 5' Aluminum DRILLING METHODS Soil Drill: 8.25 Hollow-Stem Auger
_	_					S2	8	5-9-13	22	1.50 1.50	Pure Gold	Rock Drill: N/A
20	— 785 —		ML								Grout - 2 2 - Mixture	
- 25 —	- -					S3	00	5-9-10	19	1.50 1.50		-
- -	— 780 —				777.3							-
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.<="" td=""><td></td><td></td><td>28.50</td><td>S4</td><td>DO</td><td>5-8-11</td><td>19</td><td>1.50 1.50</td><td></td><td></td></pl,>			28.50	S4	DO	5-8-11	19	1.50 1.50		
-	-		ML							1.50		- - -
35 —	_ 770					S5 	8	5-11-15	26	1.50 1.50	-	 -
-	- -	38.50 - 53.50 ML, SILT, trace sand, low plasticity;			767.3 38.50	S6	OQ	4-8-10	18	1.50 1.50		-
40 — - -	_ _ 765 _	medium to dark gray, saprollte, highly micaceous; cohesive, moist to wet (increase with depth), w <pl, soft.<="" td=""><td>ML</td><td></td><td></td><td></td><td></td><td></td><td></td><td>1.50</td><td>Pel-Plug 3/8" Pellog 5/8" Pellog 5/8"</td><td>-</td></pl,>	ML							1.50	Pel-Plug 3/8" Pellog 5/8" Pellog 5/8"	-
-	_					S7	00	20-50/4	50/4	0.75 1.50	Pel-Plug 3/8" Bentonite – Pellets	-
45 —		Log continued on next page		[' ' '	1						1	1

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



PROJECT: Plant McDonough DRILL RIG: CME 550 NORTHING: 1,390,481.40 PROJECT NUMBER: 1668496.18 DATE STARTED: 5/10/17 EASTING: 2,200,591.60 DATE COMPLETED: 5/10/17 GS ELEVATION: 805.8 TOC EI EVATION: 909 52 5

SHEET 2 of 2 DEPTH W.L.: 42.9 ELEVATION W.L.: 762.9 DATE W.L.: 5/10/2017 TIME W.L.: 10:45

DESCRIPTION Solution DESCRIPTION Solution DESCRIPTION Solution DESCRIPTION Solution DESCRIPTION Solution DESCRIPTION Solution DESCRIPTION Solution DESCRIPTION Solution DESCRIPTION Solution DESCRIPTION Solution DESCRIPTION Solution DESCRIPTION Solution DESCRIPTION DESCRIPT			SOIL PROFILE						SAMPLES					
No. 1.5		ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	DEPTH	SAMPLE NO.	TYPE	per 6 in	N-VALUE	REC	PIEZOME	TER	WELL CONSTRUCTION DETAILS
ML	45	760 	ML, SILT, trace sand, low plasticity; medium to dark gray, saprolite, highly micaceous; cohesive, moist to wet (increase with depth), w <pl, soft.<="" td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>-</td><td>Interval: 0' - 59.3' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw</td></pl,>										-	Interval: 0' - 59.3' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw
T52.3 Type: Filter Sil Grav Type: Pure Gold G Type: Filter Gold Grave Type: Pure Gold G Type: Ty	50 —	 _ 755		ML			S8	00	50/4	50/4	0.00 1.50			Interval: 48.9' - 58.9' Material: Schedule 40 PVC Diameter: 2"
Boring completed at 60.00 ft Boring completed at 60.00 ft Protective Casing: 5' Aluminum DRILLING METHO Soil Drill: 8.25 Hollo Auger Rock Drill: N/A	-	-			D V d ∆						0.25			Interval: 46.9' - 59.3' Type: FilterSil Gravel Pack
Boring completed at 60.00 ft Boring completed at 60.00 ft Protective Casing: 5' Aluminum DRILLING METHO Soil Drill: 8.25 Hollo Auger Rock Drill: N/A	55 — -	_ _ 750	SM, Silty SAND, fine grained, low plasticity; dark gray, contians mica; non-cohesive, moist, w <pl, dense.<="" td=""><td>PWR</td><td></td><td>V V V</td><td>S9</td><td>ă</td><td>50/3</td><td>50/3</td><td>1.50</td><td>Slotted _ Schedule 40</td><td></td><td>Interval: 43.4' -46.9' Type: Pel-Plug 3/8" Bentonite Pellets ANNULUS SEAL</td></pl,>	PWR		V V V	S9	ă	50/3	50/3	1.50	Slotted _ Schedule 40		Interval: 43.4' -46.9' Type: Pel-Plug 3/8" Bentonite Pellets ANNULUS SEAL
Boring completed at 60.00 ft Protective Casing: 5' Aluminum DRILLING METHO Soil Drill: 8.25 Hollo Auger Rock Drill: N/A	-	-			4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4		S10	00	50/2	50/2	0.17 1.50			Type: Pure Gold Grout Mixture WELL COMPLETION
65 — 740 —	60 —		Boring completed at 60.00 ft		DA Ď. Ā	745.8							 - -	Protective Casing: 4" x 4" x 5' Aluminum DRILLING METHODS Soil Drill: 8.25 Hollow-Stem
	65 —	<u>-</u>											- - -	Auger Rock Drill: N/A
70 — — — — — — — — — — — — — — — — — — —	-	_— 740 _—											-	
	70 — -	- - - 735											- - -	
	- - 75 —												- - -	
80 — — — — — — — — — — — — — — — — — — —	- -	- - -											-	
, , , , , , , , , , , , , , , , , , , ,	80 —	725 											-	
85 — 720 — 720 — — 720 — — — — — — — — — — — — — — — — — — —	85 —	_ _ _ _ 720											- -	
	-	- - -											- - -	

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

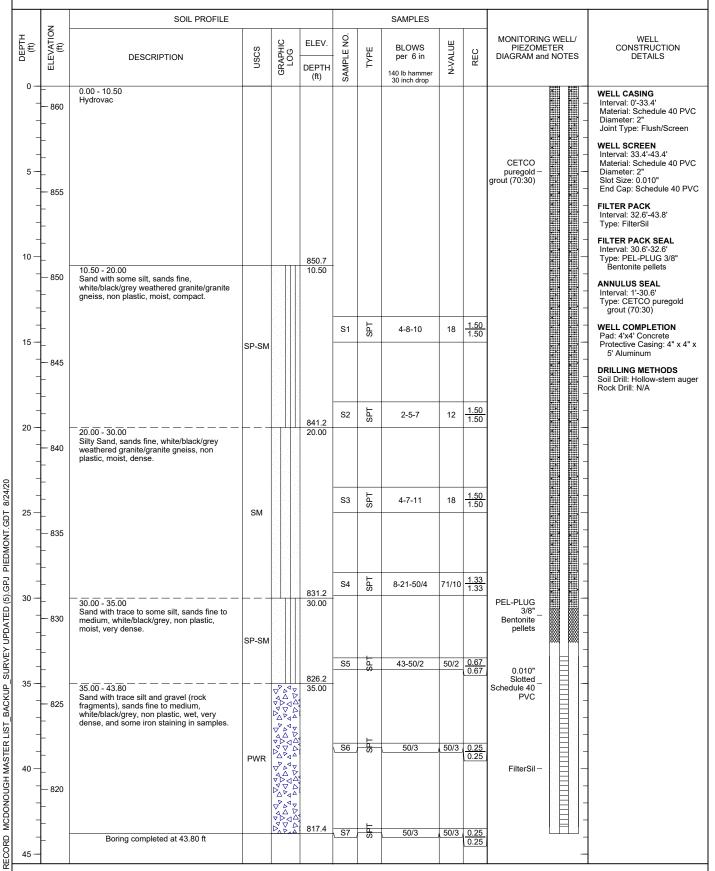


RECORD OF BOREHOLE DGWA-71/B-71

PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 43.80 ft DRILL RIG: CME 550 DATE STARTED: 2/28/17 DATE COMPLETED: 2/28/17

LOCATION: NW corner of site, inside cell tower gate.

NORTHING: 1,393,963.30 EASTING: 2,201,714.80 GS ELEVATION: 861.2 TOC ELEVATION: 863.84 ft SHEET 1 of 1 DEPTH W.L.: 27.1 ELEVATION W.L.: 834.1 DATE W.L.: 2/28/17 TIME W.L.: 1245



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



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: 1,391,242.15 EASTING: 220,723.92 GS ELEVATION: 758.09 TOC ELEVATION: 758.85 ft SHEET 1 of 1 DEPTH W.L.:2.90 DATE W.L.:5/2/2017 TIME W.L.:09:00

	_	SOIL PROFILE						SAMPLES				
DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	nscs	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	WELL CONSTRUCTION DETAILS
0	- - - - 755	0.00 - 5.00 ML, SILT, with trace fine sand and gravels (rock fragments), low plasticity; brown; cohesive, moist, w <pl, soft.<="" td=""><td>ML</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>8" Diameter Round Flush / Mount Pure Gold _ Grout Mixture Pel-Plug 3/8" Bentonite — Pellets</td><td>WELL CASING Interval: 0' - 21.9' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw SURFACE CASING Interval: Material: Diameter:</td></pl,>	ML								8" Diameter Round Flush / Mount Pure Gold _ Grout Mixture Pel-Plug 3/8" Bentonite — Pellets	WELL CASING Interval: 0' - 21.9' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw SURFACE CASING Interval: Material: Diameter:
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, soft.<="" td="" very=""><td></td><td></td><td>753.09 5.00</td><td></td><td></td><td></td><td></td><td></td><td>Pure Gold _ Grout Mixture _</td><td>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'</td></pl,>			753.09 5.00						Pure Gold _ Grout Mixture _	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'
10 —	-		SP-SM								Bentonite – Pellets	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
-	- 745 -	13.50 - 18.50 SM, Silty SAND with trace fine gravels, non-plastic to low plasticity; dark brown to			744.59 13.50	S1	00	25-50/3	50/3	<u>0.75</u> 1.50	FilterSilgravel pack	Pellets - ANNULUS SEAL Interval: 0' - 7.7' - Type: Pure Gold Grout Mixture
15 -	- - -	dark gray, highly micaceous; non-cohesive, dry to moist, w <pl, compact.<="" td=""><td>SM</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Pre-pack 0.010"</td><td>WELL COMPLETION Pad: 4' x 4' concrete Protective Casing: 8" Diameter Round Flush Mount</td></pl,>	SM								Pre-pack 0.010"	WELL COMPLETION Pad: 4' x 4' concrete Protective Casing: 8" Diameter Round Flush Mount
20 —	740 - - -	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, firm.<="" soft="" td="" to=""><td>ML</td><td></td><td>739.59 18.50 736.59</td><td>S2</td><td>8</td><td>17-34-8</td><td>42</td><td>1.50 1.50</td><td>Slotted - Schedule PVC</td><td>DRILLING METHODS Soil Drill: 4.25-inch ID HSA Rock Drill: N/A NOTES</td></pl,>	ML		739.59 18.50 736.59	S2	8	17-34-8	42	1.50 1.50	Slotted - Schedule PVC	DRILLING METHODS Soil Drill: 4.25-inch ID HSA Rock Drill: N/A NOTES
-,	- 735 -	Boring completed at 21.90 ft			21.50							- - -
25 —	- -											-
30 —	730 											- - - -
-	- 725 -											- - -
35 —	- - -											-
40 —	— 720 –											_

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



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

RECORD OF BOREHOLE B-73

G: Geoprobe 7822DT
ARTED: 4/19/17

MPLETED: 4/19/17

MPLETED: 4/19/17

MPLETED: 4/19/17

MPLETED: 4/19/17

MPLETED: 4/19/17

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MPLETED: 4/19/17

MPLETED: 4/19/17

MPLETED: 4/19/17

SHEET 1 of 1 DEPTH W.L.:4.11 DATE W.L.:4/26/2017 TIME W.L.:12:00

	z	SOIL PROFILE						SAMPLES				
(tt)	ELEVATION (ft)	DESCRIPTION	SOSO	GRAPHIC LOG	DEPTH (ft)	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 —	- - - 755	0.00 - 8.50 SP-SM, Poorly-graded SAND with Silt, non-plastic; red-orange brown; non-chesive, dry to moist, w <pl, loose.<="" td=""><td>SP-SM</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>8" Diameter Round Flush Mount Pure Gold Grout Mixture Pel-Plug 3/8" Bentonite — Pellets</td><td>WELL CASING Interval: 0' - 15, 8' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw SURFACE CASING Interval: Material: Diameter:</td></pl,>	SP-SM								8" Diameter Round Flush Mount Pure Gold Grout Mixture Pel-Plug 3/8" Bentonite — Pellets	WELL CASING Interval: 0' - 15, 8' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw SURFACE CASING Interval: Material: Diameter:
5 —	- -				750.05							WELL SCREEN Interval: 5.4' -15.4' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 15.4' -15.8'
_	 750	8.50 - 9.50 CL, CLAY, with some silt, low plasticity; red brown; cohesive, moist, w <pl, soft.<="" td=""><td>CL</td><td></td><td>750.35 8.50 749.35 9.50</td><td>S1</td><td>00</td><td>1-8-15</td><td>23</td><td>1.50 1.50</td><td>Pre-pack</td><td>FILTER PACK Interval: 3.2' - 15.8' Type: FilterSil</td></pl,>	CL		750.35 8.50 749.35 9.50	S1	00	1-8-15	23	1.50 1.50	Pre-pack	FILTER PACK Interval: 3.2' - 15.8' Type: FilterSil
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="" dense.<="" td="" to=""><td></td><td></td><td>9.50</td><td></td><td></td><td></td><td></td><td></td><td>Slotted</td><td>FILTER PACK SEAL Interval: 0.5' - 3.2' Type: Pel-Plug 3/8" Bentor Pellets</td></pl,>			9.50						Slotted	FILTER PACK SEAL Interval: 0.5' - 3.2' Type: Pel-Plug 3/8" Bentor Pellets
-	- 745		SP-SM							4.50	FilterSil	ANNULUS SEAL Interval: 0 -0.5' Type: Pure Gold Grout Mixture
15 —	-				743.35	S2	00	12-29-35	64	1.50 1.50	gravel pack	WELL COMPLETION Pad: 4' x 4' concrete
-	-	Boring completed at 15.80 ft			15.50							Protective Casing: 8" Diameter Round Flush Mount
-	- 740										-	DRILLING METHODS Soil Drill: 4.25-inch ID HSA Rock Drill: N/A
20 —	- 740 -										-	NOTES
-	-										-	
_	- 735										-	
25 —	-										_	
-	-										-	
_	- 730										-	
30 —	-										_	
-	-										-	
_	- 725										-	
s5 —	_										_	
-											-	
_	- 720										-	
	L _											

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



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: 1,391,279.82 EASTING: 2,200,665.34 GS ELEVATION: 758.96 TOC ELEVATION: 759.44 ft SHEET 1 of 1 DEPTH W.L.:3.3' DATE W.L.:4/25/2017 TIME W.L.:09:37

	NO.	SOIL PROFILE		Ι				SAMPLES				
(#)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	DEPTH (ft)	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 -	-	0.00 - 4.00 CL, CLAY, with some silt, low plasticity; red brown, fill; cohesive, moist, w <pl, soft.<="" td=""><td>CL</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>8" Diameter Round Flush – Mount Pure Gold _ Grout Mixture</td><td>WELL CASING Interval: 0' - 16.2 Material: Schedule 40 PV0 Diameter: 2" Joint Type: Flush/Screw</td></pl,>	CL								8" Diameter Round Flush – Mount Pure Gold _ Grout Mixture	WELL CASING Interval: 0' - 16.2 Material: Schedule 40 PV0 Diameter: 2" Joint Type: Flush/Screw
- - -	- 755 -	4.00 - 13.50 SP-SM, Poorly-graded SAND with Silt and			754.96 4.00						Pure Gold _ Grout Mixture	SURFACE CASING Interval: Material: Diameter:
5	-	trace gravel , fine to coarse, non-plastic; white to tan, deeply weathered, granitic; non-cohesive, moist, w <pl, loose="" soft.<="" td=""><td></td><td></td><td></td><td></td><td></td><td></td><td rowspan="2">38 <u>0</u></td><td></td><td>8" Diameter Round Flush — Mount Pure Gold Grout Mixture Pel-Plug 3/8" Bentonite — Pellets</td><td>WELL SCREEN Interval: 10.8' - 15.8' Material: Pre-pack Sched 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 15.8' - 16.2'</td></pl,>							38 <u>0</u>		8" Diameter Round Flush — Mount Pure Gold Grout Mixture Pel-Plug 3/8" Bentonite — Pellets	WELL SCREEN Interval: 10.8' - 15.8' Material: Pre-pack Sched 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 15.8' - 16.2'
0 —	- 750 -		SP-SM			S1	8	3-18-20		<u>0.75</u> 1.50	d 1 - 1 - 1 - 1	FILTER PACK Interval: 9.0' - 16.5' Type: FilterSil gravel pack
~ - -	-										gravel pack	FILTER PACK SEAL Interval: 4.8' - 9.0' Type: Pel-Plug 3/8" Bento Pellets
-	- 745	13.50 - 16.50 SM, Silty SAND, non-plastic; white to light gray; non-cohesive, dry to moist, w <pl,< td=""><td></td><td></td><td>745.46 13.50</td><td>S2</td><td>8</td><td>50/3</td><td>50/3</td><td>0.25 1.50</td><td>Pre-pack 0.010" Slottled – Schedule 40</td><td>ANNULUS SEAL Interval: 0' - 4.8' Type: Pure Gold Grout Mixture</td></pl,<>			745.46 13.50	S2	8	50/3	50/3	0.25 1.50	Pre-pack 0.010" Slottled – Schedule 40	ANNULUS SEAL Interval: 0' - 4.8' Type: Pure Gold Grout Mixture
5 -	-	dense.	SM		742.46						PVC	WELL COMPLETION Pad: 4' x 4' concrete Protective Casing: 8" Diameter Round Flush
-	-	Boring completed at 16.50 ft										Mount DRILLING METHODS Soil Drill: 4.25-inch ID HS/
0 -	740 											Rock Drill: N/A NOTES N/A
	-										-	-
-	- - 735											-
5 –	-										-	-
	-											_
- - -	- 730 -											
	-											
-	- 725											
5 -	-										-	
-	-											_

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



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 35.00 ft

DRILL RIG: Rotosonic 1159 DATE STARTED: 9/20/19 DATE COMPLETED: 9/21/19 LOCATION: South of road on north side of plant property

NORTHING: 1,394,458.60 EASTING: 2,203,223.00 GS ELEVATION: 785.9 TOC ELEVATION: 788.66 ft

SHEET 1 of 1 DEPTH W.L.: 5.92 ELEVATION W.L.: 779.98 DATE W.L.: 1/13/2020 TIME W.L.: 14:26

SOIL PROFILE SAMPLES ELEVATION (ft) DEPTH (ft) MONITORING WELL/ PIEZOMETER WELL CONSTRUCTION 9 ELEV. GRAPHIC LOG nscs TYPE SAMPLE REC DIAGRAM and NOTES DESCRIPTION **DETAILS** DEPTH (ft) Concrete 0.00 - 9.20 0 0.00 0.77 WELL CASING Surface Hydrovac 785 Interval: 0.0 - 29.43 ' Material: Schedule 40 PVC Completion Diameter: 2" Joint Type: Flush/Screw WELL SCREEN Interval: 24 93-34 43 Material: 24.93-34.43 Material: Schedule 40 PVC Schedule 40 PVC Diameter: 2" ID 4 " OD Slot Size: 0.010 NA 5 780 End Cap: Schedule 40 PVC Baroid 3/8 " FILTER PACK Interval: 22.0 - 35.0' Type: 20/40 FilterSil Bentonite Chips (Holeplug) 776.7 9.20 - 13.70 9.20 FILTER PACK SEAL (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 Interval: 14.0 - 22.0'
Type: Pel-Plug 3/8" Bentonite
Pellets 10 775 ML ANNULUS SEAL Interval: 0.4 - 14.0 ' Type: Baroid 3/8" Bentonite Chips (Holeplug) 772.2 ROTO SONIC 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 13.70 <u>0.77</u> 10.80 WELL COMPLETION 15 Protective Casing: 4" 770 Stainless Steel DRILLING METHODS Pel-Plug 3/8" Soil Drill: Sonic Rock Drill: Sonic Bentonite -Pellets ~175 gallons of water used while drilling SON 20 0.42 0.90 2 ROTO 8 765 SM 20/40 FilterSil 9/2/20 SONIC PIEDMONT.GDT 0.42 ROTO - 760 2"ID, 4"OD 0.010 Slot SONIC SCH 40 PVC U-Pack GPJ 755.9 (5) 30 Screen 30.00 0.38 ROTO (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 SURVEY UPDATED 755 brown (10YR 4/2) layers, PWB; non-cohesive, moist, compact SM PVC Cap -Backfill < 750.9 Boring completed at 35.00 ft BACKUP 750 MCDONOUGH MASTER LIST 745

LOG SCALE: 1 in = 5.5 ft

DRILLING COMPANY: Cascade Drilling

DRILLER: Jose

GA INSPECTOR: Jeff Ingram CHECKED BY: Timothy Richards, PG



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 50.00 ft LOCATION: South by river, NW of B-76

RECORD OF BOREHOLE B-83

DRILL RIG: CME550X
DATE STARTED: 9/30/19
DATE COMPLETED: 9/30/09

DATE COMPLETED: 9/30/09

DATE COMPLETED: 9/30/09

DATE COMPLETED: 9/30/09

SHEET 1 of 2 DEPTH W.L.: 28.75 ELEVATION W.L.: 748.35 DATE W.L.: 1/13/2020 TIME W.L.: 14:52

		SOIL PROFILE						SAMPLES				
ı	Z ⊙	SOIL FROFILE				o		SAWFLES			MONITORING WELL/	WELL
DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV.	LEN	TYPE	BLOWS per 6 in	N-VALUE	REC	PIEZOMETER DIAGRAM and NOTES	CONSTRUCTION DETAILS
		DESCRIPTION	Sn Sn	GRA	DEPTH (ft)	SAMPLE NO.	}	140 lb hammer	\ \ \ \	₩.		
0 -	+	0.00 - 15.00 Hydrovac to 15' for utilities			(,	0)		30 inch drop			AquaGuard	WELL CASING Interval: 0'-38.6'
	775	.,,=									Bentonite – – – – – Grout – –	Material: 0-36.6 Material: Schedule 40 PVC Diameter: 2"
-	ļ '''										50 00 10 00 00 00 00 00 00 00 00 00 00 00	Joint Type: Flush/Screw
-	+											WELL SCREEN Interval: 38.6'-48.6' Material: Schedule 40 PVC
5 -	†										0000 process p	Diameter: 2" Slot Size: 0.010"
	770										9000 100000 1000000	End Cap: Schedule 40 PVC FILTER PACK
-	Ţ′′°										0000 0000 0000 0000 0000 0000 0000 0000 0000	Interval: 36.6'-50' Type: Filter Media
-	+											FILTER PACK SEAL Interval: 30.7'-36.6'
10 -	+											Type: PEL-PLUG 3/8"
	705										5000 5000 5000 5000 5000 5000 5000 500	ANNULUS SEAL Interval: 0'-30.7'
	765										6555 15555 15555 15555 15555 15555 15555 15555 15555 15555 15555 15555 15555 15555 15555 15555 15555 15555 1555	Type: AquaGuard Bentonite Grout
-	+										AquaGuard Bentonite — Grout	WELL COMPLETION Pad: 2' x 2' concrete
15 -	†	15.00 - 19.00 ML, Gravelly SILT with some sand,	<u> </u>		762.1 15.00							Protective Casing: 8" Round Ground Flush
	760	brown-black, cohesive, W <pl, dry,="" soft<="" td=""><td>ML</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>0000 0000 0000 0000 0000 0000 0000 0000 0000</td><td>DRILLING METHODS Soil Drill: 4.25-inch ID</td></pl,>	ML								0000 0000 0000 0000 0000 0000 0000 0000 0000	DRILLING METHODS Soil Drill: 4.25-inch ID
-			"""									Hollow-Stem Auger Rock Drill: N/A
-	+	<u> </u>	ML		758.1 19.00	S1	SS	6-4-4	8	1.25 1.50	0000 0000	
20 -	†	ML, SILT, micaceous, brown, W <pl, moist,="" soft<="" td="" very=""><td> </td><td></td><td>757.1 20.00</td><td></td><td></td><td></td><td></td><td>1.00</td><td></td><td></td></pl,>	 		757.1 20.00					1.00		
	755	20.00 - 33.50 ML, SILT, brown, moist, W-PL, firm to stiff									0000 0000	
0 -	_ /33 										0000 100000 1000000	
8/24/2	+					S2	SS	2-1-3	4	1.50 1.50		
25 -	†									1.00		
. TOOL	750		ML								0000 0000 0000 0000 0000 0000 0000 0000 0000	
- PEDM	F 750										0000 0000	
GPJ -	+					S3	SS	1-1-2	3	1.50 1.50	1000 1000 1000 1000 1000 1000 1000 100	
(g) (Q)	†									1.00		
DATE	745										_	
- P	F 743				743.6						PEL-PLUG 3/8" _ Bentonite	
RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (6).GPJ PIEDMONT.GDT 8/24/20 CS C C C C C C C C C C C C C C C C C C	+	33.50 - 38.50 CL, silty CLAY, micaceous, dark			33.50	S4	SS	1-1-2	3	1.50 1.50	PEL-PLUG 3/8" Bentonite Pellets -	
35 -	†	brown-tan, cohesive, moist, W>PL, very soft to soft	6.							1.50		
BACI	740		CL								#2 FilterSil –	
LIST	'40 -				738.6							
STER	+	38.50 - 43.50 CL, silty CLAY, brown with black and red,			38.50	S5	SS	3-3-4	7	1.50 1.50		
¥ 40 −	†	W>PL, very soft to soft	6.								0.010" -	
NOUG	735		CL									
- ACDO	ļ '33				733.6							
A DA	+	43.50 - 49.00 CL, silty CLAY, brown with orange, moist	CL-ML		43.50	S6	SS	WOH-4-8	12	1.50 1.50	0.010"	
S 45 -	_	to wet, W <pl, continued="" firm="" log="" next="" on="" page<="" soft="" td="" to="" very=""><td></td><td>mm</td><td>1</td><td></td><td></td><td></td><td></td><td>1.00</td><td>Slotted </td><td></td></pl,>		mm	1					1.00	Slotted	

LOG SCALE: 1 in = 5.5 ft

DRILLING COMPANY: Southern Company Services

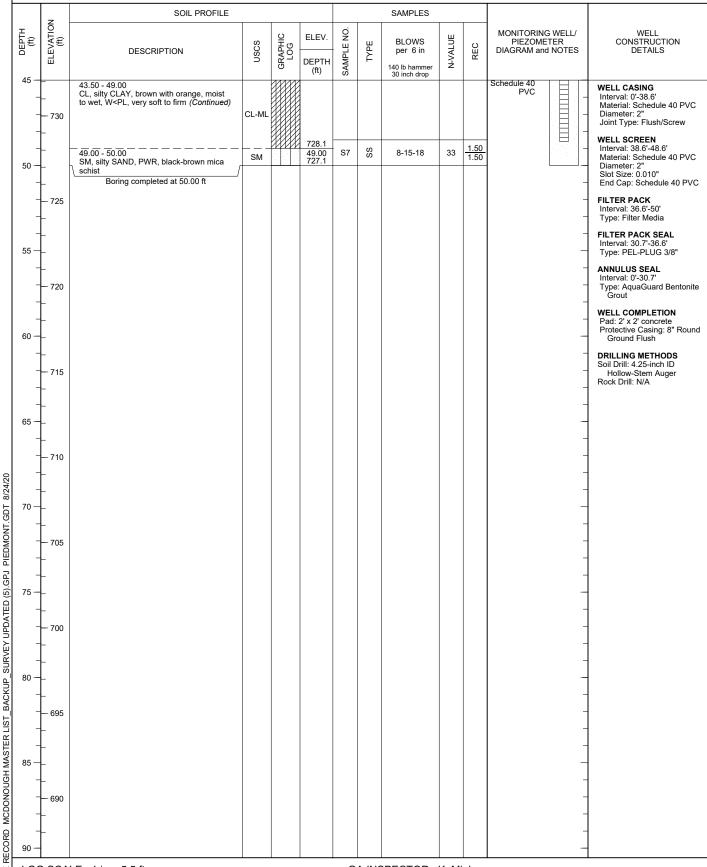
DRILLER: S. Milam

GA INSPECTOR: K. Minkara CHECKED BY: Timothy Richards, PG



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 50.00 ft LOCATION: South by river, NW of B-76

DRILL RIG: CME550X DATE STARTED: 9/30/19 DATE COMPLETED: 9/30/09 NORTHING: 1,390,735.50 EASTING: 2,202,695.60 GS ELEVATION: 777.1 TOC ELEVATION: 776.98 ft SHEET 2 of 2 DEPTH W.L.: 28.75 ELEVATION W.L.: 748.35 DATE W.L.: 1/13/2020 TIME W.L.: 14:52



LOG SCALE: 1 in = 5.5 ft

DRILLING COMPANY: Southern Company Services

DRILLER: S. Milam

GA INSPECTOR: K. Minkara
CHECKED BY: Timothy Richards, PG



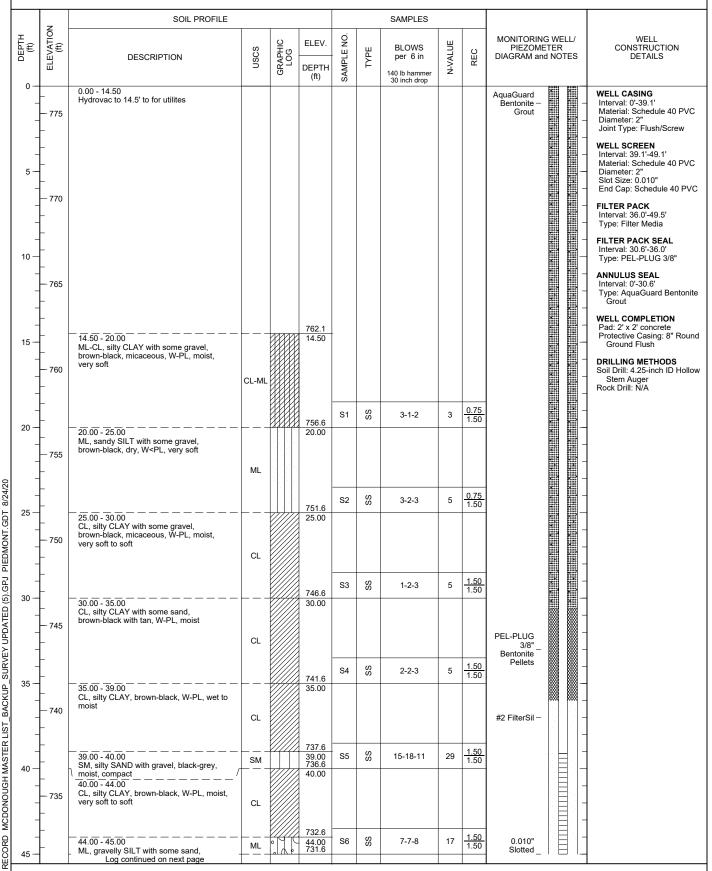
PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 50.00 ft

DRILL RIG: CME550X DATE STARTED: 10/1/19 DATE COMPLETED: 10/1/19

LOCATION: NE of security gate, along road

NORTHING: 1,390,411.90 EASTING: 2,202,241.90 GS ELEVATION: 776.6 TOC ELEVATION: 776.34 ft

SHEET 1 of 2 DEPTH W.L.: 30.12 ELEVATION W.L.: 746.48 DATE W.L.: 1/14/2020 TIME W.L.: 12:32



LOG SCALE: 1 in = 5.5 ft

DRILLING COMPANY: Southern Company Services

DRILLER: S. Milam

GA INSPECTOR: K. Minkara

CHECKED BY: Timothy Richards, PG



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 50.00 ft

DRILL RIG: CME550X DATE STARTED: 10/1/19 DATE COMPLETED: 10/1/19

LOCATION: NE of security gate, along road

NORTHING: 1,390,411.90 EASTING: 2,202,241.90 GS ELEVATION: 776.6 TOC ELEVATION: 776.34 ft SHEET 2 of 2 DEPTH W.L.: 30.12 ELEVATION W.L.: 746.48 DATE W.L.: 1/14/2020 TIME W.L.: 12:32

SOIL PROFILE SAMPLES ELEVATION (ft) DEPTH (ft) MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES WELL CONSTRUCTION SAMPLE NO GRAPHIC LOG ELEV. N-VALUE **BLOWS** nscs REC DESCRIPTION per 6 in **DETAILS** DEPTH 140 lb hammer 30 inch drop (ft) 45 Schedule 40 45.00 brown-black, micaceous, PWR, moist WELL CASING PVC 45.00 - 50.00 ML, sandy SILT with gravel, brown-black, PWR, W<PL, wet to moist, PWR, very Interval: 0'-39.1' Material: Schedule 40 PVC 730 Diameter: 2" Joint Type: Flush/Screw ML WELL SCREEN 1.50 1.50 Interval: 39.1'-49.1' SS S7 25-33-24 57 Material: Schedule 40 PVC 726.6 50 Diameter: 2' Boring completed at 50.00 ft Slot Size: 0.010" End Cap: Schedule 40 PVC 725 FILTER PACK Interval: 36.0'-49.5' Type: Filter Media FILTER PACK SEAL Interval: 30.6'-36.0' 55 Type: PEL-PLUG 3/8" **ANNULUS SEAL** 720 Interval: 0'-30.6' Type: AquaGuard Bentonite Grout WELL COMPLETION Pad: 2' x 2' concrete Protective Casing: 8" Round Ground Flush 60 DRILLING METHODS Soil Drill: 4.25-inch ID Hollow Stem Auger Rock Drill: N/A 715 65 710 8/24/20 PIEDMONT.GDT 705 SURVEY UPDATED (5).GPJ 700 BACKUP 695 MCDONOUGH MASTER LIST 690 RECORD

LOG SCALE: 1 in = 5.5 ft

DRILLING COMPANY: Southern Company Services

DRILLER: S. Milam

GA INSPECTOR: K. Minkara CHECKED BY: Timothy Richards, PG



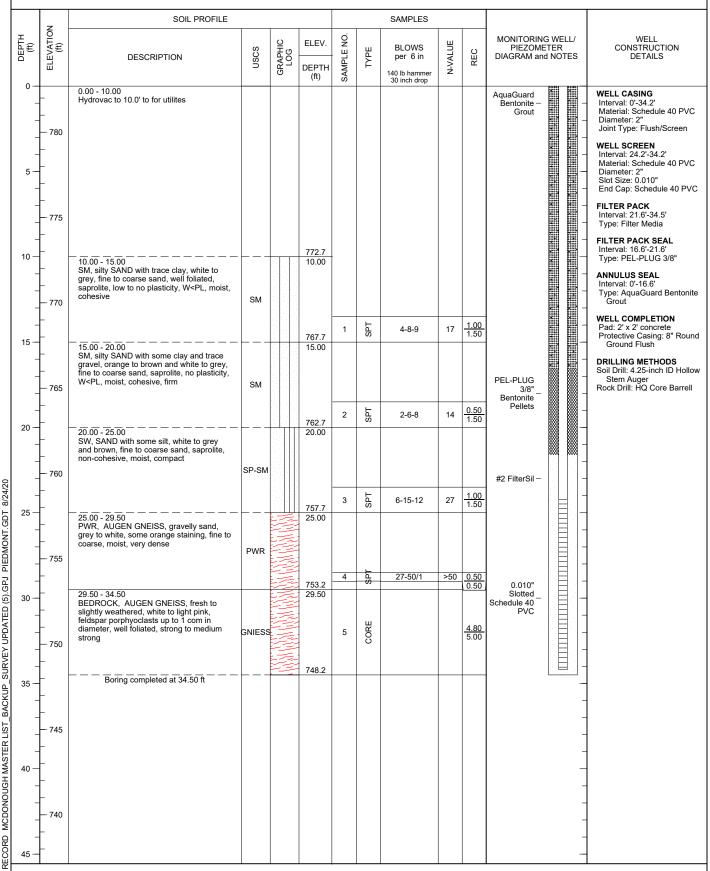
PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 34.50 ft

DRILL RIG: CME 550 DATE STARTED: 11/17/19

DATE COMPLETED: 11/18/19 LOCATION: North of site, adjacent to B-54

NORTHING: 1,394,433.40 EASTING: 2,203,134.50 GS ELEVATION: 782.7 TOC ELEVATION: 782.54 ft

SHEET 1 of 1 DEPTH W.L.: 2.27 ELEVATION W.L.: 780.43 DATE W.L.: 1/13/2020 TIME W.L.: 14:16



LOG SCALE: 1 in = 5.5 ft

DRILLING COMPANY: Southern Company Services

DRILLER: S. Milam

GA INSPECTOR: W.Ballow

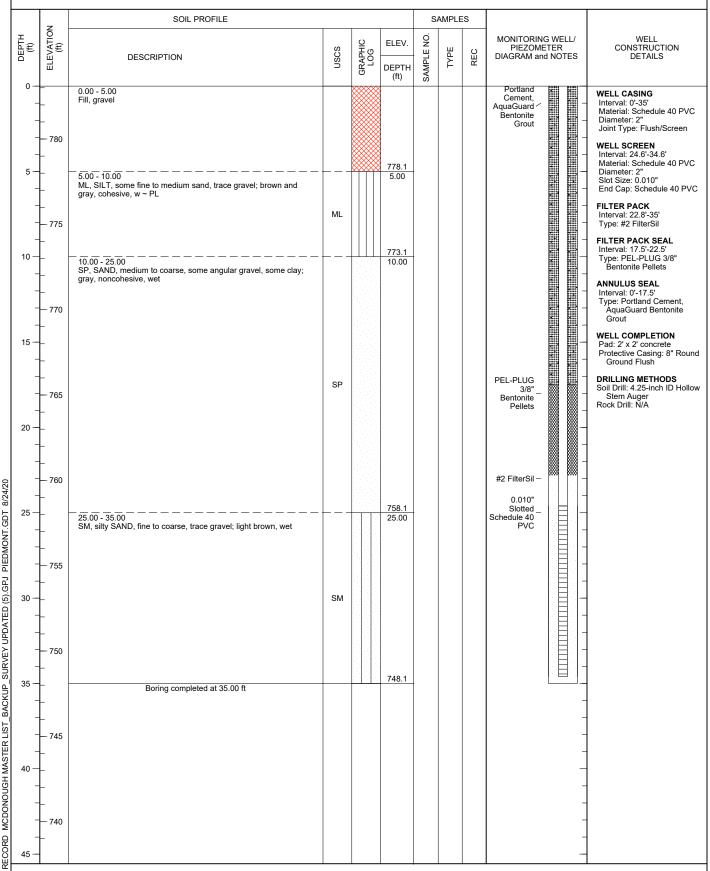
CHECKED BY: Timothy Richards, PG



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 35.00 ft DRILL RIG: CME 550 DATE STARTED: 12/11/19 DATE COMPLETED: 12/11/19

DRILLED DEPTH: 35.00 ft DATE COMPLETED: 12/11/2
LOCATION: North of site along Plant Atkinson Road

NORTHING: 1,394,447.10 EASTING: 2,203,123.90 GS ELEVATION: 783.1 TOC ELEVATION: 782.98 ft SHEET 1 of 1 DEPTH W.L.: 2.90 ELEVATION W.L.: 780.2 DATE W.L.: 1/14/2020 TIME W.L.: 12:34



LOG SCALE: 1 in = 5.5 ft

DRILLING COMPANY: Southern Company Services

DRILLER: S. Milam

GA INSPECTOR: W.Ballow

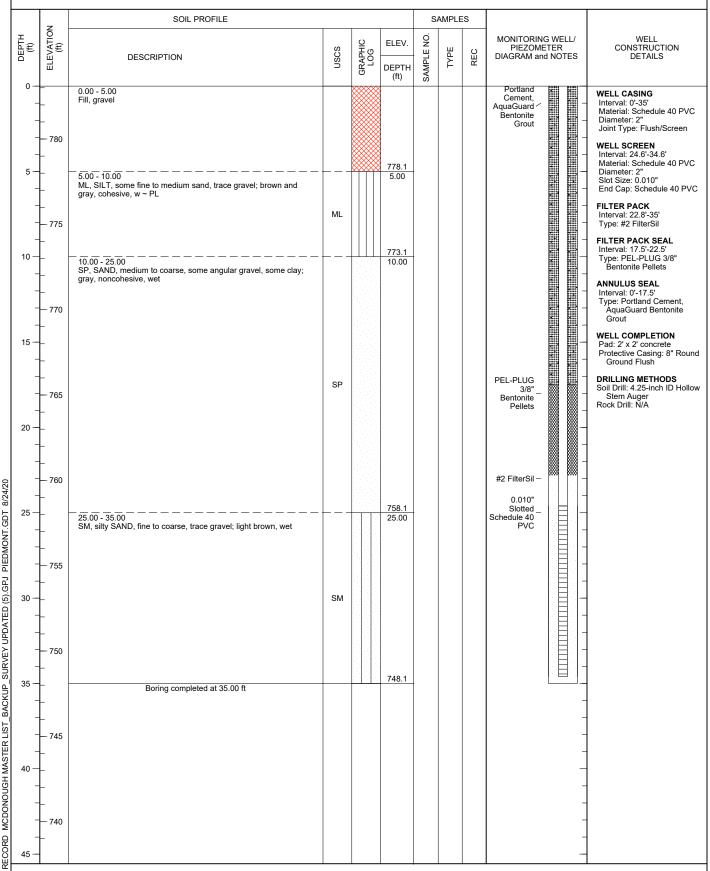
CHECKED BY: Timothy Richards, PG



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 35.00 ft DRILL RIG: CME 550 DATE STARTED: 12/11/19 DATE COMPLETED: 12/11/19

DRILLED DEPTH: 35.00 ft DATE COMPLETED: 12/11/2
LOCATION: North of site along Plant Atkinson Road

NORTHING: 1,394,447.10 EASTING: 2,203,123.90 GS ELEVATION: 783.1 TOC ELEVATION: 782.98 ft SHEET 1 of 1 DEPTH W.L.: 2.90 ELEVATION W.L.: 780.2 DATE W.L.: 1/14/2020 TIME W.L.: 12:34



LOG SCALE: 1 in = 5.5 ft

DRILLING COMPANY: Southern Company Services

DRILLER: S. Milam

GA INSPECTOR: W.Ballow

CHECKED BY: Timothy Richards, PG



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 25.00 ft DRILL RIG: CME 550
DATE STARTED: 12/11/19
DATE COMPLETED: 12/11/19

LOCATION: North of site along Plant Atkinson Road

NORTHING: 1,394,392.70 EASTING: 2,203,026.70 GS ELEVATION: 785.3 TOC ELEVATION: 785.08 ft SHEET 1 of 1 DEPTH W.L.: 3.88 ELEVATION W.L.: 781.42 DATE W.L.: 1/14/2020 TIME W.L.: 12:36

SOIL PROFILE SAMPLES ELEVATION (ft) DEPTH (ft) MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES WELL CONSTRUCTION SAMPLE NO GRAPHIC LOG ELEV. nscs REC DESCRIPTION **DETAILS** DEPTH (ft) 0.00 - 2.00 - 785 WELL CASING AquaGuard Bentonite SP, gravelly SAND, medium to coarse; brown, non-cohesive, SP Interval: 0'-25' Material: Schedule 40 PVC Grout 783.3 Diameter: 2" Joint Type: Flush/Screen 2.00 - 10.00 2.00 CL-ML, silty CLAY, some sand, trace gravel; brown and gray, cohesive, w \sim PL WELL SCREEN Interval: 14.6'-24.6' Material: Schedule 40 PVC 5 Diameter: 2" 780 Slot Size: 0.010" End Cap: Schedule 40 PVC CL-ML FILTER PACK PEL-PLUG 3/8" Bentonite Interval: 12.5'-25.0' Type: #2 FilterSil Pellets FILTER PACK SEAL Interval: 7.5'-12.5' Type: PEL-PLUG 3/8" Bentonite Pellets 775.3 10 10.00 - 25.00 775 SC, clayey SAND, medium to coarse, some silt, some gravel; brown, wet **ANNULUS SEAL** Interval: 0'-7.5'
Type: AquaGuard Bentonite
Grout #2 FilterSil -WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round 0.010" Slotted Schedule 40 PVC 15 - 770 Ground Flush **DRILLING METHODS** Soil Drill: 4.25-inch ID Hollow Stem Auger Rock Drill: N/A SC 20 765 760.3 GDT 760 Boring completed at 25.00 ft PIEDMONT. (5).GPJ 30 -755 SURVEY UPDATED BACKUP 750 MCDONOUGH MASTER LIST 745 RECORD

LOG SCALE: 1 in = 5.5 ft

DRILLING COMPANY: Southern Company Services

DRILLER: S. Milam

GA INSPECTOR: W.Ballow

CHECKED BY: Timothy Richards, PG



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 33.30 ft LOCATION: East of B-96

RECORD OF BOREHOLE B-95

DRILL RIG: CME 550
DATE STARTED: 2/11/20
DATE COMPLETED: 2/11/20
DATE COMPLETED: 2/11/20

ROS ELEVATION: 784.3
TOC ELEVATION: 784.00 ft

SHEET 1 of 1 DEPTH W.L.: 1.7 ft bTOC ELEVATION W.L.: 782.3 DATE W.L.: 2/26/2020 TIME W.L.: 13:49

		SOIL PROFILE						SAMPLES				
	EVATION (ft)	COLLINOIDE			ELEV.	9			ш		MONITORING WELL/	WELL
(#)	ELEVA (ft	DESCRIPTION	nscs	GRAPHIC LOG	DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE	REC	PIEZOMETER DIAGRAM and NOTES	CONSTRUCTION DETAILS
0	- - - - 780 -	0.00 - 10.00 Hydro Vac'd for utilities clearance						Sometrup			Bentonite Grout Bentonite Pellets	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"
10 —	_ _ 775 _ _				774.3 10.00	_					Bentonite Grout	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
15 —	- 770	13.50 - 33.30 SANDY SILT, low plasticity, fine grained sand; brown; non-cohesive, wet, loose			770.8 13.50	S-01	00	3-3-4	7	<u>N/A</u> 1.50		ANNULUS SEAL Interval: 0 ft-bgs - 17.5 ft-bg Type: Portland Cement, AquaGuard Bentonite Grout
	- - - - 765	18.50: SANDY SILT, low plasticity, fine grained sand; tan, orange, bronze, laminated, saprolite (gneiss parent rock), micaceous; non-cohesive, moist, very				S-02	DO	14-27-27	54	<u>N/A</u> 1.50	Bentonite _ Pellets _	WELL COMPLETION Pad: 2'v2' Concrete Pad Protective Casing: 8" Roun- Flush Mount DRILLING METHODS Soil Drill: 4.25-inch ID Hollov Stem Augers Rock Drill: N/A
25 —	- - - - 760	dense 23.50: Trace fine gravel	ML			S-03	DO	8-50	50/5	<u>N/A</u> 0.92	Sand Filter Pack 3" PVC 0.010 Slot U-Pack Screen	
30 —	- - - 755 -	28.50: Compact				S-04	Od	3-2-8	10	<u>N/A</u> 1.50		
- - - 35 - -	- - 750 - -	Boring completed at 33.30 ft			751	_						
40 —	- 745 										- - - -	
45 —	- - 740										- -	

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



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 75.00 ft LOCATION: Next to DGWC-9

RECORD OF BOREHOLE B-101D

DRILL RIG: Geoprobe 8140LC

DATE STARTED: 11/11/20

DATE COMPLETED: 11/12/20

DATE COMPLETED: 11/12/20

DATE COMPLETED: 11/12/20

DATE COMPLETED: 11/12/20

DATE COMPLETED: 11/12/20

DATE COMPLETED: 11/12/20

DATE COMPLETED: 11/12/20

DATE COMPLETED: 11/12/20

SHEET 1 of 2 DEPTH W.L.: 34.0 ELEVATION W.L.: 790.3 DATE W.L.: 11/12/20 TIME W.L.: 0954

	z	SOIL PROFILE		SAMPLES						
DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	DEPTH (ft)	SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES Stick-up –	WELL CONSTRUCTION DETAILS
5 —		0.00 - 10.00 Air knife; FILL	FILL							B-101D Borehole Diameter: 4" WELL CASING Interval: 0-75' Material: Schedule 40 PV Diameter: 2" Joint Type: Screw fit with rubber seam WELL SCREEN Interval: 64.9"-74.9' Material: Schedule 40 PV Diameter: 2" Slot Size: .010" End Cap: Schedule 40 PV FILTER PACK Interval: 62.5"-75.0' Type: Filter'Sil
10 —		10.00 - 15.00 (SM), SILTY SAND; tannish brown to reddish brown, low plasticity, w <pl, (cl),="" (twr),="" -="" 15.00="" 16.00="" 20.00="" brown,="" clay;="" coarse,="" dark="" deeply="" dry,="" fine="" gray,="" jointed="" loose="" low="" medium,="" moist="" plasticity,="" poorly="" reddish="" rock;="" sand,="" soft="" soft,="" some="" td="" to="" transitionally="" w<pl,="" weathered="" weathered,="" wet<=""><td>SM TWR</td><td></td><td>15.00</td><td>· 1</td><td>ROTO SONIC</td><td><u>8.00</u> 10.00</td><td></td><td>Quantity: 4-50 lbs bags FILTER PACK SEAL Interval: 59.0'-62.5' Type: 3/8" Uncoated Pel- Quantity: 1-5 gallon bucks ANNULUS SEAL Interval: 0'-59.0' Type: AquaGuard Benton Grout Quantity: Approximately 8 gallons NOTES</td></pl,>	SM TWR		15.00	· 1	ROTO SONIC	<u>8.00</u> 10.00		Quantity: 4-50 lbs bags FILTER PACK SEAL Interval: 59.0'-62.5' Type: 3/8" Uncoated Pel- Quantity: 1-5 gallon bucks ANNULUS SEAL Interval: 0'-59.0' Type: AquaGuard Benton Grout Quantity: Approximately 8 gallons NOTES
20 —		20.00 - 23.00 (ML), SILT; trace to some gravels, reddish brown, low plasticity, w <pl, (sm),="" -="" 23.00="" 25.00="" brown="" dry,="" gravels,="" gray,="" loose,="" non-plastic,="" sand;="" silty="" soft,="" tannish="" td="" to="" trace="" twr<="" very="" w<pl,="" wet=""><td>ML</td><td></td><td>20.00</td><td>2</td><td>ROTO SONIC</td><td><u>4.00</u> 5.00</td><td></td><td></td></pl,>	ML		20.00	2	ROTO SONIC	<u>4.00</u> 5.00		
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	<u>0.00</u> 10.00		
- 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	<u>0.00</u> 5.00	AquaGuard Bentonite – Grout	-
40	_	40.00 - 50.00 NO RECOVERY; The core barrel was able to be advanced to depth, but casing was not able to advance to depth. Material was lost while extracting core barrel.			40.00		SONIC	0.00		-
45 —			NR			5	ROTO SONIC	<u>0.00</u> 10.00		-



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 75.00 ft LOCATION: Next to DGWC-9

RECORD OF BOREHOLE B-101D

DRILL RIG: Geoprobe 8140LC

DATE STARTED: 11/11/20

DATE COMPLETED: 11/12/20

DATE COMPLETED: 11/12/20

DATE COMPLETED: 11/12/20

DATE COMPLETED: 11/12/20

DATE COMPLETED: 11/12/20

DATE COMPLETED: 11/12/20

DATE COMPLETED: 11/12/20

DATE COMPLETED: 11/12/20

SHEET 2 of 2 DEPTH W.L.: 34.0 ELEVATION W.L.: 790.3 DATE W.L.: 11/12/20 TIME W.L.: 0954

	z	SOIL PROFILE				S	AMPL	ES		
OEPIH (#)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC	DEPTH	SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
50 -		50.00 - 51.00 (ML), SANDY SILT; grayish brown, low to medium plasticity, w~PL, soft to firm, moist	ML ML		50.00	- w				B-101D Borehole Diameter: 4" WELL CASING
55 — - -		51.00 - 52.00 (ML), SILT; trace gravels, schist fragments, grayish tan, non-plastic, non-cohesive, w <pl, (ml),="" (twr),="" -="" 52.00="" 52.30="" 60.00="" brown,="" deeply="" dry="" fine="" firm,="" foliated,="" grain,="" gravel,="" grayish="" iron="" loose,="" low="" medium="" moist<="" plasticity,="" r2,="" rock;="" sandy="" silt;="" soft="" staining,="" td="" to="" transitionally="" weathered="" weathered,="" well="" with="" w~pl,=""><td>TWR</td><td>- P 4</td><td>52.30</td><td>6</td><td>ROTO SONIC</td><td><u>9.50</u> 10.00</td><td>3/8" Uncoated — Pel-Plug Sand Filter</td><td>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'</td></pl,>	TWR	- P 4	52.30	6	ROTO SONIC	<u>9.50</u> 10.00	3/8" Uncoated — Pel-Plug Sand Filter	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'
60 —		60.00 - 70.00 (SCHIST), BEDROCK; well foliated, highly crenulated, poorly jointed, iron staining	BR		60.00	7	ROTO SONIC	<u>2.50</u> 10.00	Pel-Plug	Type: FilterSil Quantity: 4-50 lbs bags FILTER PACK SEAL Interval: 59.0'-62.5' Type: 3/8' Uncoated Pel-Plt Quantity: 1-5 gallon bucket ANNULUS SEAL Interval: 0'-59.0' Type: AquaGuard Bentonite Grout Quantity: Approximately 80 gallons
70 —		70.00 - 72.00 (ML), SANDY SILT; grayish brown, low to medium plasticity, w~PL, soft to firm, moist 72.00 - 75.00 (SCHIST), BEDROCK; well foliated, highly crenulated, poorly jointed, iron staining	ML BR		70.00	8	ROTO SONIC	<u>3.55</u> 5.00	U-Pack _ - - - - -	
-		Boring completed at 75.00 ft							- - -	
80 —									- - - -	
- 85 — - -									- - - -	
90 —									- - - -	
- 95 — - - -									- - - -	
00 –		LE: 1 in = 6.5 ft							- - patman, PG	

LOG SCALE: 1 in = 6.5 ft

DRILLING COMPANY: Cascade Drilling

DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG CHECKED BY: Timothy Richards, PG



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 85.00 ft LOCATION: Next to DGWC-10

RECORD OF BOREHOLE B-102D

DRILL RIG: Geoprobe 8140LC

DATE STARTED: 11/9/20

DATE COMPLETED: 11/10/20

DATE COMPLETED: 11/10/20

ROBER B-102D

NORTHING: 1393828.4

EASTING: 2204200.4

GS ELEVATION: 820.6 ft

TOC ELEVATION: 823.42 ft

SHEET 1 of 2 DEPTH W.L.: 34.0 ELEVATION W.L.: 789.4 DATE W.L.: 11/10/2020 TIME W.L.: 1444

	z	SOIL PROFILE				S	AMPLE	≣S		
OEPTH (ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES Stick-up -	WELL CONSTRUCTION DETAILS
5 —		0.00 - 10.00 Air knife; FILL	FILL							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
- - - - 15 —		10.00 - 15.50 (CL), CLAY; red brown, trace to some sand, fine grain, w~PL, low plasticity, soft, moist	CL		15.50	1	ROTO SONIC	6.50 10.00		Quantity: 4-50 lbs bags FILTER PACK SEAL Interval: 67'-72' Type: 3/8" Uncoated Pel-Plu Quantity: 1-5 gallon bucket ANNULUS SEAL Interval: 0'-67' Type: AquaGuard Bentonite Grout Quantity: Approximately 120 gallons
-		(ML), SILT; red brown, trace gravels, non-plastic to low plasticity, w <pl, (ml),="" -="" 17.50="" 20.00="" brown="" loose<="" low="" moist="" nonplastic="" plasticity,="" silt;="" silver,="" soft="" soft,="" tanish-orange="" td="" to=""><td>ML ML</td><td></td><td>17.50</td><td></td><td>RO.</td><td></td><td>, , , , , , , , , , , , , , , , , , ,</td><td>NOTES</td></pl,>	ML ML		17.50		RO.		, , , , , , , , , , , , , , , , , , ,	NOTES
20 — 25 —		20.00 - 26.00 (SM), SILTY SAND; bronze, some coarse sand, nonplastic, dry to moist	SM		20.00	2	ROTO SONIC	10.00 10.00		
-		26.00 - 30.00 (SM), SILTY SAND; gray, some coarse sand, nonplastic, non-cohesive, compact, dry to moist	SM		26.00		RO			
30 — 35 —		30.00 - 40.00 (SM), SILTY SAND; gray and orange-brown, non-plastic to low plasticity, firm to compact, dry to moist, soft to firm, contains muscovite	SM		30.00	3	ROTO SONIC	<u>9.00</u> 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		IIC		AquaGuard Bentonite — Grout ### ### ### ########################	
45 —		44.00 - 46.00 (ML), SILT; gray, non-plastic to lows plasticity, soft, moist, 46.00 - 50.00 (SM), SILTY SAND; reddish brown, non-plastic to low plasticity, very soft, wet	ML		44.00	4	ROTO SONIC	<u>7.00</u> 10.00		

LOG SCALE: 1 in = 6.5 ft

DRILLING COMPANY: Cascade Drilling

DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG CHECKED BY: Timothy Richards, PG



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 85.00 ft LOCATION: Next to DGWC-10

RECORD OF BOREHOLE B-102D

DRILL RIG: Geoprobe 8140LC

DATE STARTED: 11/9/20

DATE COMPLETED: 11/10/20

DATE COMPLETED: 11/10/20

ROBER B-102D

NORTHING: 1393828.4

EASTING: 2204200.4

GS ELEVATION: 820.6 ft

TOC ELEVATION: 823.42 ft

SHEET 2 of 2 DEPTH W.L.: 34.0 ELEVATION W.L.: 789.4 DATE W.L.: 11/10/2020 TIME W.L.: 1444

	7	SOIL PROFILE				Si	AMPLE	ES .			
DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC	MONITORING PIEZOMET DIAGRAM and	ER	WELL CONSTRUCTION DETAILS
50 —		50.00 - 51.00 (SM), SILTY SAND; reddish brown, non-plastic to low plasticity,	SM		50.00	.,	ပ			2001 20001 2000 20001 2000 20001 2000 20001 2000 20001	B-102D Borehole Diameter: 4"
- - -		very soft, wet 51.00 - 55.00 (SM), SILTY SAND; gray, w <pl, compact,="" contains="" dry="" fine="" moist,="" muscovite<="" td="" to=""><td>SM</td><td></td><td>31.00</td><td>5</td><td>ROTO SONIC</td><td><u>5.00</u> 5.00</td><td></td><td>2000 20000 10000 </td><td>WELL CASING Interval: 0'-85' Material: Schedule 40 PVC Diameter: 2" Joint Type: Screw fit with rubber seam</td></pl,>	SM		31.00	5	ROTO SONIC	<u>5.00</u> 5.00		2000 20000 10000	WELL CASING Interval: 0'-85' Material: Schedule 40 PVC Diameter: 2" Joint Type: Screw fit with rubber seam
55 — - - -		55.00 - 60.00 (SM), SILTY SAND; gray to yellow orange, w <pl, dry="" fine="" moist,="" saprolitic<="" stiff,="" td="" to=""><td>SM</td><td></td><td>55.00</td><td>6</td><td>ROTO SONIC</td><td><u>5.00</u> 5.00</td><td></td><td></td><td>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</td></pl,>	SM		55.00	6	ROTO SONIC	<u>5.00</u> 5.00			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
60 —		60.00 - 65.00 (ML), SILT; gray to light brown, w <pl, dense,="" dry<="" td=""><td>ML</td><td></td><td>60.00</td><td>7</td><td>ROTO SONIC</td><td><u>4.00</u> 5.00</td><td></td><td></td><td>Quantity: 4-50 lbs bags FILTER PACK SEAL Interval: 67'-72' Type: 3/8" Uncoated Pel-Pluc Quantity: 1-5 gallon bucket ANNULUS SEAL Interval: 0'-67' Type: AquaGuard Bentonite Grout</td></pl,>	ML		60.00	7	ROTO SONIC	<u>4.00</u> 5.00			Quantity: 4-50 lbs bags FILTER PACK SEAL Interval: 67'-72' Type: 3/8" Uncoated Pel-Pluc Quantity: 1-5 gallon bucket ANNULUS SEAL Interval: 0'-67' Type: AquaGuard Bentonite Grout
65 — - - - -		65.00 - 70.00 (TWR), TRANSITIONALLY WEATHERED ROCK; silty sand, gray, low plasticity, w <pl, dry,="" hard,="" saprolitic<="" stiff="" td="" to=""><td>TWR</td><td></td><td>65.00</td><td>8</td><td>ROTO SONIC</td><td><u>5.00</u> 5.00</td><td>3/8" Uncoated – Pel-Plug</td><td></td><td>Quantity: Approximately 120 gallons NOTES</td></pl,>	TWR		65.00	8	ROTO SONIC	<u>5.00</u> 5.00	3/8" Uncoated – Pel-Plug		Quantity: Approximately 120 gallons NOTES
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	<u>5.00</u> 5.00		- - - - -	
75 — — — — — — — — — — — — — — — — — — —		75.00 - 85.00 (SCHIST), BEDROCK; dark gray to black, moderately foliated, poorly jointed, high crenulated, weak to strong rock, slightly to moderately weathered, feldspar, muscovite, schist	BR		75.00	10	ROTO SONIC	<u>7.00</u> 10.00	U-Pack _ Screen		
85 — -		Boring completed at 85.00 ft								- -	
90 —										- - - -	
- 95 — - -										- - - -	
100 -	2 904	LE: 1 in = 6.5 ft		20 1019	SDECT	OP.	Mich	aal Pr	patman, PG	- - -	

DRILLING COMPANY: Cascade Drilling

DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG CHECKED BY: Timothy Richards, PG



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 70.00 ft LOCATION: East of DGWC-47

RECORD OF BOREHOLE B-103D

DRILL RIG: Geoprobe 8140LC

DATE STARTED: 10/14/20

DATE COMPLETED: 10/15/20

DATE COMPLETED: 10/15/20

DATE COMPLETED: 10/15/20

DATE COMPLETED: 10/15/20

DATE COMPLETED: 10/15/20

DATE COMPLETED: 10/15/20

SHEET 1 of 2 DEPTH W.L.: 12.0 ELEVATION W.L.: 783.9 DATE W.L.: 10/15/2020 TIME W.L.: 0740

	7	SOIL PROFILE				s	AMPLE	ES		
DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES Stick-up –	WELL CONSTRUCTION DETAILS
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		B-103D Borehole Diameter: 4" WELL CASING Interval: 0'-70' Material: Schedule 40 PVC Diameter: 2" Joint Type: Screw fit with rubber seam
5 — — — — — — — — — — — — — — — — — — —		5.00 - 15.00 (ML), SILT; tan to gray-brown; low plasticity, moist, fine, w <pl, loose<="" td=""><td>ML</td><td></td><td>5.00</td><td>2</td><td>ROTO SONIC</td><td><u>6.50</u> 10.00</td><td></td><td>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</td></pl,>	ML		5.00	2	ROTO SONIC	<u>6.50</u> 10.00		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
15 — - - -		15.00 - 18.00 (SM), SILTY SAND; dark brown, gravel; moist, non to low plasticity, w <pl (schist),="" -="" 18.00="" 20.00="" bedrock;="" biotite,="" feldspar,="" foliated,="" fresh,="" moderate="" muscovite,="" rock<="" td="" to="" well=""><td>SM BR</td><td></td><td>15.00</td><td>3</td><td>ROTO SONIC</td><td><u>5.50</u> 5.00</td><td></td><td>Grout Quantity: Approximately 40 gallons NOTES</td></pl>	SM BR		15.00	3	ROTO SONIC	<u>5.50</u> 5.00		Grout Quantity: Approximately 40 gallons NOTES
20 —		20.00 - 23.00 (SCHIST), BEDROCK; well foliated, poorly jointed, feldspar, quartz, muscovite	BR		20.00					- - -
25 — 30 —		23.00 - 40.00 (GNEISS), BEDROCK; light to dark gray; partially foliated, poorly jointed, biotite, feldspar, quartz, locally contains garnet	BR		23.00	4	ROTO SONIC	10.00 12.00		- - - - - - - -
35 —						5	ROTO SONIC	<u>5.60</u> 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	<u>9.00</u> 10.00	AquaGuard Bentonite — Grout	- - - - - -
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



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 70.00 ft LOCATION: East of DGWC-47

RECORD OF BOREHOLE B-103D

DRILL RIG: Geoprobe 8140LC

DATE STARTED: 10/14/20

DATE COMPLETED: 10/15/20

DATE COMPLETED: 10/15/20

DATE COMPLETED: 10/15/20

DATE COMPLETED: 10/15/20

DATE COMPLETED: 10/15/20

DATE COMPLETED: 10/15/20

DATE COMPLETED: 10/15/20

DATE COMPLETED: 10/15/20

SHEET 2 of 2 DEPTH W.L.: 12.0 ELEVATION W.L.: 783.9 DATE W.L.: 10/15/2020 TIME W.L.: 0740

	z	SOIL PROFILE				S	AMPLE	≣S		
DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH (ft)	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	<u>7.50</u> 10.00	3/8" Uncoated — Pel-Plug — — — — — — — — — — — — — — — — — — —	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" Stot Size: 0:10" End Cap: Schedule 40 PVC FILTER PACK Interval: 57.9'-70.0' Type: FilterSil Quantity: 3.5-50 lbs bags FILTER PACK SEAL
65 —		Boring completed at 70.00 ft				8	ROTO SONIC	<u>9.65</u> 10.00	U-Pack	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
75 —									- - - - - - -	
85 — 90 —									- - - - - - - -	
95 —		LE: 1 in = 6.5 ft							- - - - - - - -	

LOG SCALE: 1 in = 6.5 ft

DRILLING COMPANY: Cascade Drilling

DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG CHECKED BY: Timothy Richards, PG



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 60.00 ft LOCATION: East of DGWC-48

RECORD OF BOREHOLE B-104D

DRILL RIG: Geoprobe 8140LC

DATE STARTED: 10/20/20

DATE COMPLETED: 10/20/20

DATE COMPLETED: 10/20/20

DATE COMPLETED: 10/20/20

DATE COMPLETED: 10/20/20

SHEET 1 of 2 DEPTH W.L.: 12.0 ELEVATION W.L.: 775.9 DATE W.L.: 10/20/2020 TIME W.L.: 1818

	SOIL PROFILE				S	AMPLE	ES		
ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES Stick-up –	WELL CONSTRUCTION DETAILS
	0.00 - 10.00 Air knife; FILL	FILL						AquaGuard Bentonite — Grout	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
	10.00 - 12.00 (CL), CLAY; red brown; moist, soft, low plasticity, w <pl, (ml),="" -="" 12.00="" 22.00="" brown="" dark="" dry="" fill="" firm<="" gray;="" low="" moist,="" non-plasitic="" plasticity,="" silt;="" soft="" td="" to="" w<pl,=""><td>CL ————————————————————————————————————</td><td></td><td>12.00</td><td>1</td><td>ROTO SONIC</td><td><u>8.00</u> 8.00</td><td></td><td>Quantity: 4-50 lbs bags FITTER 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</td></pl,>	CL ————————————————————————————————————		12.00	1	ROTO SONIC	<u>8.00</u> 8.00		Quantity: 4-50 lbs bags FITTER 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
				22.00	2	ROTO SONIC	<u>4.00</u> 4.00		- - - - -
	(ML), SILT; dark brown; w~PL, moist to wet, soft to firm, contains gravels of biotite gneiss (trace)	ML			3	ROTO SONIC	8.00 8.00	AquaGuard Bentonite – Grout ×	- - - - - -
	30.00 - 35.00 (TWR), TRANSITIONALLY WEATHERED ROCK; rust brown to gray, deeply weathered biolite gneiss, poorly foliated, poorly jointed, iron staining 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	TWR			4	ROTO SONIC	<u>6.55</u> 10.00		- - - - - - -
		BR			5	ROTO SONIC	2.10 5.00	3/8" Uncoated —	- - - - -
					6	ROTO SONIC	4.35 7.50	Sand Filter_	- - - - -
: SC		Log continued on next page	Log continued on next page	Log continued on next page	Log continued on next page	Log continued on next page	6 ON ON ON ON ON ON ON ON ON ON ON ON ON	6 Q 4.35 7.50 Log continued on next page	Fel-Plug Rel-Plug Rel-Plug Sand Filter Sand Filter

LOG SCALE: 1 in = 6.5 ft

DRILLING COMPANY: Cascade Drilling

DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG CHECKED BY: Timothy Richards, PG



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 60.00 ft LOCATION: East of DGWC-48

RECORD OF BOREHOLE B-104D

DRILL RIG: Geoprobe 8140LC

DATE STARTED: 10/20/20

DATE COMPLETED: 10/20/20

DATE COMPLETED: 10/20/20

DATE COMPLETED: 10/20/20

DATE COMPLETED: 10/20/20

DATE COMPLETED: 10/20/20

SHEET 2 of 2 DEPTH W.L.: 12.0 ELEVATION W.L.: 775.9 DATE W.L.: 10/20/2020 TIME W.L.: 1818

	7	SOIL PROFILE				S	AMPLE	≣S		
DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH (ft)	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
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	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'
60 —		Boring completed at 60.00 ft							:自:] - - - - -	Type: FilterSil Quantity: 4-50 lbs bags FILTER PACK SEAL Interval: 44'-47.15 Type: 38" Uncoated Pel-Plug Quantity: 1-5 gallon bucket ANNULUS SEAL Interval: 0'-44' Type: AquaGuard Bentonite Grout Quantity: Approximately 40
- - - 70 —									- - - - -	gallons NOTES
75 —									- - - - -	
80 									- - - -	
85 — - -									- - - -	
90 —									- - - - -	
95 — - - -									_ - - - -	
100 —	S SCA	LE: 1 in = 6.5 ft		GA INS	SPECT	OR:	Mich	ael Bo	– patman, PG	<u>^</u>

DRILLING COMPANY: Cascade Drilling

DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG CHECKED BY: Timothy Richards, PG



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 70.00 ft LOCATION: East of DGWC-40

RECORD OF BOREHOLE B-105D

DRILL RIG: Geoprobe 8140LC

DATE STARTED: 10/18/20

DATE COMPLETED: 10/19/20

DATE COMPLETED: 10/19/20

ROBEHOLE B-105D

NORTHING: 1390634.5
EASTING: 2201831.9
GS ELEVATION: 776.0 ft
TOC ELEVATION: 779.01 ft

SHEET 1 of 2 DEPTH W.L.: 22.50 ELEVATION W.L.: 756.5 DATE W.L.: 10/19/2020 TIME W.L.: 0950

	z	SOIL PROFILE				S	AMPLE	≣S		
(#)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC	MONITORING WEL PIEZOMETER DIAGRAM and NOTI Stick-up –	CONSTRUCTION
5 —		0.00 - 10.00 Air knife; FILL	FILL							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 PVF FILTER PACK Interval: 57.5'-60.0' Type: FilterSil
10 — - - 15 — - -		10.00 - 15.00 (ML), SILT; red to orange brown, some clay, low plasticity, dry to moist, w <pl, (ml),="" -="" 15.00="" 27.00="" brown="" brown,="" contains="" fill="" firm,="" low="" moist,="" muscovite<="" olive="" plasticity,="" silt;="" silvery="" soft="" td="" to="" w<pl,=""><td>CL-ML</td><td></td><td>15.00</td><td>· 1</td><td>ROTO SONIC</td><td><u>9.25</u> 10.00</td><td></td><td>Slot Size: .010" End Cap: Schedule 40 PV: 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-P Quantity: 1-5 gallon bucket ANNULUS SEAL Interval: 0-53.75 Type: AquaGuard Bentonit Grout Quantity: Approximately 80 gallons NOTES</td></pl,>	CL-ML		15.00	· 1	ROTO SONIC	<u>9.25</u> 10.00		Slot Size: .010" End Cap: Schedule 40 PV: 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-P Quantity: 1-5 gallon bucket ANNULUS SEAL Interval: 0-53.75 Type: AquaGuard Bentonit Grout Quantity: Approximately 80 gallons NOTES
20 — - - - 25 — -			ML			2	ROTO SONIC	<u>6.00</u> 7.50		
- 30 — - -		27.00 - 27.50 (CL), CLAY; white, medium plasticity, firm, moist, w <pl, (ml),="" -="" 27.50="" 32.50="" 33.80<="" brown,="" fine="" firm="" grain,="" gray="" low="" medium="" moist,="" plasticity,="" possible="" silt;="" soft="" td="" to="" wt="" w~pl,=""><td>ML SM</td><td></td><td>27.50</td><td>3</td><td>TO SONIC</td><td><u>8.50</u> 10.00</td><td></td><td></td></pl,>	ML SM		27.50	3	TO SONIC	<u>8.50</u> 10.00		
35 — _		(SM), SILTY SAND; non-plastic to low plasticity, dry to moist, fine to \(\sigma \corr \text{carse}, \text{ w <pl}, (biotite="" (ml),="" -="" 33.80="" 37.50="" \)="" \text{mica}="" brown,="" fine="" firm<="" grain,="" gray="" is="" loose,="" low="" moderate="" moist,="" muscovite)="" plasticity,="" sand="" silt;="" soft="" td="" to="" w~pl,=""><td>ML</td><td></td><td>33.80</td><td></td><td>RO</td><td></td><td>D0001</td><td>P2 0 0 1</td></pl},>	ML		33.80		RO		D0001	P2 0 0 1
-		37.50 - 40.00 (ML), SILT; whitish gray, trace fine sand, low plasticity, moist to dry, w~PL, firm/compact, high feldspar	ML		37.50	4	ROTO SONIC	2.50 2.50		- -
40 — - - -		40.00 - 45.00 (SM), SILTY SAND; brown to black, non-plastic to low plasticity, moist, w <pl, coarse,="" compact="" fine="" is="" loose.="" mica,="" not="" particles="" quartz.<="" sand="" size="" td="" to=""><td>SM</td><td></td><td>40.00</td><td>5</td><td>ROTO SONIC RC</td><td><u>5.00</u> 5.00</td><td>AquaGuard Bentonite — Grout</td><td></td></pl,>	SM		40.00	5	ROTO SONIC RC	<u>5.00</u> 5.00	AquaGuard Bentonite — Grout	
45 — - - -		45.00 - 50.00 (SM), SILTY SAND; rock flour, trace gravels, tan brown, non-plastic, dry, fine to coarse, w <pl, 48.8'-50.0'<="" from="" is="" loose,="" micaceous,="" sand="" td="" to="" transitions="" twr=""><td>SM</td><td></td><td>45.00</td><td>6</td><td>ROTO SONIC</td><td><u>5.00</u> 5.00</td><td></td><td></td></pl,>	SM		45.00	6	ROTO SONIC	<u>5.00</u> 5.00		

LOG SCALE: 1 in = 6.5 ft

DRILLING COMPANY: Cascade Drilling

DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG CHECKED BY: Timothy Richards, PG



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 70.00 ft LOCATION: East of DGWC-40

RECORD OF BOREHOLE B-105D

DRILL RIG: Geoprobe 8140LC

DATE STARTED: 10/18/20

DATE COMPLETED: 10/19/20

DATE COMPLETED: 10/19/20

ROBEHOLE B-105D

NORTHING: 1390634.5
EASTING: 2201831.9
GS ELEVATION: 776.0 ft
TOC ELEVATION: 779.01 ft

SHEET 2 of 2 DEPTH W.L.: 22.50 ELEVATION W.L.: 756.5 DATE W.L.: 10/19/2020 TIME W.L.: 0950

		SOIL PROFILE				s	AMPLE	ES		
DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH (ft)	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, (relief="" from="" gneiss="" is="" loose="" materials="" soft,="" structure),="" td="" twr<=""><td>SM</td><td></td><td>50.00</td><td>7</td><td>ROTO SONIC</td><td><u>5.00</u> 5.00</td><td>3/8" = - 3/8" = - Uncoated - Pel-Plug</td><td>B-105D Borehole Diameter: 4" WELL CASING Interval: 0'-70' Material: Schedule 40 PV(Diameter: 2" Joint Type: Screw fit with rubber seam</td></pl,>	SM		50.00	7	ROTO SONIC	<u>5.00</u> 5.00	3/8" = - 3/8" = - Uncoated - Pel-Plug	B-105D Borehole Diameter: 4" WELL CASING Interval: 0'-70' Material: Schedule 40 PV(Diameter: 2" Joint Type: Screw fit with rubber seam
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			55.00	8	ROTO SONIC	<u>2.75</u> 3.50	Pel-Plug	WELL SCREEN Interval: 60'-70' Material: Schedule 40 PV Diameter: 2" Slot Size: 010" End Cap: Schedule 40 PV FILTER PACK
60 —			BR			9	ROTO SONIC	<u>4.80</u> 6.50	U-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- Quantity: 1-5 gallon bucke ANNULUS SEAL Interval: 0'-53.75 Type: AquaGuard Benton Grout
65 —						10	ROTO SONIC	<u>4.25</u> 5.00	Screen Sc	Quantity: Approximately 8 gallons NOTES
70 — — — — — 75 —		Boring completed at 70.00 ft							- - - - -	
- - 80 -									- - - -	
85 —									- - - - -	
90 —									- - - - -	
95 — - - -									- - - -	
DRIL	LLING	LE: 1 in = 6.5 ft COMPANY: Cascade Drilling Fred Dorse		CHEC		/: Tiı			patman, PG nards, PG	GOLDER



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 80.00 ft LOCATION: North of DGWC-8

RECORD OF BOREHOLE B-106D

DRILL RIG: Geoprobe 8140LC

DATE STARTED: 11/12/20

DATE COMPLETED: 11/13/20

DATE COMPLETED: 11/13/20

DATE COMPLETED: 11/13/20

DATE COMPLETED: 11/13/20

DATE COMPLETED: 11/13/20

DATE COMPLETED: 11/13/20

DATE COMPLETED: 11/13/20

DATE COMPLETED: 11/13/20

SHEET 1 of 2 DEPTH W.L.: 37.0 ELEVATION W.L.: 789.2 DATE W.L.: 11/13/2020 TIME W.L.: 1652

	z	SOIL PROFILE				s	AMPLI	ES		
(ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	DEPTH (ft)	SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES Stick-up –	WELL CONSTRUCTION DETAILS
5 —		0.00 - 10.00 Air knife; FILL	FILL		40.00				AquaGuard Bentonite – Grout	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
- - - 15 —		10.00 - 16.75 (ML), SILT; some fine to medium sand, some gravel, moist, firm, w <pl, low="" medium="" plasticity<="" td="" to=""><td>ML</td><td></td><td>10.00</td><td>1</td><td>ROTO SONIC</td><td><u>8.20</u> 10.00</td><td></td><td>FILTER PACK SEAL Interval: 62.85'-66.61' Type: 3/8" Uncoated Pel-Plu Quantity: 1-5 gallon bucket ANNULUS SEAL Interval: 0'-62.85' Type: AquaGuard Bentonite Grout Quantity: NOTES</td></pl,>	ML		10.00	1	ROTO SONIC	<u>8.20</u> 10.00		FILTER PACK SEAL Interval: 62.85'-66.61' Type: 3/8" Uncoated Pel-Plu Quantity: 1-5 gallon bucket ANNULUS SEAL Interval: 0'-62.85' Type: AquaGuard Bentonite Grout Quantity: NOTES
20 —		16.75 - 18.10 (ML), SILT; some coarse sand, moist, stiff, w <pl (cl),="" -="" 18.10="" 20.00="" 28.00<="" clay;="" coarse="" dry="" fill="" moist,="" muscovite,="" red="" red-brown,="" sand,="" soft,="" some="" td="" to="" w<pl,=""><td>ML CL</td><td></td><td>16.75 18.10 20.00</td><td></td><td></td><td></td><td></td><td>- - - -</td></pl>	ML CL		16.75 18.10 20.00					- - - -
25 —		(ML), SILT; brown, some fines, very fine to coarse sand, wet, soft to very soft, w <pl, medium="" plasticity,<="" td=""><td>ML</td><td></td><td></td><td>2</td><td>ROTO SONIC</td><td><u>10.00</u> 10.00</td><td>AquaGuard Bentonite – Grout</td><td>- - - - - -</td></pl,>	ML			2	ROTO SONIC	<u>10.00</u> 10.00	AquaGuard Bentonite – Grout	- - - - - -
30 —		28.00 - 30.00 (SP), SAND; uniformly graded, some silt, non-cohesive, loose, moist, non-plastic 30.00 - 32.00 (SM), SILTY SAND; brown, trace gravel, dry to moist, cohesive,	SP		28.00		v		AquaGuard Bentonite –	
-		firm to stiff, w <pl, (sm),="" -="" 32.00="" 35.00="" cohesive,="" crenulations,="" dry="" firm="" low="" medium="" moist,="" plasticity,="" plasticity<="" sand;="" saprolitc="" silty="" some="" stiff,="" td="" to="" w~pl,=""><td>SM</td><td></td><td>32.00</td><td>3</td><td>ROTO SONIC</td><td><u>5.00</u> 5.00</td><td></td><td>_ - -</td></pl,>	SM		32.00	3	ROTO SONIC	<u>5.00</u> 5.00		_ - -
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	<u>5.00</u> 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, medium="" moist,="" plasticity<="" td=""><td>SM</td><td></td><td>40.00</td><td>5</td><td>IC ROTO SONIC</td><td><u>5.00</u> 5.00</td><td></td><td>- - - - -</td></pl,>	SM		40.00	5	IC ROTO SONIC	<u>5.00</u> 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		77.00	7	Ľ.	0.00 13.00		_

LOG SCALE: 1 in = 6.5 ft

DRILLING COMPANY: Cascade Drilling

DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG CHECKED BY: Timothy Richards, PG



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 80.00 ft LOCATION: North of DGWC-8

RECORD OF BOREHOLE B-106D

DRILL RIG: Geoprobe 8140LC
DATE STARTED: 11/12/20
DATE COMPLETED: 11/13/20

DATE COMPLETED: 11/13/20

ROS ELEVATION: 823.5 ft
TOC ELEVATION: 826.21 ft

SHEET 2 of 2 DEPTH W.L.: 37.0 ELEVATION W.L.: 789.2 DATE W.L.: 11/13/2020 TIME W.L.: 1652

	7	SOIL PROFILE				S	AMPLE	ES		
DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	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	<u>0.00</u> 13.00	3/8" Uncoated — Pel-Plug	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
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	<u>1.60</u> 5.00	3/8" = - 3/8" = - Uncoated - Pel-Plug -	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
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	<u>5.20</u> 10.00	Sand Filter	Quantity: NOTES
75 — — — — — 80 —		75.00 - 80.00 (BIOTITE GNEISS), BEDROCK; light gray to dark gray, zones of muscovitie schistocity, very fine grain, moderate to poor foliation, poorly jointed, fresh to moderately weathered, medium strong, iron staining, feldspar, quartz Boring completed at 80.00 ft	BR		75.00	10	ROTO SONIC	3.40 5.00	Screen	
		During completed at 60.00 it							- - - - - - - - - - - - - - - - - - -	
100 —		 F: 1 in = 6.5 ft							patman PG	

LOG SCALE: 1 in = 6.5 ft

DRILLING COMPANY: Cascade Drilling

DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG CHECKED BY: Timothy Richards, PG



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 85.75 ft LOCATION: Southwest of DGWC-19

RECORD OF BOREHOLE B-107D

DRILL RIG: Geoprobe 8140LC

DATE STARTED: 10/28/20

DATE COMPLETED: 10/28/20

DATE COMPLETED: 10/28/20

DATE COMPLETED: 10/28/20

DATE COMPLETED: 10/28/20

DATE COMPLETED: 10/28/20

DATE COMPLETED: 10/28/20

SHEET 1 of 2 DEPTH W.L.: 21.8 ELEVATION W.L.: 801.6 DATE W.L.: 10/28/2020 TIME W.L.: 1440

	z	SOIL PROFILE				S	AMPLE	ES .		
DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES Stick-up –	WELL CONSTRUCTION DETAILS
0 — — — — — — — — — — — — — — — — — — —		0.00 - 10.00 Air knife; FILL	FILL							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
15 — 20 —		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		20.00	1	ROTO SONIC	7.00 10.00		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
25 — — — — — — — — — — — — — — — — — — —		(SM), SILTY SAND; brown to tannish brown, trace sand, w <pl, compact,="" grains="" large="" loose="" low="" muscovite<="" of="" plasticity,="" td="" to=""><td>SM</td><td></td><td></td><td>2</td><td>ROTO SONIC</td><td><u>4.30</u> 10.00</td><td></td><td></td></pl,>	SM			2	ROTO SONIC	<u>4.30</u> 10.00		
35 —		38.00 - 40.00 (SM), SILTY SAND; black and silverish gray, fine to medium, non-plastic, w <pl, loose="" moist,<="" sand,="" td=""><td>SM</td><td></td><td>38.00</td><td>3</td><td>ROTO SONIC</td><td><u>10.00</u> 10.00</td><td> </td><td></td></pl,>	SM		38.00	3	ROTO SONIC	<u>10.00</u> 10.00		
40 — - 45 — - 45 — - - - - - - - - - - - - -		40.00 - 50.00 (SM-ML), SILTY SAND to SILT; brown to silverish brown, moist to wet, w <pl, soft="" stiff<="" td="" to=""><td>SM</td><td></td><td>40.00</td><td>4</td><td>ROTO SONIC</td><td><u>9.00</u> 10.00</td><td>AquaGuard Bentonite — — — — — — — — — — — — — — — — — — —</td><td></td></pl,>	SM		40.00	4	ROTO SONIC	<u>9.00</u> 10.00	AquaGuard Bentonite — — — — — — — — — — — — — — — — — — —	

LOG SCALE: 1 in = 6.5 ft

DRILLING COMPANY: Cascade Drilling

DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG CHECKED BY: Timothy Richards, PG



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 85.75 ft LOCATION: Southwest of DGWC-19

RECORD OF BOREHOLE B-107D

DRILL RIG: Geoprobe 8140LC

DATE STARTED: 10/28/20

DATE COMPLETED: 10/28/20

DATE COMPLETED: 10/28/20

DATE COMPLETED: 10/28/20

DATE COMPLETED: 10/28/20

DATE COMPLETED: 10/28/20

DATE COMPLETED: 10/28/20

SHEET 2 of 2 DEPTH W.L.: 21.8 ELEVATION W.L.: 801.6 DATE W.L.: 10/28/2020 TIME W.L.: 1440

	SOIL PROFILE				S	AMPLE	ΞS		
DEPTH (ft) (ft) ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
50	50.00 - 60.00 (SM-ML), SILTY SAND to SILT; brown to silverish brown, moist to wet, w <pl, soft="" stiff<="" td="" to=""><td>SM</td><td></td><td>50.00</td><td>5</td><td>ROTO SONIC</td><td><u>6.00</u> 10.00</td><td>3/8" Uncoated — Pel-Plug</td><td>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</td></pl,>	SM		50.00	5	ROTO SONIC	<u>6.00</u> 10.00	3/8" Uncoated — Pel-Plug	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
- - - - - 65 —	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	<u>0.00</u> 7.00		Ouantity: 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
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	<u>6.70</u> 8.00	3/8" Uncoated — — — — — — — — — — — — — — — — — — —	NOTES
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	U-Pack	
85 —	Boring completed at 85.75 ft			85.75					
100 —	.LE: 1 in = 6.5 ft							- - - - patman, PG	

LOG SCALE: 1 in = 6.5 ft

DRILLING COMPANY: Cascade Drilling

DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG CHECKED BY: Timothy Richards, PG



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 80.00 ft LOCATION: Next to DGWC-20

RECORD OF BOREHOLE B-108D

DRILL RIG: Geoprobe 8140LC
DATE STARTED: 10/26/20
DATE COMPLETED: 10/27/20

ROSELEVATION: 818.4 ft
TOC ELEVATION: 821.13 ft

SHEET 1 of 2 DEPTH W.L.: 17.7 ELEVATION W.L.: 803.43 DATE W.L.: 10/27/2020 TIME W.L.: 0915

	z	SOIL PROFILE				S	AMPLE	ES .		
DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES Stick-up -	WELL CONSTRUCTION DETAILS
0 — — — — — — — — — — — — — — — — — — —		0.00 - 10.00 Air knife; FILL	FILL						AquaGuard Bentonite — Grout	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
10 — — — — — — — — — — — — — — — — — — —		10.00 - 12.00 (CL), CLAY;w <pl, (ml),="" -="" 12.00="" 20.00="" black="" brown="" compact="" fill="" fine="" firm,="" low="" moist="" moist<="" non-plastic="" plasticity,="" sand,="" silt;="" spots,="" tannish="" td="" to="" trace="" w<pl,="" wet,="" with=""><td>CL</td><td></td><td>12.00</td><td>1</td><td>ROTO SONIC</td><td>10.00 10.00</td><td></td><td>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</td></pl,>	CL		12.00	1	ROTO SONIC	10.00 10.00		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
20 —		20.00 - 30.00 (ML), SILT; tannish brown with black/silver spots, trace to some fine sand, w <pl, biotite="" deeply="" dry="" firm,="" gneiss<="" low="" moist,="" plasticity,="" saprolite,="" td="" to="" weather=""><td>ML</td><td></td><td>20.00</td><td>2</td><td>ROTO SONIC</td><td><u>9.50</u> 10.00</td><td></td><td></td></pl,>	ML		20.00	2	ROTO SONIC	<u>9.50</u> 10.00		
30 —		30.00 - 40.00 (ML-SM), SILT and SILTY SAND; silverish brown, trace clay, w <pl, contains="" firm="" low="" moist,="" muscovite,="" nonplastic="" plasticity,="" saprolite<="" stiff,="" td="" to=""><td>SM</td><td></td><td>30.00</td><td>3</td><td>ROTO SONIC</td><td><u>8.00</u> 10.00</td><td></td><td></td></pl,>	SM		30.00	3	ROTO SONIC	<u>8.00</u> 10.00		
40 —		40.00 - 50.00 (ML-SM), SILT and SILTY SAND; silverish brown, trace clay, w <pl, contains="" firm,="" low="" moist,="" muscovite,="" nonplastic="" plasticity,="" saprolite<="" soft="" td="" to=""><td>SM</td><td></td><td>40.00</td><td>4</td><td>ROTO SONIC</td><td><u>6.75</u> 10.00</td><td></td><td></td></pl,>	SM		40.00	4	ROTO SONIC	<u>6.75</u> 10.00		

LOG SCALE: 1 in = 6.5 ft

DRILLING COMPANY: Cascade Drilling

DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG CHECKED BY: Timothy Richards, PG



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 80.00 ft LOCATION: Next to DGWC-20

RECORD OF BOREHOLE B-108D

DRILL RIG: Geoprobe 8140LC
DATE STARTED: 10/26/20
DATE COMPLETED: 10/27/20

ROSELEVATION: 818.4 ft
TOC ELEVATION: 821.13 ft

SHEET 2 of 2 DEPTH W.L.: 17.7 ELEVATION W.L.: 803.43 DATE W.L.: 10/27/2020 TIME W.L.: 0915

	z	SOIL PROFILE				s	AMPLE	ES .		
DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
50 — - - - - 55 — -		50.00 - 51.00 (SP), SAND; black to dark gray, w <pl, (ml),="" -="" 51.00="" 57.50="" brown,="" firm="" firm,="" gray="" loose,="" low="" moist,="" non-plastic,="" plasticity,="" saprolite<="" silt;="" stiff,="" td="" to="" w<pl,="" wet=""><td>SP ML</td><td></td><td>50.00</td><td>5</td><td>ROTO SONIC</td><td>7.50 7.50</td><td></td><td>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" Stot Size: 0.10"</td></pl,>	SP ML		50.00	5	ROTO SONIC	7.50 7.50		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" Stot Size: 0.10"
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" ————————————————————————————————————	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
65 — 70 —		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	<u>6.55</u> 10.00		Quantity: Approximately 80 gallons NOTES
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	<u>4.80</u> 5.00	Screen Sc	
80 —		Boring completed at 80.00 ft								
100 -	1	 F: 1 in = 6.5 ft						<u> </u>	oatman PG	

LOG SCALE: 1 in = 6.5 ft

DRILLING COMPANY: Cascade Drilling

DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG CHECKED BY: Timothy Richards, PG



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 100.00 ft LOCATION: Next to DGWC-2

RECORD OF BOREHOLE B-109D

DRILL RIG: Geoprobe 8140LS

DATE STARTED: 10/30/20

DATE COMPLETED: 10/31/20

DATE COMPLETED: 10/31/20

DATE COMPLETED: 10/31/20

DATE COMPLETED: 10/31/20

DATE COMPLETED: 10/31/20

DATE COMPLETED: 10/31/20

SHEET 1 of 2 DEPTH W.L.: 23.50 ELEVATION W.L.: 827.2 DATE W.L.: 10/31/2020 TIME W.L.: 1157

	z	SOIL PROFILE				S	AMPLI	≣S		
DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES Stick-up –	WELL CONSTRUCTION DETAILS
5 —		0.00 - 10.00 Air knife; FILL	FILL							B-109D Borehole Diameter: 4" WELL CASING Interval: 0'-100' Material: Schedule 40 PV Diameter: 2" Joint Type: Screw fit with rubber seam WELL SCREEN Interval: 89.4'-99.4' Material: Schedule 40 PV Diameter: 2" Slot Size: .010" End Cap: Schedule 40 PV FILTER PACK Interval: 86.5'-99.4' Type: Eiter's'il
10 —		10.00 - 13.50 (ML). SILT; brown, soft, 13.50 - 20.00 (CL), CLAY; red to red brown, trace sand, medium plasticity, w <pl, dry,<="" firm,="" moist="" td="" to=""><td>ML CL</td><td></td><td>13.50</td><td>. 1</td><td>ROTO SONIC</td><td><u>10.00</u> 10.00</td><td></td><td>Type: FilterSil Quantity: 4-50 lbs bags FILTER PACK SEAL Interval: 83.9'-86.5' Type: 3/8" Uncoated Pel-I Quantity: 1-5 gallon bucke ANNULUS SEAL Interval: 0'-83.9' Type: AquaGuard Benton Grout Quantity: Approximately 8 gallons NOTES</td></pl,>	ML CL		13.50	. 1	ROTO SONIC	<u>10.00</u> 10.00		Type: FilterSil Quantity: 4-50 lbs bags FILTER PACK SEAL Interval: 83.9'-86.5' Type: 3/8" Uncoated Pel-I Quantity: 1-5 gallon bucke ANNULUS SEAL Interval: 0'-83.9' Type: AquaGuard Benton Grout Quantity: Approximately 8 gallons NOTES
20 —		20.00 - 30.00 (SM), SILTY SAND; gray to reddish gray, fine to medium, loose to soft, dry to moist, w <pl, biotite,="" feldspar<="" low="" plasticity,="" quartz,="" td=""><td>SM</td><td></td><td>20.00</td><td>2</td><td>ROTO SONIC</td><td>3.70 10.00</td><td></td><td>- - - - - - -</td></pl,>	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, biotite,="" feldspar<="" low="" plasticity,="" quartz,="" td=""><td>SM</td><td></td><td>30.00</td><td>3</td><td>ROTO SONIC</td><td>6.00 6.00</td><td></td><td>- - - - -</td></pl,>	SM		30.00	3	ROTO SONIC	6.00 6.00		- - - - -
- - -		36.00 - 40.00 (CL), CLAY; black to dark gray, low plasticity, w <pl, biotite="" dry="" gneiss,="" hard,="" moist,="" saprolite,="" saprolite,<="" soft="" td="" to="" very=""><td>CL</td><td></td><td>36.00</td><td>4</td><td>ROTO SONIC</td><td><u>4.00</u> 4.00</td><td></td><td>- - - -</td></pl,>	CL		36.00	4	ROTO SONIC	<u>4.00</u> 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, biotite="" fragments<="" gneiss="" moist="" soft,="" td="" to="" wet,=""><td>TWR</td><td></td><td>40.00</td><td>5</td><td>ROTO SONIC</td><td><u>2.20</u> 5.00</td><td></td><td>- - - -</td></pl,>	TWR		40.00	5	ROTO SONIC	<u>2.20</u> 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 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 Log continued on next page	BR BR		45.00	6	ROTO SONIC	<u>4.20</u> 10.00	AquaGuard Bentonite – Grout	- - - -
DRIL	LLING	LE: 1 in = 6.5 ft COMPANY: Cascade Drilling Fred Dorse		CHEC		: Tir			patman, PG pards, PG	GOLDER



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 100.00 ft LOCATION: Next to DGWC-2

RECORD OF BOREHOLE B-109D

DRILL RIG: Geoprobe 8140LS

DATE STARTED: 10/30/20

DATE COMPLETED: 10/31/20

DATE COMPLETED: 10/31/20

DATE COMPLETED: 10/31/20

DATE COMPLETED: 10/31/20

DATE COMPLETED: 10/31/20

DATE COMPLETED: 10/31/20

SHEET 2 of 2 DEPTH W.L.: 23.50 ELEVATION W.L.: 827.2 DATE W.L.: 10/31/2020 TIME W.L.: 1157

	z	SOIL PROFILE				s	AMPL	ES		
DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	DEPTH (ft)	SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
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		B-109D Borehole Diameter: 4" WELL CASING Interval: 0'-100' Material: Schedule 40 PVC Diameter: 2" Joint Type: Screw fit with
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).			55.00		OIN			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'
60 — - - -			BR			7	ROTO SONIC	<u>8.25</u> 10.00		Type: FilterSil Quantity: 4-50 lbs bags FILTER PACK SEAL Interval: 83.9'-86.5' Type: 3/8' Uncoated Pel-Pl Quantity: 1-5 gallon bucket ANNULUS SEAL Interval: 0'-83.9' Type: AquaGuard Bentonite
65 — - - - 70 — - -		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	<u>10.00</u> 10.00	3/8"	Grout Quantity: Approximately 80 gallons NOTES
75 — - - -						9	ROTO SONIC	<u>5.00</u> 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	<u>4.25</u> 5.00	3/8" - 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			85.00	11	ROTO SONIC	<u>5.00</u> 5.00	Sand Filter _ Pack	
90 —			BR			12	ROTO SONIC	<u>8.40</u> 10.00	U-Pack Screen	
00 —		Boring completed at 100.00 ft								
DRIL	LING	LE: 1 in = 6.5 ft COMPANY: Cascade Drilling Fred Dorse		CHEC		/: Tiı			oatman, PG ards, PG	GOLDER



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 65.00 ft LOCATION: Next to DGWC-68A

RECORD OF BOREHOLE B-110D

DRILL RIG: Geoprobe 8140LC

DATE STARTED: 11/14/20

DATE COMPLETED: 11/17/20

DATE COMPLETED: 11/17/20

ROS ELEVATION: 764.7 ft
TOC ELEVATION: 764.61 ft

SHEET 1 of 2 DEPTH W.L.: 9.35 ELEVATION W.L.: 755.3 DATE W.L.: 11/17/2020 TIME W.L.: 1110

	SOIL PROFILE				S	AMPLE	ES		
OEPTH (ft) ELEVATION	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES Flush mount –	WELL CONSTRUCTION DETAILS
0	0.00 - 5.00 Hand Auger 0'-10'; core loss from 0'-5',	NR							B-110D Borehole Diameter: 4" WELL CASING Interval: 0'-65' Material: Schedule 40 PVC Diameter: 2" Joint Type: Screw fit with
5 — - - -	5.00 - 8.50 (CL), CLAY; reddish brown to yellowish orange, trace to some fine to medium sand, moist, low plasticity, w <pl, fill<="" firm,="" soft="" td="" to=""><td>CL</td><td></td><td>5.00</td><td>1</td><td>ROTO SONIC</td><td>7.00 12.00</td><td></td><td>rubber seam WELL SCREEN Interval: 53'-63' Material: Schedule 40 PVC Diameter: 2" Slot Size: .010" End Cap: Schedule 40 PVC</td></pl,>	CL		5.00	1	ROTO SONIC	7.00 12.00		rubber seam WELL SCREEN Interval: 53'-63' Material: Schedule 40 PVC Diameter: 2" Slot Size: .010" End Cap: Schedule 40 PVC
- 10 — -	8.50 - 12.00 (ML), SILT; brown to dark brown, trace fine sand, moist, non-plastic, w <pl, soft<="" td=""><td>ML</td><td></td><td>8.50</td><td></td><td></td><td></td><td></td><td>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</td></pl,>	ML		8.50					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
15 —	12.00 - 20.00 (ML), SILT; brown to dark brown, some fine sand, moist, non-plastic, w <pl, soft<="" td=""><td>ML</td><td></td><td>12.00</td><td>2</td><td>ROTO SONIC</td><td><u>3.00</u> 8.00</td><td></td><td>Quantity: 1-5 gallon bucket ANNULUS SEAL Interval: 0'-46' Type: AquaGuard Bentonite Grout Quantity: Approximately 85 gallons NOTES</td></pl,>	ML		12.00	2	ROTO SONIC	<u>3.00</u> 8.00		Quantity: 1-5 gallon bucket ANNULUS SEAL Interval: 0'-46' Type: AquaGuard Bentonite Grout Quantity: Approximately 85 gallons NOTES
20 —	20.00 - 25.00 (ML), SILT; brown to dark brown, some fine sand, moist, non-plastic, w <pl, firm="" stiff<="" td="" to=""><td>ML</td><td></td><td>20.00</td><td>3</td><td>ROTO SONIC</td><td><u>3.00</u> 5.00</td><td>AquaGuard Bentonite – Grout</td><td></td></pl,>	ML		20.00	3	ROTO SONIC	<u>3.00</u> 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	<u>0.00</u> 10.00	AquaGuard Bentonite — Grout	
35 —	35.00 - 45.00 (CNEISS), 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	<u>6.40</u> 10.00	3/8" Uncoated – Pel-Plug	
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	<u>8.70</u> 10.00	3/8" Uncoated — Pel-Plug -	

LOG SCALE: 1 in = 6.5 ft

DRILLING COMPANY: Cascade Drilling

DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG CHECKED BY: Timothy Richards, PG



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 65.00 ft LOCATION: Next to DGWC-68A

RECORD OF BOREHOLE B-110D

DRILL RIG: Geoprobe 8140LC

DATE STARTED: 11/14/20

DATE COMPLETED: 11/17/20

DATE COMPLETED: 11/17/20

ROS ELEVATION: 764.7 ft
TOC ELEVATION: 764.61 ft

SHEET 2 of 2 DEPTH W.L.: 9.35 ELEVATION W.L.: 755.3 DATE W.L.: 11/17/2020 TIME W.L.: 1110

	z	SOIL PROFILE					AMPLE	S		
DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH (ft)	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	<u>8.70</u> 10.00	Sand Filter _ Pack	B-110D Borehole Diameter: 4" WELL CASING Interval: 0'-65' Material: Schedule 40 PV(Diameter: 2" Joint Type: Screw fit with rubber seam
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	<u>5.00</u> 5.00		WELL SCREEN Interval: 53'-63' Material: Schedule 40 PV Diameter: 2" Slot Size: .010" End Cap: Schedule 40 PV FILTER PACK Interval: 50.5'-63' Type: FilterSil
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	<u>4.00</u> 5.00	U-Pack _ Screen	Quantity: 3.5-50 lbs bags FILTER PACK SEAL Interval: 46'-50.5' Type: 3/8" Uncoated Pel- Quantity: 1-5 gallon bucke ANNULUS SEAL Interval: 0'-46' Type: AquaGuard Benton Grout
70 — 75 —		Boring completed at 65.00 ft								Quantity: Approximately 8 gallons NOTES
95 — — — — — — — — — — — — — — — — — — —										
LOG DRII	LLING	LE: 1 in = 6.5 ft COMPANY: Cascade Drilling Fred Dorse		CHEC		′: Tiı			patman, PG pards, PG	GOLDER



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 85.00 ft LOCATION: West of DGWC-5

RECORD OF BOREHOLE B-111D

DRILL RIG: Geoprobe 8140LC

DATE STARTED: 11/1/20

DATE COMPLETED: 11/3/20

DATE COMPLETED: 11/3/20

DATE COMPLETED: 11/3/20

DATE COMPLETED: 11/3/20

DATE COMPLETED: 11/3/20

DATE COMPLETED: 11/3/20

DATE COMPLETED: 11/3/20

DATE COMPLETED: 11/3/20

DATE COMPLETED: 11/3/20

SHEET 1 of 2 DEPTH W.L.: 8.9 ELEVATION W.L.: 755.30 DATE W.L.: 11/3/2020 TIME W.L.: 0815

	7	SOIL PROFILE				S	AMPL	ES		
DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES Stick-up –	WELL CONSTRUCTION DETAILS
0 — — — — — — — — — — — — — — — — — — —		0.00 - 10.00 Air Knife; Fill	FILL						AquaGuard Bentonite — Grout	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'
10 —		10.00 - 15.00 (ML), SILT; tan to brown, trace fine to coarse sand, moist to wet, soft, low plasticity, w <pi, saprolite<="" td=""><td>ML</td><td></td><td>10.00</td><td></td><td>S</td><td></td><td></td><td>Type: FilterSil Quantity: 3-50 lbs bags FILTER PACK SEAL Interval: 68.7-72.1' Type: 3/8" Uncoated Pel-Pl Quantity: 1-5 gallon bucket ANNULUS SEAL Interval: 0'-68.7' Type: AquaGuard Bentonity</td></pi,>	ML		10.00		S			Type: FilterSil Quantity: 3-50 lbs bags FILTER PACK SEAL Interval: 68.7-72.1' Type: 3/8" Uncoated Pel-Pl Quantity: 1-5 gallon bucket ANNULUS SEAL Interval: 0'-68.7' Type: AquaGuard Bentonity
15 —		15.00 - 20.00 (ML), SILT; gray and green to brown, low plasticity, w <pl, firm<="" moist,="" soft="" td="" to=""><td>ML</td><td></td><td>15.00</td><td>1</td><td>ROTO SONIC</td><td>10.00</td><td></td><td>Grout Quantity: Approximately 80 gallons NOTES</td></pl,>	ML		15.00	1	ROTO SONIC	10.00		Grout Quantity: Approximately 80 gallons NOTES
20 —		20.00 - 26.00 (ML), SILT; gray and green to brown, low plasticity, w <pl, firm,="" moist,="" more="" saprolitic<="" soft="" td="" to=""><td></td><td></td><td>20.00</td><td></td><td></td><td></td><td></td><td>- - -</td></pl,>			20.00					- - -
25 —			ML			2	ROTO SONIC	8.00 8.00		- - -
- - - -		26.00 - 27.00 (TWR), TRANSITIONALLY WEATHERED ROCK; silt, gray and green to brown, low plasticity, w <pl, (gneiss),="" -="" 27.00="" 34.00="" augen="" bedrock;="" biotite="" biotite,="" contains="" dark="" feldspar,="" firm,="" gneiss="" gravels="" gray,<="" locally="" moist,="" of="" quartz,="" saprolitic,="" soft="" td="" to="" white=""><td>TWR</td><td>$\nabla^{\mathcal{D}} \Delta^{\nabla} \nabla$</td><td>26.00</td><td>3</td><td><u></u></td><td>1.00</td><td>AquaGuard</td><td>-</td></pl,>	TWR	$\nabla^{\mathcal{D}} \Delta^{\nabla} \nabla$	26.00	3	<u></u>	1.00	AquaGuard	-
30 —		moderately weathered, medium strong, iron staining, locally contains augened feldspars	BR			4	ROTO SONIROTO SON	<u>2.20</u> 4.00	Bentonite –	-
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			34.00	5	ROTO SONIC F	1.70 6.00		
40			BR			6	ROTO SONIC	10.00 10.00		
		Log continued on next page LE: 1 in = 6.5 ft							oatman, PG	<u>^</u>
		COMPANY: Cascade Drilling Fred Dorse			KED B` : 2/3/21		noth	y Rich	nards, PG	GOLDER



PROJECT: Plant McDonough PROJECT NUMBER: 1668496.18 DRILLED DEPTH: 85.00 ft LOCATION: West of DGWC-5

RECORD OF BOREHOLE B-111D

DRILL RIG: Geoprobe 8140LC
DATE STARTED: 11/1/20
DATE COMPLETED: 11/3/20

ROSELEVATION: 789.1 ft
TOC ELEVATION: 791.87 ft

SHEET 2 of 2 DEPTH W.L.: 8.9 ELEVATION W.L.: 755.30 DATE W.L.: 11/3/2020 TIME W.L.: 0815

	7	SOIL PROFILE				S	AMPLE	≣S		
DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
50 -			BR		(11)	Ø			9600 BEST	<u>B-111D</u>
55 —	-	51.50 - 58.00 (GNEISS), BEDROCK; feldspar, quartz, biotite, white to light gray, well foliated, poorly jointed, fresh to slightly weathered, medium strong, locally contains epidote	BR		51.50	7	ROTO SONIC	7.00 10.00	3/8" Uncoated — Pel-Plug	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
-	-	(GNEISS), BEDROCK; biotite, feldspar, quartz, white to light gray, well foliated, poorly jointed, fresh to slightly weathered, medium to			00.00					Interval: 72.1'-84.15' Type: FilterSil
60		strong,				8	ROTO SONIC	<u>5.00</u> 5.00		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
65	-					9	ROTO SONIC	<u>5.00</u> 5.00	3/8"	Quantity: Approximately 80 gallons NOTES
-			BR			10	ROTO SONIC	<u>5.00</u> 5.00	Sand Filter_	
75						11	ROTO SONIC	<u>10.00</u> 10.00	Pack	
85 - 85 - 90 - 90 - 90 - 90 - 90 - 90 - 90 - 9		Boring completed at 85.00 ft								

LOG SCALE: 1 in = 6.5 ft

DRILLING COMPANY: Cascade Drilling

DRILLER: Fred Dorse

GA INSPECTOR: Michael Boatman, PG CHECKED BY: Timothy Richards, PG



RECORD OF BOREHOLE B-112D

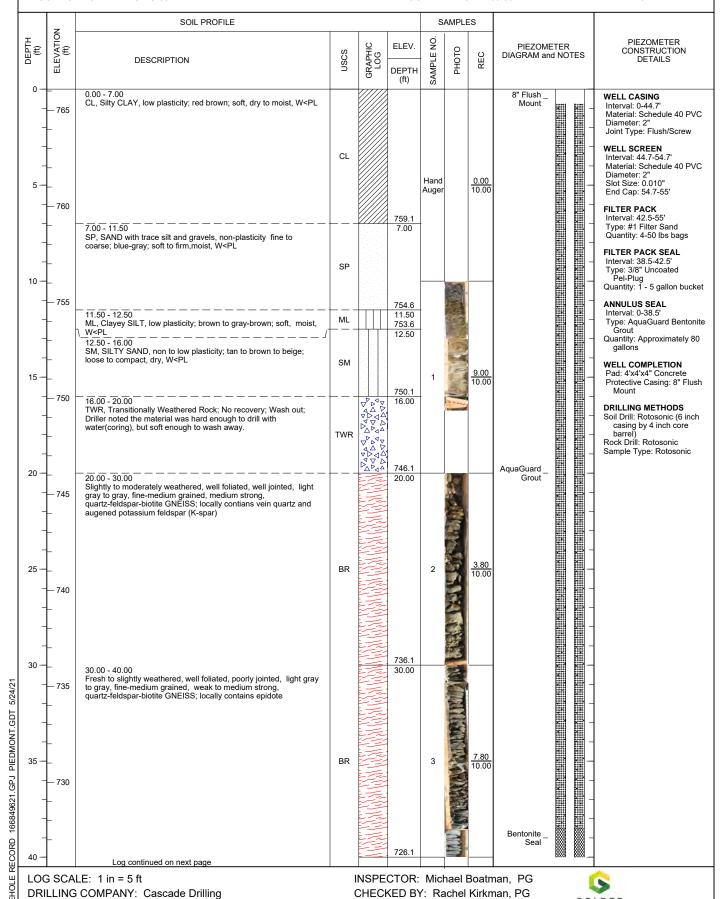
PROJECT: Plant McDonough
PROJECT NUMBER: 166849621
DRILLED DEPTH: 55.00 ft
LOCATION: Offset of DGWC-69

DRILL RIG: TSi 150CC
DATE STARTED: 3/21/21
DATE COMPLETED: 3/22/21

DRILLER: Tommy Ardito

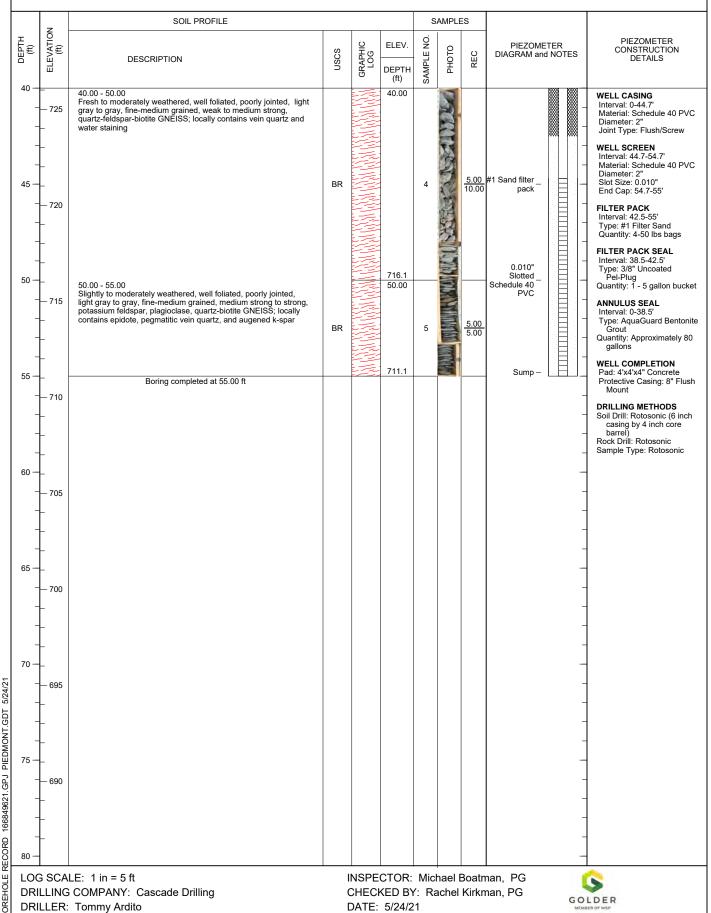
NORTHING: 1,391,564.2 EASTING: 2,200,664.1 GS ELEVATION: 766.1 TOC ELEVATION: 765.58 ft SHEET 1 of 2 DEPTH W.L.:6.87 ELEVATION W.L.: 758.71 DATE W.L.:4/12/2021 TIME W.L.:12:18

GOLDER



RECORD OF BOREHOLE B-112D

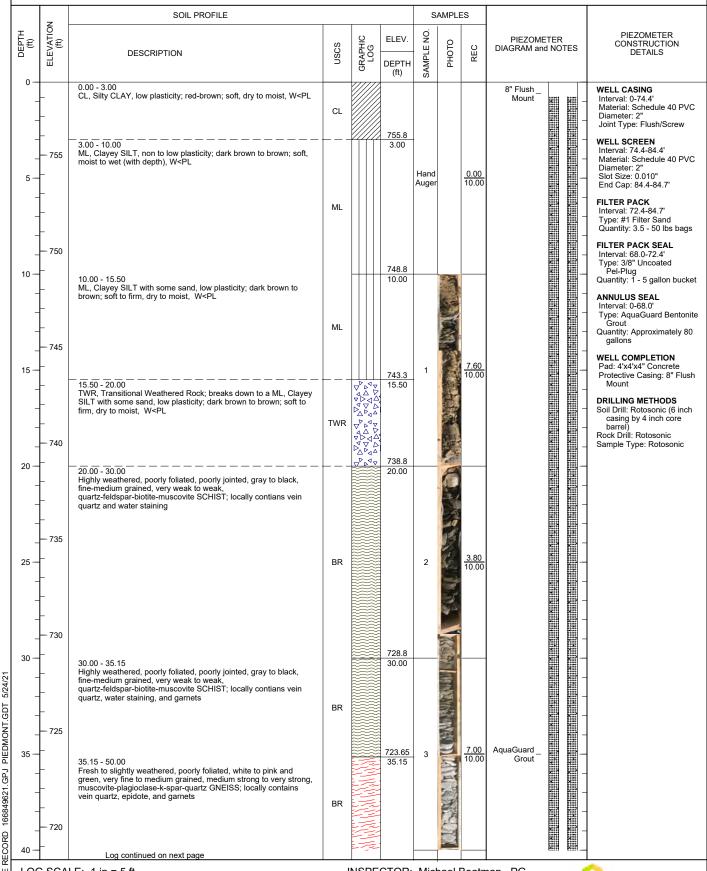
PROJECT: Plant McDonough PROJECT NUMBER: 166849621 DRILLED DEPTH: 55.00 ft LOCATION: Offset of DGWC-69 DRILL RIG: TSi 150CC DATE STARTED: 3/21/21 DATE COMPLETED: 3/22/21 NORTHING: 1,391,564.2 EASTING: 2,200,664.1 GS ELEVATION: 766.1 TOC ELEVATION: 765.58 ft SHEET 2 of 2 DEPTH W.L.:6.87 ELEVATION W.L.: 758.71 DATE W.L.:4/12/2021 TIME W.L.:12:18



RECORD OF BOREHOLE B-113D

PROJECT: Plant McDonough
PROJECT NUMBER: 166849621
DA'
DRILLED DEPTH: 85.00 ft
LOCATION: Offset of B-72

DRILL RIG: TSi 150CC DATE STARTED: 3/22/21 DATE COMPLETED: 3/30/21 NORTHING: 1,391,264.6 EASTING: 2,200,719.2 GS ELEVATION: 758.8 TOC ELEVATION: 758.22 ft SHEET 1 of 3 DEPTH W.L.:1.46 ELEVATION W.L.: 756.76 DATE W.L.:4/12/2021 TIME W.L.:12:00



LOG SCALE: 1 in = 5 ft

DRILLING COMPANY: Cascade Drilling

DRILLER: Tommy Ardito

INSPECTOR: Michael Boatman, PG CHECKED BY: Rachel Kirkman, PG



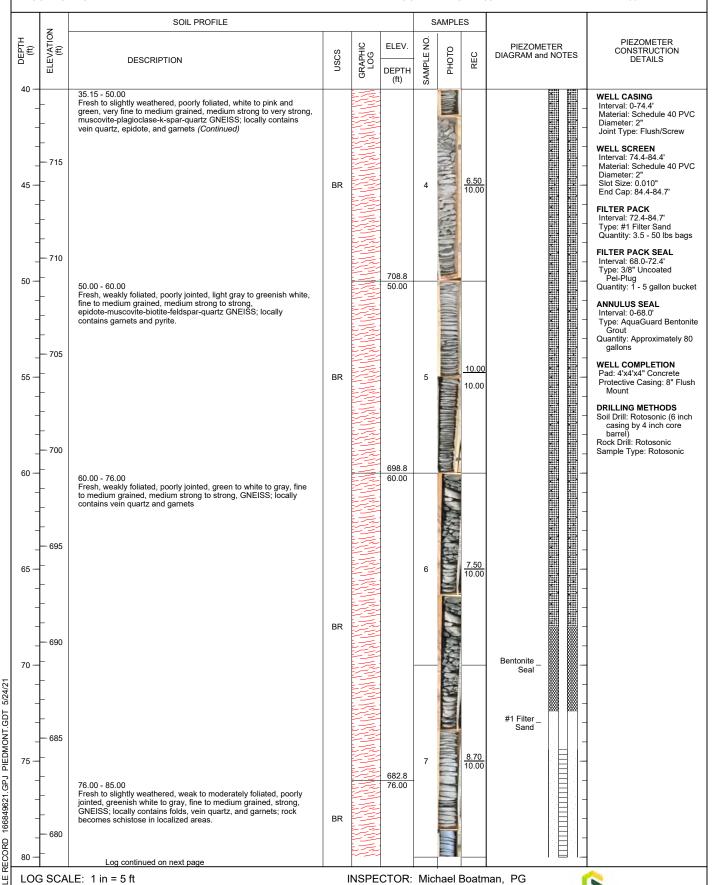
RECORD OF BOREHOLE B-113D

PROJECT: Plant McDonough
PROJECT NUMBER: 166849621
DATE ST/
DRILLED DEPTH: 85.00 ft
LOCATION: Offset of B-72

DRILLING COMPANY: Cascade Drilling

DRILLER: Tommy Ardito

DRILL RIG: TSi 150CC DATE STARTED: 3/22/21 DATE COMPLETED: 3/30/21 NORTHING: 1,391,264.6 EASTING: 2,200,719.2 GS ELEVATION: 758.8 TOC ELEVATION: 758.22 ft SHEET 2 of 3 DEPTH W.L.:1.46 ELEVATION W.L.: 756.76 DATE W.L.:4/12/2021 TIME W.L.:12:00



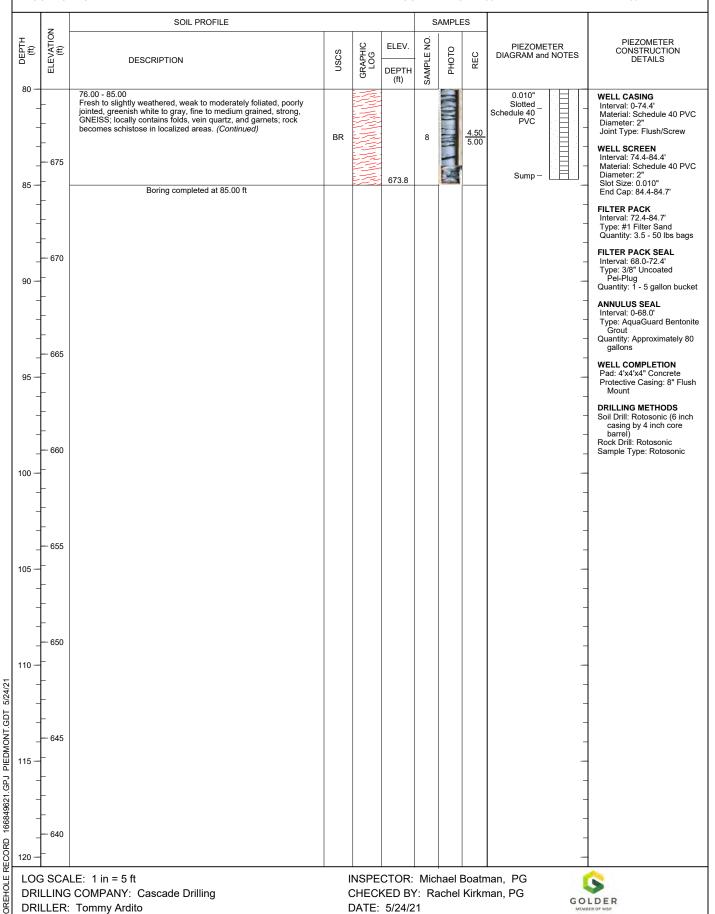
CHECKED BY: Rachel Kirkman, PG

DATE: 5/24/21

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: 758.8 TOC ELEVATION: 758.22 ft SHEET 3 of 3 DEPTH W.L.:1.46 ELEVATION W.L.: 756.76 DATE W.L.:4/12/2021 TIME W.L.:12:00



RECORD OF BOREHOLE B-115D

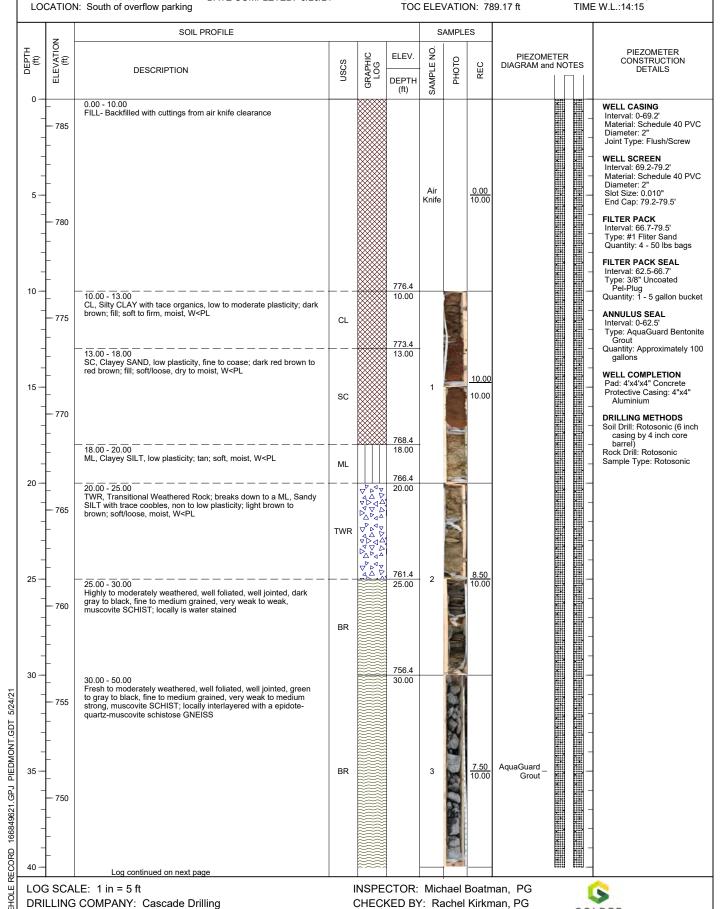
PROJECT: Plant McDonough
PROJECT NUMBER: 166849621
DRILLED DEPTH: 80.00 ft

DRILL RIG: TSi 150CC
DATE STARTED: 3/19/21
DATE COMPLETED: 3/20/21

DRILLER: Tommy Ardito

NORTHING: 1,391,265.3 EASTING: 2,202,580.7 GS ELEVATION: 786.4 TOC ELEVATION: 789.17 ft SHEET 1 of 2 DEPTH W.L.:19.32 ELEVATION W.L.: 769.85 DATE W.L.:4/7/2021 TIME W.L.:14:15

GOLDER



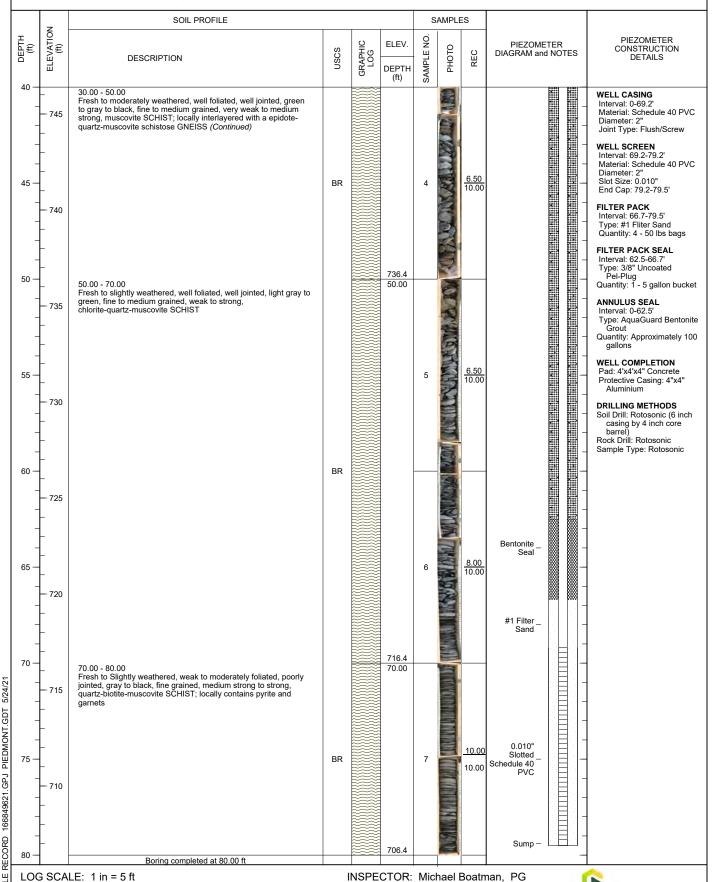
RECORD OF BOREHOLE B-115D

PROJECT: Plant McDonough
PROJECT NUMBER: 166849621
DRILLED DEPTH: 80.00 ft
LOCATION: South of overflow parking

DRILLING COMPANY: Cascade Drilling

DRILLER: Tommy Ardito

DRILL RIG: TSi 150CC DATE STARTED: 3/19/21 DATE COMPLETED: 3/20/21 NORTHING: 1,391,265.3 EASTING: 2,202,580.7 GS ELEVATION: 786.4 TOC ELEVATION: 789.17 ft SHEET 2 of 2 DEPTH W.L.:19.32 ELEVATION W.L.: 769.85 DATE W.L.:4/7/2021 TIME W.L.:14:15



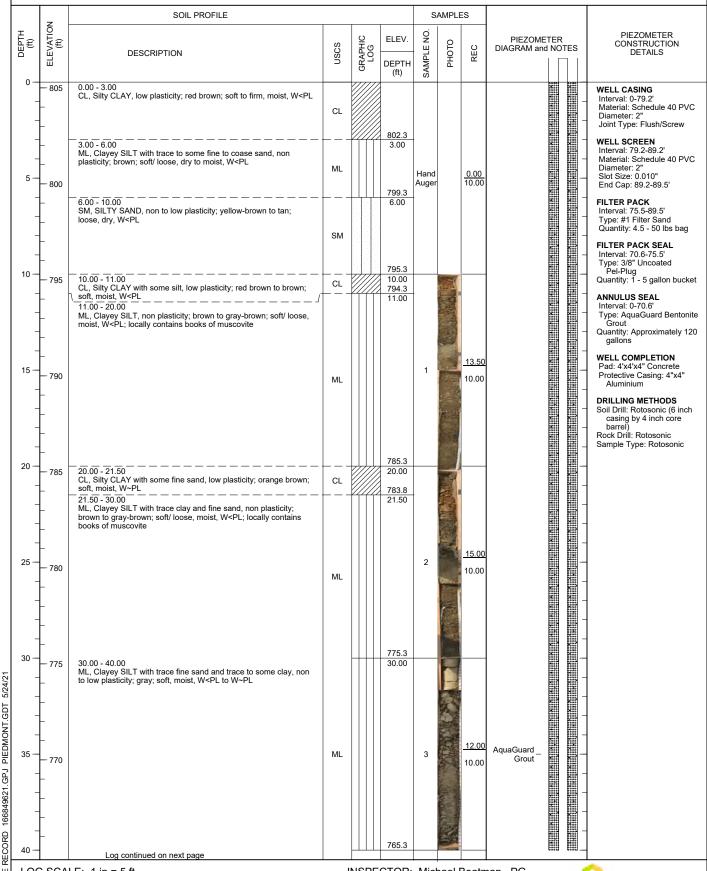
CHECKED BY: Rachel Kirkman, PG

DATE: 5/24/21

GOLDER

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: 805.3 TOC ELEVATION: 807.82 ft SHEET 1 of 3 DEPTH W.L.:40.82 ELEVATION W.L.: 767.00 DATE W.L.:4/6/2021 TIME W.L.:15:11



LOG SCALE: 1 in = 5 ft

DRILLING COMPANY: Cascade Drilling

DRILLER: Tommy Ardito

INSPECTOR: Michael Boatman, PG CHECKED BY: Rachel Kirkman, PG



RECORD OF BOREHOLE B-116D

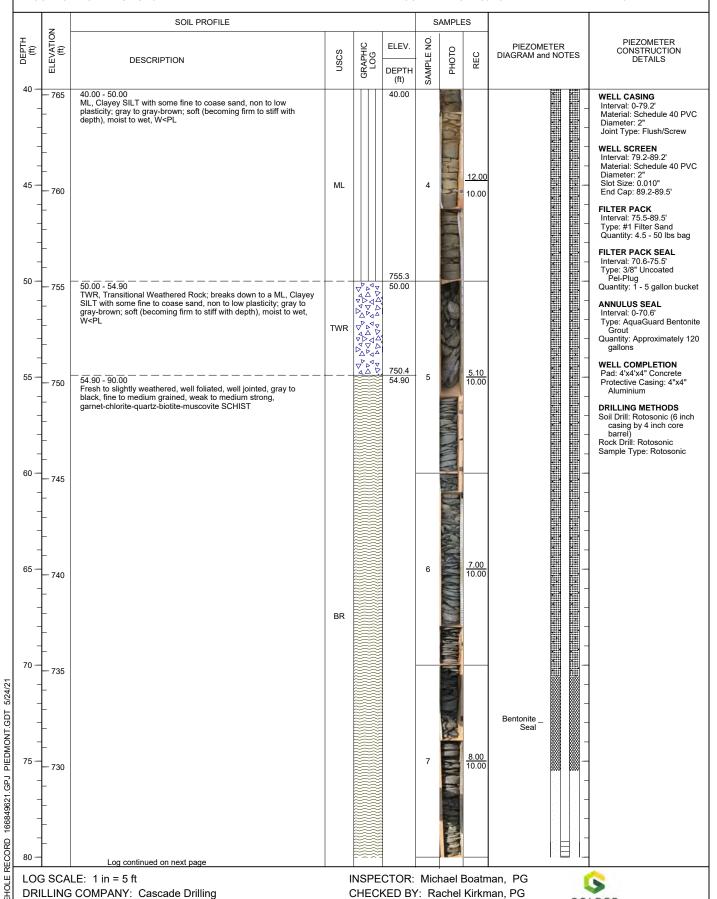
PROJECT: Plant McDonough PROJECT NUMBER: 166849621 DRILLED DEPTH: 90.00 ft LOCATION: Offset DGWC-70A

DRILLER: Tommy Ardito

DRILL RIG: TSi 150CC
DATE STARTED: 3/7/21
DATE COMPLETED: 3/8/21

NORTHING: 1,390,483.7 EASTING: 2,200,611.0 GS ELEVATION: 805.3 TOC ELEVATION: 807.82 ft SHEET 2 of 3 DEPTH W.L.:40.82 ELEVATION W.L.: 767.00 DATE W.L.:4/6/2021 TIME W.L.:15:11

GOLDER



PROJECT: Plant McDonough PROJECT NUMBER: 166849621 DRILLED DEPTH: 90.00 ft LOCATION: Offset DGWC-70A

DRILLER: Tommy Ardito

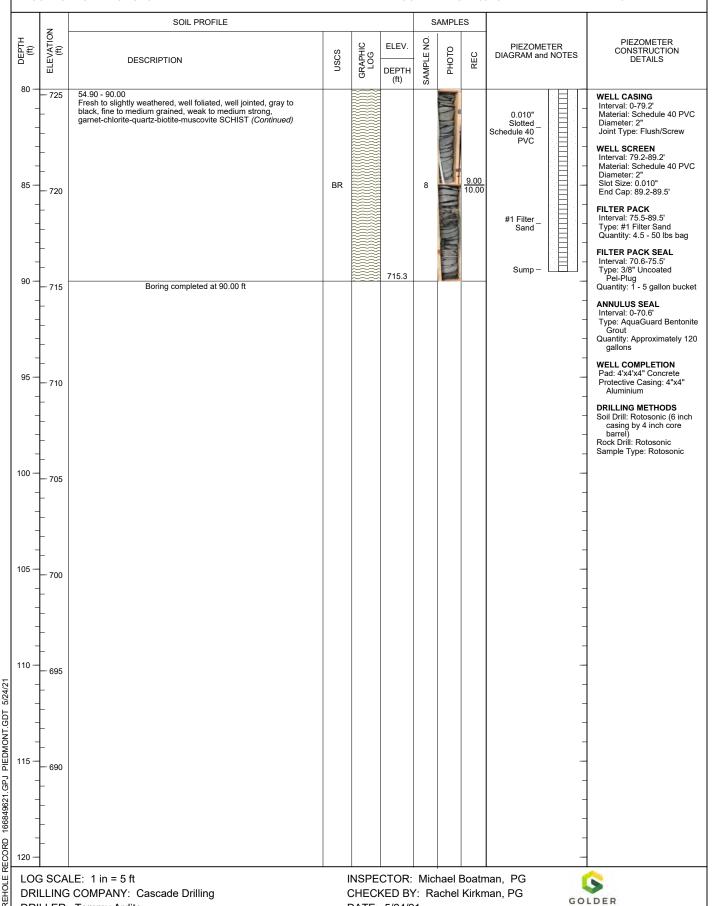
RECORD OF BOREHOLE B-116D

DRILL RIG: TSi 150CC
DATE STARTED: 3/7/21
DATE COMPLETED: 3/8/21

RECORD OF BOREHOLE B-116D

NORTHING: 1,390,48
EASTING: 2,200,611.
GS ELEVATION: 805

NORTHING: 1,390,483.7 EASTING: 2,200,611.0 GS ELEVATION: 805.3 TOC ELEVATION: 807.82 ft SHEET 3 of 3 DEPTH W.L.:40.82 ELEVATION W.L.: 767.00 DATE W.L.:4/6/2021 TIME W.L.:15:11



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: 861.2 TOC ELEVATION: 863.82 ft SHEET 1 of 2 DEPTH W.L.:27.88 ELEVATION W.L.: 835.94 DATE W.L.:4/7/2021 TIME W.L.:9:35

SOIL PROFILE SAMPLES LEVATION (ft) DEPTH (ft) PIEZOMETER CONSTRUCTION DETAILS Š PIEZOMETER DIAGRAM and NOTES GRAPHIC LOG ELEV. **PHOTO USCS** SAMPLE REC DESCRIPTION ᆸ DEPTH (ft) 0.00 - 10.00 **WELL CASING** FILL- Backfilled with cuttings from air knife clearance Interval: 0-64.7' Material: Schedule 40 PVC - 860 Diameter: 2" Joint Type: Flush/Screw WELL SCREEN Interval: 64 7-74 7 Material: Schedule 40 PVC Diameter: 2' 0.00 Slot Size: 0.010" 5 -Knife End Cap: 74.7-75' 855 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 851.2 10 10.00 - 16.00 10.00 SM, SILTY SAND, low plasticity; red brown; soft/loose, moist, ANNULUS SEAL 850 Interval: 0-58.5'
Type: AquaGuard Bentonite
Grout SM Quantity: Approximately 80 gallons 7.00 9.00 WELL COMPLETION Pad: 4'x4'x4" Concrete Protective Casing: 4'x4' Aluminium 845 16.00 - 19.00 16.00 DRILLING METHODS ML, Clayey SILT with trace sand, low plasticity; light gray to white; Soil Drill: Rotosonic (6 inch soft, moist, W<PL ML casing by 4 inch core barrel)
Rock Drill: Rotosonic 842.2 Sample Type: Rotosonic 19.00 - 29.00 SM, SILTY SAND, low plasticity, very fine; light gray to tannish 19.00 20 white; soft, moist, W<PL 840 SM 2 25 835 832.2 29.00 - 39.00 SM, SILTY SAND with trace gravels, low plasticity, fine to coarse; 29.00 30 light gray to tannish white; soft, moist (becoming dry with depth), W<PL 5/24/21 830 PIEDMONT.GDT 10.00 SM 3 10.00 AquaGuard Grout GPJ 825 166849621 822 2 RECORD 39.00 9.00 SM Log continued on next page

LOG SCALE: 1 in = 5 ft

DRILLING COMPANY: Cascade Drilling

DRILLER: Tommy Ardito

INSPECTOR: Michael Boatman, PG CHECKED BY: Rachel Kirkman, PG

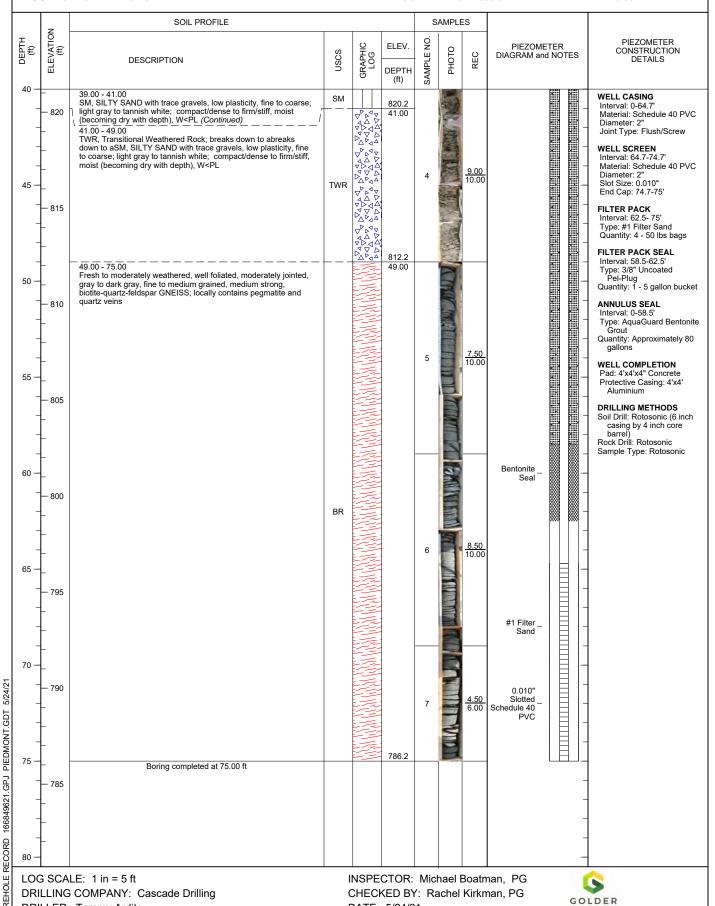


RECORD OF BOREHOLE B-117D

PROJECT: Plant McDonough PROJECT NUMBER: 166849621 DRILLED DEPTH: 75.00 ft LOCATION: Offset of DGWC-71

DRILLER: Tommy Ardito

DRILL RIG: TSi 150CC DATE STARTED: 3/17/21 DATE COMPLETED: 3/17/21 NORTHING: 1,393,963.8 EASTING: 2,201,727.3 GS ELEVATION: 861.2 TOC ELEVATION: 863.82 ft SHEET 2 of 2 DEPTH W.L.:27.88 ELEVATION W.L.: 835.94 DATE W.L.:4/7/2021 TIME W.L.:9:35



PROJECT: Plant McDonough PROJECT NUMBER: 166849621 DRILLED DEPTH: 75.00 ft LOCATION: West of gas pipline

RECORD OF BOREHOLE B-118

DRILL RIG: TSi 150CC
DATE STARTED: 3/8/21
DATE COMPLETED: 3/9/21

DATE COMPLETED: 3/9/21

DATE COMPLETED: 3/9/21

DATE COMPLETED: 3/9/21

DATE COMPLETED: 3/9/21

DATE COMPLETED: 3/9/21

SHEET 1 of 2 DEPTH W.L.:50.65 ELEVATION W.L.: 757.05 DATE W.L.:4/6/2021 TIME W.L.:9:36

	z l	SOIL PROFILE					AMPLE	=S				
(tf)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV.	SAMPLE NO.	РНОТО	REC	PIEZOMETE DIAGRAM and No		S	PIEZOMETER CONSTRUCTION DETAILS
0	급 805		Ď	GR,	DEPTH (ft)	SAMF	H.	ட				
-	- - -	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					000000000000000000000000000000000000000		WELL CASING Interval: 0-64.85' Material: Schedule 40 P\ Diameter: 2" Joint Type: Flush/Screw WELL SCREEN Interval: 64.85-74.85'
5 —	- 800 -	SP, SAND, non plasticity, uniformly graded; yellow-orange; loose, dry to moist, W <pl< td=""><td>SP</td><td></td><td></td><td>Hand Auger</td><td></td><td>0.00 10.00</td><td></td><td>000000000000000000000000000000000000000</td><td></td><td>Material: Schedule 40 P\ Diameter: 2" Slot Size: 0.010" End Cap: 74.85-75.15' FILTER PACK</td></pl<>	SP			Hand Auger		0.00 10.00		000000000000000000000000000000000000000		Material: Schedule 40 P\ Diameter: 2" Slot Size: 0.010" End Cap: 74.85-75.15' FILTER PACK
	- - -		55						2	00 00 00 00 00 00 00 00 00 00 00 00 00		Interval: 61.8-75.15 Type: #1 Filter Sand Quantity: 4 - 50 lbs bags FILTER PACK SEAL Interval: 56.6-61.8'
0 -	— 795 -	10.00 - 18.50			795 10.00		1			0000		Type: 3/8" Uncoated Pel-Plug Quantity: 1 - 5 gallon buc
-	- - -	CL, Silty CLAY with trace to some fine sand, low plasticity; red-orange and white; soft, moist, W,PL					1		X X X	00 00 00 00 00 00 00 00 00 00 00 00 00		ANNULUS SEAL Interval: 0-56.6' Type: AquaGuard Bento Grout Quantity: Approximately 8
- 5 -	- 790 		CL			1		<u>5.00</u> 10.00	2	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		gallons WELL COMPLETION Pad: 4'x4'x4" Concrete Protective Casing: 4"x4" Aluminium
-	- - -	18.50 - 20.00 ML, Clayey SILT with trace sand and fine gravels, non plasiticity; olive brown to brown; loose, dry, W <pl< td=""><td>ML</td><td></td><td>786.5 18.50</td><td></td><td></td><td></td><td>* *</td><td>900000000000000000000000000000000000000</td><td></td><td>DRILLING METHODS Soil Drill: Rotosonic (6 in casing by 4 inch core barrel) Rock Drill: Rotosonic Sample Type: Rotosonic</td></pl<>	ML		786.5 18.50				* *	900000000000000000000000000000000000000		DRILLING METHODS Soil Drill: Rotosonic (6 in casing by 4 inch core barrel) Rock Drill: Rotosonic Sample Type: Rotosonic
) - -	— 785 - -	20.00 - 25.00 SP, SAND, non plasticity, fine to coarse, poorly graded; tannish-orange; loose, moist, W <pl< td=""><td>SP</td><td></td><td>785 20.00</td><td></td><td></td><td></td><td></td><td>000000000000000000000000000000000000000</td><td></td><td></td></pl<>	SP		785 20.00					000000000000000000000000000000000000000		
5-	- - 780 -	25.00 - 30.00 SM, SILTY SAND, low plasticity, fine to medium; orange to tan;			780 25.00	- 2	The state of the s	7.50 10.00	×	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0000 0000 0000 0000 0000 0000 0000 0000 0000	
-	- - -	loose/soft, moist, W <pl< td=""><td>SM</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>0004</td><td></td></pl<>	SM								0004	
- - -	- 775 - -	30.00 - 32.00 ML, Sandy SILT, non plasiticity; brown to dark brown; soft, moist, W <pl< td=""><td>ML</td><td></td><td>775 30.00</td><td>3</td><td></td><td>2.50 2.00</td><td></td><td>0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td><td></td><td></td></pl<>	ML		775 30.00	3		2.50 2.00		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		
-	- - -	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< td=""><td></td><td></td><td>773 32.00</td><td></td><td></td><td></td><td>**************************************</td><td>000000000000000000000000000000000000000</td><td></td><td></td></pl<>			773 32.00				**************************************	000000000000000000000000000000000000000		
5 - -	— 770 —		TWR			4		1.00 6.00	AquaGuard	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		
-	_			00000000000000000000000000000000000000	765	5	TO SERVICE OF THE PERSON OF TH	1.50 2.00		000000000000000000000000000000000000000		

DRILLING COMPANY: Cascade Drilling

DRILLER: Tommy Ardito

INSPECTOR: Michael Boatman, PG CHECKED BY: Rachel Kirkman, PG



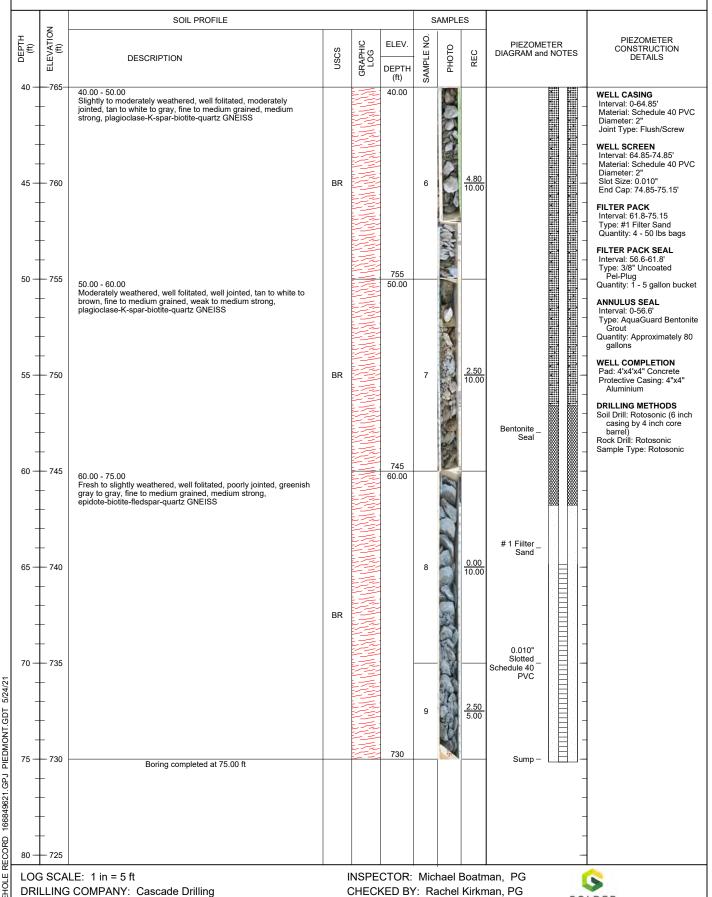
RECORD OF BOREHOLE B-118

PROJECT: Plant McDonough PROJECT NUMBER: 166849621 DRILLED DEPTH: 75.00 ft LOCATION: West of gas pipline

DRILLER: Tommy Ardito

DRILL RIG: TSi 150CC DATE STARTED: 3/8/21 DATE COMPLETED: 3/9/21 NORTHING: 1,391,219.3 EASTING: 2,200,449.7 GS ELEVATION: 805.0 TOC ELEVATION: 807.70 ft SHEET 2 of 2 DEPTH W.L.:50.65 ELEVATION W.L.: 757.05 DATE W.L.:4/6/2021 TIME W.L.:9:36

GOLDER



PROJECT: Plant McDonough PROJECT NUMBER: 166849621 DRILLED DEPTH: 105.00 ft LOCATION: Offset of B-118

RECORD OF BOREHOLE B-119D

DRILL RIG: TSi 150CC
DATE STARTED: 3/10/21
DATE COMPLETED: 3/16/21

RECORD OF BOREHOLE B-119D

NORTHING: 1,391,236.4

EASTING: 2,200,446.6

GS ELEVATION: 804.5 TOC ELEVATION: 807.15 ft

SHEET 1 of 3 DEPTH W.L.:49.94 ELEVATION W.L.: 757.21 DATE W.L.:4/027 TIME W.L.:13:37

	<u>Z</u>	SOIL PROFILE		1	1		AMPLE	S		
DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV.	SAMPLE NO.	РНОТО	REC	PIEZOMETER DIAGRAM and NOTES	PIEZOMETER CONSTRUCTION DETAILS
0	- - - -	0.00 - 12.50 CL, Sandy CLAY, low plasticity, fine to coarse; red to red-orange; soft/loose, dry to moist, W <pl< td=""><td></td><td></td><td>(ft)</td><td>Hand Auger</td><td></td><td><u>0.00</u> 10.00</td><td></td><td>WELL CASING Interval: 0-94, 7' Material: Schedule 40 P' Diameter: 2" Joint Type: Flush/Screw WELL SCREEN Interval: 94,7-104.7' Material: Schedule 40 P' Diameter: 2" Slot Size: 0.010" End Cap: 104.7-105'</td></pl<>			(ft)	Hand Auger		<u>0.00</u> 10.00		WELL CASING Interval: 0-94, 7' Material: Schedule 40 P' Diameter: 2" Joint Type: Flush/Screw WELL SCREEN Interval: 94,7-104.7' Material: Schedule 40 P' Diameter: 2" Slot Size: 0.010" End Cap: 104.7-105'
- - - 10 —	_ _ _ _ 795		CL						*	FILTER PACK Interval: 91.5-105' Type: #1 Filter Sand Quantity: 4.5 - 50 lbs bag FILTER PACK SEAL Interval: 86.5-91.5' Type: 3/8" Uncoated Pel-Plug Quantity: 1 - 5 gallon buc
- - - 15 —	- - - 790	12.50 - 18.00 ML, Clayey SILT with some fine sand, low plasticity; pink-brown to tan; loose, dry to moist, W <pl< td=""><td> ML</td><td></td><td>792 12.50</td><td>1</td><td></td><td>7.50 9.00</td><td> </td><td>ANNULUS SEAL Interval: 0-86.5' Type: AquaGuard Bento Grout Quantity: Approximately gallons WELL COMPLETION Pad: 4'x4'x4" Concrete Protective Casing: 4"x4' Aluminium</td></pl<>	 ML		792 12.50	1		7.50 9.00		ANNULUS SEAL Interval: 0-86.5' Type: AquaGuard Bento Grout Quantity: Approximately gallons WELL COMPLETION Pad: 4'x4'x4" Concrete Protective Casing: 4"x4' Aluminium
- - 20 — -	- - - 785 -	18.00 - 19.00 SP, SAND with trace to some silt, low plasticity, uniformly graded; white to tan; loose, dry, W <pl -="" 19.00="" 20.00="" 21.50="" 23.50<="" brown;="" clayey="" dark="" dry="" fine="" fine;="" gray;="" loose,="" low="" medium;="" moderate="" moist,="" plasticity,="" sand="" sand,="" sc,="" silt,="" soft,="" some="" sp,="" tan="" td="" to="" w-pl="" w<pl="" white="" with=""><td>SP SC SP</td><td></td><td>786.5 18.00 785.5 19.00 784.5 20.00 783 21.50</td><td></td><td></td><td></td><td></td><td>DRILLING METHODS Soil Drill: Rotosonic (6 in casing by 4 inch core barrel) Rock Drill: Rotosonic Sample Type: Rotosonic</td></pl>	SP SC SP		786.5 18.00 785.5 19.00 784.5 20.00 783 21.50					DRILLING METHODS Soil Drill: Rotosonic (6 in casing by 4 inch core barrel) Rock Drill: Rotosonic Sample Type: Rotosonic
- 25 — -	780 	SM, SILTY SAND, low plasticity; beige brown; soft, moist to wet, W-PL 23.50 - 27.50 ML, Clayey SILT with some fine sand, moderate plasticity; light to dark brown; soft/loose, dry to moist, W <pl< td=""><td>ML</td><td></td><td>781 23.50</td><td>2</td><td></td><td><u>9.50</u> 10.00</td><td></td><td></td></pl<>	ML		781 23.50	2		<u>9.50</u> 10.00		
- 30 —	- - 775 -	27.50 - 29.00 SP, SAND with trace to some silt, non plasticity, fine to coarse; white to beige; loose, dry, W <pl -="" 29.00="" 39.00="" brown;="" dry="" fine;="" gravels,="" light="" loose,="" low="" ml,="" moist,="" plasticity,="" sandy="" silt="" tan="" td="" to="" trace="" w<pl<="" with=""><td>SP</td><td></td><td>777 27.50 775.5 29.00</td><td></td><td></td><td></td><td></td><td></td></pl>	SP		777 27.50 775.5 29.00					
- - 35 — -	- - 770 - -		ML			3		<u>9.50</u> 10.00	AquaGuard XX XX XX XX XX XX XX XX XX XX XX XX XX	
-	_		ML		765.5 39.00	4		4.50 6.00		

LOG SCALE: 1 in = 5 ft

DRILLING COMPANY: Cascade Drilling

DRILLER: Tommy Ardito

INSPECTOR: Michael Boatman, PG CHECKED BY: Rachel Kirkman, PG



RECORD OF BOREHOLE B-119D

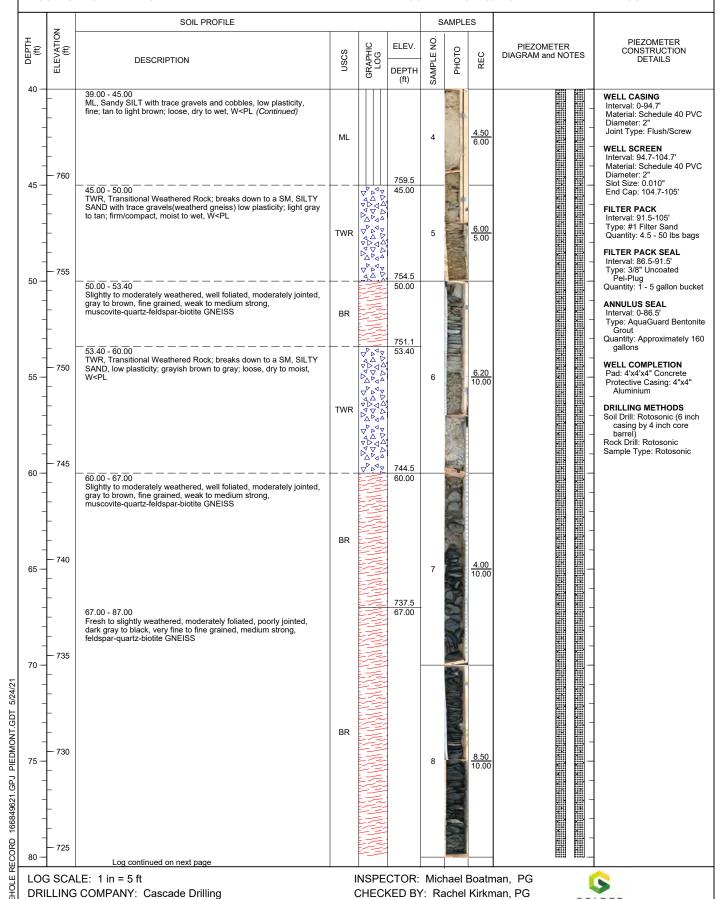
PROJECT: Plant McDonough
PROJECT NUMBER: 166849621
DRILLED DEPTH: 105.00 ft
LOCATION: Offset of B-118

DRILL RIG: TSi 150CC
DATE STARTED: 3/10/21
DATE COMPLETED: 3/16/21

DRILLER: Tommy Ardito

NORTHING: 1,391,236.4 EASTING: 2,200,446.6 GS ELEVATION: 804.5 TOC ELEVATION: 807.15 ft SHEET 2 of 3 DEPTH W.L.:49.94 ELEVATION W.L.: 757.21 DATE W.L.:4/5/2021 TIME W.L.:13:37

GOLDER



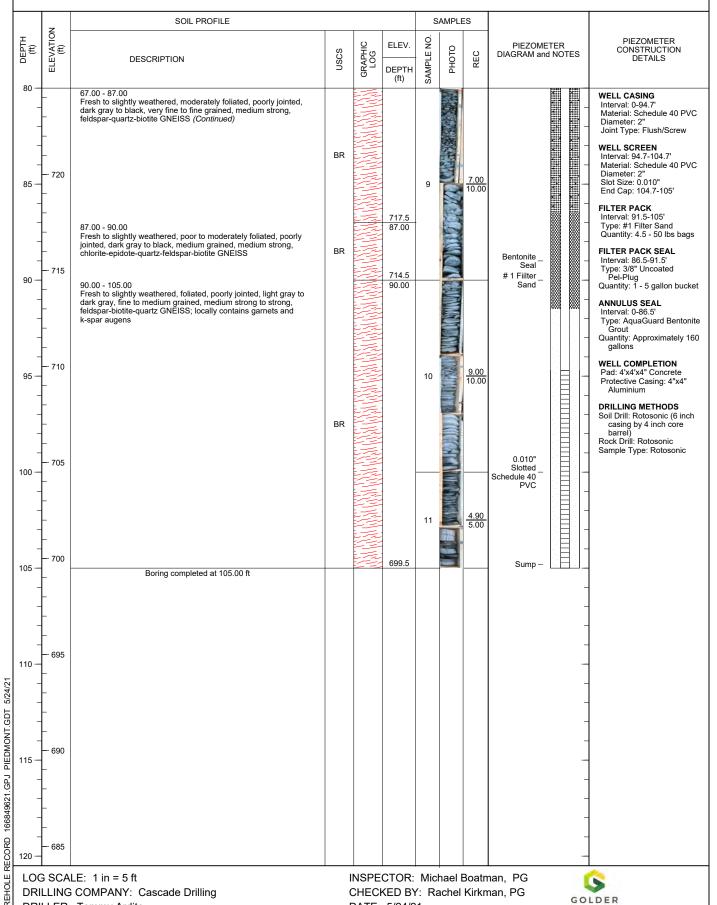
DATE: 5/24/21

RECORD OF BOREHOLE B-119D

PROJECT: Plant McDonough PROJECT NUMBER: 166849621 DRILLED DEPTH: 105.00 ft LOCATION: Offset of B-118

DRILLER: Tommy Ardito

DRILL RIG: TSi 150CC DATE STARTED: 3/10/21 DATE COMPLETED: 3/16/21 NORTHING: 1,391,236.4 EASTING: 2,200,446.6 GS ELEVATION: 804.5 TOC ELEVATION: 807.15 ft SHEET 3 of 3 DEPTH W.L.:49.94 ELEVATION W.L.: 757.21 DATE W.L.:4/5/2021 TIME W.L.:13:37



DATE: 5/24/21

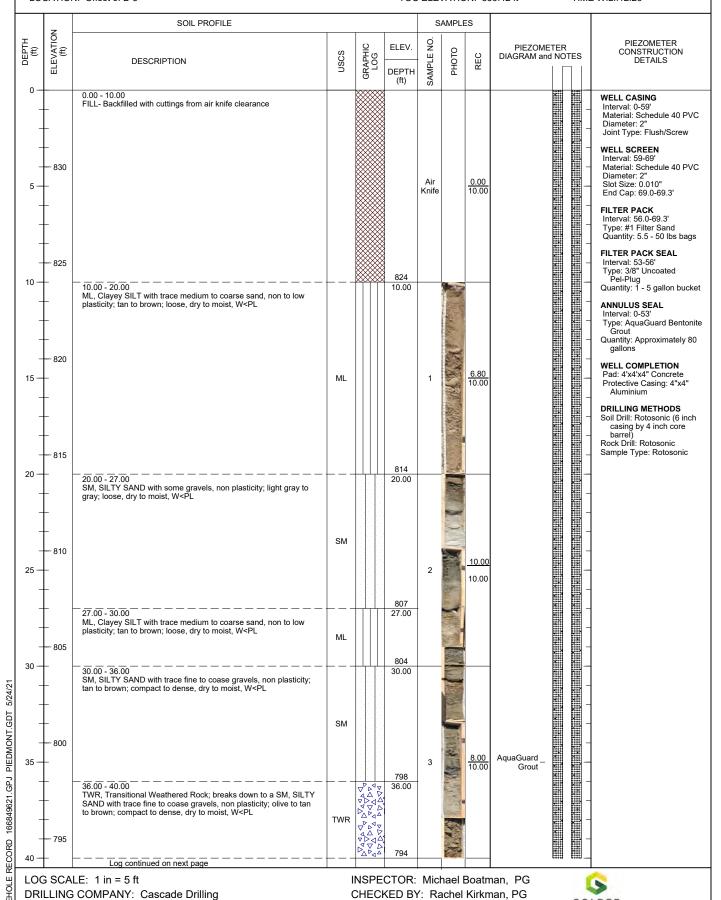
RECORD OF BOREHOLE B-120D

PROJECT: Plant McDonough PROJECT NUMBER: 166849621 DRILLED DEPTH: 70.00 ft LOCATION: Offset of B-3

DRILLER: Tommy Ardito

DRILL RIG: TSi 150CC DATE STARTED: 3/5/21 DATE COMPLETED: 3/6/21 NORTHING: 1,394,047.2 EASTING: 2,202,436.4 GS ELEVATION: 834.0 TOC ELEVATION: 836.42 ft SHEET 1 of 2 DEPTH W.L.:33.76 ELEVATION W.L.: 802.66 DATE W.L.:4/9/2021 TIME W.L.:12:26

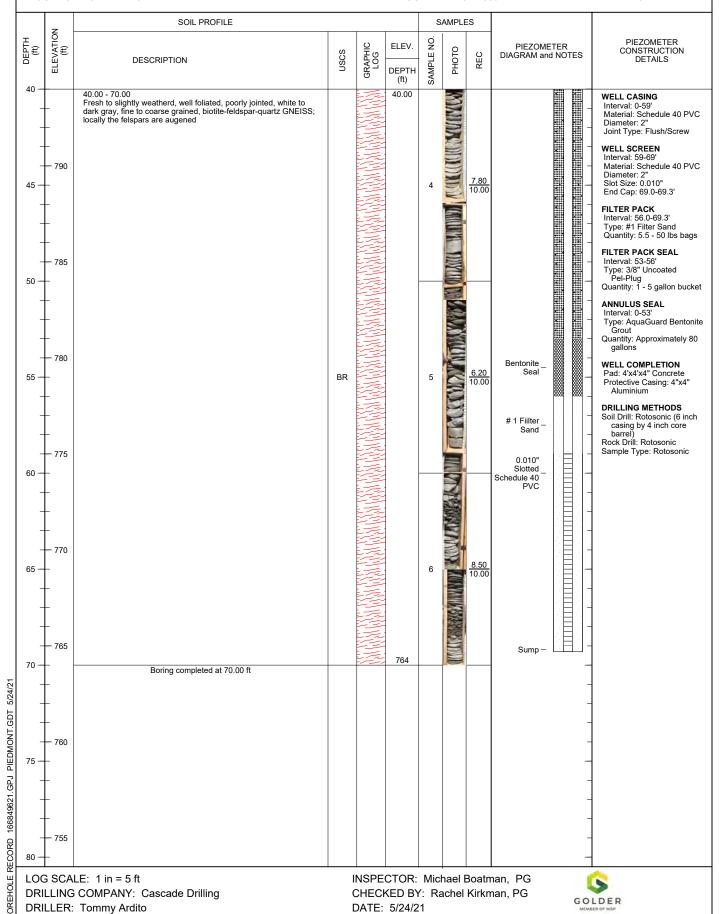
GOLDER



DATE: 5/24/21

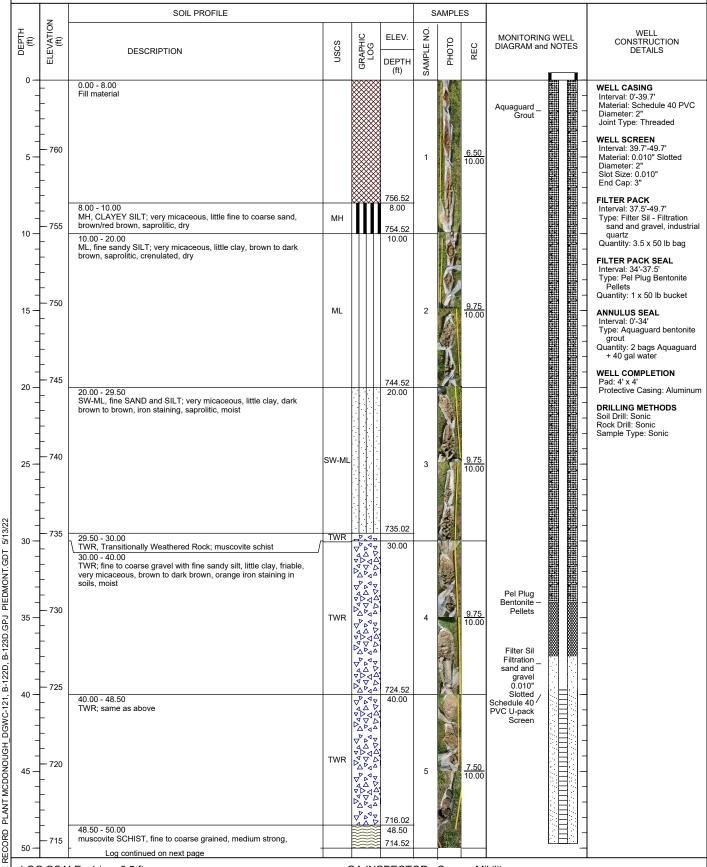
RECORD OF BOREHOLE B-120D

PROJECT: Plant McDonough PROJECT NUMBER: 166849621 DRILLED DEPTH: 70.00 ft LOCATION: Offset of B-3 DRILL RIG: TSi 150CC DATE STARTED: 3/5/21 DATE COMPLETED: 3/6/21 NORTHING: 1,394,047.2 EASTING: 2,202,436.4 GS ELEVATION: 834.0 TOC ELEVATION: 836.42 ft SHEET 2 of 2 DEPTH W.L.:33.76 ELEVATION W.L.: 802.66 DATE W.L.:4/9/2021 TIME W.L.:12:26



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 SHEET 1 of 2 DEPTH W.L.:9.4' ELEVATION W.L.:755.12 DATE W.L.:3/22/22 TIME W.L.:19:25



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

SHEET 2 of 2 DEPTH W.L.:9.4' ELEVATION W.L.:755.12 DATE W.L.:3/22/22 TIME W.L.:19:25

				-				I IIVIE	W.L.:19:25
z	SOIL PROFILE	-				AMPLE	S		
(ft) (ELEVATION	DESCRIPTION	nscs	GRAPHIC LOG	DEPTH	SAMPLE NO.	РНОТО	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			(ft)	/S				WELL CASING Interval: 0'-39.7' Material: Schedule 40 PV Diameter: 2" Joint Type: Threaded
55 — 710								- - - -	WELL SCREEN Interval: 39.7'-49.7' Material: 0.010" Slotted Diameter: 2" Slot Size: 0.010" End Cap: 3"
60 - 70								- -	FILTER PACK Interval: 37.5'-49.7' Type: Filter Sil - Filtration sand and gravel, indust 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
65 —								_ - - -	ANNULUS SEAL Interval: 0'-34' Type: Aquaguard benton grout Quantity: 2 bags Aquagua + 40 gal water
70 - 69								<u>-</u>	WELL COMPLETION Pad: 4' x 4' Protective Casing: Alumi
- - - - -								- - -	DRILLING METHODS Soil Drill: Sonic Rock Drill: Sonic Sample Type: Sonic
75 - 690								- -	
=								- - -	
80 - 68								<u>-</u> - -	
85 — 680								- - -	
-								- - -	
90 - 679								- - -	
95 — 670								- - -	
+								- - -	
- 1									

LOG SCALE: 1 in = 6.5 ft

DRILLING COMPANY: Cascade Drilling

DRILLER: Corey Franklin

GA INSPECTOR: Connor Mikilitus

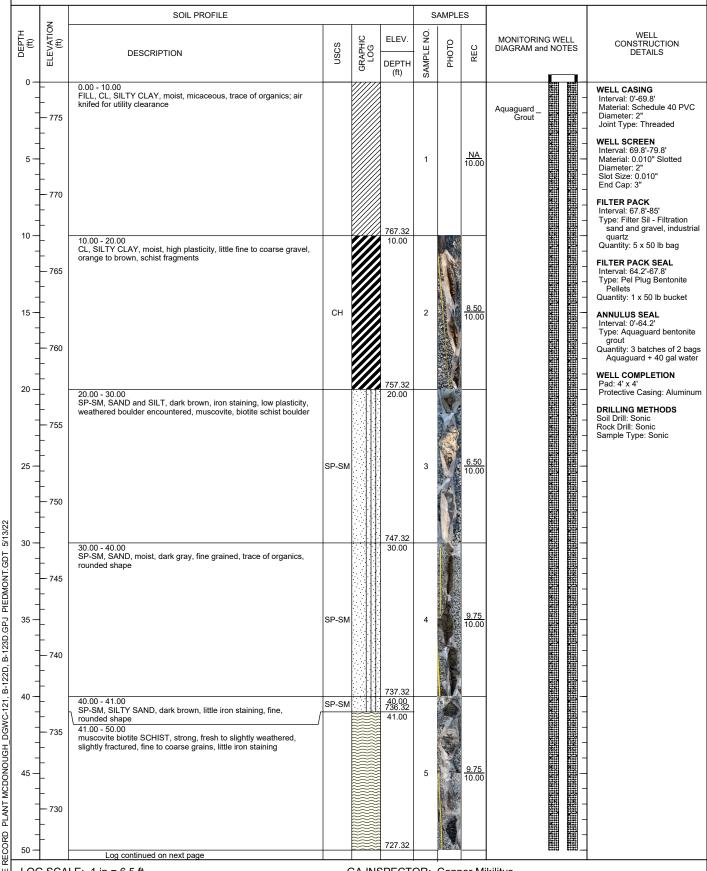
CHECKED BY: Rachel Kirkman, PG

DATE: 5/10/22

DATE COMPLETED: 3/24/22

NORTHING: 1,390,992.8 EASTING: 2,202,975.4 GS ELEVATION: 777.32 TOC ELEVATION: 777.03 ft

SHEET 1 of 2 DEPTH W.L.:30.25 ELEVATION W.L.:747.07 DATE W.L.:3/25/22



LOG SCALE: 1 in = 6.5 ft

DRILLING COMPANY: Cascade Drilling

DRILLER: Corey Franklin

GA INSPECTOR: Connor Mikilitus CHECKED BY: Rachel Kirkman, PG

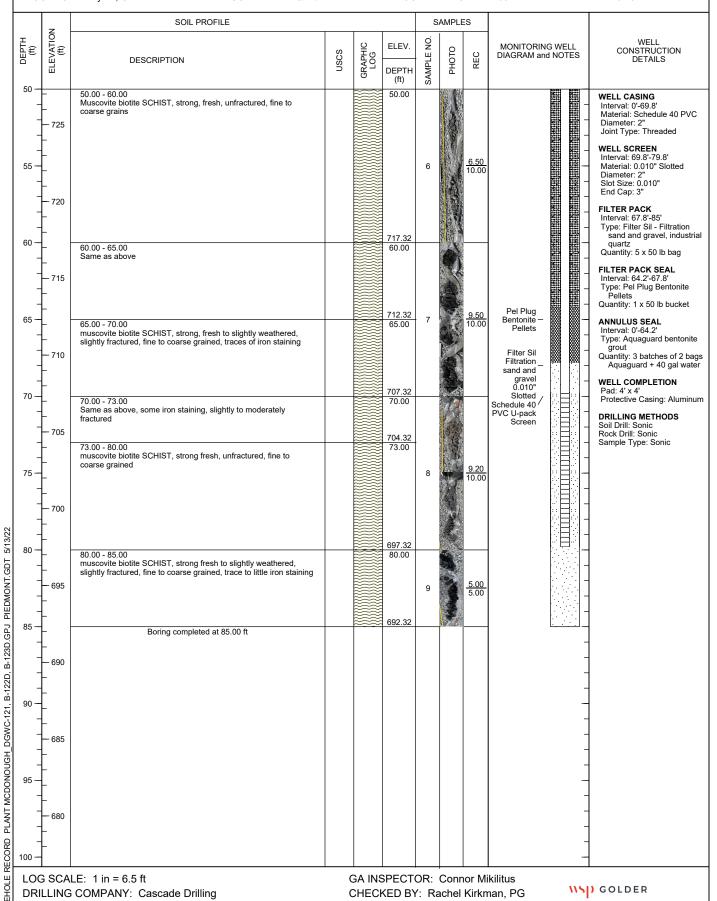
DATE: 5/10/22

RECORD OF BOREHOLE B-122D

PROJECT: SCS Plant McDonough PROJECT NUMBER: GL166849621 DRILLED DEPTH: 85.00 ft LOCATION: Smyrna, GA

DRILLER: Corey Franklin

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 SHEET 2 of 2 DEPTH W.L.:30.25 ELEVATION W.L.:747.07 DATE W.L.:3/25/22 TIME W.L.:8:15

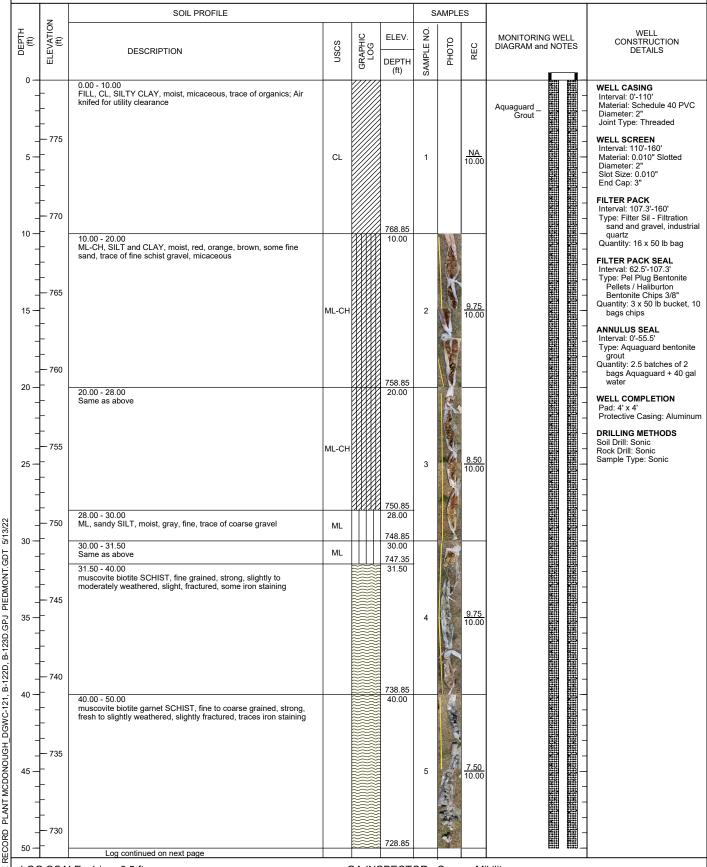


DATE: 5/10/22

DATE COMPLETED: 4/4/22

NORTHING: 1,391,234.4 EASTING: 2,202,608.4 GS ELEVATION: 778.85 TOC ELEVATION: 781.80 ft

SHEET 1 of 4 DEPTH W.L.:13.2 ELEVATION W.L.:765.65 DATE W.L.:4/4/22 TIME W.L.:14:55



LOG SCALE: 1 in = 6.5 ft

DRILLING COMPANY: Cascade Drilling

DRILLER: Corey Franklin

GA INSPECTOR: Connor Mikilitus CHECKED BY: Rachel Kirkman, PG

DATE: 5/10/22

RECORD OF BOREHOLE B-123D

DRILL RIG: Terra Sonic 150T
 Truck-Mounted Sonic

DATE STARTED: 3/25/22
DATE COMPLETED: 4/4/22

RECORD OF BOREHOLE B-123D

NORTHING: 1,391,234.4
EASTING: 2,202,608.4
GS ELEVATION: 778.85
TOC ELEVATION: 781.80 ft

SHEET 2 of 4 DEPTH W.L.:13.2 ELEVATION W.L.:765.65 DATE W.L.:4/4/22 TIME W.L.:14:55

	z	SOIL PROFILE					AMPLE	:8		
(ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	DEPTH (ft)	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		1		Pel Plug _ Pellets _	WELL CASING Interval: 0'-110'
-	-	signity weathered, silging fractured, traces of non-staining								Material: Schedule 40 P\ Diameter: 2" Joint Type: Threaded
-	_ 725									WELL SCREEN
55 —	-					6		9.30 10.00	5555 5555 2720 7020 7020 7020 7020 7020 7020 7020	Interval: 110'-160' Material: 0.010" Slotted
_	-						L	10.00	Pel Plug _ Pellets	Diameter: 2" Slot Size: 0.010" End Cap: 3"
-	_						To leave			FILTER PACK
	 720									Interval: 107.3'-160' Type: Filter Sil - Filtration
60 —	-	60.00 - 70.00			718.85 60.00		100		-	sand and gravel, indus quartz
-		muscovite biotite chlorite SCHIST, fine to coarse grained, strong, fresh, unfractured to slightly fractured, trace of iron staining								Quantity: 16 x 50 lb bag FILTER PACK SEAL
							X		Haliburton Bentonite –	Interval: 62.5'-107.3' Type: Pel Plug Bentonite
_	- 715								Chips 3/8"	Pellets / Haliburton Bentonite Chips 3/8"
65 —	-					7		9.50 10.00	-	Quantity: 3 x 50 lb bucke bags chips
-							-			ANNULUS SEAL Interval: 0'-55.5'
	_						1			Type: Aquaguard bentor
_	— 710									Quantity: 2.5 batches of 2 bags Aquaguard + 40
70 —	-	70.00 - 80.00			708.85 70.00				-	water WELL COMPLETION
-		muscovite biotite SCHIST, fine to coarse grained, strong, fresh, unfractured to slightly weathered, slightly fractured, secondary								Pad: 4' x 4' Protective Casing: Alum
	_	mineralization of fractures, trace of iron staining					1			DRILLING METHODS
_	 705									Soil Drill: Sonic Rock Drill: Sonic
75 —	-					8		9.50 10.00	-	Sample Type: Sonic
	_						-			
_	-									
-	 700				000.05					_
80 —		80.00 - 90.00 muscovite biotite SCHIST, fine to coarse grained, strong, fresh,			698.85 80.00		ET.		-	
	_	unfractured to slightly weathered, slightly fractured, secondary mineralization of fractures, trace of iron staining					信			
_	-						Same.			
-	 695						A	7 50		_
85 — _						9	Y	7.50 10.00	-	
_	-									
_	-									
	— 690 –				688.85					1
90 —	_	90.00 - 100.00 muscovite biotite SCHIST, fine to coarse grained, strong, fresh,			90.00		1			
-	-	fresh to slightly weathered, unfractured to slightly fractured					V			
-	- 005									1
- 95 —	— 685 –					10		8.00 10.00		
JJ _						10		10.00		_
-	-						R			-
-	- 600									-
-	- 680				678.85		>			7

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

DRILLING COMPANY: Cascade Drilling

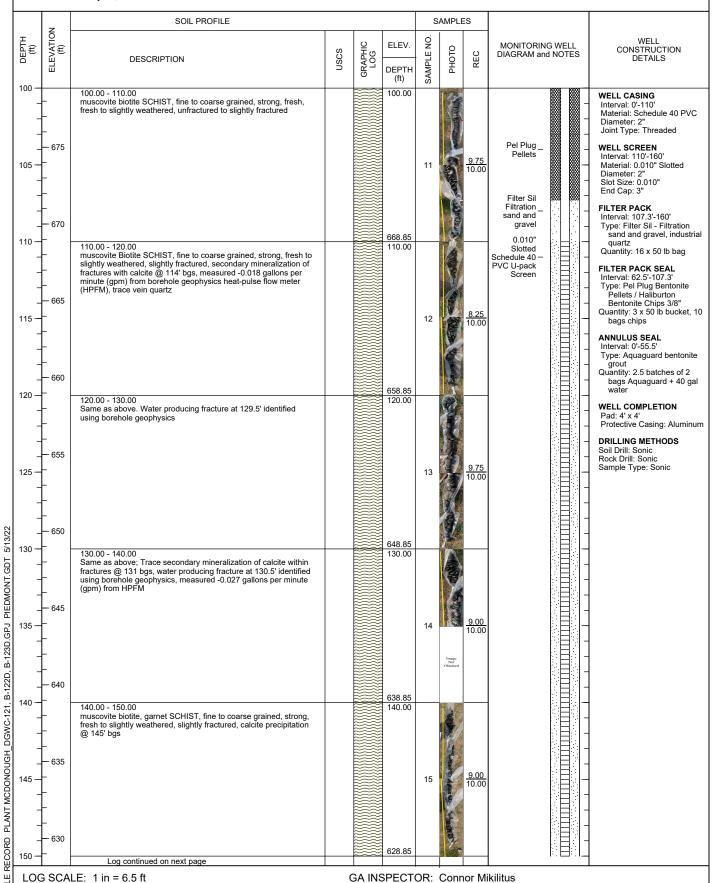
DRILLER: Corey Franklin

DATE COMPLETED: 4/4/22

NORTHING: 1,391,234.4 EASTING: 2,202,608.4 GS ELEVATION: 778.85 TOC ELEVATION: 781.80 ft

SHEET 3 of 4 DEPTH W.L.:13.2 ELEVATION W.L.:765.65 DATE W.L.:4/4/22 TIME W.L.:14:55

WSD GOLDER



CHECKED BY: Rachel Kirkman, PG

DATE: 5/10/22

DRILLER: Corey Franklin

RECORD OF BOREHOLE B-123D

DRILL RIG: Terra Sonic 150T
 Truck-Mounted Sonic

DATE STARTED: 3/25/22
DATE COMPLETED: 4/4/22

RECORD OF BOREHOLE B-123D

NORTHING: 1,391,234.4
EASTING: 2,202,608.4
GS ELEVATION: 778.85
TOC ELEVATION: 781.80 ft

SHEET 4 of 4 DEPTH W.L.:13.2 ELEVATION W.L.:765.65 DATE W.L.:4/4/22 TIME W.L.:14:55

Z	SOIL PROFILE	1		SAMPLES					
(ft) ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	PHOTO	REC	MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
50	150.00 - 160.00 Same as above; calcite @ 157.5' bgs			150.00	•,	2			WELL CASING Interval: 0'-110'
+						7			Material: Schedule 40 P ¹ Diameter: 2"
十						500			Joint Type: Threaded
625						1	9.75		WELL SCREEN Interval: 110'-160'
55 -					16		10.00		Material: 0.010" Slotted Diameter: 2" Slot Size: 0.010" End Cap: 3"
1						3			FILTER PACK
620				618.85				-	Interval: 107.3'-160' Type: Filter Sil - Filtration sand and gravel, indus quartz
· +	Boring completed at 160.00 ft							-	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 bucke bags chips
+								-	ANNULUS SEAL
1								_	Interval: 0'-55.5' Type: Aquaguard bentor grout
610								_	Quantity: 2.5 batches of bags Aquaguard + 40 water
								_	WELL COMPLETION Pad: 4' x 4' Protective Casing: Alum
+								-	DRILLING METHODS
605								-	Soil Drill: Sonic Rock Drill: Sonic Sample Type: Sonic
75 —								_	, ,,
+								_	
600								-	
80 - 000									
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DATE: 5/10/22

RECORD OF BOREHOLE B-01 stigation DRILLING START: August 6, 2020 09:30 SHEET: 1 of 2 Plant McDonough - Barrier Wall Field Investigation August 6, 2020 09:30 GS ELEV .: 792 PROJECT NO.: 19124362 DRILLING END: August 6, 2020 11:15 TOC ELEV .: LOCATION: Atlanta, Georgia COORDINATES: N: 1,391,891 E: 2,201,581 DATUM: NAD 83 SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft BORING METHOD DEPTH (ft) **BLOWS** GRAPHIC LOG SAMPLE TYPE & NUMBER 40 60 **NOTES** per 6 in **USCS** Depth WATER LEVELS WATER CONTENT (%) DESCRIPTION Elev ASTM D1586 140 lb hamme 30 inch drop Automatic -OW W, H (in) 0 0.0 792.0 20 40 60 80 Hydrovac. ER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:58
SSOCIATES.SHAREPOINT.COM@SSL\DAVWWWROOTISITES/1103181PROJECT FILESIS TECHNICAL WORK;300 FIELD INFORMATION/GINT LOGS/20201109_AP1 MCDONOUGH_LOGS_COMBINED.GPJ Hydrovac. 0 to 10 ft 5 10 10.0 782.0 Shelby Tube pushed at No recovery 10'. No Recovery ST-01 <u>0</u> 24 780.0 12.0 Collected B-01 bucket (ML), CLAYEY SILT AND SAND, low to sample from 12 to 15 ft medium plasticity, and sand, trace gravel, grayish-brown; soft to firm, w ~ PL ML 15 Shelby Tube pushed at 15'. No Recovery <u>0</u> 24 RESIDUUM, (SM), SILTY SAND, fine to coarse, and low plasticity fines, some fine gravel, brown to blue-gray; non-cohesive, loose, wet, saprolitic WH-3-2-4 <u>10</u> 24 S-01 <u>a</u> (5) 20 SM 8 DO S-02 <u>24</u> 24 3-4-4-7 (8) 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 28 DO 8-03 4-12-16-20 (28)ML Log continued on next page 01 - GOLDER - WGOLDERASS DRILLING CO.: Betts Environmental Drilling LOGGED: Michael Boatman GOLDER DRILLER: Cliff Lackey CHECKED: K. Gray MEMBER OF WSP DRILL RIG: CME 75 REVIEWED: Pieter DePree

RECORD OF BOREHOLE B-01 stigation DRILLING START: August 6, 2020 09:30 SHEET: 2 of 2 Plant McDonough - Barrier Wall Field Investigation GS ELEV .: 792 PROJECT: PROJECT NO.: 19124362 DRILLING END: August 6, 2020 11:15 TOC ELEV .: LOCATION: Atlanta, Georgia COORDINATES: N: 1,391,891 E: 2,201,581 DATUM: NAD 83 SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft DEPTH (ft) SAMPLE TYPE & NUMBER **BLOWS** GRAPHIC LOG 40 60 **NOTES USCS** per 6 in Depth WATER LEVELS DESCRIPTION WATER CONTENT (%) Elev ASTM D1586 140 lb hamme 30 inch drop Automatic ATT -OW W_D (in) 30 30.0 762.0 20 40 60 80 RESIDUUM, (ML), CLAYEY SILT AND 29 SAND, low plasticity, and fine to coarse 4-10-19-19 S-04 18 24 sand, trace fine gravel, red-brown; cohesive, ш⊢ (29)01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:58
\GOLDERASSOCIATES.SHAREPOINT.COM@SSL\DAVWWWROOTISITES/110318\PROJECT FILESIS TECHNICAL WORK;300 FIELD INFORMATION\GINT LOGS\20201109_AP1 MCDONOUGH_LOGS_COMBINED.GPU compact to dense, w < PL, saprolitic (continued) 35 ML 40 DO S-05 <u>22</u> 24 8-17-23-30 (40)100 40 PARTIALLY WEATHERED ROCK GP 50/2 SAMPLED AS, (GP), SANDY GRAVEL, (50/2")poorly graded, dark gray; very dense, moist 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 LOGGED: Michael Boatman GOLDER DRILLER: Cliff Lackey CHECKED: K. Gray MEMBER OF WSP DRILL RIG: CME 75 REVIEWED: Pieter DePree

RECORD OF BOREHOLE B-02 stigation DRILLING START: August 6, 2020 07:20 SHEET: 1 of 2 Plant McDonough - Barrier Wall Field Investigation August 6, 2020 07:20 GS ELEV .: 791 PROJECT NO.: 19124362 DRILLING END: August 6, 2020 08:45 TOC ELEV .: LOCATION: Atlanta, Georgia COORDINATES: N: 1,391,691 E: 2,201,585 DATUM: NAD 83 SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft DEPTH (ft) **BLOWS** GRAPHIC LOG SAMPLE TYPE & NUMBER 40 60 **NOTES** per 6 in **USCS** WATER LEVELS WATER CONTENT (%) DESCRIPTION Elev ASTM D1586 140 lb hamme 30 inch drop Automatic -OW W, H (in) 0.0 791.0 20 40 60 80 Hydrovac. AP1 MCDONOUGH LOGS COMBINED.GPJ Hydrovac. 0 to 10 ft 5 10 781.0 Bulk sample 10 to 15 ft (ML), SANDY CLAYEY SILT, non plastic, 18/PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109 3-3-4-6 <u>24</u> 24 fine to coarse sand, trace fine gravel; S-01 Ė a non-cohesive, loose to compact, w < PL, weathered schist 15 DO 8-02 2-2-4-10 24 24 (6) ML 20 Shelby Tube pushed at 20'. Only pushed for 1 ft <u>12</u> 24 due to flexing roots 19 19 24 6-8-11-16 (19)25 25.0 766.0 RESIDUUM, (SM), SILTY SAND, fine, low to 42 non plastic plasticity fines, dark gray to black; dense to very dense, dry to moist, S-04 5-18-24-26 18 24 (42)relict structure DF STD US LAB E-M.GDT - 8/20/21 09:58 .COM@SSL\DAVWWWROOT\SITES\11031 SM 30 79 31-28-51-37 (79)PARTIALLY WEATHERED ROCK, SAMPLED AS, (ML), SANDY CLAYEY SILT, low to medium plasticity, fine to 35 medium sand, red-brown to gray; cohesive, very dense, w < PL, saprolitic, contains fine 100 90-S 12-30-50/5" <u>16</u> 17 grained gneiss BOREHOLE RECORD - OCIATES. SHAREPOINT. (80/11")ML Log continued on next page 01 - GOLDER - WGOLDERASS DRILLING CO.: Betts Environmental Drilling LOGGED: Michael Boatman GOLDER DRILLER: Cliff Lackey CHECKED: K. Gray MEMBER OF WSP DRILL RIG: CME 75 REVIEWED: Pieter DePree

PRC	JEC1	Γ NO.:	Plant McDonough - 19124362 Atlanta, Georgia	- Barrier Wall Field	REC d Investigation	OR	DRIL	LING END	REHOLE : August 6, 2 : August 6, 2 : N: 1,391,69	2020 08	3:45	i		GS ELI	EET: 2 of 2 EV.: 791 EV.: na UM: NAD 83	
DEPTH (ft)	BORING METHOD	Depth		SOIL PROFILE	Elev	nscs	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop	REC ATT	20	BLOWS	60 80 ENT (%)		NOTES WATER LEVELS	ADDITIONAL
40		S/ SI m ve	ARTIALLY WEATH AMPLED AS, (ML), LT, low to medium edium sand, red-br rry dense, w < PL, ained gneiss (cont	, SANDY CLAYEY plasticity, fine to rown to gray; cohes saprolitic, contains	sive,	ML	0	X 00 %	Automatic 18-50/5" (50/5")	(in) 11 11	20			100		
45	-	В	efusal at 46.0 ft. ottom of borehole a ackfilled with soil cu		745.0			\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	14-50 (50 /")	12 12				100		
50																
55																
60																
65	-															
70 75 80 DRIII	-															
 75	-															
80 DRII	DR	G CO.: ILLER: .L. RIG:		mental Drilling			СН	OGGED: ECKED: (IEWED:			n			\$	GOLD MEMBER OF	

RECORD OF BOREHOLE B-03
stigation DRILLING START: July 27, 2020 08:00
DRILLING END: July 27, 2020 13:00 SHEET: 1 of 2 Plant McDonough - Barrier Wall Field Investigation GS ELEV .: 801 PROJECT: PROJECT NO.: 19124362 TOC ELEV .: LOCATION: Atlanta, Georgia COORDINATES: N: 1,391,423 E: 2,201,768 DATUM: NAD 83 SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE ADDITIONAL LAB TESTING BLOWS / ft BORING METHOD DEPTH (ft) GRAPHIC LOG SAMPLE TYPE & NUMBER **BLOWS** 40 60 **NOTES USCS** per 6 in Depth WATER LEVELS DESCRIPTION WATER CONTENT (%) Elev ASTM D1586 140 lb hamme 30 inch drop Automatic ATT -OW W, H (in) 0 40 0.0 801.0 20 60 80 RESIDUUM, (ML), SANDY CLAYEY SILT, non plastic, fine to coarse sand, trace fine gravel, tan to brown; micaceous, ER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:58
SSOCIATES.SHAREPOINT.COM@SSL\DAVWWWROOTISITES/1103181PROJECT FILESIS TECHNICAL WORK;300 FIELD INFORMATION/GINT LOGS/20201109_AP1 MCDONOUGH_LOGS_COMBINED.GPJ non-cohesive, loose to dense, dry to wet 7 <u>0</u> 18 9-4-3 S-01 (7) 5 10 11 DO S-02 6-4-7 **(11)** <u>6</u> 18 :o **–** ▼ 13.5 ft, 08/14/2020 14:40 48 DO S-03 11-21-27 <u>18</u> 18 15 (48)35 DO 8-04 <u>18</u> 18 6-20-15 (35) 20 **▼** 20.0 ft, 08/17/2020 MI 14:40 DO S-05 4-5-6 <u>18</u> 18 (11) 25 8 90-S <u>18</u> 18 2-3-5 Ĭ ОH (8) 30 15 2-5-10 <u>18</u> 18 DO S-07 (15) 35 17 S-08 3-7-10 <u>18</u> 18 (17) Log continued on next page DRILLING CO.: Betts Environmental Drilling LOGGED: Qian Zhao GOLDER Cliff Lackey DRILLER: CHECKED: K. Gray MEMBER OF WSP DRILL RIG: CME 75 REVIEWED: Pieter DePree

01 - GOLDER - I

RECORD OF BOREHOLE B-03 stigation DRILLING START: July 27, 2020 08:00 SHEET: 2 of 2 July 27, 2020 08:00 July 27, 2020 13:00 Plant McDonough - Barrier Wall Field Investigation GS ELEV .: 801 PROJECT NO.: 19124362 DRILLING END: TOC ELEV .: LOCATION: Atlanta, Georgia COORDINATES: N: 1,391,423 E: 2,201,768 DATUM: NAD 83 SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft DEPTH (ft) **BLOWS** GRAPHIC LOG SAMPLE TYPE & NUMBER 40 60 **NOTES** per 6 in **USCS** Depth WATER LEVELS DESCRIPTION WATER CONTENT (%) Elev ASTM D1586 140 lb hamme 30 inch drop Automatic -OW W, H (in) 40 40.0 761.0 20 40 60 80 RESIDUUM, (ML), SANDY CLAYEY SILT, non plastic, fine to coarse sand, trace fine gravel, tan to brown; micaceous, DF STD US LAB E-M.GDT - 8/20/21 09:58 .COM@SSL\DAVWWWROOTISITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109_AP1 MCDONOUGH_LOGS_COMBINED.GPJ non-cohesive, loose to dense, dry to wet (continued) 16 S-09 4-6-10 <u>18</u> 18 (16) 45 29 DO S-10 5-11-18 (29)50 26 <u>18</u> 18 5-12-14 S-11 (26)55 Rock fragments in the sample as gravel ML 21 ■DH DO S-12 <u>18</u> 18 (21) 60 26 DO S-13 4-10-16 (26)65 DO S-14 7-12-18 <u>18</u> 18 (30)70 73.0 PARTIALLY WEATHERED ROCK, SAMPLED AS, (SM), GRAVELLY SILTY 50-50/3 99 (50/3") SAND, fine, non plastic fines, tan to brown; 75 micaceous, non-cohesive, compact to SM dense, dry to wet ER - BOREHOLE RECORD - (SSOCIATES.SHAREPOINT. 724.0 Refusal at 77.0 ft. Bottom of borehole at 77.0 ft. Backfilled with soil cuttings 80 01 - GOLDER - I DRILLING CO.: Betts Environmental Drilling LOGGED: Qian Zhao GOLDER DRILLER: Cliff Lackey CHECKED: K. Gray MEMBER OF WSP DRILL RIG: CME 75 REVIEWED: Pieter DePree

RECORD OF BOREHOLE B-04 stigation DRILLING START: July 27, 2020 14:00 DRILLING END: July 28, 2020 11:30 SHEET: 1 of 2 Plant McDonough - Barrier Wall Field Investigation GS ELEV .: 797 PROJECT: PROJECT NO.: 19124362 TOC ELEV .: LOCATION: Atlanta, Georgia COORDINATES: N: 1,391,192 E: 2,201,761 DATUM: NAD 83 SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE ADDITIONAL LAB TESTING BLOWS / ft BORING METHOD DEPTH (ft) GRAPHIC LOG SAMPLE TYPE & NUMBER **BLOWS** 40 60 **NOTES USCS** per 6 in Depth WATER LEVELS DESCRIPTION ASTM D1586 140 lb hammer 30 inch drop Automatic WATER CONTENT (%) Elev ATT -OW W, H (in) 0 40 0.0 797.0 20 60 80 RESIDUUM, (ML), SANDY CLAYEY SILT, non plastic, fine to coarse sand, trace fine gravel, brown to red-brown; micaceous, 01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:58
\GOLDERASSOCIATES.SHAREPOINT.COM@SSL\DAVWWWROOTISITES/110318\PROJECT FILESIS TECHNICAL WORK;300 FIELD INFORMATION\GINT LOGS\20201109_AP1 MCDONOUGH_LOGS_COMBINED.GPU non-cohesive, very loose to dense, dry to 2 18 ■ 1-0-0 S-01 (0) 5 10 DO S-02 4-4-6 <u>18</u> 18 0 (10) 10 8 S-03 <u>18</u> 18 3-3-5 (8) 15 16 DO 8-04 <u>18</u> 18 4-7-9 **■**: 0 (16)20 MI 17 DO S-05 4-8-9 <u>18</u> 18 (17) 25 16 90-S 5-7-9 **(16)** <u>18</u> 18 30 15 5-5-10 <u>18</u> 18 DO S-07 (15) 35 26 S-08 6-11-15 <u>18</u> 18 (26)Log continued on next page DRILLING CO.: Betts Environmental Drilling LOGGED: Ayushi Tiwari GOLDER Cliff Lackey CHECKED: K. Gray DRILLER: MEMBER OF WSP DRILL RIG: CME 75 REVIEWED: Pieter DePree

RECORD OF BOREHOLE B-04 estigation DRILLING START: July 27, 2020 14:00 DRILLING END: July 28, 2020 11:30 SHEET: 2 of 2 PROJECT: Plant McDonough - Barrier Wall Field Investigation GS ELEV .: 797 PROJECT NO.: 19124362 TOC ELEV .: LOCATION: Atlanta, Georgia COORDINATES: N: 1,391,192 E: 2,201,761 DATUM: NAD 83 SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft DEPTH (ft) **BLOWS** GRAPHIC LOG SAMPLE TYPE & NUMBER 40 60 **NOTES** per 6 in Depth **USCS** WATER LEVELS DESCRIPTION WATER CONTENT (%) Elev ASTM D1586 140 lb hamme 30 inch drop Automatic -OW W_D (in) 40 40.0 757.0 20 40 60 80 RESIDUUM, (ML), SANDY CLAYEY SILT, non plastic, fine to coarse sand, trace fine gravel, brown to red-brown; micaceous, IR - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:58 SSOCIATES/110318/PROJECT FILES/IS TECHNICAL WORK/300 FIELD INFORMATION/GINT LOGS/20201109_AP1 MCDONOUGH_LOGS_COMBINED.GPU ASSOCIATES.SHAREPOINT.COM@SSL/DAVWWWROOTISITES/110318/PROJECT FILES/IS TECHNICAL WORK/300 FIELD INFORMATION/GINT LOGS/20201109_AP1 MCDONOUGH_LOGS_COMBINED.GPU non-cohesive, very loose to dense, dry to wet (continued) 22 S-09 4-8-14 <u>18</u> 18 (22) 45 28 DO S-10 4-9-19 <u>18</u> 18 (28)50 MI 29 6-9-20 <u>18</u> 18 DO S-11 (29)55 42 DO S-12 <u>18</u> 18 6-15-27 (42)60 62.0 RESIDUUM, (SM), SILTY SAND, fine to SM medium, non plastic fines, brown with gray; 733.5 micaceous, non-cohesive, very dense, wet 100 DO S-13 PARTIALLY WEATHERED ROCK, 16-47-50/5" SAMPLED AS, (ML), GRAVELLY SANDY 65 SILT, non plastic, fine to medium sand, brown; non-cohesive, wet ML50/4' $\frac{4}{4}$ (50/4")70 725.0 Refusal at 72.0 ft. Bottom of borehole at 72.0 ft. Backfilled with soil cuttings 75 80 01 - GOLDER - I DRILLING CO.: Betts Environmental Drilling LOGGED: Ayushi Tiwari GOLDER DRILLER: Cliff Lackey CHECKED: K. Gray MEMBER OF WSP REVIEWED: Pieter DePree DRILL RIG: CME 75

RECORD OF BOREHOLE B-05 stigation DRILLING START: July 28, 2020 15:55 DRILLING END: July 28, 2020 18:15 SHEET: 1 of 2 Plant McDonough - Barrier Wall Field Investigation GS ELEV .: 782 PROJECT NO.: 19124362 TOC ELEV .: LOCATION: Atlanta, Georgia COORDINATES: N: 1,390,752 E: 2,201,733 DATUM: NAD 83 SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft BORING METHOD DEPTH (ft) GRAPHIC LOG SAMPLE TYPE & NUMBER **BLOWS** 40 60 **NOTES** per 6 in Depth **USCS** WATER LEVELS DESCRIPTION WATER CONTENT (%) Elev ASTM D1586 140 lb hamme 30 inch drop Automatic -oW W, H (in) 0.0 782.0 20 40 60 80 RESIDUUM, (ML), SANDY CLAYEY SILT, low plasticity, fine to coarse sand, trace fine gravel, brown; non-cohesive, loose to IR - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59
SSOCIATES.SHAREPOINT.COM@SSL\DAVWWWROOTISITES/110318\PROJECT FILES\S TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109_AP1 MCDONOUGH_LOGS_COMBINED.GPU compact, dry, tree roots Hand auger utility clearance 0 to 10 feet. 5 10 Collected B-01 bucket sample of auger 13 6-6-7-11 <u>19</u> 24 S-01 cuttings from 10 to 20 (13)feet ML15 Tree roots 13 4-6-7-11 DO 8-02 ■ :O H (13) ▼ 18.0 ft, 07/29/2020 07:43 20 **▼** 20.0 ft, 07/28/2020 9 18:15 S-03 4-4-5-7 22 24 (9) 25 21 S-04 4-9-12-15 <u>22</u> 24 (21) Shelby Tube pushed at RESIDUUM, (SM), SILTY SAND, fine, ST-01 brown; micaceous, non-cohesive, compact <u>24</u> 24 to dense, wet 30 25 DO S-05 9-10-15-20 (25) SM 35 90-S 5-14-18-18 (32) Log continued on next page 01 - GOLDER -DRILLING CO.: Betts Environmental Drilling LOGGED: Ayushi Tiwari GOLDER Cliff Lackey DRILLER: CHECKED: K. Gray MEMBER OF WSP DRILL RIG: CME 75 REVIEWED: Pieter DePree

RECORD OF BOREHOLE B-05 stigation DRILLING START: July 28, 2020 15:55 SHEET: 2 of 2 July 28, 2020 15:55 July 28, 2020 18:15 Plant McDonough - Barrier Wall Field Investigation GS ELEV .: 782 PROJECT: PROJECT NO.: 19124362 DRILLING END: TOC ELEV .: LOCATION: Atlanta, Georgia COORDINATES: N: 1,390,752 E: 2,201,733 DATUM: NAD 83 SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft DEPTH (ft) SAMPLE TYPE & NUMBER **BLOWS** GRAPHIC LOG 40 60 **NOTES** per 6 in Depth **USCS** WATER LEVELS DESCRIPTION WATER CONTENT (%) Elev ASTM D1586 140 lb hamme 30 inch drop Automatic ATT -OW W_D F (in) 40 40.0 742.0 20 40 60 80 RESIDUUM, (SM), SILTY SAND, fine, 17 5-6-11-14 DO S-07 <u>19</u> 24 brown; micaceous, non-cohesive, compact to dense, wet (continued) (17) 01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59
\[GOLDERASSOCIATES.SHAREPOINT.COM@SSL\DAVWWWROOTISITES/110318\PROJECT FILESIS TECHNICAL WORK;300 FIELD INFORMATION\GINT LOGS\20201109_AP1 MCDONOUGH_LOGS_COMBINED.GPU SM 45 24 S-08 <u>24</u> 24 4-9-15-20 (24)RESIDUUM, (SM), SILTY SAND, fine to coarse, and , trace fine gravel; micaceous, non-cohesive, dense, wet 50 31 90-S 5-12-19-25 (31) 55 SM 23 DO S-10 5-8-15-21 (23) 60 34 9-14-20-38 24 24 S-11 (34)720.0 62.0 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 LOGGED: Ayushi Tiwari GOLDER DRILLER: Cliff Lackey CHECKED: K. Gray MEMBER OF WSP DRILL RIG: CME 75 REVIEWED: Pieter DePree

RECORD OF BOREHOLE B-06 stigation DRILLING START: July 30, 2020 08:10 SHEET: 1 of 2 July 30, 2020 08:10 July 30, 2020 11:15 PROJECT: Plant McDonough - Barrier Wall Field Investigation GS ELEV .: 790 PROJECT NO.: 19124362 DRILLING END: TOC ELEV .: LOCATION: Atlanta, Georgia COORDINATES: N: 1,390,489 E: 2,201,596 DATUM: NAD 83 SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft BORING METHOD DEPTH (ft) GRAPHIC LOG SAMPLE TYPE & NUMBER **BLOWS** 40 60 **NOTES USCS** per 6 in Depth WATER LEVELS DESCRIPTION WATER CONTENT (%) Elev ASTM D1586 ATT 140 lb hamme 30 inch drop Automatic -oW W, H (in) 40 0.0 790.0 20 60 80 FILL, (ML), SANDY CLAYEY SILT, fine to coarse sand, trace fine to coarse gravel, brown; micaceous, non-cohesive, loose to DF STD US LAB E-M.GDT - 8/20/21 09:59 .COM@SSL\DAVWWWROOTISITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109_AP1 MCDONOUGH_LOGS_COMBINED.GPJ compact, dry Hand augered utility clearance from 0 to 10 5 10 Collected B-01 bucket sample of auger 14 6-6-8-9 <u>22</u> 24 cuttings from 10-20 feet S-01 (14) 15 20 6-8-12-13 DO 8-02 24 24 ML (20) 20 17 S-03 6-8-9-12 24 24 (17) 25 20 S-04 8-9-11-13 22 24 (20)30 26 S-05 9-11-15-12 <u>13</u> 24 (26) **▼** 32.0 ft, 07/31/2020 08:30 RESIDUUM, (CL), SILTY CLAY AND SAND, medium plasticity, and fine to coarse sand, ST-01 ▼ Shelby Tube pushed at O F red-brown; micaceous, cohesive, soft, w < 24 32' 33.0 ft, 07/30/2020 13:00 CL 35 90-S 3-4-4-5 <u>18</u> 24 ER - BOREHOLE RECORD - (SSOCIATES.SHAREPOINT. (8) TP ST-02 ΟĖ 24 SC Log continued on next page 01 - GOLDER -DRILLING CO.: Betts Environmental Drilling LOGGED: Ayushi Tiwari GOLDER DRILLER: Cliff Lackey CHECKED: K. Gray MEMBER OF WSP DRILL RIG: CME 75 REVIEWED: Pieter DePree

RECORD OF BOREHOLE B-06 stigation DRILLING START: July 30, 2020 08:10 SHEET: 2 of 2 July 30, 2020 08:10 July 30, 2020 11:15 Plant McDonough - Barrier Wall Field Investigation GS ELEV .: 790 PROJECT NO.: DRILLING END: TOC ELEV .: LOCATION: Atlanta, Georgia COORDINATES: N: 1,390,489 E: 2,201,596 DATUM: NAD 83 SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft DEPTH (ft) **BLOWS** GRAPHIC LOG SAMPLE TYPE & NUMBER 40 60 **NOTES** per 6 in **USCS** Depth WATER LEVELS DESCRIPTION Elev ASTM D1586 140 lb hamme 30 inch drop Automatic WATER CONTENT (%) -OW W_D (in) 40.0 750.0 20 60 80 RESIDUUM, (SC), GRAVELLY CLAYEY 2-2-4-11 <u>24</u> 24 DO S-07 SAND, fine to coarse, fine gravel, brown with gray; micaceous, non-cohesive, loose, (6) SC DF STD US LAB E-M.GDT - 8/20/21 09:59 .COM@SSL\DAVWWWROOTISITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109_AP1 MCDONOUGH_LOGS_COMBINED.GPJ wet (continued) 43.0 RESIDUUM, (SM), SILTY SAND, fine to coarse, non plastic fines, trace fine gravel, brown with black; micaceous, non-cohesive, 45 loose to compact, wet S-08 2-2-5-11 (7) 50 20 9-8-12-13 <u>15</u> 24 (20) SM 55 18 DO S-10 6-7-11-12 (18) 60 26 7-10-16-18 S-11 (26)PARTIALLY WEATHERED ROCK, SAMPLED AS, (ML), GRAVELLY SILT, non plastic, some fine sand, brown with black; 65 micaceous, non-cohesive, very dense, wet 100 40-50/3 99 (50/3")70 ML 100 DO S-13 <u>12</u> 15 23-40-50/3" (90/9") 75 100 DO S-14 19-50/5" <u>11</u> 11 (50/5")ER - BOREHOLE RECORD - (SSOCIATES.SHAREPOINT Refusal at 77.0 ft. Bottom of borehole at 77.0 ft. Backfilled with soil cuttings 01 - GOLDER - WGOLDERASS DRILLING CO.: Betts Environmental Drilling LOGGED: Ayushi Tiwari GOLDER DRILLER: Cliff Lackey CHECKED: K. Gray MEMBER OF WSP REVIEWED: Pieter DePree DRILL RIG: CME 75

RECORD OF BOREHOLE B-07 SHEET: 1 of 2 DRILLING START: August 14, 2020 13:40 GS ELEV .: 755 Plant McDonough - Barrier Wall Field Investigation PROJECT NO.: 19124362 DRILLING END: August 14, 2020 14:40 TOC ELEV .: LOCATION: Atlanta, Georgia COORDINATES: N: 1,390,301 E: 2,201,397 DATUM: NAD 83 SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft DEPTH (ft) **BLOWS** GRAPHIC LOG SAMPLE TYPE & NUMBER 40 60 **NOTES** per 6 in **USCS** Depth WATER LEVELS DESCRIPTION Elev WATER CONTENT (%) ASTM D1586 140 lb hamme 30 inch drop Automatic -oW W_p F (in) 0.0 755.0 20 60 80 FILL, (GP), GRAVEL, fine to coarse, poorly graded, angular, some fine sand, trace non o () plastic fines; trace cobbles to 6" COMBINED 00 5 Hydrovac. from 0 to 10 AP1 MCDONOUGH LOGS GP ft. Soil description is based on observation 10 745.0 RESIDUUM, (CL), SANDY SILTY CLAY, O S WOH-WOH-1-18/PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109 <u>15</u> 24 medium plasticity, fine to coarse sand, brown; cohesive, soft to very stiff, w ~ PL **▼** 13.5 ft, 08/17/2020 14:40 15 CL 20 7-7-13-16 DO 8-02 10 24 (20) 20 **▼** 20.0 ft, 08/14/2020 20.0 RESIDUUM, (CL-ML), CLAY AND SAND, 14:40 TO ST-01 20 24 low plasticity, and fine to coarse sand, trace Shelby tube pushed at CL-ML fine gravel, brown; cohesive, soft, w ~ PL 20'. Bottom of tube was 733.0 22.0 bent because of gravels RESIDUUM, (SM), GRAVELLY SILTY (Assumed) SAND, fine to coarse, and non plastic fines, fine to coarse gravel, black-brown; non-cohesive, loose, wet 25 Augers stuck at 25' S-03 5-3-4-9 15 24 Bulk sample 20 to 30 ft Ė (7) DF STD US LAB E-M.GDT - 8/20/21 09:59 .COM@SSL\DAVWWWROOT\SITES\1103 30 SM S-04 1-1-4-6 <u>12</u> 24 (5) 35 S-05 2-4-4-6 <u>18</u> 24 BOREHOLE RECORD - OCIATES.SHAREPOINT (8) 38.0 ML<u>20</u> 24 10-11-16-22 27 (27)Log continued on next page 01 - GOLDER -MGOLDERASS DRILLING CO.: Betts Environmental Drilling GOLDER LOGGED: Nick Moran DRILLER: Scott Sanders CHECKED: K. Gray MEMBER OF WSP DRILL RIG: Geoprobe 7822 REVIEWED: Pieter DePree

RECORD OF BOREHOLE B-07 stigation DRILLING START: August 14, 2020 13:40 SHEET: 2 of 2 August 14, 2020 13:40 August 14, 2020 14:40 PROJECT: Plant McDonough - Barrier Wall Field Investigation GS ELEV .: 755 PROJECT NO.: 19124362 DRILLING END: TOC ELEV .: LOCATION: Atlanta, Georgia COORDINATES: N: 1,390,301 E: 2,201,397 DATUM: NAD 83 SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft BORING METHOD DEPTH (ft) GRAPHIC LOG SAMPLE TYPE & NUMBER **BLOWS** 40 60 **NOTES NSCS** per 6 in Depth REC ATT WATER LEVELS DESCRIPTION WATER CONTENT (%) Elev ASTM D1586 140 lb hammer 30 inch drop Automatic -oW W, H (in) 40 60 80 40.0 715.0 90-8 RESIDUUM, (ML), GRAVELLY SANDY ML 714.0 SILT, non plastic, fine to coarse sand, fine subangular gravel, brown to black; non-cohesive, dense, wet (continued) Refusal at 39.0 ft. Bottom of borehole at 41.0 ft. Backfilled with soil cuttings 45 50 55 60 65 70 75 80 GOLDER DRILLING CO.: Betts Environmental Drilling LOGGED: Nick Moran DRILLER: Scott Sanders CHECKED: K. Gray MEMBER OF WSP DRILL RIG: REVIEWED: Pieter DePree

Geoprobe 7822

RECORD OF BOREHOLE B-08 stigation DRILLING START: August 17, 2020 10:00 SHEET: 1 of 1 Plant McDonough - Barrier Wall Field Investigation August 17, 2020 10:00 GS ELEV .: 758 PROJECT NO.: 19124362 DRILLING END: August 17, 2020 12:20 TOC ELEV .: LOCATION: Atlanta, Georgia COORDINATES: N: 1,390,379 E: 2,201,114 DATUM: NAD 83 SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft BORING METHOD DEPTH (ft) **BLOWS** GRAPHIC LOG SAMPLE TYPE & NUMBER 40 60 **NOTES** per 6 in **USCS** Depth WATER LEVELS DESCRIPTION WATER CONTENT (%) Elev ASTM D1586 140 lb hamme 30 inch drop Automatic -OW W_D (in) 0.0 758.0 60 80 FILL, (ML), CLAYEY SILT AND SAND, non plastic, and fine to coarse sand, trace fine to coarse subangular gravel, brown; DF STD US LAB E-M.GDT - 8/20/21 09:59 .COM@SSL\DAVWWWROOTISITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109_AP1 MCDONOUGH_LOGS_COMBINED.GPJ non-cohesive, compact, moist ▼ 4.5 ft, 08/17/2020 15:00 5 Grab sample from Hand Auger at 5 feet. Bulk Sample B-01 collected from 0 to 10 ft ML 10 19 6-7-12-12 <u>22</u> 24 S-01 (19)RESIDUUM, (SM), SILTY SAND, fine to coarse, and non plastic fines, trace fine subangular gravel, brown; non-cohesive, 15 compact to very dense, moist 27 10-11-16-35 DO 8-02 0 : ■⊦ (27) 20 55 19-25-30-23 S-03 (55) SM 25 **y** 25.0 ft, 08/17/2020 20 12:20 S-04 6-8-12-10 22 24 (20)30 19 DO S-05 8-9-10-10 Ė (19) RESIDUUM, (ML), SILT AND SAND, non plastic, and fine to coarse sand, trace fine 35 subangular gravel, brown; non-cohesive, 35 S-06 11-10-25-45 dense, moist to wet - BOREHOLE RECORD -(35) ML 34 20-14-20-22 (34)Refusal at 37.0 ft. Bottom of borehole at 39.0 ft. 01 - GOLDER - WGOLDERASS DRILLING CO.: Betts Environmental Drilling LOGGED: Nick Moran GOLDER DRILLER: Scott Sanders CHECKED: K. Gray MEMBER OF WSP REVIEWED: Pieter DePree

DRILL RIG:

Geoprobe 7822

RECORD OF BOREHOLE B-09 SHEET: 1 of 2 Plant McDonough - Barrier Wall Field Investigation August 4, 2020 07:45 August 4, 2020 10:30 DRILLING START: GS ELEV .: 764 PROJECT NO.: 19124362 DRILLING END: TOC ELEV .: LOCATION: Atlanta, Georgia COORDINATES: N: 1,390,746 E: 2,200,851 DATUM: NAD 83 SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft DEPTH (ft) GRAPHIC LOG SAMPLE TYPE & NUMBER **BLOWS** 40 60 **NOTES** per 6 in **USCS** Depth WATER LEVELS DESCRIPTION WATER CONTENT (%) Elev ASTM D1586 140 lb hamme 30 inch drop Automatic -OW W_D (in) 0.0 764.0 20 40 60 80 (ML), SANDY CLAYEY SILT, non plastic, trace organics, brown; soft, w < PL, contains quartz and a lot of muscovite DF STD US LAB E-M.GDT - 8/20/21 09:59 .COM@SSL\DAVWWWROOTISITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109_AP1 MCDONOUGH_LOGS_COMBINED.GPJ Hand augered utility clearance from 0 to 10 5 ML ▼ 7.0 ft, 08/05/2020 00:00 10 Collected B-01 bucket sample from 10-15 feet 6 4-3-3-3 <u>7</u> 24 S-01 (D-RESIDUUM, (ML), SILT WITH SLIGHT PLASTICITY AND SAND, low plasticity, and fine to coarse sand, trace gravel, gray; 15 micaceous, loose to compact, dry to moist, contains muscovite, gneiss, and quartz, 3-5-6-8 DO 8-02 24 24 saprolite (11) 20 24 5-9-15-21 S-03 (24)25 16 ML S-04 6-8-8-9 <u>12</u> 24 (16)30 Shelby Tube pushed at ST-01 <u>24</u> 24 Ó 35 26 DO S-05 6-10-16-23 ER - BOREHOLE RECORD - (SSOCIATES.SHAREPOINT. (26)38.0 SM Log continued on next page 01 - GOLDER -DRILLING CO.: Betts Environmental Drilling LOGGED: Michael Boatman GOLDER Cliff Lackey DRILLER: CHECKED: K. Gray MEMBER OF WSP DRILL RIG: CME 75 REVIEWED: Pieter DePree

RECORD OF BOREHOLE B-09 stigation DRILLING START: August 4, 2020 07:45 SHEET: 2 of 2 August 4, 2020 07:45 August 4, 2020 10:30 PROJECT: Plant McDonough - Barrier Wall Field Investigation GS ELEV .: 764 PROJECT NO.: 19124362 DRILLING END: TOC ELEV .: LOCATION: Atlanta, Georgia COORDINATES: N: 1,390,746 E: 2,200,851 DATUM: NAD 83 SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft DEPTH (ft) **BLOWS** GRAPHIC LOG SAMPLE TYPE & NUMBER 40 60 **NOTES** per 6 in **USCS** Depth WATER LEVELS DESCRIPTION WATER CONTENT (%) Elev ASTM D1586 140 lb hamme 30 inch drop Automatic -OW W_D (in) 40 40.0 724.0 20 40 60 80 PARTIALLY WEATHERED ROCK 90-S 17-33-50/5' <u>17</u> 17 SAMPLED AS, (SM), SILTY SAND, fine to (83/11") medium, non plastic fines, red-brown to ER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59
ASSOCIATES.SHAREPOINT.COM@SSL\DAVWWWROOTISITES/1103181PROJECT FILESIS TECHNICAL WORK;300 FIELD INFORMATION/GINT LOGS/20201109_AP1 MCDONOUGH_LOGS_COMBINED.GPJ olive-gray; dense to very dense, dry (continued) SM 45 100 00 28-50/4 <u>10</u> 10 (50/4")PARTIALLY WEATHERED ROCK, SAMPLED AS, (ML), SILT, non plastic, trace fine sand; very dense, dry to moist, contains foliated saprolite and gneiss 100 50 \bowtie $\stackrel{\circ}{\sim}$ 50/5 <u>5</u> (50/5")ML 55 100 50/5' <u>5</u> (50/5")58.0 706.0 Refusal at 58.0 ft. Bottom of borehole at 58.0 ft. Backfilled with soil cuttings 60 65 70 75 01 - GOLDER - I DRILLING CO.: Betts Environmental Drilling LOGGED: Michael Boatman GOLDER DRILLER: Cliff Lackey CHECKED: K. Gray MEMBER OF WSP DRILL RIG: CME 75 REVIEWED: Pieter DePree

RECORD OF BOREHOLE B-10 stigation DRILLING START: August 4, 2020 13:00 SHEET: 1 of 1 Plant McDonough - Barrier Wall Field Investigation August 4, 2020 13:00 GS ELEV .: 767 PROJECT NO.: 19124362 DRILLING END: August 4, 2020 14:30 TOC ELEV .: LOCATION: Atlanta, Georgia COORDINATES: N: 1,391,116 E: 2,200,786 DATUM: NAD 83 SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft BORING METHOD DEPTH (ft) SAMPLE TYPE & NUMBER **BLOWS** GRAPHIC LOG 40 60 **NOTES** per 6 in **USCS** Depth WATER LEVELS DESCRIPTION WATER CONTENT (%) Elev ASTM D1586 140 lb hamme 30 inch drop Automatic -OW W, H (in) 0.0 767.0 20 40 60 80 (SM), SILTY SAND, fine, non plastic fines; non-cohesive, loose, dry to moist Hand augered utility clearance from 0 to 10 ER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59
ASSOCIATES.SHAREPOINT.COM@SSL\DAVWWWROOTISITES/1103181PROJECT FILESIS TECHNICAL WORK;300 FIELD INFORMATION/GINT LOGS/20201109_AP1 MCDONOUGH_LOGS_COMBINED.GPJ 5 SM 10 ▼ 10.0 ft, 08/05/2020 RESIDUUM, (ML), CLAYEY SILT AND 18 ■ 5-5-13-14 <u>20</u> 24 SAND, non plastic, and fine to coarse sand, brown to black; non-cohesive, compact to S-01 Bulk sample from 10 to (18) 15 ft dense, moist 15 ML 37 15-17-20-24 <u>21</u> 24 DO 8-02 (37) 100 20 747.0 746.5 SM PARTIALLY WEATHERED ROCK, 50/2" <u>2</u> SAMPLED AS, (SM), SILTY SAND, fine to (50/2")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 25 30 35 01 - GOLDER - I DRILLING CO.: Betts Environmental Drilling LOGGED: Michael Boatman GOLDER DRILLER: Cliff Lackey CHECKED: K. Gray MEMBER OF WSP DRILL RIG: CME 75 REVIEWED: Pieter DePree

RECORD OF BOREHOLE B-11 stigation DRILLING START: August 4, 2020 15:10 SHEET: 1 of 1 Plant McDonough - Barrier Wall Field Investigation August 4, 2020 15:10 GS ELEV .: 768 PROJECT NO.: 19124362 DRILLING END: August 4, 2020 16:05 TOC ELEV .: LOCATION: Atlanta, Georgia COORDINATES: N: 1,391,428 E: 2,200,706 DATUM: NAD 83 SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft BORING METHOD DEPTH (ft) **BLOWS** GRAPHIC LOG SAMPLE TYPE & NUMBER 40 60 **NOTES** per 6 in **USCS** Depth WATER LEVELS WATER CONTENT (%) DESCRIPTION Elev ASTM D1586 140 lb hamme 30 inch drop Automatic -OW W, H (in) 0.0 768.0 20 40 60 80 (SP), SAND, fine to coarse, poorly graded; non-cohesive, dry to moist ER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59
ASSOCIATES.SHAREPOINT.COM@SSL\DAVWWWROOTISITES/1103181PROJECT FILESIS TECHNICAL WORK;300 FIELD INFORMATION/GINT LOGS/20201109_AP1 MCDONOUGH_LOGS_COMBINED.GPJ SP 5 Hand Augered straight (SC), CLAYEY SAND, fine to coarse, low to utility clearanc 0 to 10 medium plasticity fines, yellow-tan to white; feet cohesive, w ~ PL SC 10 100 10.0 ft, 08/05/2020 00:00 10.0 758.0 900 32-50/3 OH: 99 PARTIALLY WEATHERED ROCK. (50/3")Collected B-01 bucket SAMPLED AS, (ML), SANDY SILT, non sample from 10-15 feet plastic, fine to coarse sand, some fine gravel, grayish brown; non-cohesive, compact, moist, relict structure, contains saprolite, quartz, gneiss 15 100 ML DO S-02 11-28-50/4 <u>16</u> 16 (78/10") 20 PARTIALLY WEATHERED ROCK, 5-10-10-25 S-03 21 24 SAMPLED AS, (SM), SILTY SAND, fine to (20) coarse, low to non plastic plasticity fines, SM dark brown to white; non-cohesive, very dense, dry to moist 23.0 745.0 Refusal at 23.0 ft. Bottom of borehole at 23.0 ft. Backfilled with soil cuttings 25 30 35 01 - GOLDER - WGOLDERASS DRILLING CO.: Betts Environmental Drilling LOGGED: Michael Boatman GOLDER DRILLER: Cliff Lackey CHECKED: K. Gray MEMBER OF WSP DRILL RIG: CME 75 REVIEWED: Pieter DePree

RECORD OF BOREHOLE B-12 SHEET: 1 of 1 PROJECT: Plant McDonough - Barrier Wall Field Investigation DRILLING START: August 18, 2020 09:25 GS ELEV .: 770 PROJECT NO .: 19124362 DRILLING END: August 18, 2020 12:00 TOC ELEV .: LOCATION: Atlanta, Georgia COORDINATES: N: 1,391,841 E: 2,200,768 DATUM: NAD 83 SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft DEPTH (ft) **BLOWS** GRAPHIC LOG SAMPLE TYPE & NUMBER 40 60 **NOTES** per 6 in **USCS** Depth WATER LEVELS DESCRIPTION WATER CONTENT (%) Elev ASTM D1586 ATT 140 lb hamme 30 inch drop Automatic -OW W_D (in) 0.0 770.0 20 60 80 RESIDUUM, (ML), SANDY CLAYEY SILT, non plastic, fine to coarse sand, trace fine subrounded gravel; non-cohesive, moist to IR - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59
SSOCIATES.SHAREPOINT.COM@SSL\DAVWWWROOTISITES/110318\PROJECT FILES\S TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109_AP1 MCDONOUGH_LOGS_COMBINED.GPU 5 Bulk sample collected 0 ML to 10 feet ▼ 6.5 ft, 08/19/2020 10:00 10 760.0 ▼ 10.0 ft, 08/18/2020 10:00 10.0 15 RESIDUUM, (SM), GRAVELLY SILTY DO 8-02 4-5-10-32 <u>18</u> 24 SAND, fine to coarse, fine subrounded to (15) subangular gravel, red-brown to gray; non-cohesive, compact, moist to wet SM 15 15.0 755.0 38 <u>9</u> 24 DO 8-02 11-13-25-17 RESIDUUM, (SW), SAND, fine to coarse, (38) well graded, some fine subrounded gravel, SW trace non plastic fines, gray; non-cohesive, 100 dense to very dense, dry
PARTIALLY WEATHERED ROCK, SW 50/2 (50/2")SAMPLED AS, (SW), SAND, fine to coarse, well graded, some fine subrounded gravel, 20 trace non plastic fines, gray; non-cohesive, very dense, dry Refusal at 18.2 ft. Bottom of borehole at 18.2 ft. Backfilled with soil cuttings 25 30 35 01 - GOLDER - WGOLDERASS DRILLING CO.: Betts Environmental Drilling LOGGED: Nick Moran GOLDER DRILLER: Scott Sanders CHECKED: K. Gray MEMBER OF WSP DRILL RIG: Geoprobe 7822 REVIEWED: Pieter DePree

RECORD OF BOREHOLE B-13 stigation DRILLING START: August 18, 2020 13:45 SHEET: 1 of 1 Plant McDonough - Barrier Wall Field Investigation August 18, 2020 13:45 GS ELEV .: 794 PROJECT NO.: 19124362 DRILLING END: August 18, 2020 14:45 TOC ELEV .: LOCATION: Atlanta, Georgia COORDINATES: N: 1,391,922 E: 2,200,927 DATUM: NAD 83 SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft DEPTH (ft) **BLOWS** GRAPHIC LOG SAMPLE TYPE & NUMBER 40 60 **NOTES** per 6 in **USCS** Depth WATER LEVELS DESCRIPTION WATER CONTENT (%) Elev ASTM D1586 140 lb hamme 30 inch drop Automatic -OW W_D (in) Θ^{20} 0.0 794.0 60 80 RESIDUUM, (ML), SANDY SILT, non plastic, fine to medium sand, trace fine subangular gravel, red-brown; non-cohesive, IR - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59
SSOCIATES.SHAREPOINT.COM@SSL\DAVWWWROOTISITES/110318\PROJECT FILES\S TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109_AP1 MCDONOUGH_LOGS_COMBINED.GPU compact, dry to moist No Groundwater encountered 5 5: Bulk sample collected ML 0 to 10 feet 10 RESIDUUM, (SM), SILTY SAND, fine to DO S-02 4-4-7-10 22 24 coarse, brown-red; non-cohesive, compact, ■ Ó H (11) dry to moist SM 15 779.0 RESIDUUM, (SM), SILTY SAND, fine to 11-24-21-20 DO 8-02 coarse, non plastic fines, trace fine (45) subangular gravel, gray; non-cohesive, dense, moist 20 SM 50 19-28-22-28 S-03 0 (50) 25 25.0 769.0 100 PARTIALLY WEATHERED ROCK, 25-50/3 <u>9</u> 768.3 SAMPLED AS; Fractured rock (50/3")Refusal at 25.8 ft. Bottom of borehole at 25.8 ft. Backfilled with soil cuttings 30 35 01 - GOLDER - WGOLDERASS DRILLING CO.: Betts Environmental Drilling LOGGED: Nick Moran GOLDER DRILLER: Scott Sanders CHECKED: K. Gray MEMBER OF WSP DRILL RIG: Geoprobe 7822 REVIEWED: Pieter DePree

RECORD OF BOREHOLE B-14 stigation DRILLING START: August 18, 2020 16:30 SHEET: 1 of 1 PROJECT: Plant McDonough - Barrier Wall Field Investigation August 18, 2020 16:30 GS ELEV .: 792 PROJECT NO.: 19124362 DRILLING END: August 18, 2020 17:15 TOC ELEV .: LOCATION: Atlanta, Georgia COORDINATES: N: 1,391,808 E: 2,201,033 DATUM: NAD 83 SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft BORING METHOD DEPTH (ft) SAMPLE TYPE & NUMBER **BLOWS** GRAPHIC LOG 40 60 **NOTES** per 6 in Depth **USCS** WATER LEVELS DESCRIPTION WATER CONTENT (%) Elev ASTM D1586 140 lb hamme 30 inch drop Automatic ATT -oW W, H (in) 0.0 792.0 20 40 60 80 RESIDUUM, (SM), SILTY SAND, fine to coarse, non plastic fines, trace fine angular gravel, white to gray; non-cohesive, ER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59
ASSOCIATES.SHAREPOINT.COM@SSL\DAVWWWROOTISITES/1103181PROJECT FILESIS TECHNICAL WORK;300 FIELD INFORMATION/GINT LOGS/20201109_AP1 MCDONOUGH_LOGS_COMBINED.GPJ compact, dry to moist 5 No Groundwater encountered Hand Auger utilitiy clearance 0 to 10 feet SM 10 20 6-10-10-10 (20) 15 Bulk B-01 sample collected from 10 to 20 13 4-7-6-9 DO 8-02 24 24 feet. (CL-ML) sandy CLAYEY SILT, fine to **■** ⊙ H (13) coarse sand, trace fine to coarse gravel. 774.0 SM PARTIALLY WEATHERED ROCK, 50/4" $\frac{4}{4}$ SAMPLED AS, (SM), SILTY SAND, fine to (50/4")coarse, non plastic fines, trace fine angular 20 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 25 30 35 01 - GOLDER - I DRILLING CO.: Betts Environmental Drilling LOGGED: Nick Moran GOLDER DRILLER: Scott Sanders CHECKED: K. Gray MEMBER OF WSP DRILL RIG: Geoprobe 7822 REVIEWED: Pieter DePree

RECORD OF BOREHOLE B-15 SHEET: 1 of 1 Plant McDonough - Barrier Wall Field Investigation DRILLING START: August 18, 2020 17:25 GS ELEV .: 787 PROJECT NO.: 19124362 DRILLING END: August 18, 2020 18:45 TOC ELEV .: LOCATION: Atlanta, Georgia COORDINATES: N: 1,391,743 E: 2,201,197 DATUM: NAD 83 SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft BORING METHOD DEPTH (ft) **BLOWS** GRAPHIC LOG SAMPLE TYPE & NUMBER 40 60 **NOTES** per 6 in **USCS** Depth WATER LEVELS WATER CONTENT (%) DESCRIPTION Elev ASTM D1586 ATT 140 lb hamme 30 inch drop Automatic -OW W_D (in) 0.0 787.0 60 80 (ML), SANDY SILT, non plastic, fine to coarse sand, trace fine subangular gravel, yellow brown; Bulk Sample AP1 MCDONOUGH LOGS COMBINED.GPJ 5 Hydrovac 0 to 10 feet ML Bulk Sample B-01 collected between 0 to 10 777.0 RESIDUUM, (SM), SILTY SAND, fine to DF STD US LAB E-M.GDT - 8/20/21 09:59 .COM@SSL\DAVWWWROOT\SITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109_ coarse, non plastic fines, trace fine subangular gravel, gray to brown; micaceous, non-cohesive, compact, moist 3-6-8-6 <u>20</u> 24 S-01 ■Ò (14) ▼ 14.5 ft, 08/19/2020 15 22:30 20 8-10-10-11 DO 8-02 (20) SM 20 27 S-03 15-13-14-13 (27) 25 17 761.0 760.5 S-04 5-5-12-25 <u>24</u> 24 ML RESIDUUM, (ML), SANDY SILT, non (17) **▼** 27.0 ft, 08/18/2020 plastic, fine to medium sand, red-orange; non-cohesive, compact, moist 18:00 RESIDUUM, (SM), SILTY SAND, fine to coarse, non plastic fines, trace fine SM subangular gravel, gray; non-cohesive, compact, moist 30 100 12-50/5 11 11 00.0 PARTIALLY WEATHERED ROCK SM (50/5" 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 35 ER - BOREHOLE RECORD - (SSOCIATES.SHAREPOINT. 01 - GOLDER - WGOLDERASS DRILLING CO.: Betts Environmental Drilling LOGGED: Nick Moran GOLDER DRILLER: Scott Sanders CHECKED: K. Gray MEMBER OF WSP DRILL RIG: Geoprobe 7822 REVIEWED: Pieter DePree

RECORD OF BOREHOLE SC-01 SHEET: 1 of 2 July 31, 2020 11:05 July 31, 2020 13:50 PROJECT: Plant McDonough - Barrier Wall Field Investigation DRILLING START: GS ELEV .: 753 PROJECT NO.: 19124362 DRILLING END: TOC ELEV .: LOCATION: Atlanta, Georgia COORDINATES: N: 1,390,228 E: 2,201,410 DATUM: NAD 83 SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft BORING METHOD DEPTH (ft) **BLOWS** GRAPHIC LOG SAMPLE TYPE & NUMBER 40 60 **NOTES** per 6 in **USCS** Depth WATER LEVELS DESCRIPTION WATER CONTENT (%) Elev ASTM D1586 ATT 140 lb hamme 30 inch drop Automatic -OW W_D (in) 0.0 753.0 20 40 60 80 (SP), GRAVELLY SAND, coarse, poorly graded, coarse gravel, brown to gray; non-cohesive, very loose to compact, wet IR - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59
SSOCIATES.SHAREPOINT.COM@SSL\DAVWWWROOTISITES/110318\PROJECT FILES\S TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109_AP1 MCDONOUGH_LOGS_COMBINED.GPU Hand Augered utility

▼ clearance 0 to 10 feet

7 2.5 ft, 07/31/2020 14:40 5 SP 10 1-1-1-5 <u>6</u> 24 S-01 (2) 15 Collected B-01 bucket 18 sample from 10-20 feet 3-7-11-13 <u>6</u> 24 DO 8-02 (18) 18.0 735.0 RESIDUUM, (ML), GRAVELLY SANDY SILT, non plastic, fine sand, brown with gray; micaceous, non-cohesive, loose, wet 20 2-2-3-7 S-03 12 24 (5) 25 10 ML S-04 2-3-7-13 <u>20</u> 24 (10)30 8 DO S-05 1-3-5-6 <u>16</u> 24 (8) 33.0 RESIDUUM, (ML), GRAVELLY SANDY SILT, non plastic, fine to medium sand, coarse gravel, brown to tan; non-cohesive, 35 Shelby Tube pushed at 35'. No Recovery dense to very dense, wet 60 90-S 23-27-33-45 <u>14</u> 24 (60)ML Log continued on next page 01 - GOLDER - WGOLDERASS DRILLING CO.: Betts Environmental Drilling LOGGED: Ayushi Tiwari GOLDER DRILLER: Cliff Lackey CHECKED: K. Gray MEMBER OF WSP DRILL RIG: CME 75 REVIEWED: Pieter DePree

PROJE	ECT	NO.: 1	Plant McDonough - Barrier Wall Field Inve 9124362 Atlanta, Georgia	REC(estigation	n D	RILLII DRIL	NG START LING END	EHOLE : July 31, 202 : July 31, 202 : July 31, 202 : N: 1,390,22	20 11:0 20 13:	05 50		SHEET: 2 of 2 GS ELEV.: 753 DC ELEV.: na DATUM: NAD 83	
O CH) BORING	METHOD	Depth 0.0	SOIL PROFILE DESCRIPTION	∂ ⊞ 713.0	nscs	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic	REC ATT (in)	WATER CONTENT	80 [%) — I W	NOTES WATER LEVELS	ADDITIONAL
40 - 45 - 45 - 50 - 55 - 60 - 65 - 70		41.5 42.0 PA SA SII co: vei Re Bo	ARTIALLY WEATHERED ROCK, MPLED AS, (ML), GRAVELLY SANDY LT, non plastic, fine to medium sand, arse gravel, brown to tan; non-cohesive, ry dense, wet fusal at 42.0 ft. ttom of borehole at 42.0 ft. ckfilled with soil cuttings	713.0	ML ML		N 20-S	30 inch drop			W,		
75													
[DR		Betts Environmental Drilling Cliff Lackey CME 75			СН	ECKED:	Ayushi Tiw K. Gray Pieter DeP				GOLD! MEMBER OF WS	

RECORD OF BOREHOLE SC-02
vestigation DRILLING START: July 30, 2020 13:45
DRILLING END: July 30, 2020 16:00 SHEET: 1 of 2 Plant McDonough - Barrier Wall Field Investigation GS ELEV .: 754 PROJECT: PROJECT NO.: 19124362 TOC ELEV .: LOCATION: Atlanta, Georgia COORDINATES: N: 1,390,224 E: 2,201,335 DATUM: NAD 83 SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE ADDITIONAL LAB TESTING BLOWS / ft BORING METHOD DEPTH (ft) GRAPHIC LOG SAMPLE TYPE & NUMBER **BLOWS** 40 60 **NOTES** per 6 in Depth **USCS** WATER LEVELS DESCRIPTION WATER CONTENT (%) Elev ASTM D1586 140 lb hamme 30 inch drop Automatic ATT -OW W_D (in) 0.0 754.0 20 40 60 80 (SP), GRAVELLY SAND, coarse, poorly graded, medium to coarse gravel, brown to tan; non-cohesive, loose, wet ER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59
ASSOCIATES.SHAREPOINT.COM@SSL\DAVWWWROOTISITES/1103181PROJECT FILESIS TECHNICAL WORK;300 FIELD INFORMATION/GINT LOGS/20201109_AP1 MCDONOUGH_LOGS_COMBINED.GPJ **4**.0 ft, 07/31/2020 10:10 5 Hand Augered utility clearance 0 to 10 feet 10 3-4-5-2 <u>8</u> 24 S-01 ĕ SP 15 Collected B-01 bucket 20 sample from 10-20 feet 12-13-7-7 DO 8-02 <u>19</u> 24 (20) 20 14 8-7-7-8 S-03 11 24 (14) 731.0 RESIDUUM, (ML), GRAVELLY SANDY SILT WITH SLIGHT PLASTICITY, coarse sand, brown to tan; micaceous, 25 non-cohesive, compact, wet S-04 3-3-8-15 <u>10</u> 24 (11) 30 11 DO S-05 3-5-6-8 <u>16</u> 24 (11) ML 35 12 90-S 4-5-7-12 <u>20</u> 24 (12) Shelby Tube pushed at ST-01 Д 24 Log continued on next page 01 - GOLDER - I DRILLING CO.: Betts Environmental Drilling LOGGED: Ayushi Tiwari GOLDER DRILLER: Cliff Lackey CHECKED: K. Gray MEMBER OF WSP DRILL RIG: CME 75 REVIEWED: Pieter DePree

PRC)JEC	T NO.:	Plant McDonough - Barrier Wall Fiel 19124362 Atlanta, Georgia	REC ld Investigation	ORE	RILLII DRIL	NG START LING END	EHOLE July 30, 202 July 30, 202 July 30, 202 N: 1,390,22	20 13:4 20 16:0	15 00			GS E TOC E	HEET: 2 of 2 ELEV.: 754 ELEV.: na TUM: NAD 83	
(t) OEPTH Offi	BORING METHOD	Depth 0.04	SOIL PROFILE DESCRIPTION	ື່⊕ ເມື່	nscs	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic	REC ATT (in)	20 4 WATER	LOWS /	ft) 80 ENT (%)	W _i	NOTES WATER LEVELS	ADDITIONAL
_	-		RESIDUUM, (ML), GRAVELLY SANDY SILT WITH SLIGHT PLASTICITY, coa sand, brown to tan; micaceous, non-cohesive, compact, wet (continue Sandy CLAYEY SILT, tan to brown	Y arse	ML		DO 8-07	12-18-31-39 (49)	18 24		49 ■				
45 		48.0	RESIDUUM, (ML), GRAVELLY SAND	706.0			S-80 08-80	5-10-17-26 (27)	18 24	27					
50		51.5	SILT WITH SLIGHT PLASTICITY, tan black; micaceous, non-cohesive, dense	to	ML		00 S	33-37-50 (87)	17 18				37 ■		
		53.0	PARTIALLY WEATHERED ROCK, SAMPLED AS, (ML), GRAVELLY SAN SILT WITH SLIGHT PLASTICITY, tan black; micaceous, non-cohesive, very	IDY to <u>701.0</u>	ML		,					:			_
45 - 45 - 50 - 55 			Refusal at 53.0 ft. Bottom of borehole at 53.0 ft. Backfilled with soil cuttings												
75	-														
DRI	DF	IG CC RILLEI LL RIC	_			СН	ECKED:	Ayushi Tiw K. Gray Pieter DeP					\$	GOLD MEMBER OF W	

RECORD OF BOREHOLE SP-01 SHEET: 1 of 2 July 29, 2020 08:15 July 29, 2020 11:00 PROJECT: Plant McDonough - Barrier Wall Field Investigation DRILLING START: GS ELEV .: 782 PROJECT NO.: 19124362 DRILLING END: TOC ELEV .: LOCATION: Atlanta, Georgia COORDINATES: N: 1,390,744 E: 2,201,815 DATUM: NAD 83 SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE ADDITIONAL LAB TESTING BLOWS / ft BORING METHOD DEPTH (ft) GRAPHIC LOG SAMPLE TYPE & NUMBER **BLOWS** 40 60 **NOTES** per 6 in **USCS** Depth WATER LEVELS DESCRIPTION WATER CONTENT (%) Elev ASTM D1586 ATT 140 lb hamme 30 inch drop Automatic -OW W, H (in) 0 0.0 782.0 20 40 60 80 RESIDUUM, (ML), SANDY SILT, non plastic, fine sand, some fine gravel, brown; micaceous, non-cohesive, loose to compact, DF STD US LAB E-M.GDT - 8/20/21 09:59 .COM@SSL\DAVWWWROOTISITES\110318\PROJECT FILES\5 TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109_AP1 MCDONOUGH_LOGS_COMBINED.GPJ 5 Hand Augered utility clearance 0 to 10 feet 10 16 7-7-9-11 <u>16</u> 24 S-01 (16) 15 Collected B-01 bucket ML sample from 10 to 20 DO 8-02 7-5-4-5 18 24 (9) **▼** 19.0 ft, 07/31/2020 08:30 20 **▼** 21.0 ft, 07/29/2020 DO S-03 3-3-6-9 24 24 (9) 13:05 Shelby Tube pushed at 22' TP ST-01 <u>24</u> 24 25 15 S-04 7-7-8-11 <u>24</u> 24 (15) 30 27 DO S-05 751.0 7-11-16-18 31.0 (27) RESIDUUM, (SM), SILTY SAND, some gravel, orange with brown; micaceous, non-cohesive, compact, wet 35 SM 25 5-7-18-35 90-S <u>24</u> 24 ER - BOREHOLE RECORD - (SSOCIATES.SHAREPOINT. (25)39.0 ML Log continued on next page 01 - GOLDER - WGOLDERASS DRILLING CO.: Betts Environmental Drilling LOGGED: Ayushi Tiwari GOLDER DRILLER: Cliff Lackey CHECKED: K. Gray MEMBER OF WSP DRILL RIG: CME 75 REVIEWED: Pieter DePree

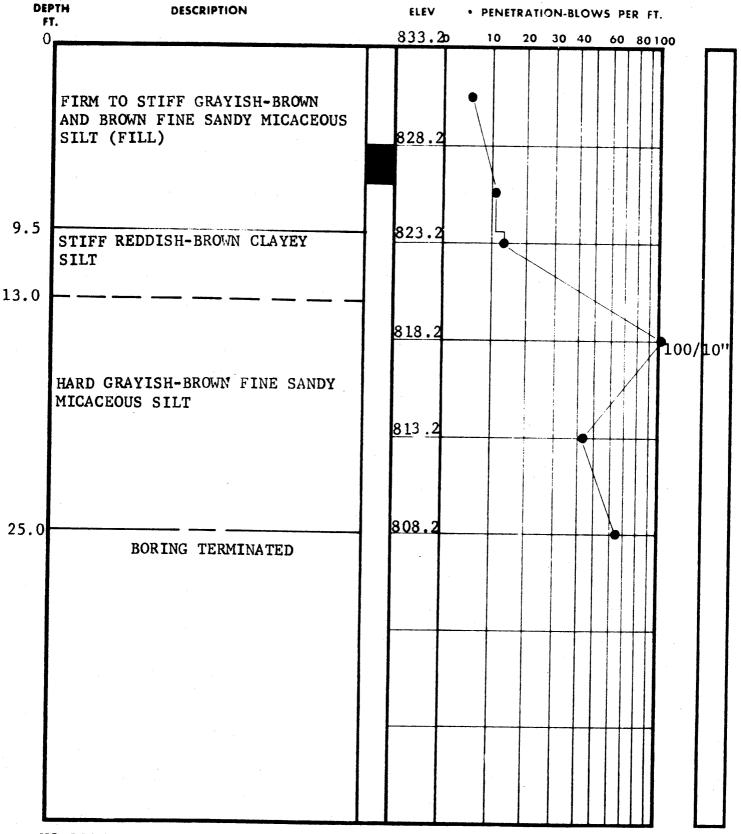
RECORD OF BOREHOLE SP-01 restigation DRILLING START: July 29, 2020 08:15 SHEET: 2 of 2 Plant McDonough - Barrier Wall Field Investigation July 29, 2020 08:15 July 29, 2020 11:00 PROJECT: GS ELEV .: 782 PROJECT NO.: 19124362 DRILLING END: TOC ELEV .: LOCATION: Atlanta, Georgia COORDINATES: N: 1,390,744 E: 2,201,815 DATUM: NAD 83 SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft DEPTH (ft) SAMPLE TYPE & NUMBER **BLOWS** GRAPHIC LOG 40 60 **NOTES** per 6 in Depth **USCS** WATER LEVELS DESCRIPTION WATER CONTENT (%) Elev ASTM D1586 140 lb hamme 30 inch drop Automatic ATT -OW W_p F (in) 40 40.0 742.0 20 60 80 RESIDUUM, (ML), GRAVELLY SANDY 25 DO S-07 7-11-14-19 24 24 SILT, non plastic, orange with brown; (25)micaceous, non-cohesive, compact to ER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59
ASSOCIATES.SHAREPOINT.COM@SSL\DAVWWWROOTISITES/1103181PROJECT FILESIS TECHNICAL WORK;300 FIELD INFORMATION/GINT LOGS/20201109_AP1 MCDONOUGH_LOGS_COMBINED.GPJ dense, wet (continued) 45 20 S-08 <u>24</u> 24 7-8-12-15 (20)50 **44** ML S-09 9-18-26-33 <u>24</u> 24 (44)55 42 DO S-10 8-16-26-28 (42) 60 82 S-11 <u>18</u> 18 19-32-50 (82) 7<u>20.5</u> PARTIALLY WEATHERED ROCK, SAMPLED AS, (ML), GRAVELLY SANDY SILT, non plastic, orange with brown; micaceous, non-cohesive, compact to very 65 MI 100 13-50/4 DO S-1; <u>10</u> 10 (50/4")68.0 714.0 Refusal at 68.0 ft. Bottom of borehole at 68.0 ft. Backfilled with soil cuttings 70 75 80 01 - GOLDER - I DRILLING CO.: Betts Environmental Drilling LOGGED: Ayushi Tiwari GOLDER DRILLER: Cliff Lackey CHECKED: K. Gray MEMBER OF WSP DRILL RIG: CME 75 REVIEWED: Pieter DePree

RECORD OF BOREHOLE SP-02 SHEET: 1 of 2 DRILLING START: July 29, 2020 13:45 July 29, 2020 15:20 Plant McDonough - Barrier Wall Field Investigation GS ELEV .: 774 PROJECT: PROJECT NO.: 19124362 DRILLING END: TOC ELEV .: LOCATION: Atlanta, Georgia COORDINATES: N: 1,390,523 E: 2,201,752 DATUM: NAD 83 SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE ADDITIONAL LAB TESTING BLOWS / ft BORING METHOD DEPTH (ft) GRAPHIC LOG SAMPLE TYPE & NUMBER **BLOWS** 40 60 **NOTES USCS** per 6 in Depth WATER LEVELS DESCRIPTION WATER CONTENT (%) Elev ASTM D1586 140 lb hammer 30 inch drop Automatic ATT -oW W, H (in) 40 0.0 774.0 20 60 80 RESIDUUM, (ML), SANDY GRAVELLY SILT, non plastic, brown to tan; non-cohesive, compact, dry to wet ER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59
ASSOCIATES.SHAREPOINT.COM@SSL\DAVWWWROOTISITES/1103181PROJECT FILESIS TECHNICAL WORK;300 FIELD INFORMATION/GINT LOGS/20201109_AP1 MCDONOUGH_LOGS_COMBINED.GPJ 5 Hand Augered utility clearance 0 to 10 feet 10 17 5-8-9-10 $\frac{17}{24}$ ▼ 11.0 ft, 07/31/2020 08:30 S-01 (17) 15 Collected B-01 bucket 14 sample from 10-20 feet 5-5-9-11 DO 8-02 18 24 (14) **▼** 17.5 ft, 07/30/2020 07:30 20 MI 19 18 24 S-03 4-8-11-13 (19) Shelby Tube pushed at 23' ST-01 <u>24</u> 24 25 10 5-5-5 (**10**) <u>18</u> 18 DO S-04 30 13 DO S-05 4-4-9-11 <u>20</u> 24 (13) 35 20 90-S 4-7-13-15 (20)Log continued on next page 01 - GOLDER - I DRILLING CO.: Betts Environmental Drilling LOGGED: Ayushi Tiwari GOLDER Cliff Lackey DRILLER: CHECKED: K. Gray MEMBER OF WSP DRILL RIG: CME 75 REVIEWED: Pieter DePree

PROJ	JEC1	「NO.: 1	Plant McDonough - Barrier Wall Field Ir 19124362 Atlanta, Georgia	REC ovestigation	n D	RILLII DRIL	NG START LING END	EHOLE July 29, 202 July 29, 202 N: 1,390,52	20 13:4 20 15:2	45 20	Т	SHEET: 2 of 2 GS ELEV.: 774 OC ELEV.: na DATUM: NAD 83	
DEPTH (ft)	BORING METHOD	Depth	SOIL PROFILE DESCRIPTION	Elev	nscs	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop	REC ATT	20 40 WATER C	ION RESISTANCE DWS / ft 60 80 CONTENT (%)	NOTES WATER LEVELS	ADDITIONAL AB TESTING
40		43.0 GF ve Re Bo	ARTIALLY WEATHERED ROCK, MPLED AS, (GM), SANDY SILTY RAVEL, coarse, brown; non-cohesive, ry dense, wet fusal at 43.0 ft. ittom of borehole at 43.0 ft. ckfilled with soil cuttings	734.0	ML		S-07	Automatic 17-28-50/5" (78/11")	(in) 6 17	20 40	60 80	•	
65													
 70 													
65													
DRIL	DR		Betts Environmental Drilling Cliff Lackey CME 75			СН	ECKED:	Ayushi Tiw K. Gray Pieter DeP				GOLI MEMBER OI	

RECORD OF BOREHOLE SP-03 SHEET: 1 of 2 PROJECT: Plant McDonough - Barrier Wall Field Investigation DRILLING START: August 17, 2020 16:15 GS ELEV .: 756 PROJECT NO.: 19124362 DRILLING END: August 17, 2020 06:30 TOC ELEV .: LOCATION: Atlanta, Georgia COORDINATES: N: 1,390,290 E: 2,201,514 DATUM: NAD 83 SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft BORING METHOD DEPTH (ft) SAMPLE TYPE & NUMBER **BLOWS** GRAPHIC LOG 40 60 **NOTES** per 6 in **USCS** Depth WATER LEVELS DESCRIPTION WATER CONTENT (%) Elev ASTM D1586 ATT 140 lb hamme 30 inch drop Automatic -OW W, H (in) 0.0 756.0 20 40 60 80 (ML), SANDY SILT, non plastic, fine to coarse sand, trace fine subangular gravel, brown; cohesive, w ~ PL IR - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 8/20/21 09:59
SSOCIATES.SHAREPOINT.COM@SSL\DAVWWWROOTISITES/110318\PROJECT FILES\S TECHNICAL WORK\300 FIELD INFORMATION\GINT LOGS\20201109_AP1 MCDONOUGH_LOGS_COMBINED.GPU ML 5 ▼ 5.0 ft, 08/18/2020 18:30 Grab sample from Hand (ML), SANDY SILT, non plastic, fine to Auger between 8 to 10 coarse sand, trace fine subangular gravel, brown to gray; non-cohesive, loose to 10 compact, moist to wet 5 2-2-3-3 <u>18</u> 24 S-01 (5) 15 ML 31 12-14-17-18 DO 8-02 (31) 20 **▼** 20.0 ft, 08/17/2020 36 18:30 DO S-03 14-15-21-22 (36)734.0 22.0 RESIDUUM, (ML), SILT AND SAND, non plastic, and fine to coarse SAND, trace fine subangular to angular gravel, brown to gray; non-cohesive, loose to dense, wet 25 14 S-04 8-7-7-8 17 24 (14) 30 20 DO S-05 7-11-9-12 ML (20) 35 90-S 2-2-5-6 <u>14</u> 24 (7) Log continued on next page 01 - GOLDER -DRILLING CO.: Betts Environmental Drilling LOGGED: Nick Moran GOLDER DRILLER: Scott Sanders CHECKED: K. Gray MEMBER OF WSP DRILL RIG: Geoprobe 7822 REVIEWED: Pieter DePree

PRO	JEC ⁻	Γ NO.:	Plant McDonough - Barrier Wall Field I 19124362 Atlanta, Georgia	REC nvestigation	ORE	RILLIN DRIL	NG START: LING END:	EHOLE August 17, August 17, N: 1,390,29	2020 ²	16:15 06:30 T	SHEET: 2 of 2 GS ELEV.: 756 OC ELEV.: na DATUM: NAD 83	
_	(n D		SOIL PROFILE					SAMPLES		■ PENETRATION RESISTANCE BLOWS / ft		
(#) (#)	BORING	Depth 40.0	DESCRIPTION	≱ ⊞ 716.0	nscs	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic	REC ATT	20 40 60 80 WATER CONTENT (%) W _p	NOTES WATER LEVELS	
		41.0	ransitions to partially weathered rock	715.0	ML		S-07	24-27-20-27 (47)	<u>24</u> 24	47		
_			efusal at 42.0 ft. ottom of borehole at 42.0 ft.	·								
45												
-												
-												
50												
-												
- 55												
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60												
-												
-												
65 -												
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70												
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-												
75												
_												
80												
	DR	G CO.: IILLER: LL RIG:				СН	ECKED:	Nick Morar K. Gray Pieter DeP		1	GOLD MEMBER OF W	



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.

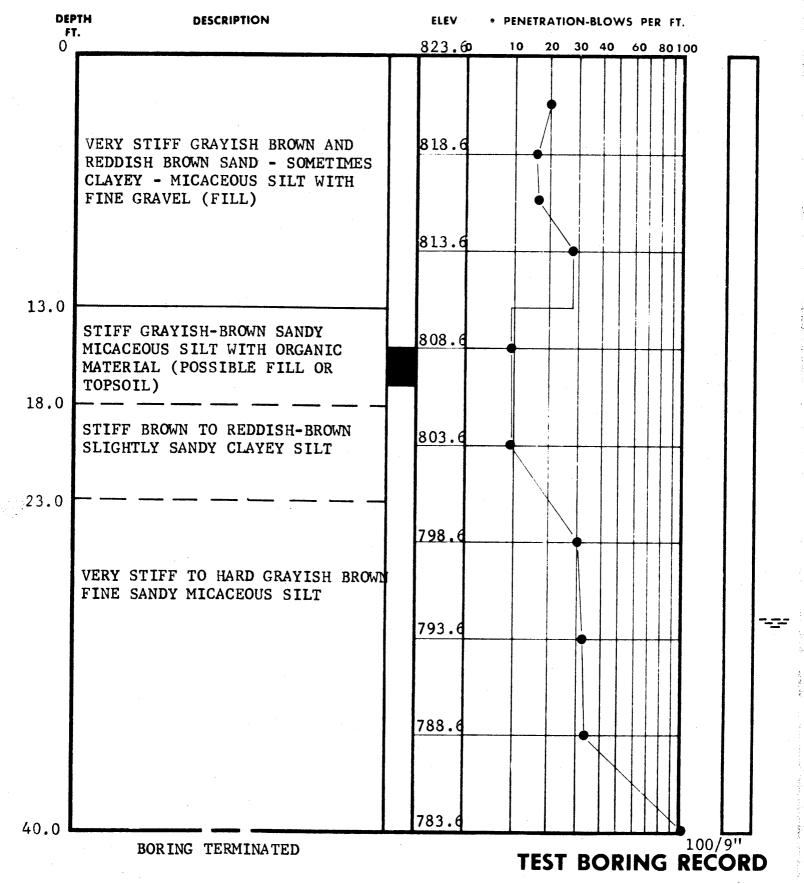
DATE DRILLED 3/5/68.

JOB NO. 5862

50 % ROCK CORE RECOVERY

UNDISTURBED SAMPLE

LOSS OF DRILLING WATER

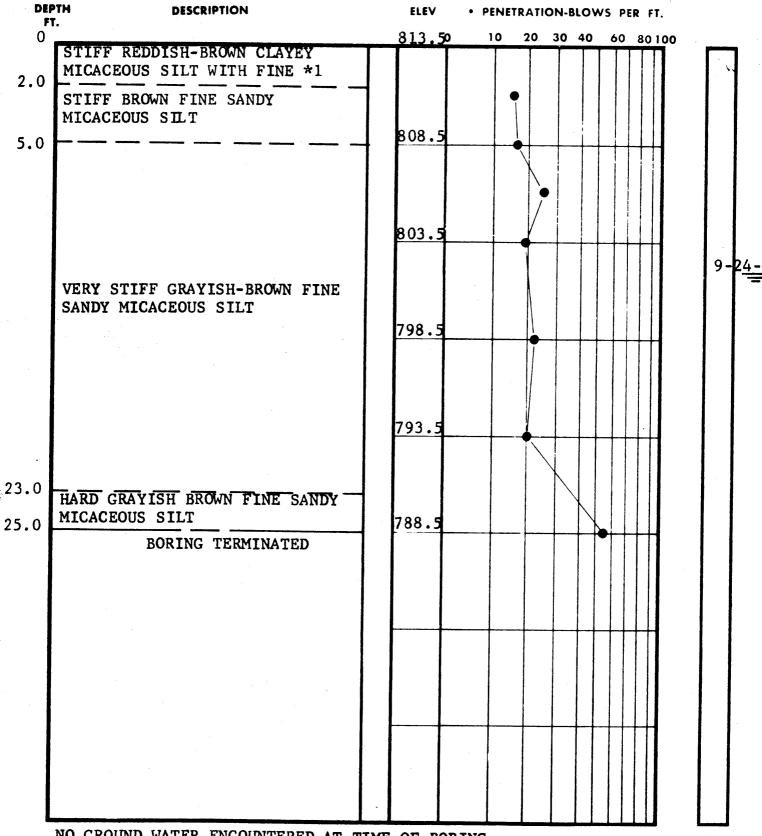


PENETRATION IS THE NUMBER OF BLOWS OF 140 LB, HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

UNDISTURBED SAMPLE

WATER TABLE, 24 HR.

LOSS OF DRILLING WATER



NO GROUND WATER ENCOUNTERED AT TIME OF BORING

*1 QUARTZ GRAVEL

BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113

UNDISTURBED SAMPLE

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.

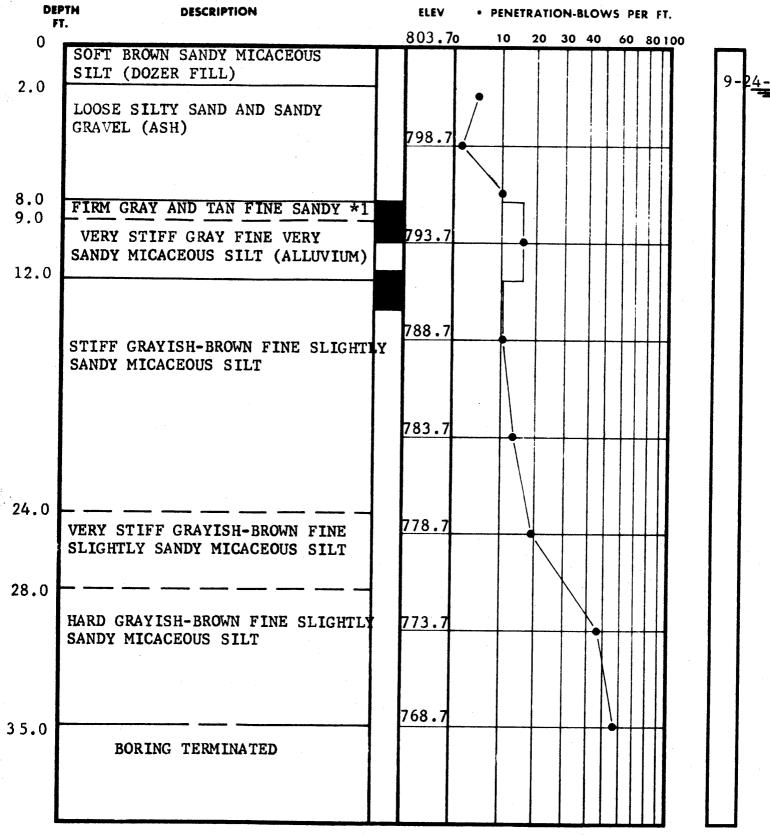
WATER TABLE, 1 HR.

50 % ROCK CORE RECOVERY

LOSS OF DRILLING WATER

TEST BORING RECORD

BORING NO. ______ B-103 DATE DRILLED 8/2/68 5862 JOB NO. -



*1 SLIGHTLY CLAYEY MICACEOUS SILT (ALLUVIUM) **TEST BORING RECORD**

BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113

UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER

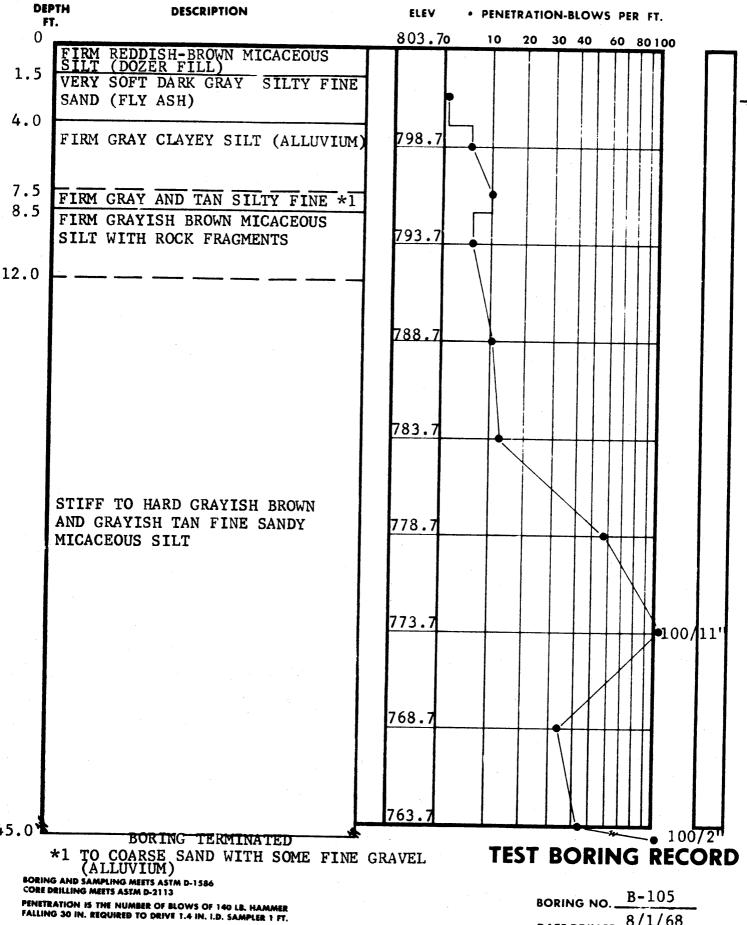
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

DATE DRILLED 8/2/68 JOВ NO. <u>5862</u>



50 % ROCK CORE RECOVERY

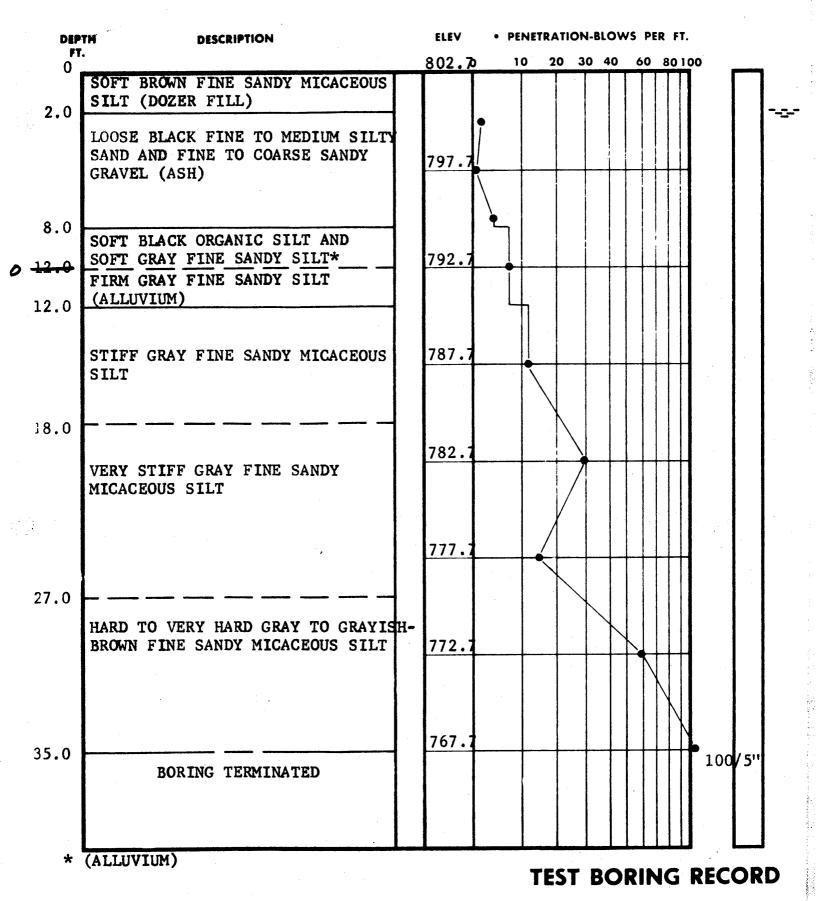
UNDISTURBED SAMPLE

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

DATE DRILLED 8/1/68

JOB NO. 5862



PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

UNDISTURBED SAMPLE

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

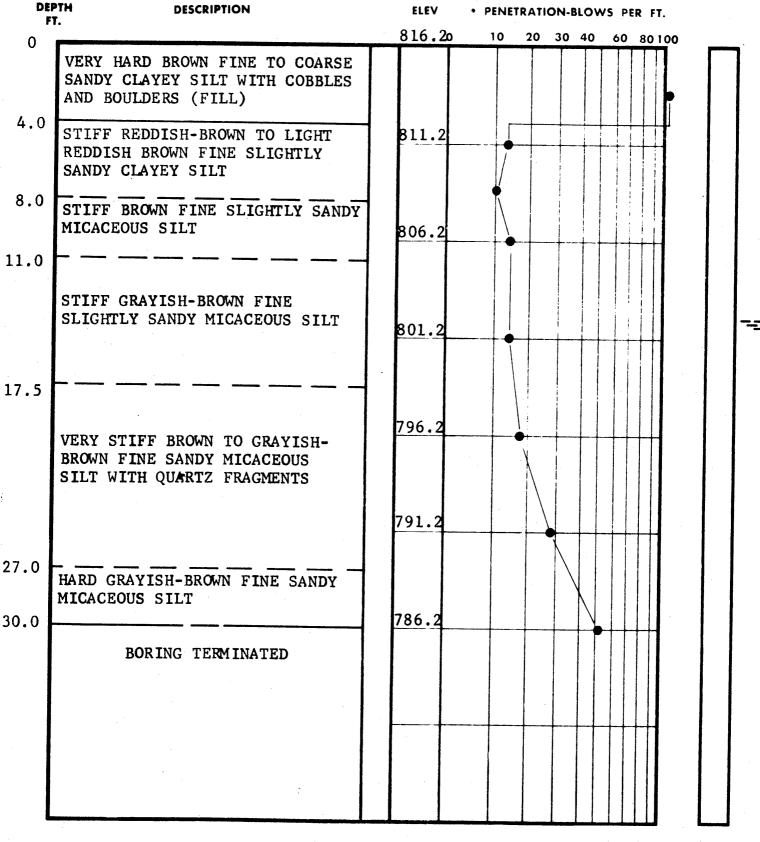
50 % ROCK CORE RECOVERY

LOSS OF DRILLING WATER

BORING NO. B-106

DATE DRILLED 8/1/68

JOB NO. ______5862



BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

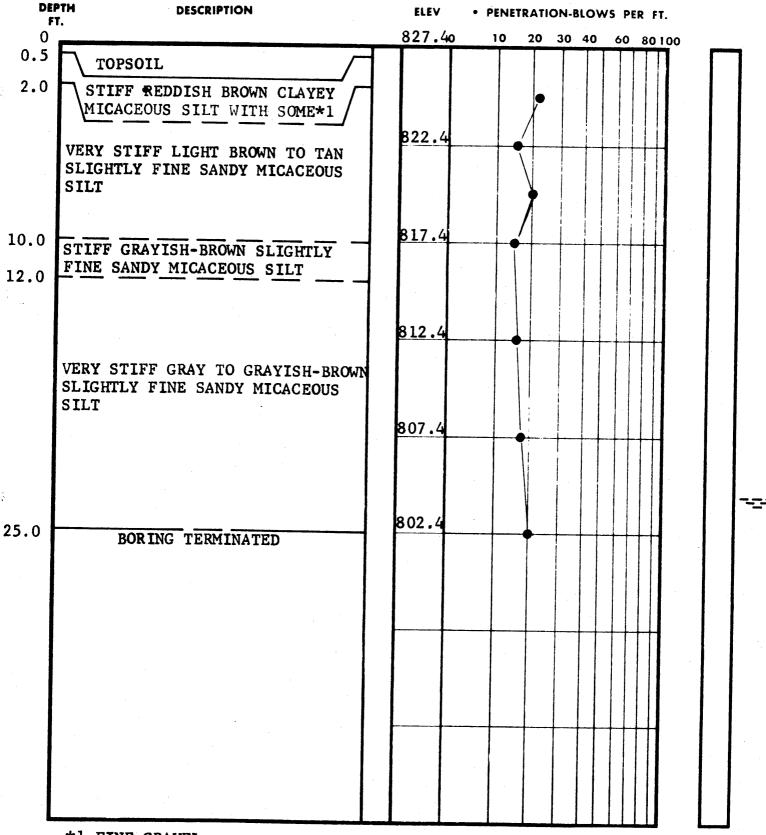
WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

50 % ROCK CORE RECOVERY

UNDISTURBED SAMPLE

LOSS OF DRILLING WATER



*1 FINE GRAVEL

TEST BORING RECORD

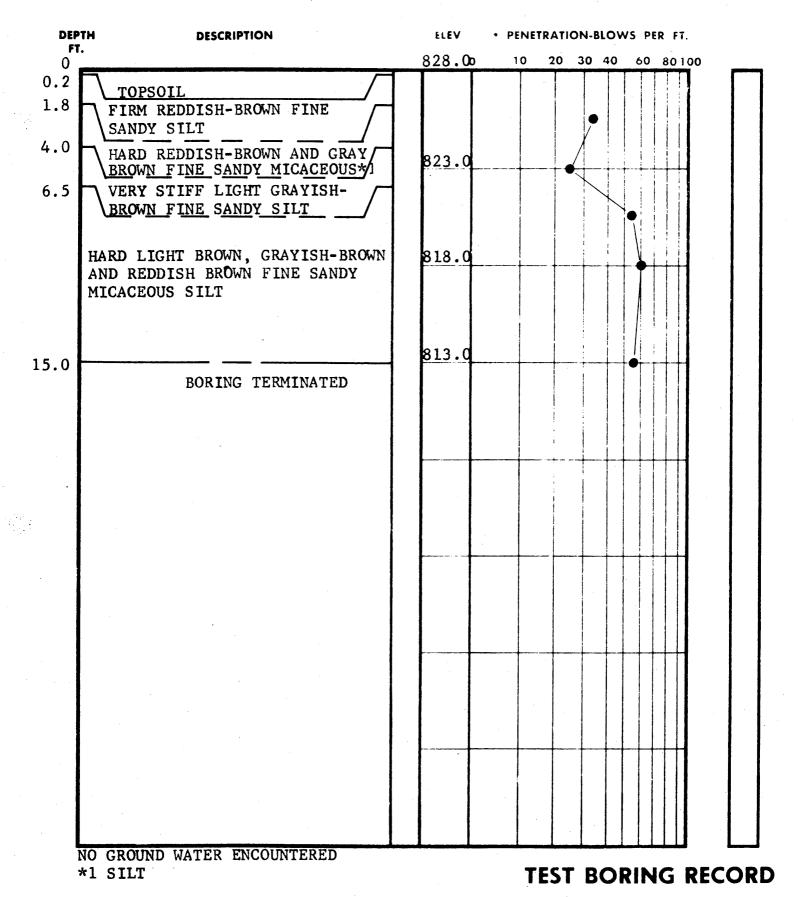
BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

WATER TABLE, 24 HR.

UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

LOSS OF DRILLING WATER



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.

50 % ROCK CORE RECOVERY

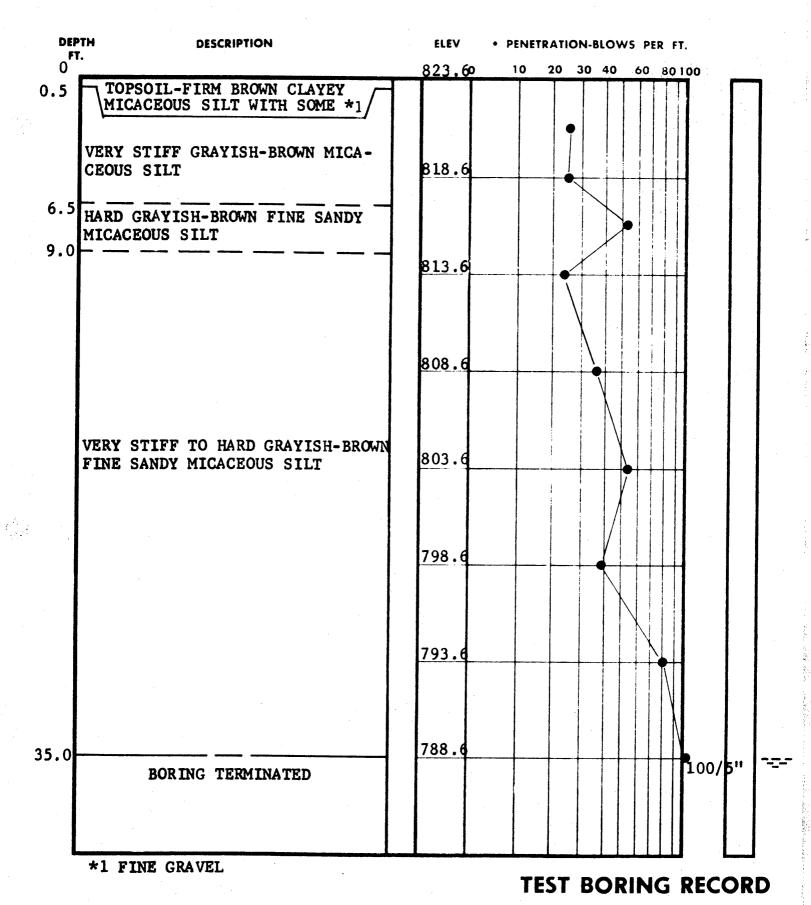
UNDISTURBED SAMPLE

LOSS OF DRILLING WATER

B-109 BORING NO. ___ 5862

LAW ENGINEERING TESTING CO.

JOB NO. __



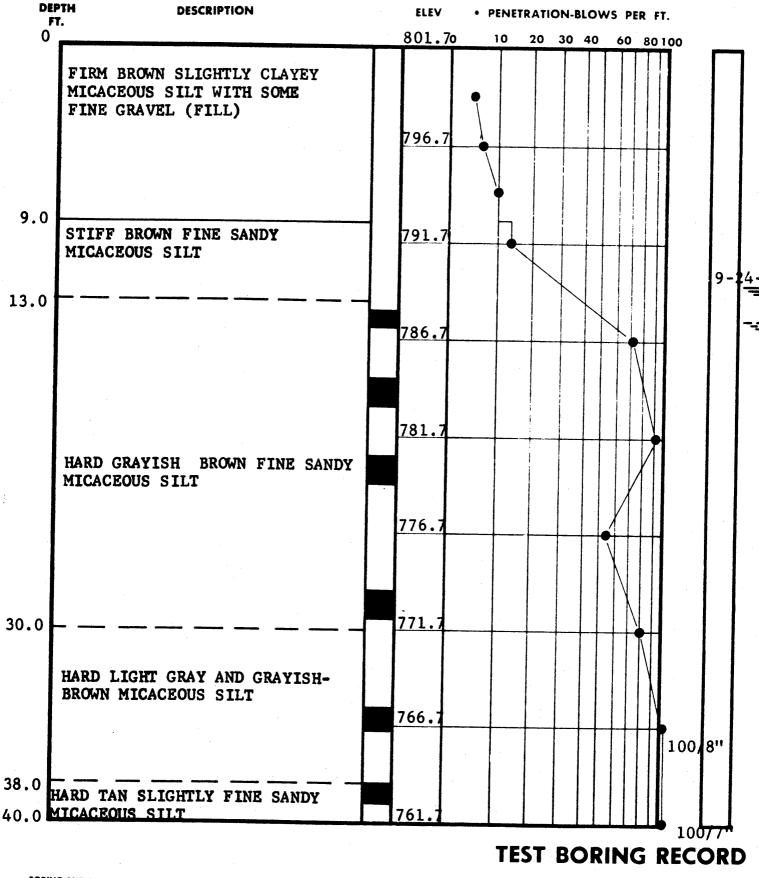
PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

UNDISTURBED SAMPLE

WATER TABLE, 24 HR. WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

B-110 BORING NO. __ DATE DRILLED 7/30/68 5862 JOB NO. _



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

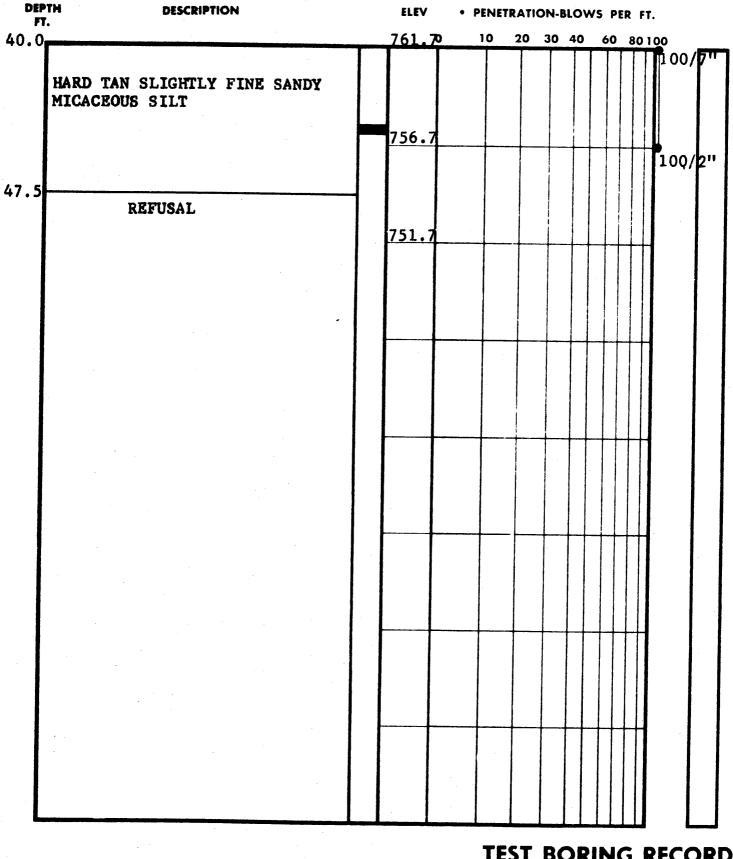
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WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

PAGE 1 of 2



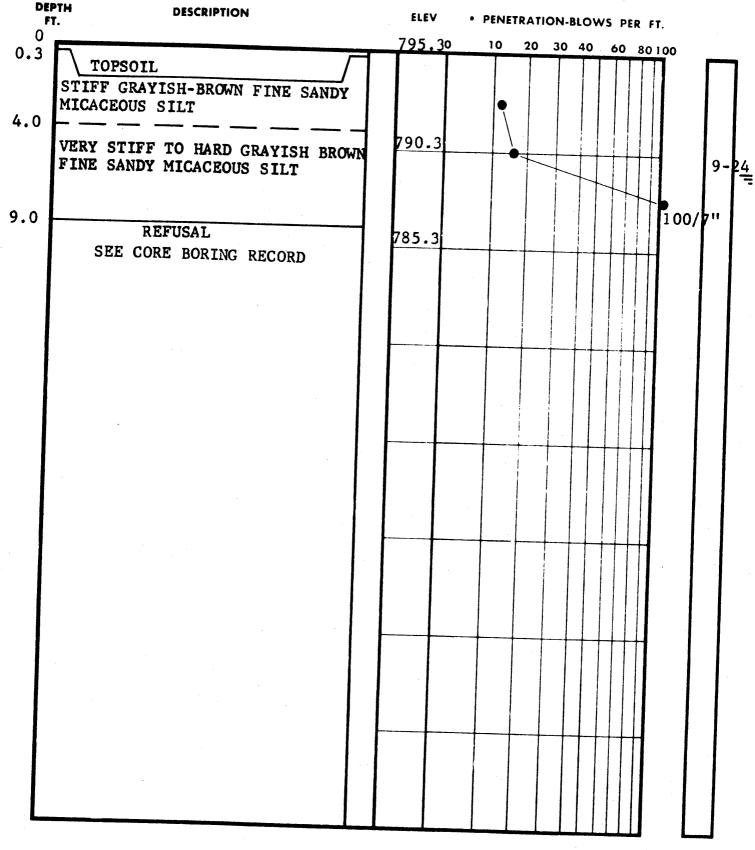
BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. LD. SAMPLER 1 FT.

PAGE 2 of 2

BORING NO. B-111 5862 JOB NO.__

UNDISTURBED SAMPLE 50 % ROCK CORE RECOVERY

WATER TABLE, 24 HR. WATER TABLE, 1 HR. LOSS OF DRILLING WATER



PAGE 1 OF 2

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

UNDISTURBED SAMPLE

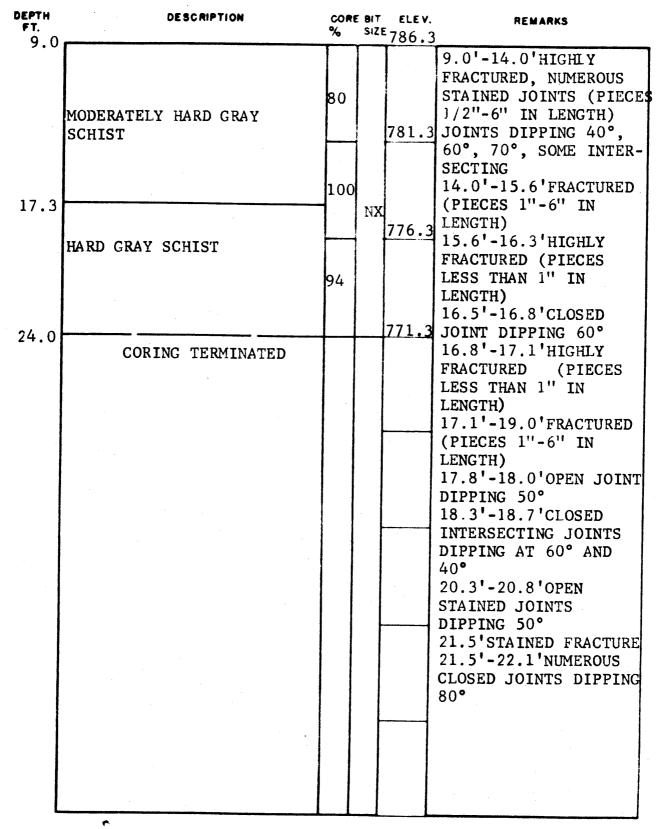
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

WATER TABLE, 1 HR.

50 % ROCK CORE RECOVERY LOSS OF DRILLING WATER

WATER TABLE, 24 HR.

BORING NO. _ B-112 DATE DRILLED 7/25/68 5862 JOB NO. _

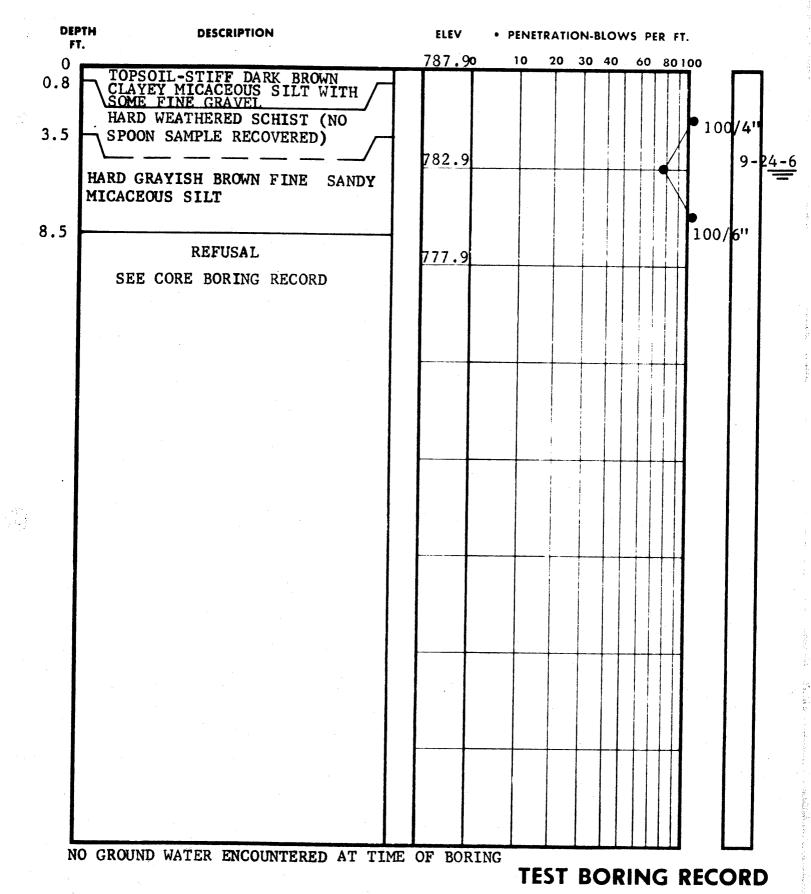


LOST 50% OF DRILLING WATER AT 12 FEET

PAGE 2 of 2 CORE BORING RECORD

> 112 BORING NO._

JOB NO. 5862



PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN, I.D. SAMPLER 1 FT.

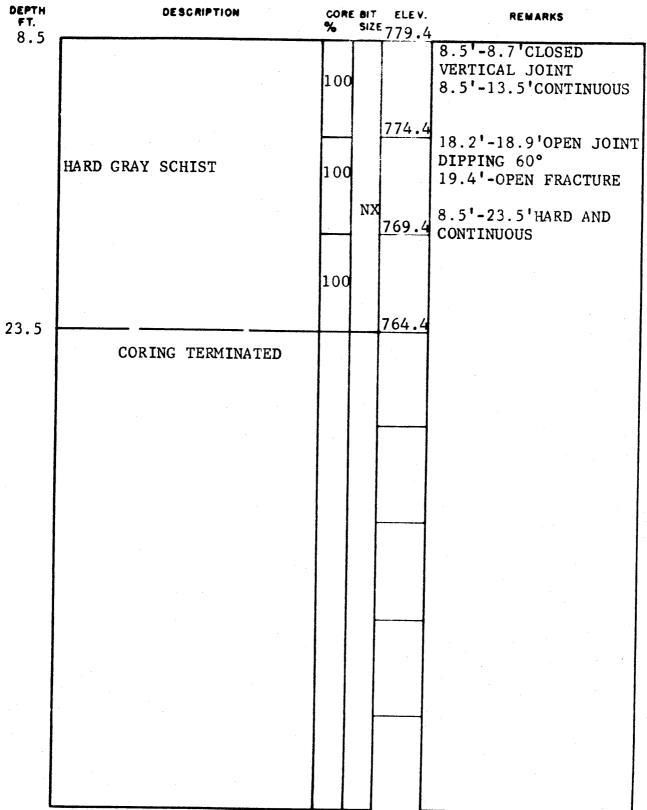
PAGE 1 OF 2

UNDISTURBED SAMPLE

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

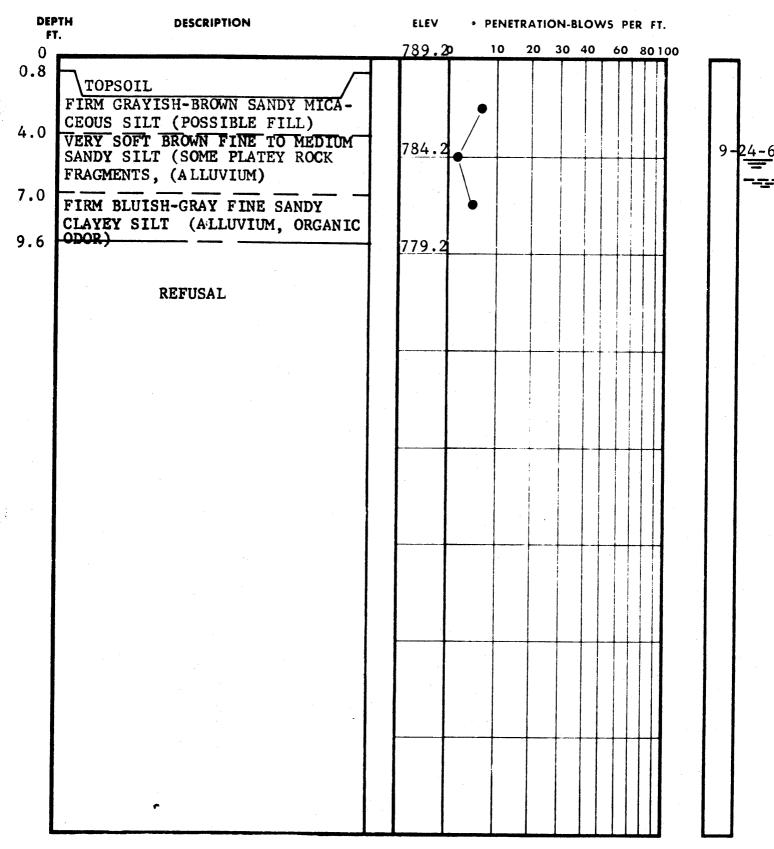


NO DRILLING WATER LOSS RECORDED

PAGE 2 of 2

CORE BORING RECORD

BORING NO._ JOB NO. ____



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.

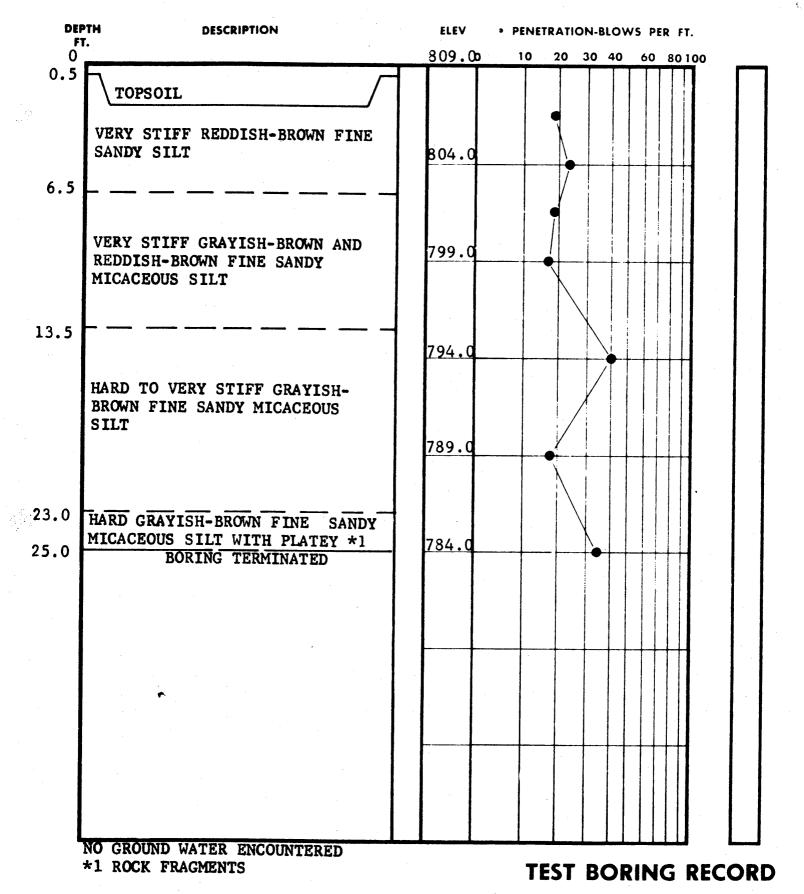
DATE 1 BOL

DATE DRILLED 7/25/68

UNDISTURBED SAMPLE

jj





UNDISTURBED SAMPLE

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.

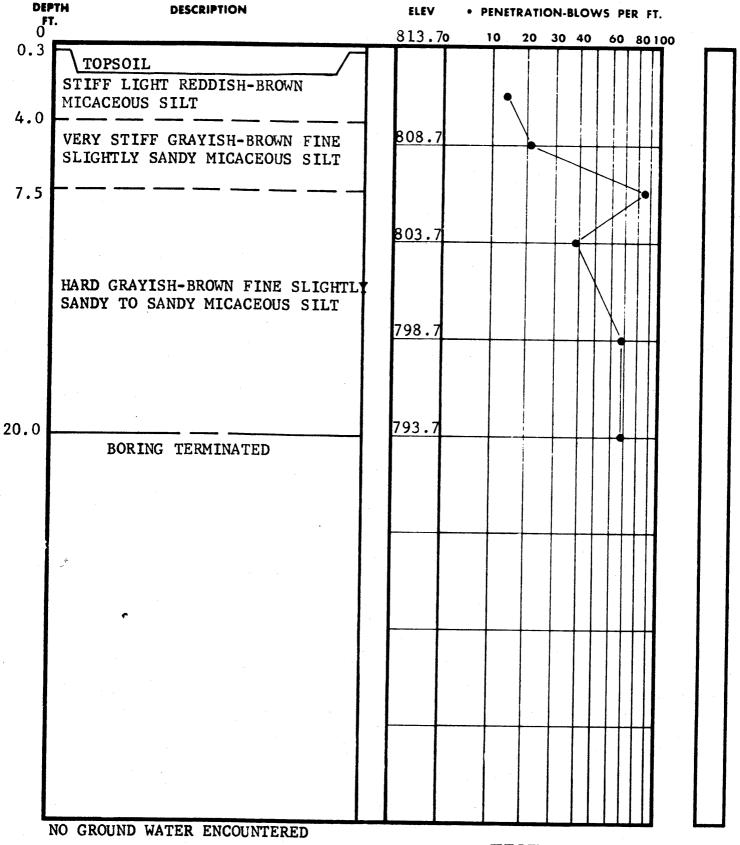
WATER TABLE, 1 HR.

50 % ROCK CORE RECOVERY

LOSS OF DRILLING WATER

5862

JOB NO. -

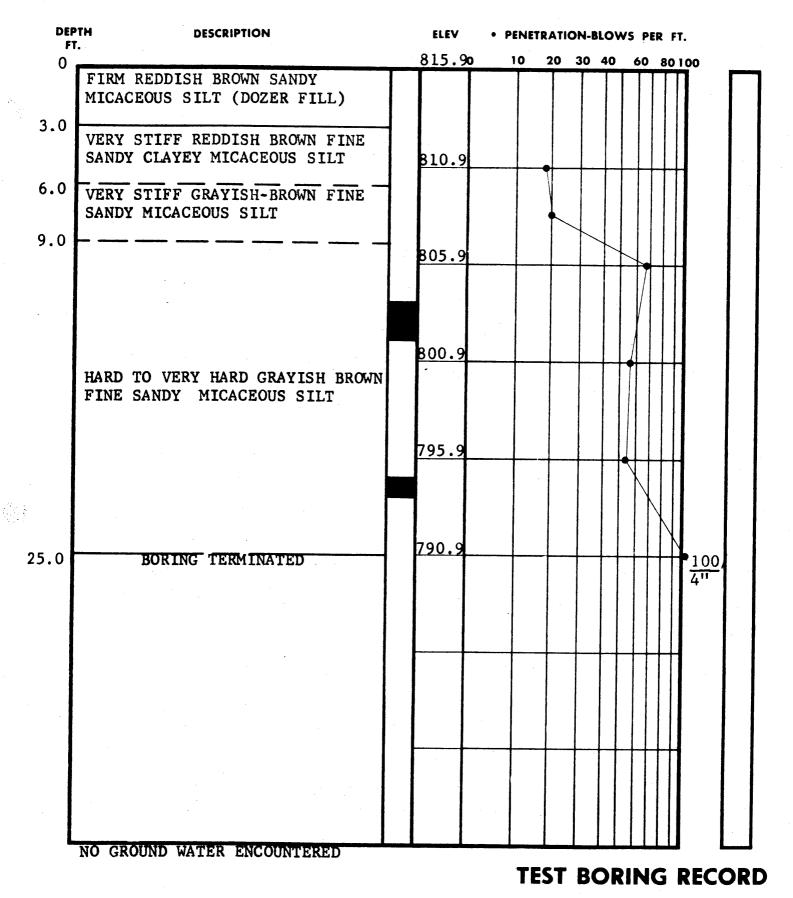


BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER



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. 1.D. SAMPLER 1 FT.

1.4 IN. I.D. SAMPLER 1 FT.

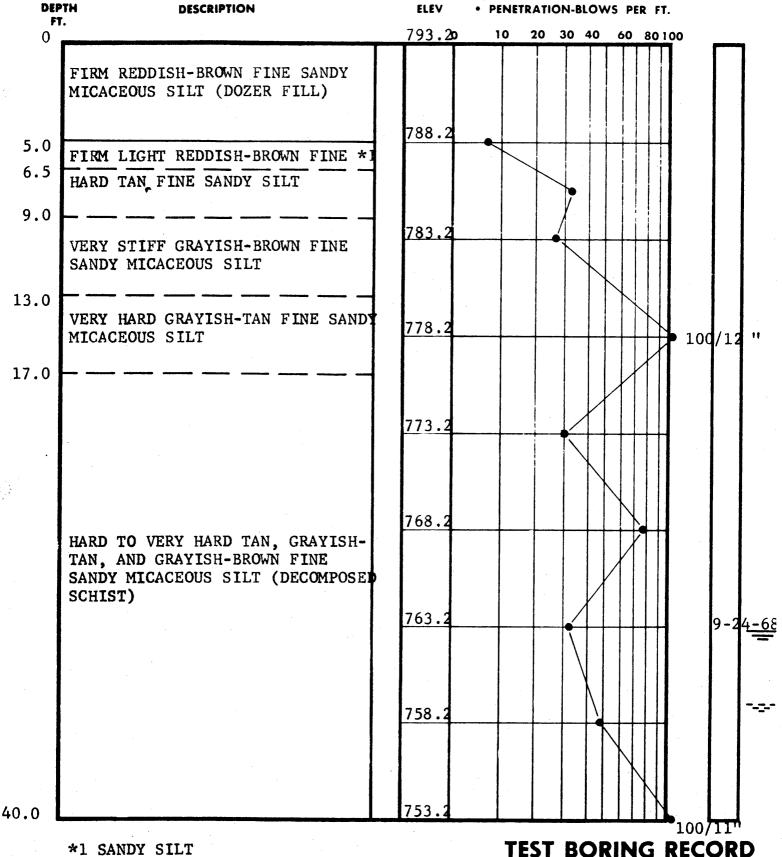
WATER TABLE,

WATER TABLE, 24 HR.
WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

jj

UNDISTURBED SAMPLE



*1 SANDY SILT

UNDISTURBED SAMPLE

PAGE 1 of 2

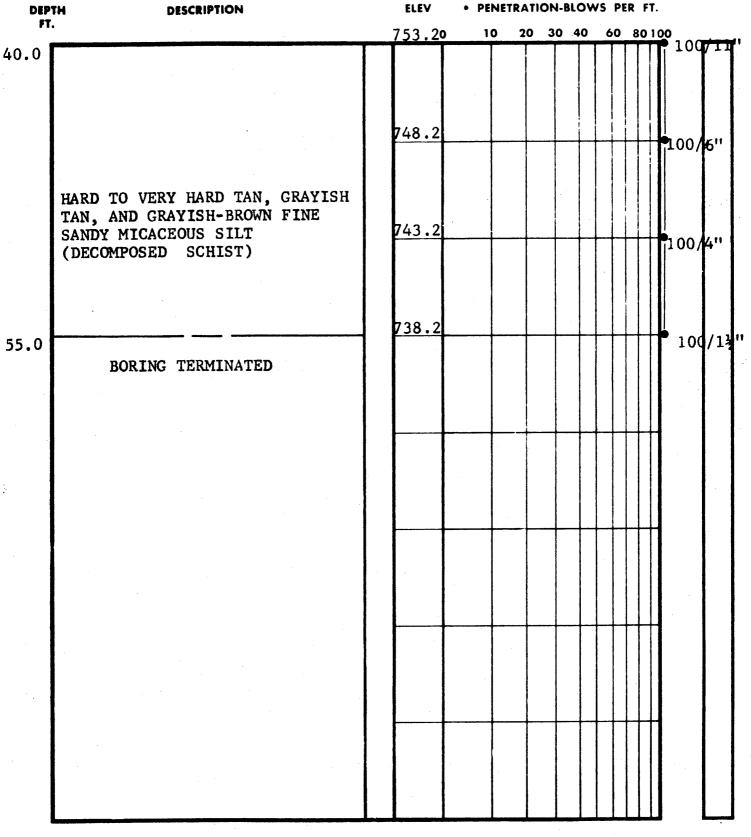
BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

DATE DRILLED 8/5/68 5862 JOB NO. -

jj



BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM 0-2113 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.

PAGE 2 of 2

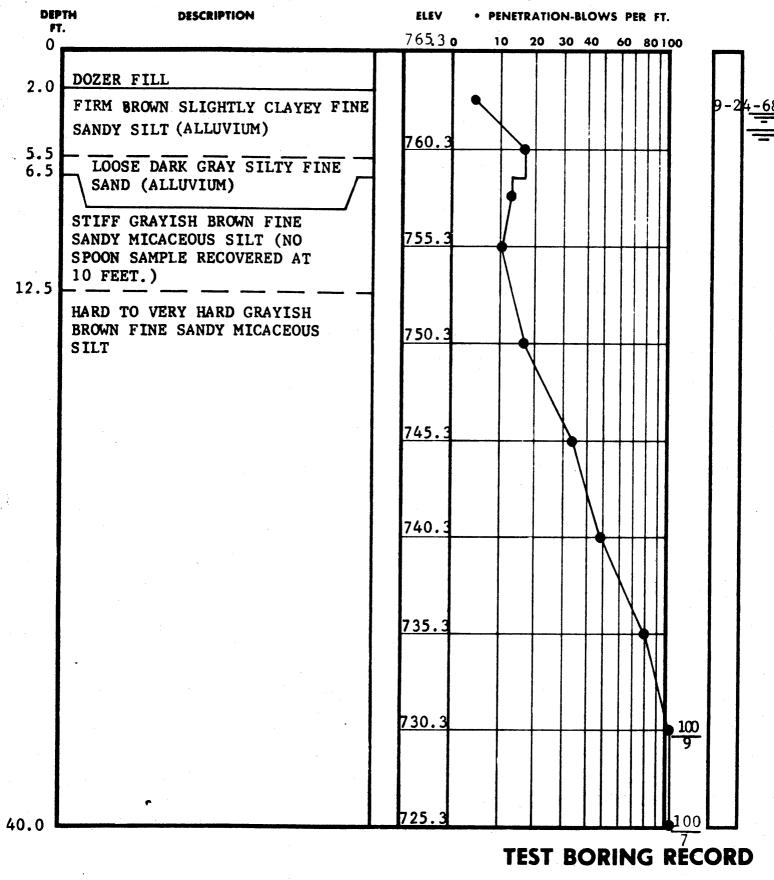
B-118 BORING NO. 8/5/68 DATE DRILLED _ 586**2** JOB NO.

50 % ROCK CORE RECOVERY

UNDISTURBED SAMPLE

jj

LOSS OF DRILLING WATER



PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

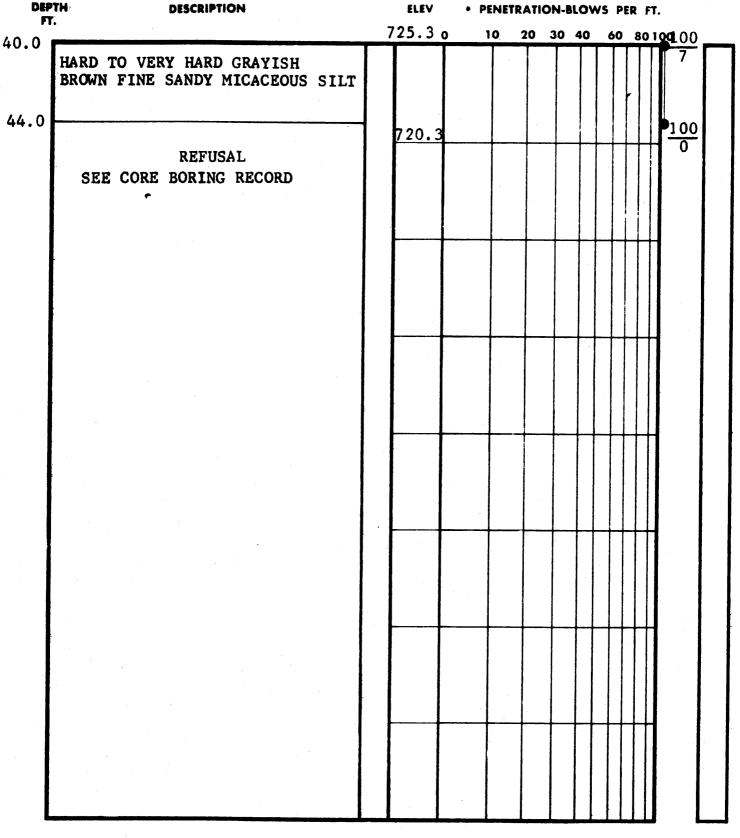
PAGE 1 of

BORING NO. <u>B-119</u>
DATE DRILLED <u>8-19-68</u>
JOB NO. <u>5862</u>

UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

WATER TABLE, 24 HR.
WATER TABLE, 1 HR.
LOSS OF DRILLING WATER



BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

PAGE 2 of 3

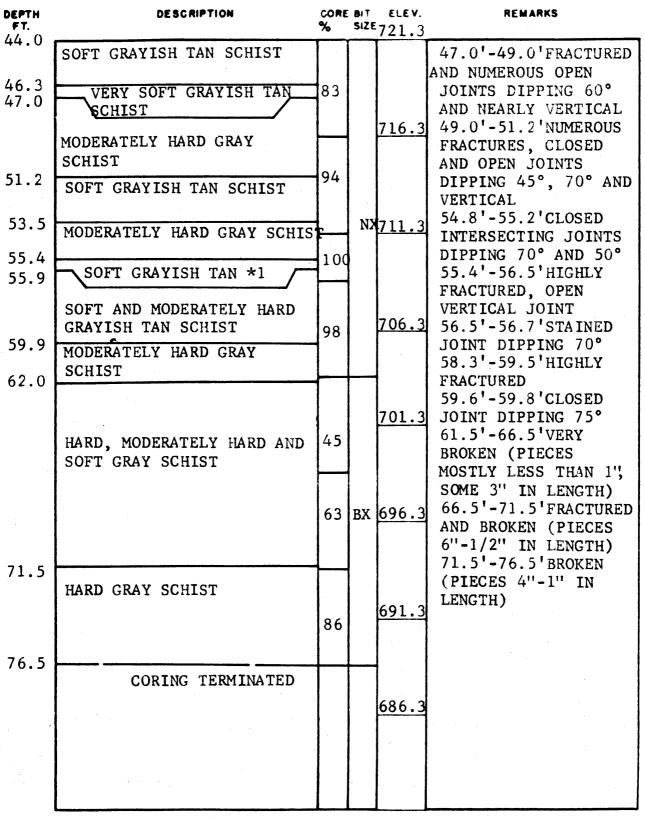
DATE DRILLED 8-19-68 JOB NO. ____5862

UNDISTURBED SAMPLE 50 % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

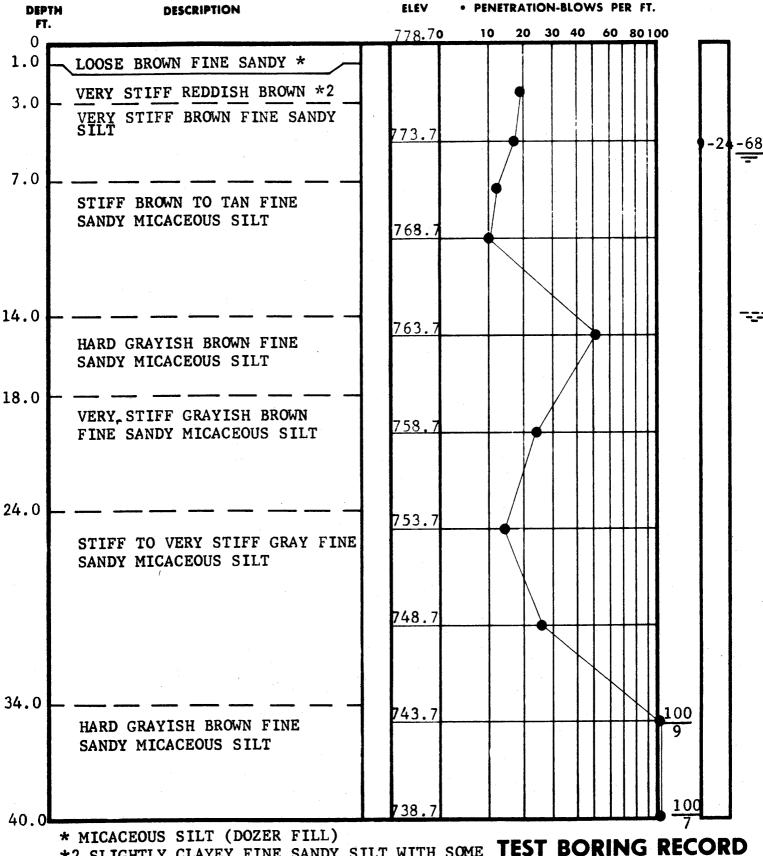


NO DRILLING WATER LOSS RECORDED *1 SCHIST

CORE BORING RECORD

PAGE 3 OF 3

BORING NO. 119 JOB NO. 5862



*2 SLIGHTLY CLAYEY FINE SANDY SILT WITH SOME TEST BORING RECORD GRAVEL

PAGE 1 OF 3

BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113

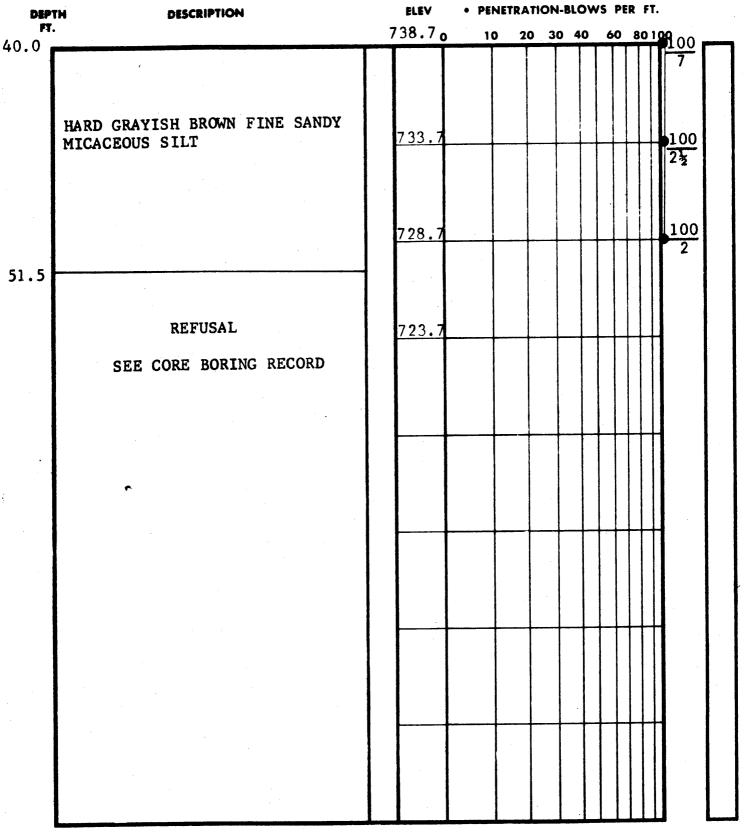
UNDISTURBED SAMPLE

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.

% ROCK CORE RECOVERY LOSS OF DRILLING WATER BORING NO. <u>B-120</u> DATE DRILLED 8-22-68 JOB NO. <u>5862</u>



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.

PAGE 2 OF 3

DATE DRILLED 8-22-68

JOB NO. 5862

LAW ENGINEERING TESTING CO.

UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

LOSS OF DRILLING WATER

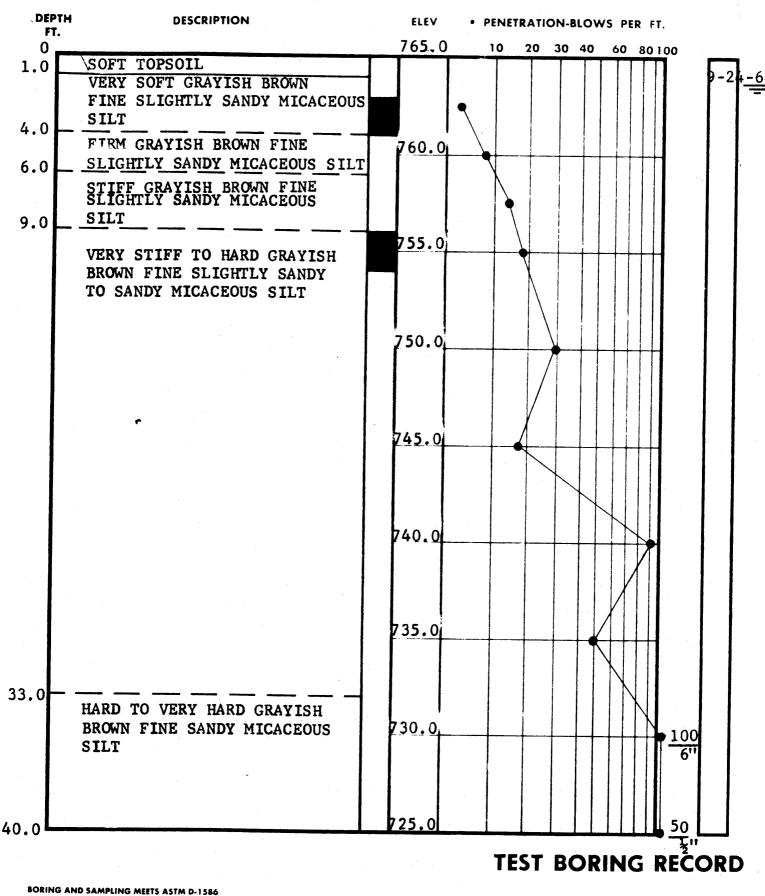
DEPTH FT. 51.5	DESCRIPTION	%	E BIT	ELEV.	
52.2 54.2 54.9	MODERATELY HARD GRAY SCHIST HARD GRAY SCHIST MODERATELY HARD GRAY	85			51.5'-56.5'ROCK IS BROKEN AND FRACTURED (PIECES 3"-6" IN LENGTH)
57 7	SCHIST HARD GRAY SCHIST MODERATELY HARD GRAY SCHIST	93		722.2	56.5'-57.9'ROCK IS CONTINUOUS 57.9'-59.6'FRACTURED AND BROKEN (PIECES 6"-8" IN LENGTH)
	HARD GRAY SCHIST	87	ВХ		DIPPING 75° 59.6'-61.5'FRACTURED (PIECES 1"-3" IN LENGTH)
71.5		100		707.2	64.3'-64.5'CLOSED VERTICAL JOINT DIPPING 70° 62.5'-62.9'TWO STAINED FRACTURES 66.5'-67.2'HIGHLY
, 1.3	CORING TERMINATED				FRACTURED 67.8'-69.6'FRACTURED (PIECES 6"-1" IN LENGTH) 68.5'-69.6'TWO STAINED JOINTS, ONE NEARLY VERTICAL AND ONE
					DIPPING 70° 70.1'-73.4'BROKEN 71.9'-72.2'CLOSED JOINT DIPPING 60°

NO DRILLING WATER LOSSES RECORDED

CORE BORING RECORD

PAGE 3 OF 3

BORING NO. 120 JOB NO. 5862



CORE DRILLING MEETS ASTM D-11380
CORE DRILLING MEETS ASTM D-2113
PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

PAGE 1 of

DATE DRILLED 8-6-68

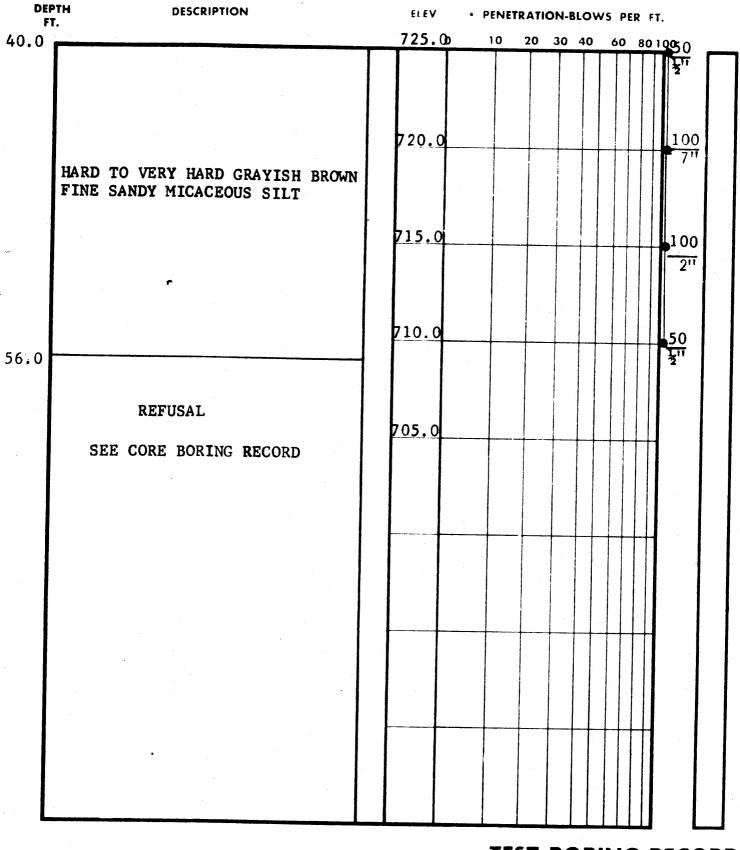
JOB NO. 5862

WATER TABLE, 24 HR.
WATER TABLE, 1 HR.

UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

LOSS OF DRILLING WATER



BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113

50 % ROCK CORE RECOVERY

PAGE 2 of 3

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

UNDISTURBED SAMPLE

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

4 (c

LOSS OF DRILLING WATER

BORING NO. <u>B-121</u>

DATE DRILLED <u>8-6-68</u>

JOB NO. <u>5862</u>

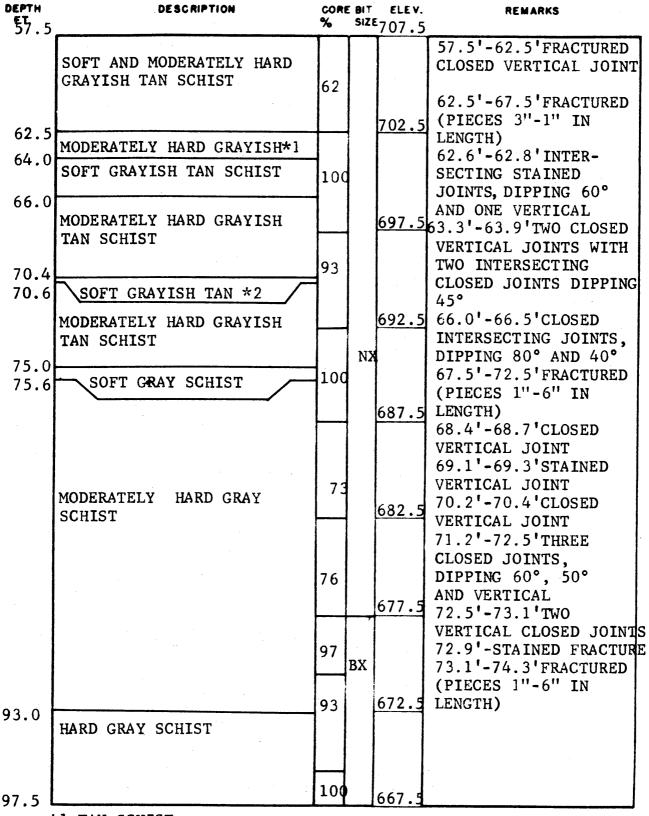
DEPTH FT.	DESCRIPTION	cori	E BIT	ELE V. E709.0	REMARKS
56.0	SOFT AND MODERATELY HARD GRAYISH TAN SCHIST	48	вх	704.0	56.0'-60.5'HIGHLY FRACTURED AND BROKEN, SOME STAINED FRAC- TURES AND ONE JOINT
60.5	CORING TERMINATED				
	•				
				·	

NO DRILLING WATER LOSS RECORDED

CORE BORING RECORD

PAGE 3 OF 3

BORING NO. 121 JOB NO. 5862



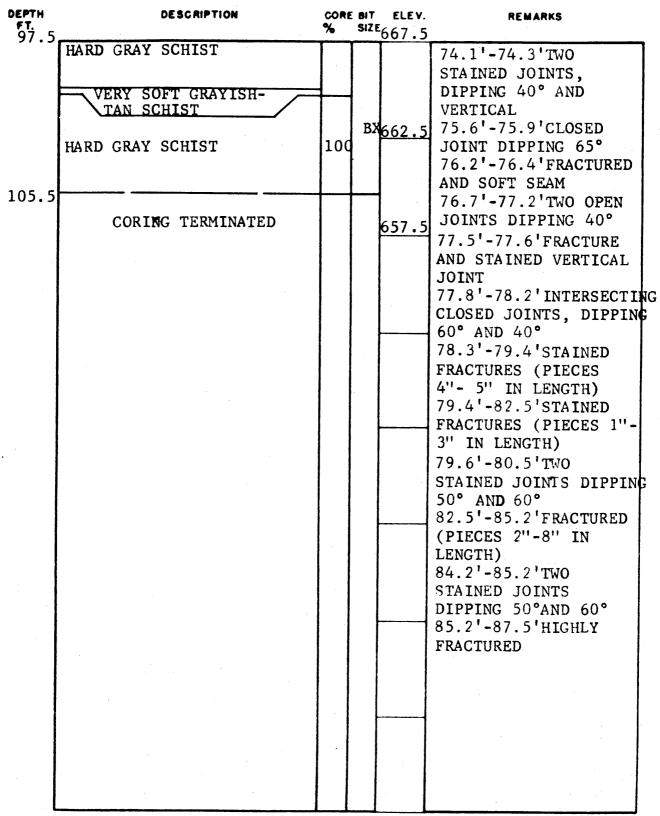
*1 TAN SCHIST

*2 SCHIST

PAGE 1 of 4

CORE BORING RECORD

BORING NO. 121A JOB NO. 5862



NO DRILLING WATER LOSS RECORDED

jj

CORE BORING RECORD

WATER TABLE

	%	SIZE		
				87.5'-90.5'FRACTURED
	1			AND JOINTED
	1]]		88.0'-88.3'CLOSED
	1	1 1		STAINED JOINT DIPPING
	1			60°
·	1			88.4'-88.9'TWO CLOSED
	1	1 1		JOINTS DIPPING 70°
		1 1		89.0'-89.5'CLOSED
·	1			INTERSECTING JOINTS
		1 1		DIPPING 60° AND 70°
		1 1		90.8'-90.9'OPEN JOINT
		1 1		DIPPING 45°
				91.4'-92.4'FRACTURED
				AND BROKEN (PIECES
,		1 1	i	ABOUT 1" IN LENGTH)
·		1 1		92.4'-95.5'FRACTURED
		1 1		AND BROKEN (PIECES
	1.			3"-6" IN LENGTH)
	İ			93.0'-93.4'STAINED
f				VERTICAL JOINT
				95.0'-95.2'OPEN
	1			JOINT DIPPING 60°
	Ī			95.5'-100.5'FRACTURED
	1			AND BROKEN (PIECES
		1 1		1"-6" IN LENGTH)
	1	l		95.5'-96.0'CLOSED
	1			VERTICAL JOINT
				96.0'-96.3'OPEN
			1	JOINT DIPPING 50°
·				97.0'-98.0'TWO
				VERTICAL CLOSED
				JOINTS AND ONE CLOSED
				JOINT DIPPING 80°
				98.3'-99.1'THREE
			1	CLOSED STAINED JOINTS
			-	DIPPING 75° AND ONE
				INTERSECTING JOINT
				DIPPING 60°
			į	100.5'-102.2'FRAC-
				TURED AND BROKEN
			ŀ	101.2'-102.2'FOUR
		\Box		STAINED JOINTS *

*VERTICAL, DIPPING 60°, 80°, AND 45°

CORE BORING RECORD

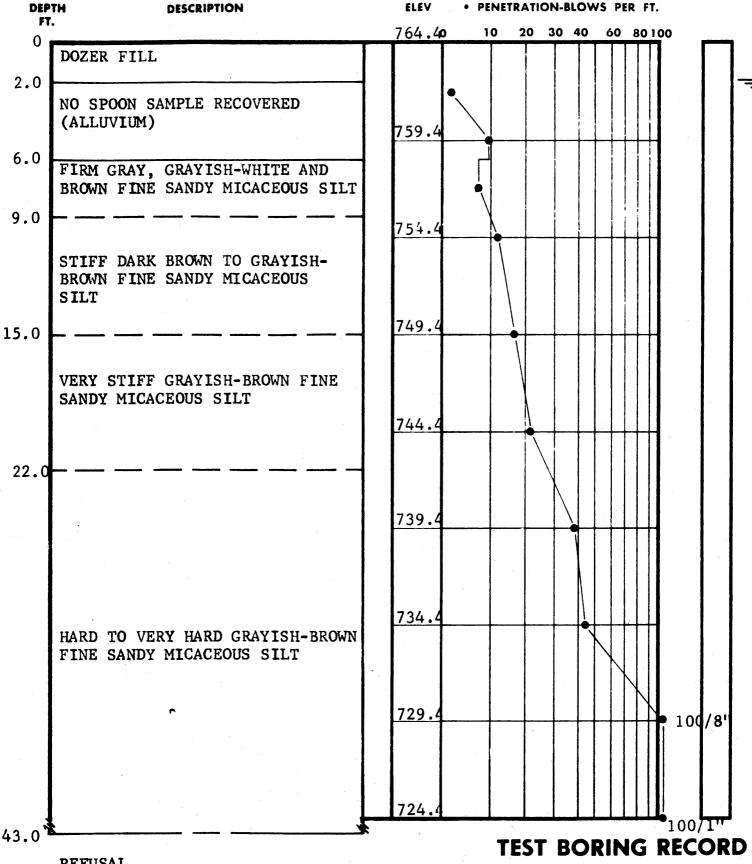
PAGE 3 OF 4BORING NO. 121-A
JOB NO. 5862

CORE BORING RECORD

PAGE 4 OF 4

BORING NO. 121A JOB NO. 5862

WATER TABLE



REFUSAL

BORING AND SAMPLING MEETS ASTM D-1586 **CORE DRILLING MEETS ASTM D-2113**

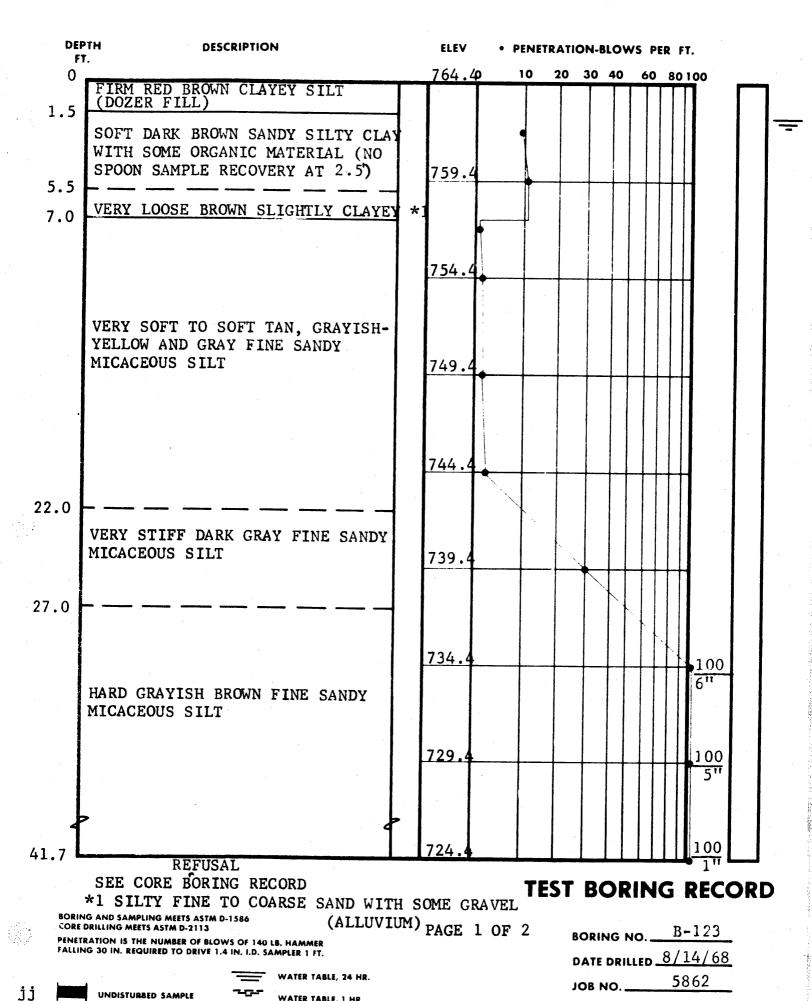
PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER

FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

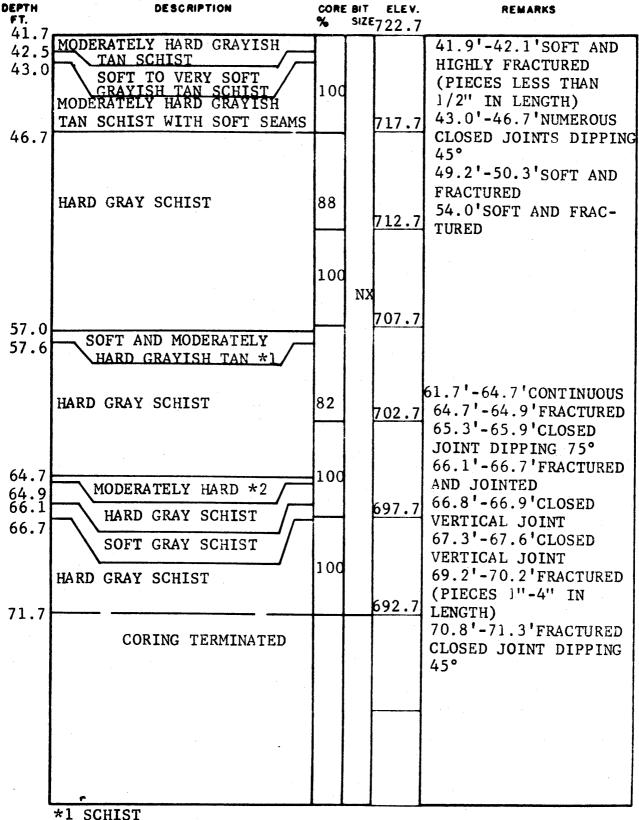
50 % ROCK CORE RECOVERY LOSS OF DRILLING WATER DATE DRILLED 8/19/68 5862 JOB NO.



50 % ROCK CORE RECOVERY

LOSS OF DRILLING WATER

WATER TABLE, 1 HR.



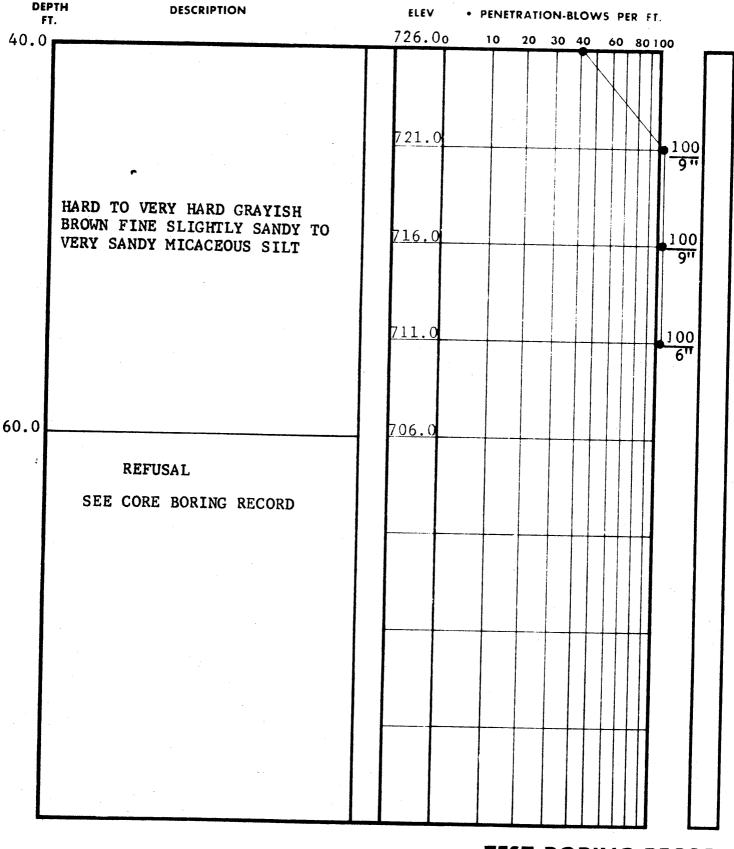
*1 SCHIST
*2 GRAY SCHIST

NO DRILLING WATER LOSS RECORDED

PAGE 2 of 2

CORE BORING RECORD

BORING NO. 123 JOB NO. 5862



BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

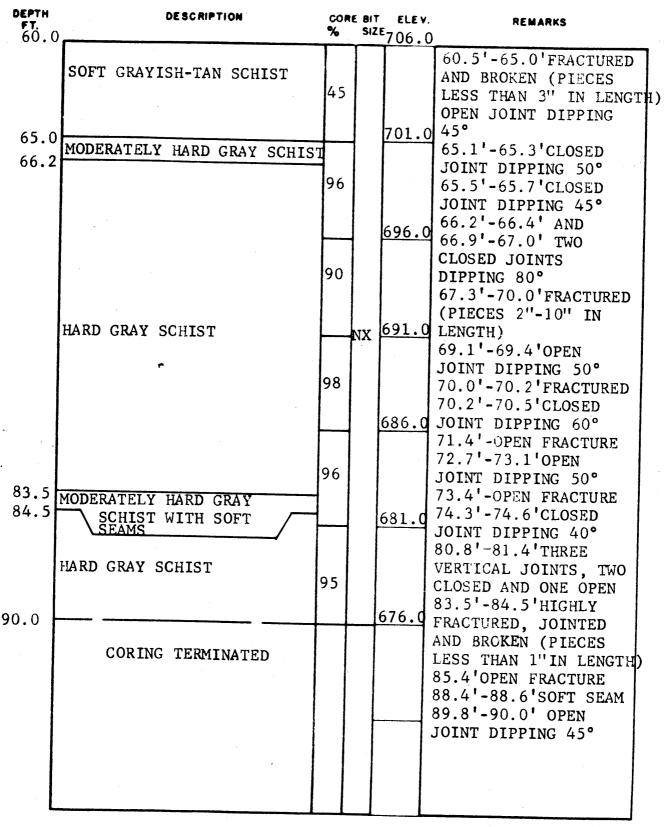
WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

PAGE 2 OF 3

BORING NO. __B-124___ DATE DRILLED 8-9-68 **ЈОВ NO. <u>5862</u>**



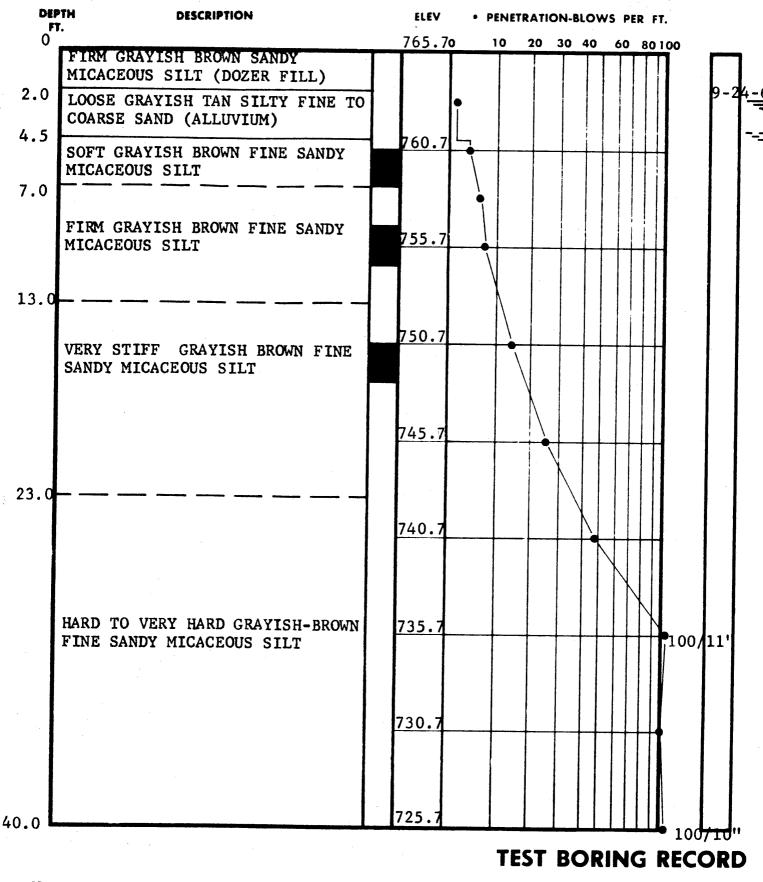
NO DRILLING WATER LOSS RECORDED

CORE BORING RECORD

1

PAGE 3 OF 3

BORING NO. 124 JOB NO. 5862



BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

PAGE 1 of 2

BORING NO. B-125

DATE DRILLED 8/7/68

JOB NO. 5862

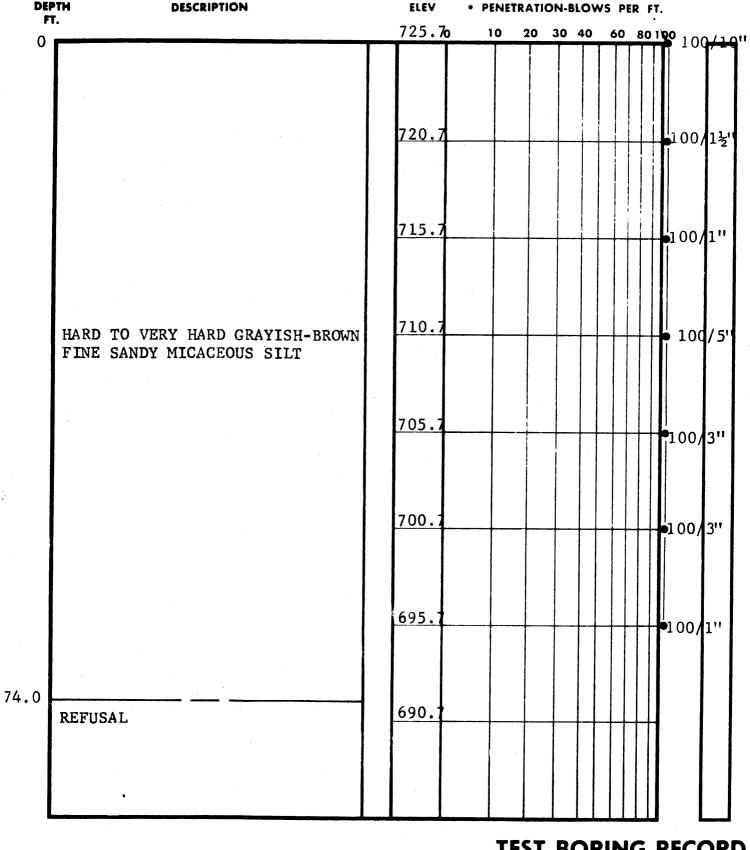
UNDISTURBED SAMPLE

% ROCK CORE RECOVERY

jj

WATER TABLE, 24 HR.
WATER TABLE, 1 HR.

LOSS OF DRILLING WATER



BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

PAGE 2 of 2

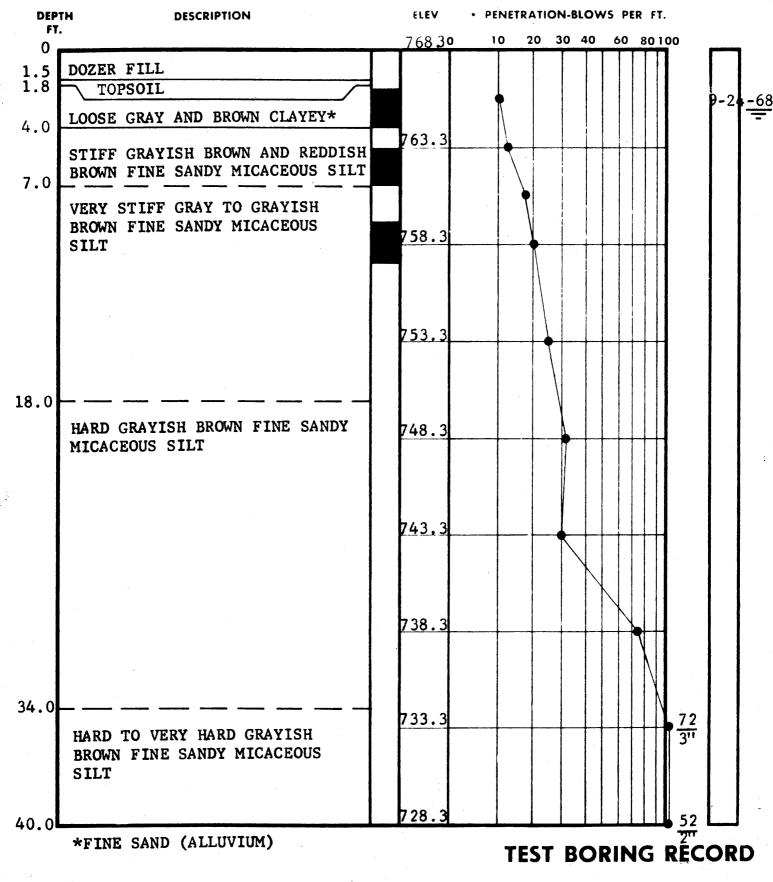
DATE DRILLED 8/7/68 5862 JOB NO.

UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

WATER TABLE, 24 HR. WATER TABLE, 1 HR.

LOSS OF DRILLING WATER



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

50 % ROCK CORE RECOVERY

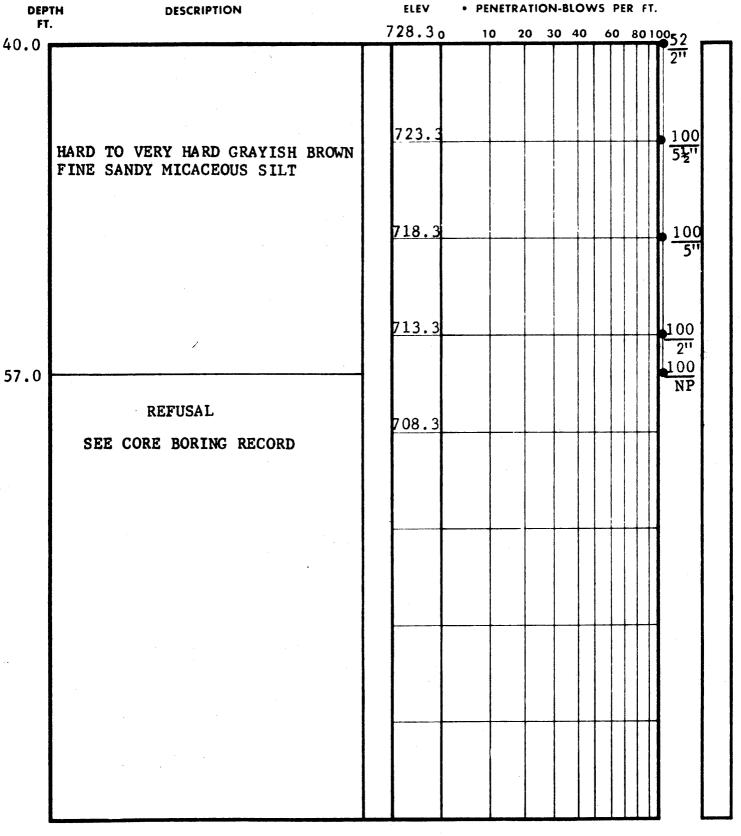
WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

PAGE 1 of 3 BORING NO. <u>B-126</u>

DATE DRILLED <u>8-6-68</u>

JOB NO. <u>5862</u>



BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113

50 % ROCK CORE RECOVERY

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

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WATER TABLE, 24 HR.

UNDISTURBED SAMPLE

WATER TABLE, 1 HR.

PAGE 2 OF 3

BORING NO. <u>B-126</u>

DATE DRILLED <u>8-6-68</u>

JOB NO. <u>5862</u>

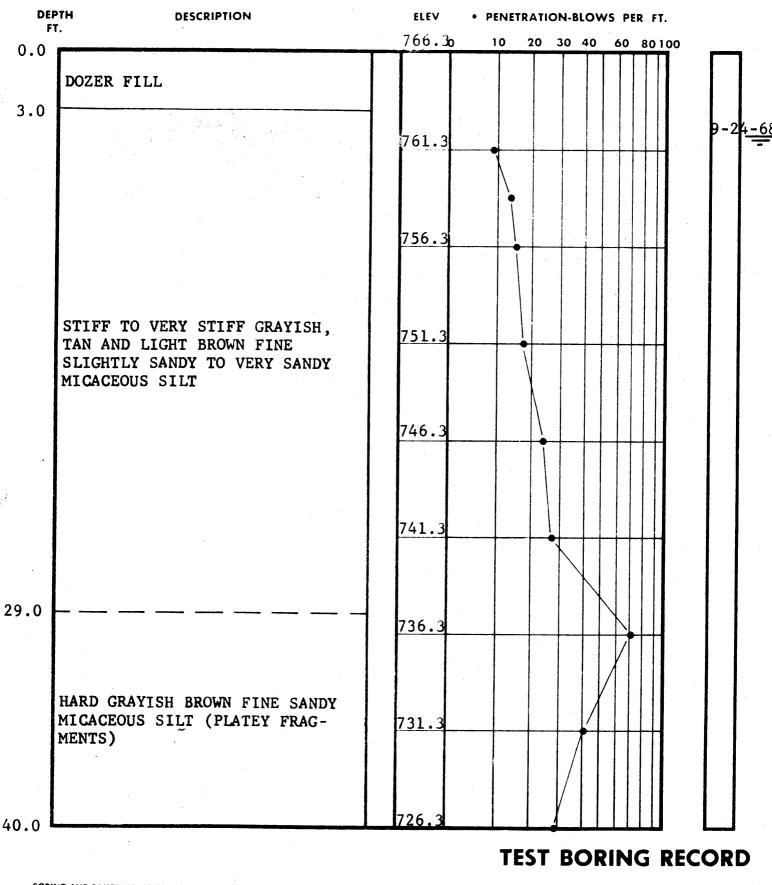
DEPTH FT.	DESCRIPTION	core			REMARKS
57.0	VERY SOFT, SOFT AND MODERATELY HARD GRAYISH TAN SCHIST	75 75	ВХ	701.3 696.3	57.0'-62.0'HIGHLY FRACTURED AND BROKEN WITH STAINED JOINTS AND FRACTURES 62.0'-67.0'HIGHLY FRACTURED AND BROKEN, PIECES SHOW NUMEROUS STAINED FRACTURES AND JOINTS, SOME INTER- SECTING NEARLY VER- TICAL JOINTS 67.0'-72.0'HIGHLY FRACTURED AND BROKEN 72.0'-77.0'HIGHLY FRACTURED AND BROKEN, SOME STAINED JOINTS AND FRACTURES 77.0'-82.0'HIGHLY
		50		691.3 686.3	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

PAGE 3 OF 3

BORING NO. 126 JOB NO. 5862



Page 1 of

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.

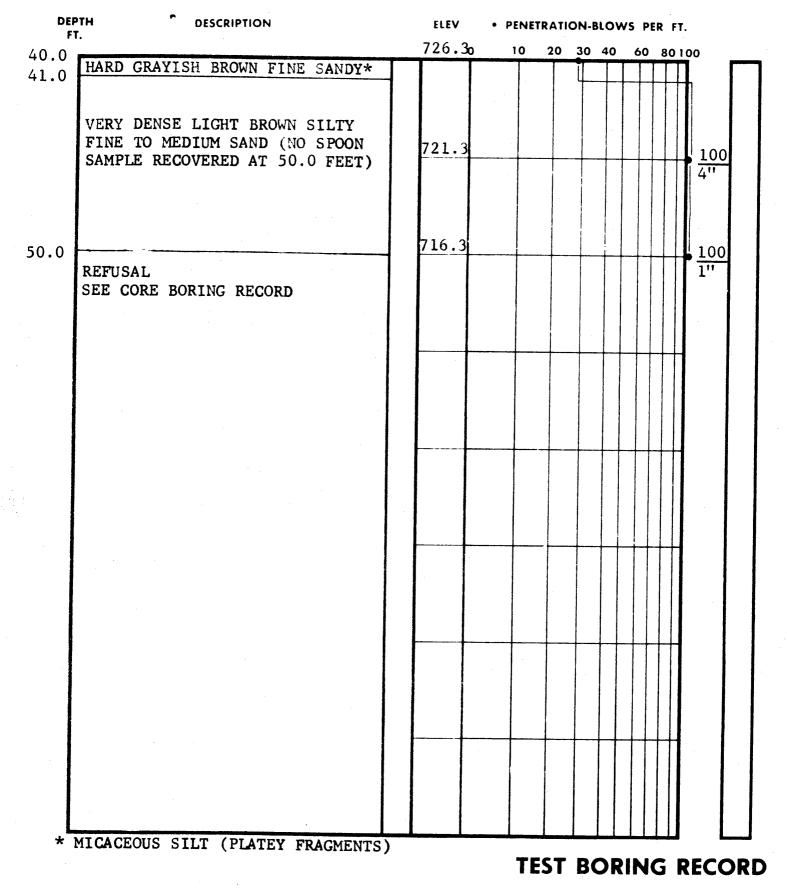
WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

DATE DRILLED 8-13-68 5862 JOB NO._

UNDISTURBED SAMPLE

abc



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

Page 2 of 3

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

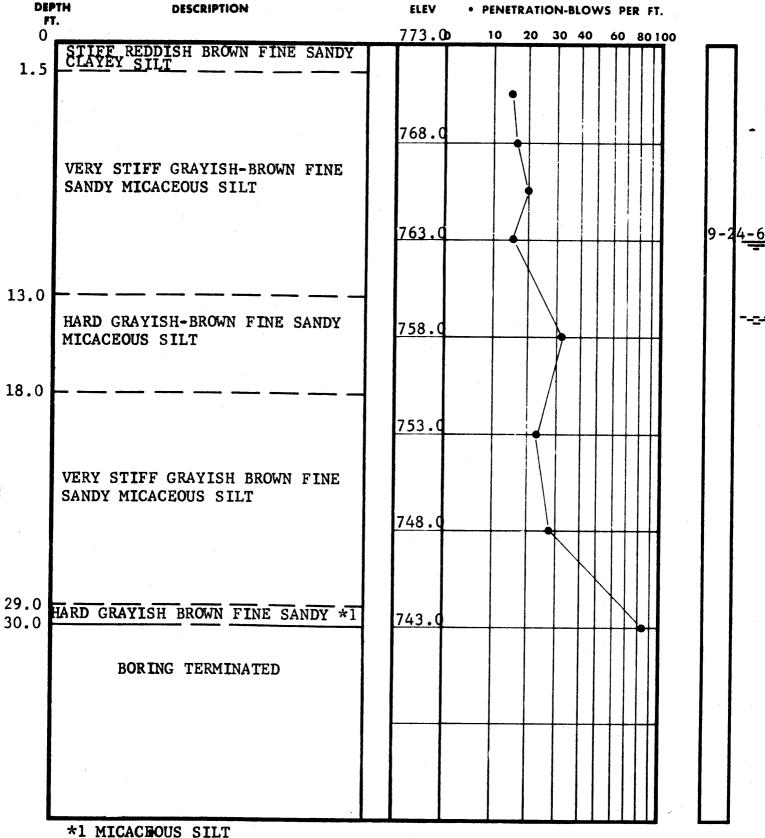
BORING NO. <u>B-127</u> DATE DRILLED 8-13-68 5862 JOB NO. _

DEPTH FT. 50.0	DESCRIPTION	cort		ELEV. E716.	
52.2	VERY SOFT GRAY BROWN SCHIST	ביון			50.0' - 52.2' ROCK IS FRACTURED AND THINLY
53.2	entral same of the	25			FOLIATED; ALSO, SEV- ERAL STAINED FRAC- TURED FOLIATION PLANES AND STAINED JOINTS DIPPING ABOUT 80°
	r	51			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		53.2' - 65.0' HIGHLY FRACTURED (PIECES UP TO 1" IN LENGTH) 61.0' - 65.0' (CLOSED JOINT DIPPING 80°,
		94			OPEN STAINED JOINT DIPPING 80°) 68.0' - 68.3' OPEN STAINED JOINT DIPPING 45°
80.0		97		686.;	68.8'- 68.9' OPEN
·	CORING TERMINATED				
				· ·	

CORE BORING RECORD

PAGE 3 OF 3

BORING NO. B-127 JOB NO. 5862



BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

WATER TABLE, 24 HR.

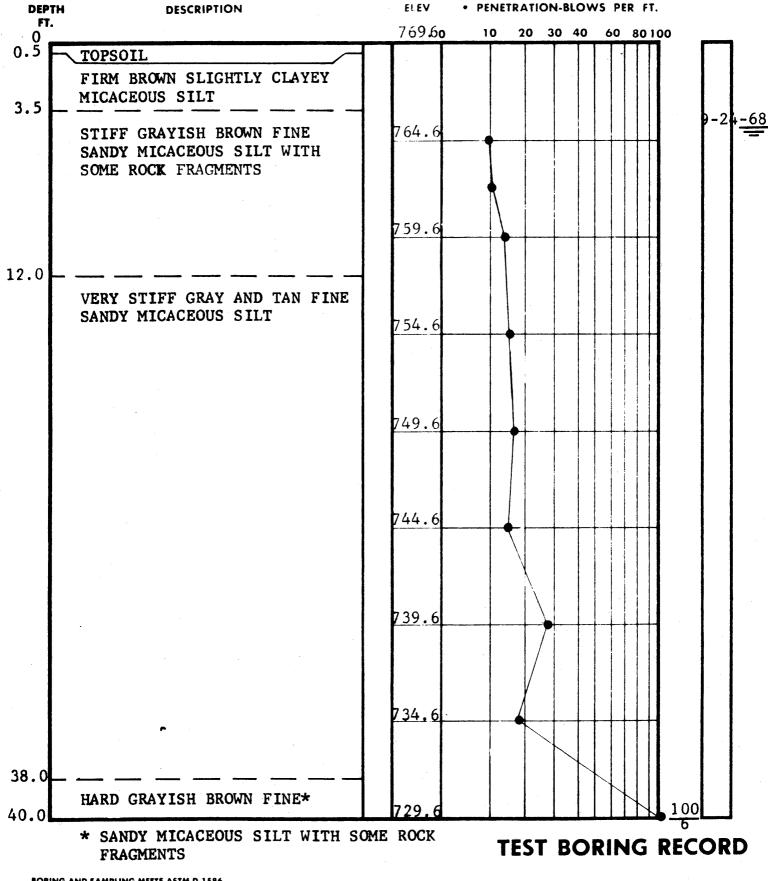
50 % ROCK CORE RECOVERY

UNDISTURBED SAMPLE

WATER TABLE, 1 HR. LOSS OF DRILLING WATER

TEST BORING RECORD

DATE DRILLED 8/6/68 5862 JOB NO._



BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113 PENETRATION IS THE NUMBER OF BLOWS OF 14

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.

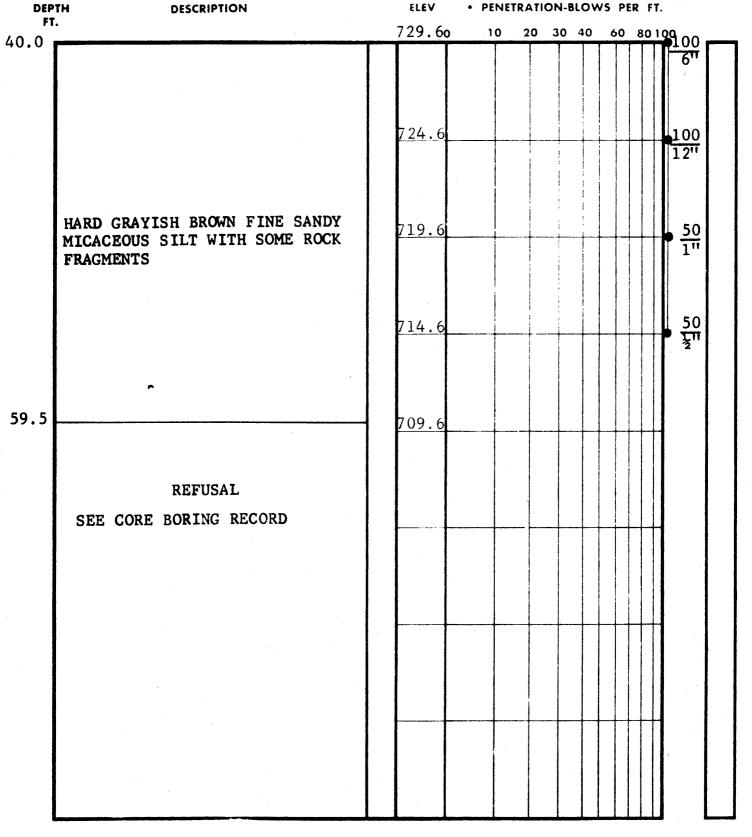
LOSS OF DRILLING WATER

PAGE 1 OF 3

BORING NO. <u>B-129</u>

DATE DRILLED <u>8-19-68</u>

JOB NO. <u>5862</u>



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.

50 % ROCK CORE RECOVERY

UNDISTURBED SAMPLE

LOSS OF DRILLING WATER

PAGE 2 OF 3

BORING NO. <u>B-129</u> DATE DRILLED 8-19-68 5862 JOB NO.

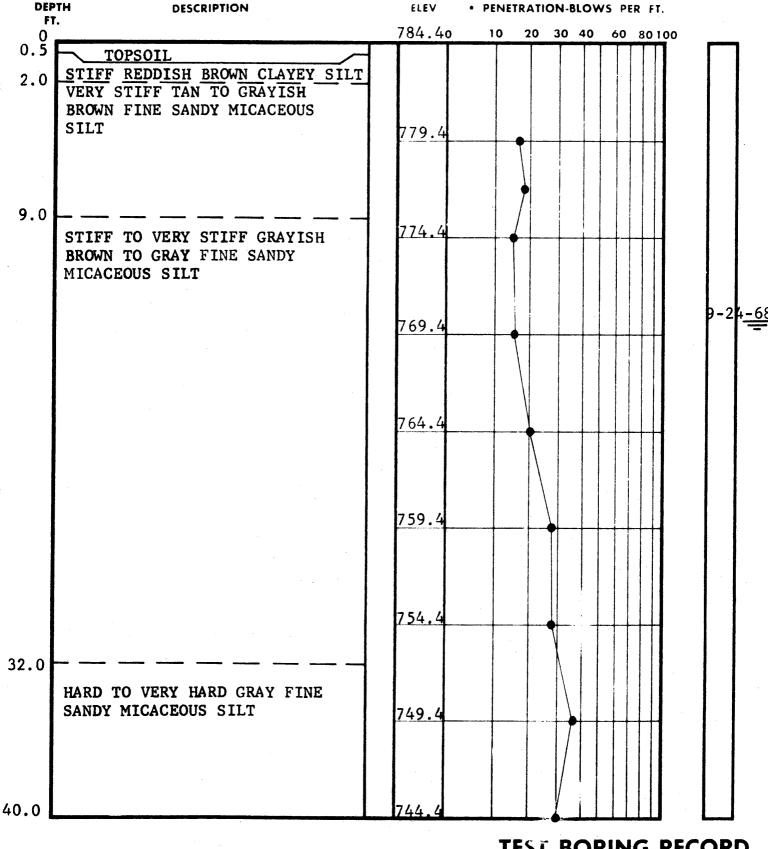
DEPTH FT. 59.5	DESCRIPTION	COR %	E B!	T ELEV	. REMARKS
		100		705.	59.5'-64.5'FRACTURED AND BROKEN (PIECES 1"-6" IN LENGTH) 59.5'-60.3'NUMEROUS CLOSED JOINTS DIPPING
	MODERATELY HARD GRAYISH TAN SCHIST	100		700.	80° 60.3'OPEN FRACTURE 61.5'-62.2'OPEN STAINED JOINT DIPPING 80°
		97	вх		64.5'-69.6'FRACTURED AND BROKEN (PIECES 1"-10" IN LENGTH) 65.4'-66.6' OPEN FRACTURE 67.9'-68.2'INTER-
79.5		100			SECTING OPEN JOINTS, BOTH DIPPING 50° 68.3'-68.5'OPEN JOINT DIPPING 50° 69.5'-74.5'FRACTURED
	CORING TERMINATED				AND BROKEN 70.2'-70.8'OPEN STAINED JOINT DIPPING 80° AND HIGHLY FRAC- TURED 71.6'-OPEN FRACTURE
					72.7'-73.8'CLOSED JOINT DIPPING 80° 74.5'-78.2'SLIGHTLY FRACTURED AND BROKEN (PIECES 2"-8" IN LENGTH) 78.2'-78.9'HIGHLY
					FRACTURED
L					

NO DRILLING WATER LOSS RECORDED

CORE BORING RECORD

PAGE 3 OF 3

BORING NO. 129 JOB NO. 5862



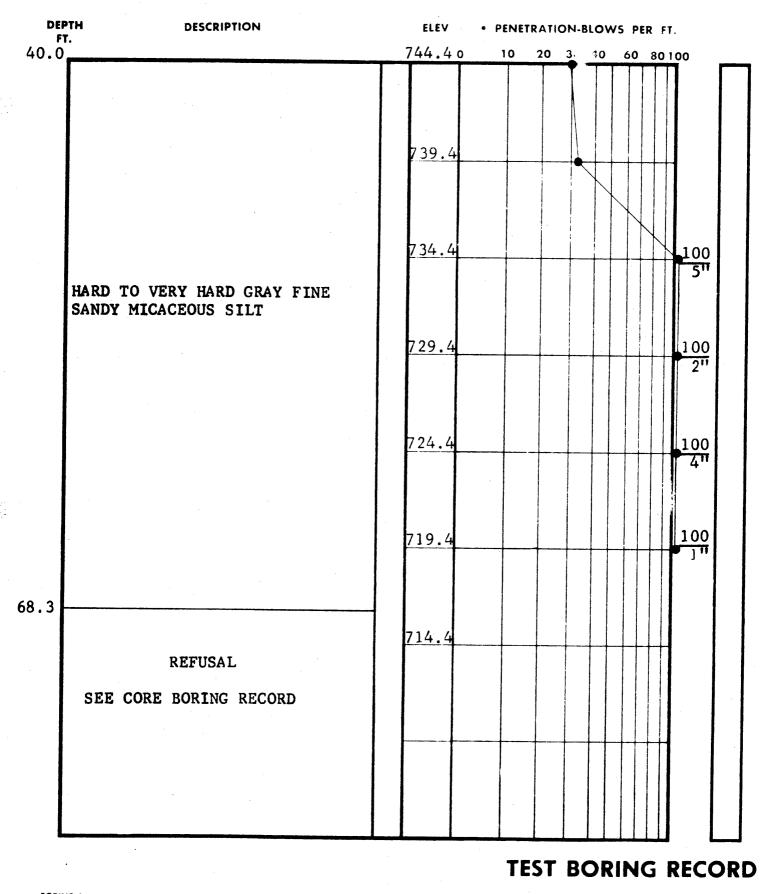
BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

WATER TABLE, 24 HR. WATER TABLE, 1 HR. LOSS OF DRILLING WATER PAGE 1 OF 3

BORING NO. B-131 DATE DRILLED 8-21-68 5862 JOB NO.



PAGE 2 OF 3

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

50 % ROCK CORE RECOVERY

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

BORING NO. <u>B-131</u>

DATE DRILLED <u>8-21-68</u>

JOB NO. <u>5862</u>

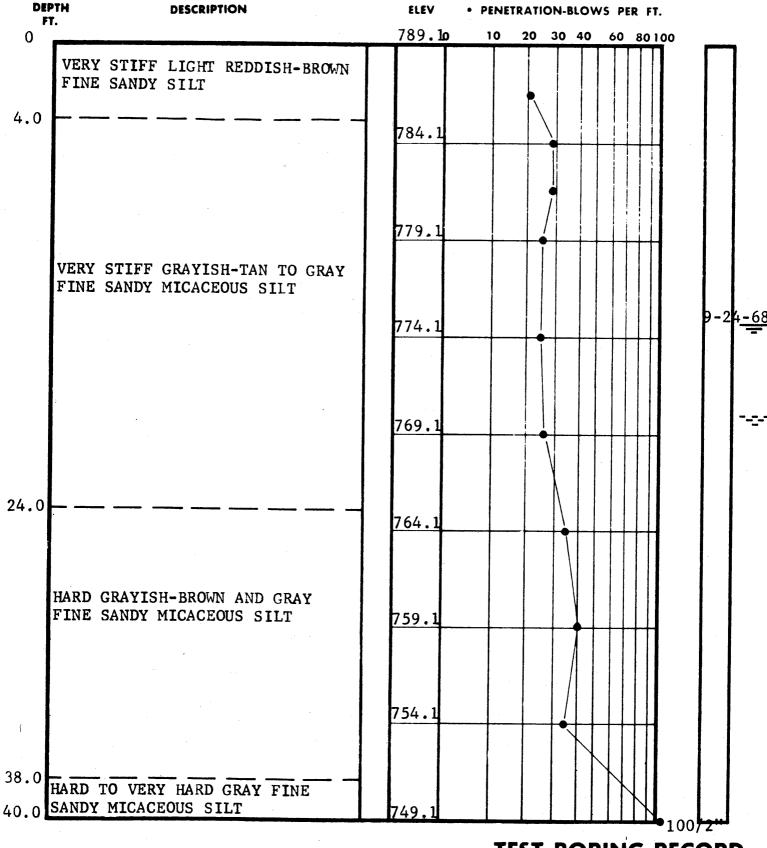
DEPTH FT. 68.3	DESCRIPTION	cor %	E BIT	ELE V. E716.1	
00.3	MODERATELY HARD GRAY SCHIST	98		711.1	68.3'-73.3'SLIGHTLY FRACTURED 68.7'-68.8'TWO STAINED FRACTURES 69.6'CLOSED STAINED FRACTURE
78.3		98		706.1	72.2'-72.4' AND 73.0'-73.3'SOFT SEAM 73.3'-78.3'BROKEN (PIECES 3"-6" IN LENGTH)
	HARD GRAY SCHIST	93	NX	701.1	11.0 -10.0 CTOSED
88.3		98		696.1	STAINED JOINT DIPPING 60° 78.0'-78.3'HIGHLY FRACTURED 78.7'-STAINED
	CORING TERMINATED				FRACTURE 79.4'-80.0'TWO CLOSED JOINTS DIPPING 80° AND 50° 80.0'-80.5'CLOSED JOINT DIPPING 80°
					80.7'-81.7'HIGHLY FRACTURED, STAINED VERTICAL JOINT 81.7'-81.9'NUMEROUS JOINTS DIPPING 70° 84.4'-85.1'STAINED OPEN JOINT DIPPING 75°

NO DRILLING WATER LOSS RECORDED

CORE BORING RECORD

PAGE 3 OF 3

BORING NO. 131 JOB NO. 5862

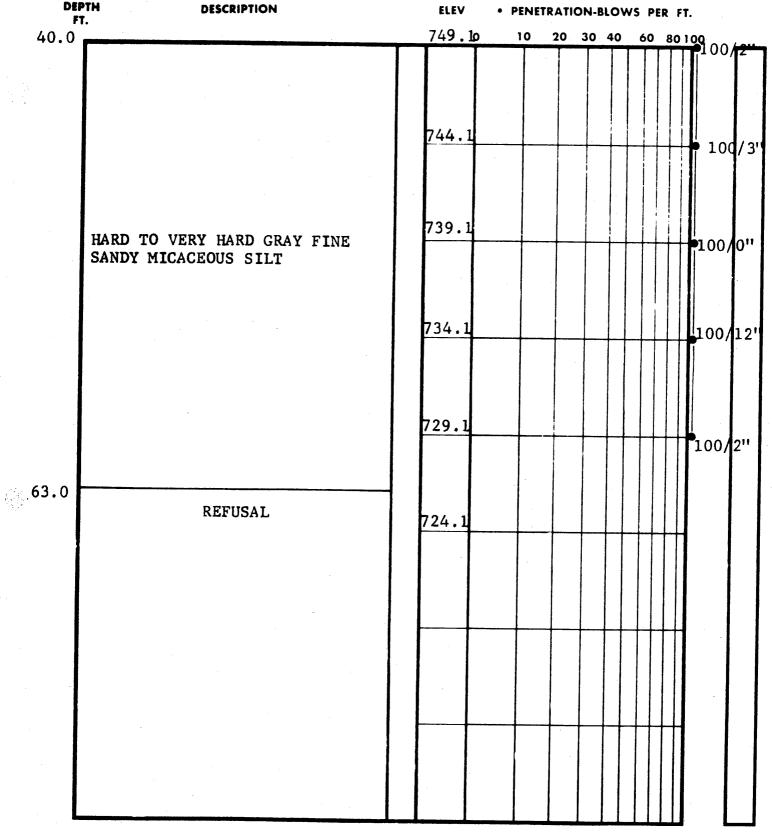


BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

> WATER TABLE, 24 HR. WATER TABLE, 1 HR.

PAGE 1 of 2

B-132 BORING NO. 8/26/68 DATE DRILLED _ 5862 JOB NO.____



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.

BORING NO. B-132

DATE DRILLED 8/26/68

JOB NO. 5862

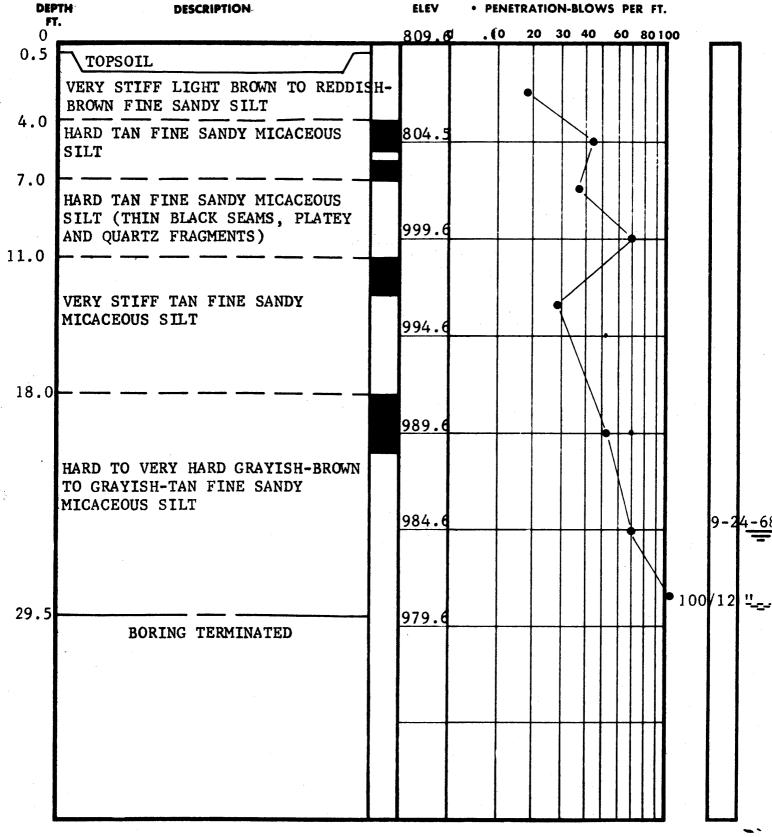
PAGE 2 of 2

50 % ROCK CORE RECOVERY

UNDISTURBED SAMPLE

jj

LOSS OF DRILLING WATER



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.

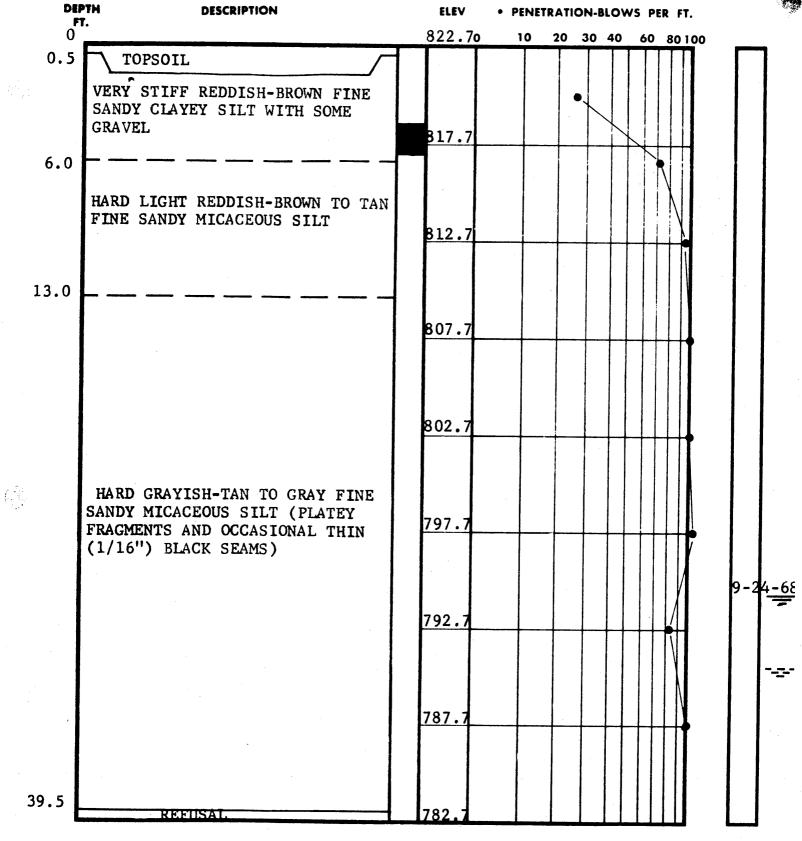
50 % ROCK CORE RECOVERY

UNDISTURBED SAMPLE

jj

LOSS OF DRILLING WATER

B-133 BORING NO. __ DATE DRILLED 8/26/68 586**2** JOB NO. ...



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.

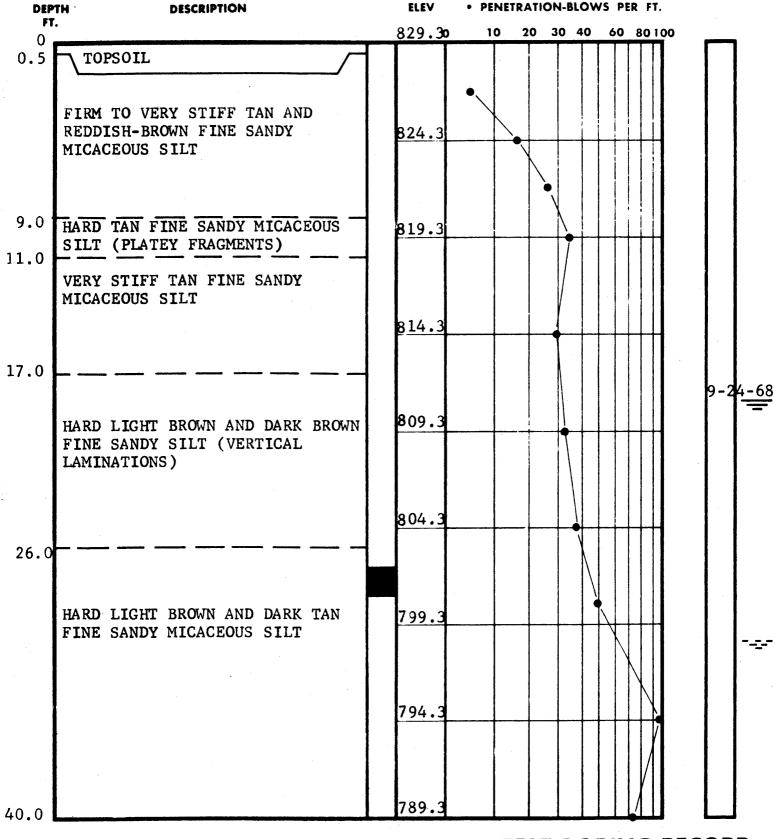
DATE DRILLED 8/26/68 5862 JOB NO. ___

50 % ROCK CORE RECOVERY

UNDISTURBED SAMPLE

tt

LOSS OF DRILLING WATER



BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113

UNDISTURBED SAMPLE

PAGE 1 of 2

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

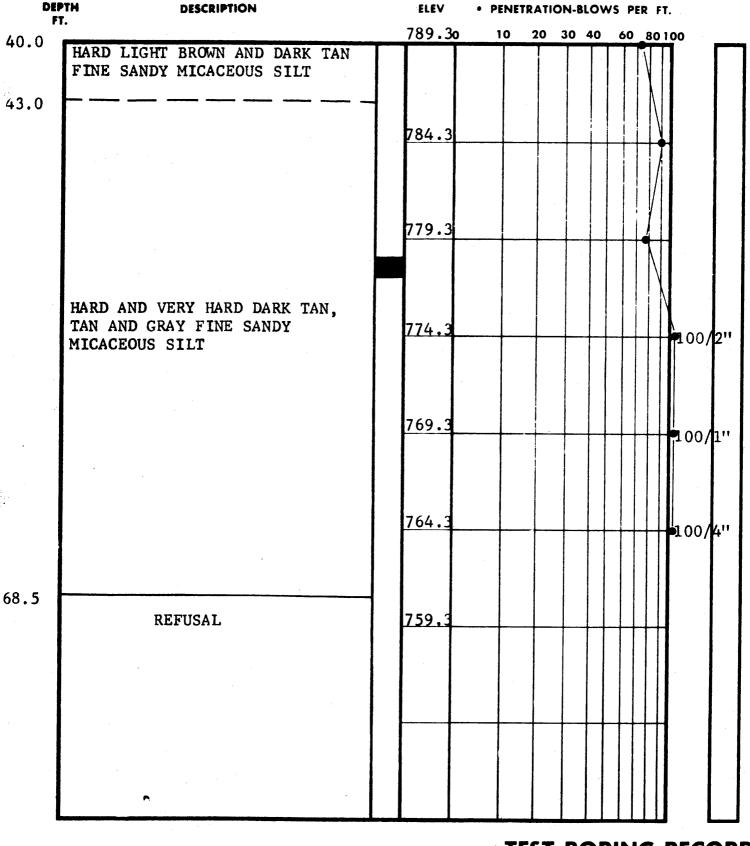
WATER TABLE, 24 HR. WATER TABLE, 1 HR.

B-135 BORING NO. _ DATE DRILLED 8/26/68 586**2** JOB NO.

50 % ROCK CORE RECOVERY

jj

LOSS OF DRILLING WATER



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. BEQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

PAGE 2 of 2

BORING NO. <u>B-135</u>

DATE DRILLED <u>8/26/68</u>

JOB NO. <u>5862</u>

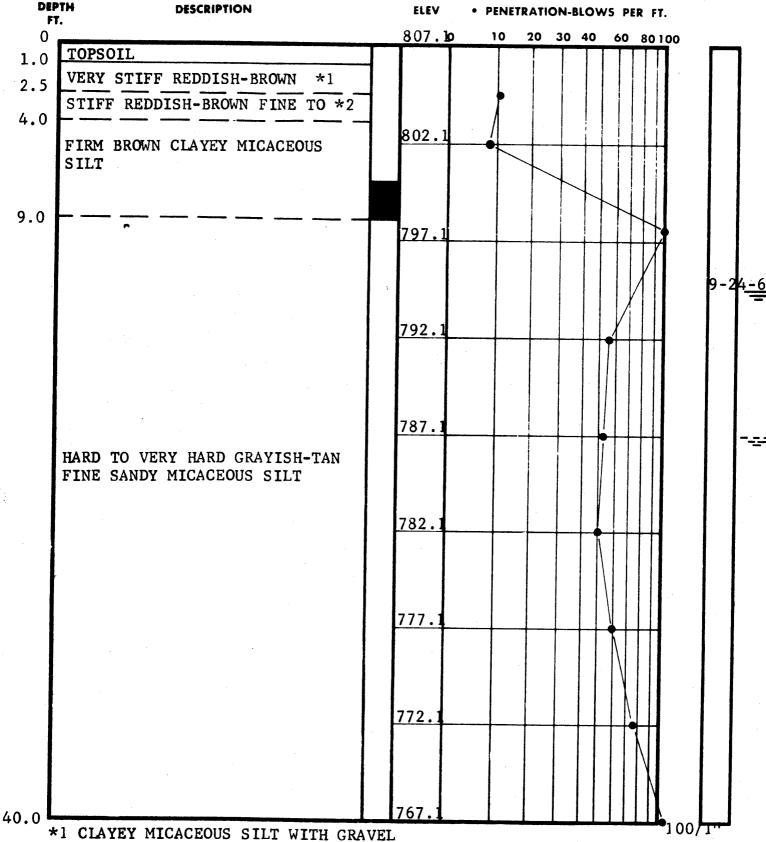
UNDISTURBED SAMPLE

| 50 | % ROCK CORE RECOVERY

kk

jj

WATER TABLE, 24 HR.
WATER TABLE, 1 HR.
LOSS OF DRILLING WATER



*2 MEDIUM SANDY SLIGHTLY CLAYEY MICACEOUS SILT TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586
CORE DRILLING MEETS ASTM D-2113
PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

PAGE 1 of 2

BORING NO. <u>B-136</u>

DATE DRILLED <u>8/27/68</u>

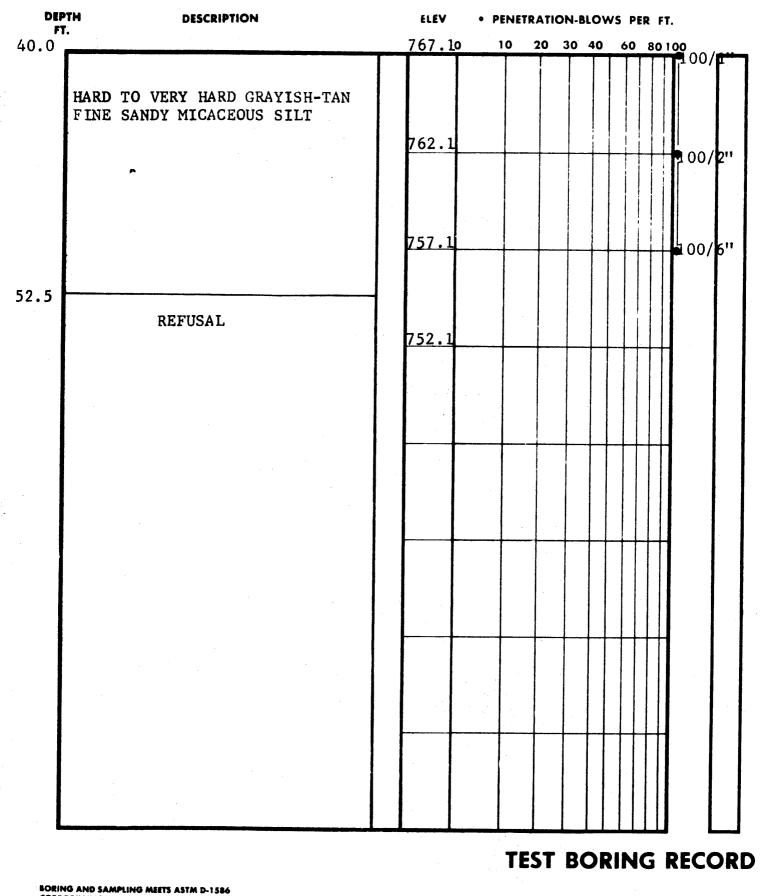
JOB NO. <u>5862</u>

UNDISTURBED SAMPLE

% ROCK CORE RECOVERY

jj





CORE DRILLING MEETS ASTM D-2113
PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

PAGE 2 of 2

BORING NO. <u>B-136</u>

DATE DRILLED <u>8/27/68</u>

JOB NO. <u>5862</u>

UNDISTURBED SAMPLE

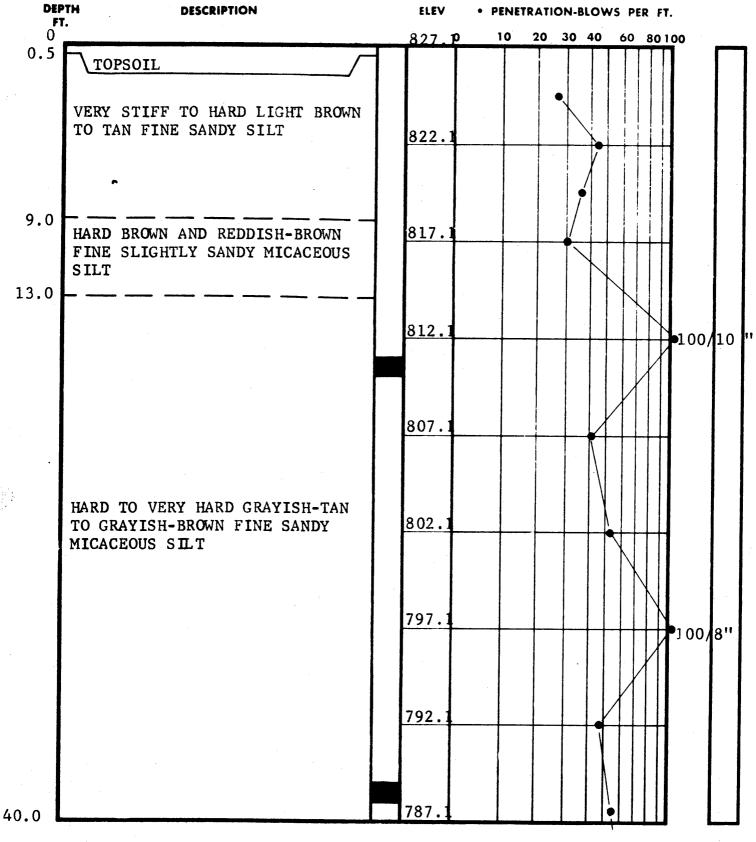
j



WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER



PAGE 1 of 2

BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113

UNDISTURBED SAMPLE

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

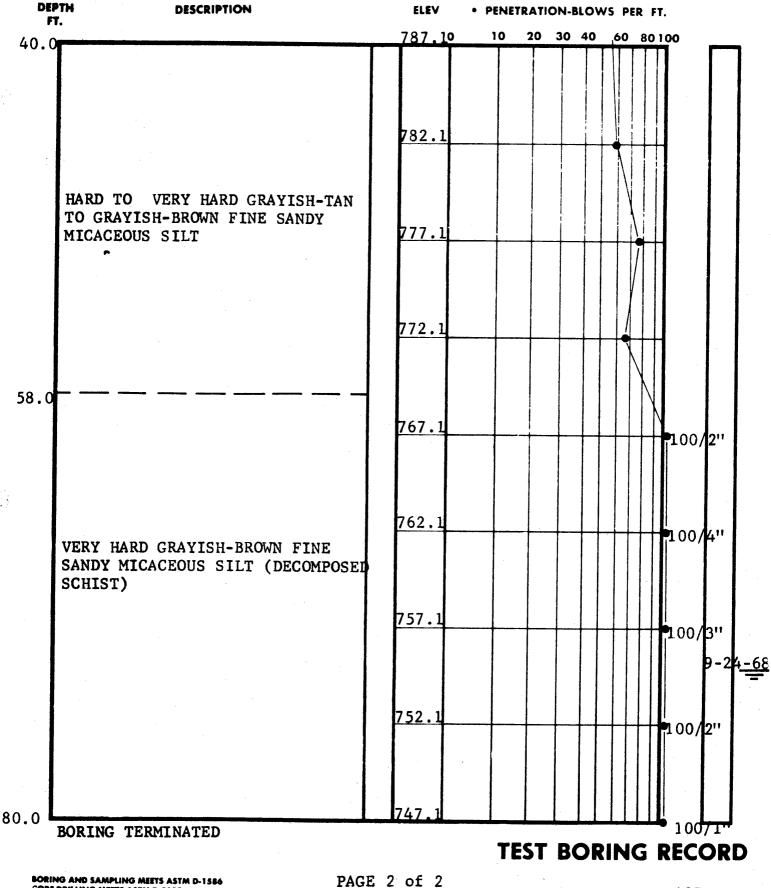
WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

50 % ROCK CORE RECOVERY

LOSS OF DRILLING WATER

B-137BORING NO. _ DATE DRILLED 8/28/68 5862 JOB NO.,



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.

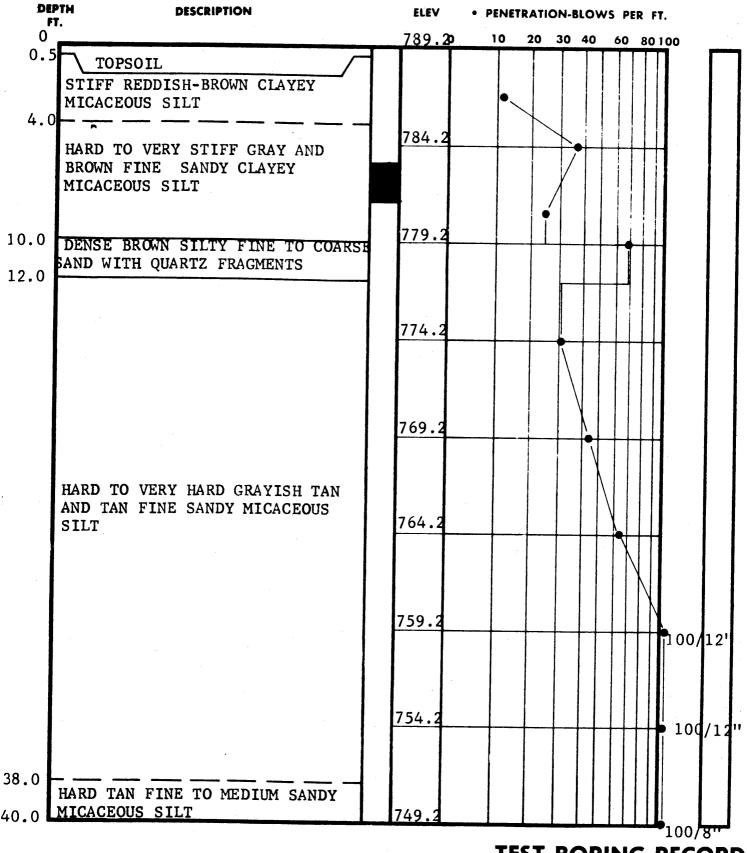
B-137 BORING NO. _ 8/28/68 DATE DRILLED __ 5862 JOB NO.

UNDISTURBED SAMPLE

WATER TABLE, 1 HR.

% ROCK CORE RECOVERY

LOSS OF DRILLING WATER



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.

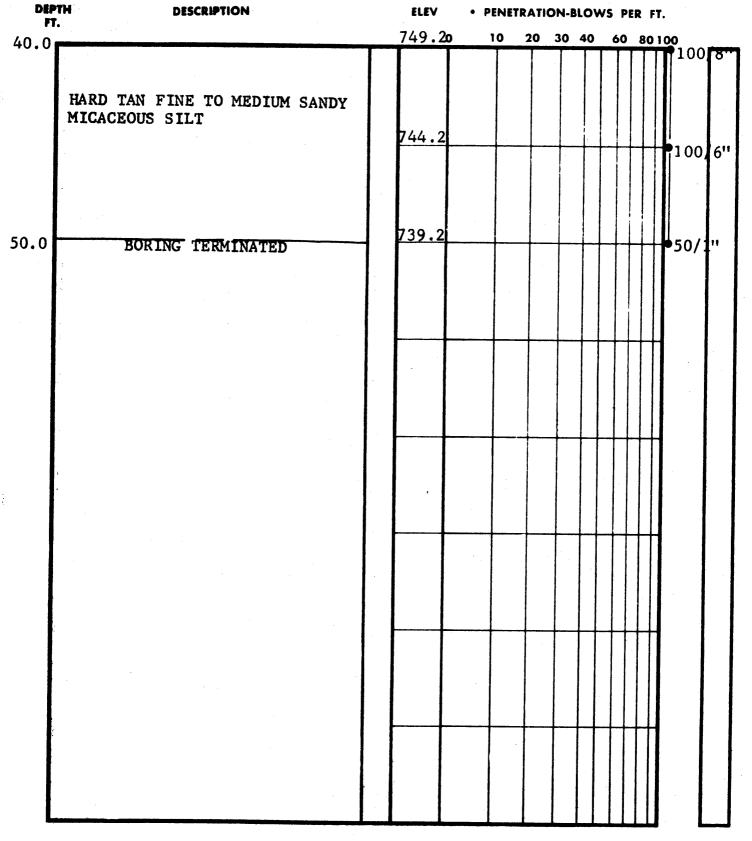
PAGE 1 of 2 WATER TABLE, 1 HR.

DATE DRILLED 8/28/68 5862 JOB NO. _____

UNDISTURBED SAMPLE 50 % ROCK CORE RECOVERY

jj

LOSS OF DRILLING WATER



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.

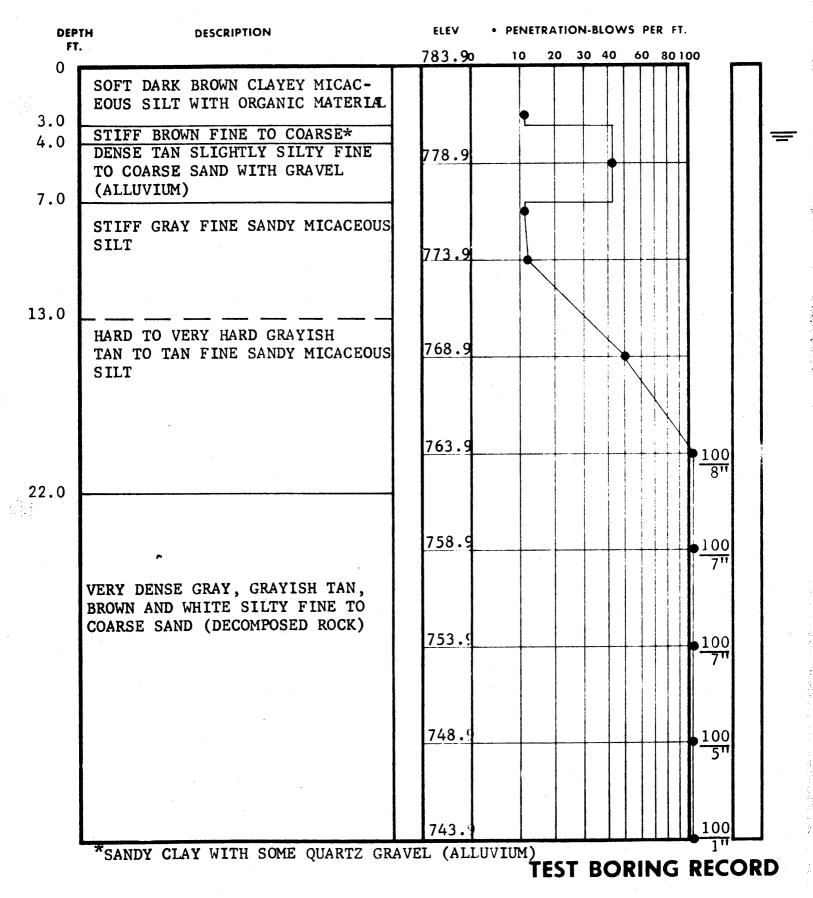
WATER TABLE, 1 HR.

PAGE 2 of 2

DATE DRILLED 8/28/68

5862 JOB NO._

UNDISTURBED SAMPLE



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.

LOSS OF DRILLING WATER

UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

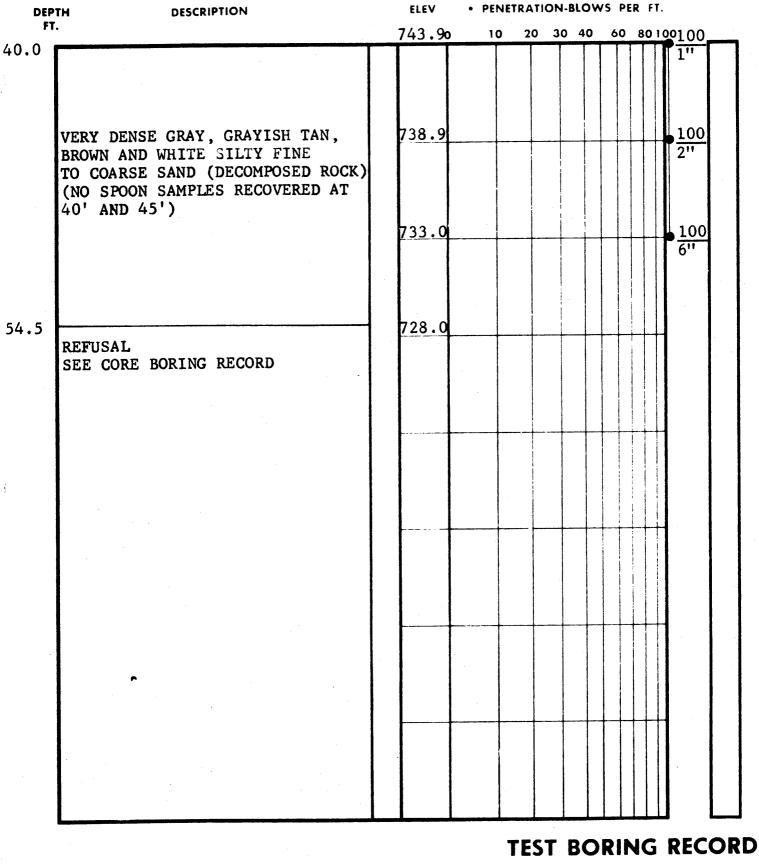
WATER TABLE, 1 HR.

PAGE 1 OF 3

BORING NO. <u>B-139</u>

DATE DRILLED <u>8-28-68</u>

JOB NO. <u>5862</u>



2 OF 3

PAGE

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.

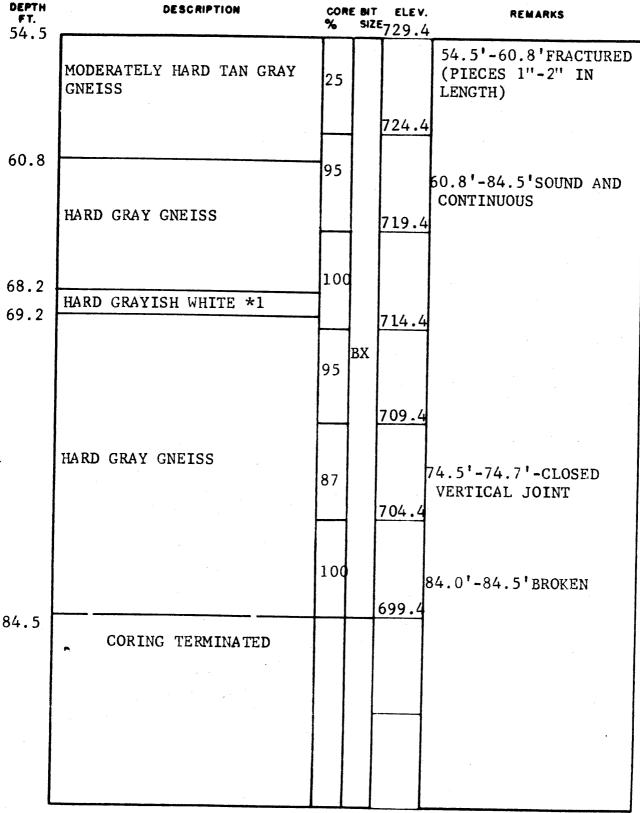
WATER TABLE, 1 HR.

50 % ROCK CORE RECOVERY

UNDISTURBED SAMPLE

LOSS OF DRILLING WATER

BORING NO. B-139 DATE DRILLED 8-28-68 5862 JOB NO. ___



*1 PEGMATITE

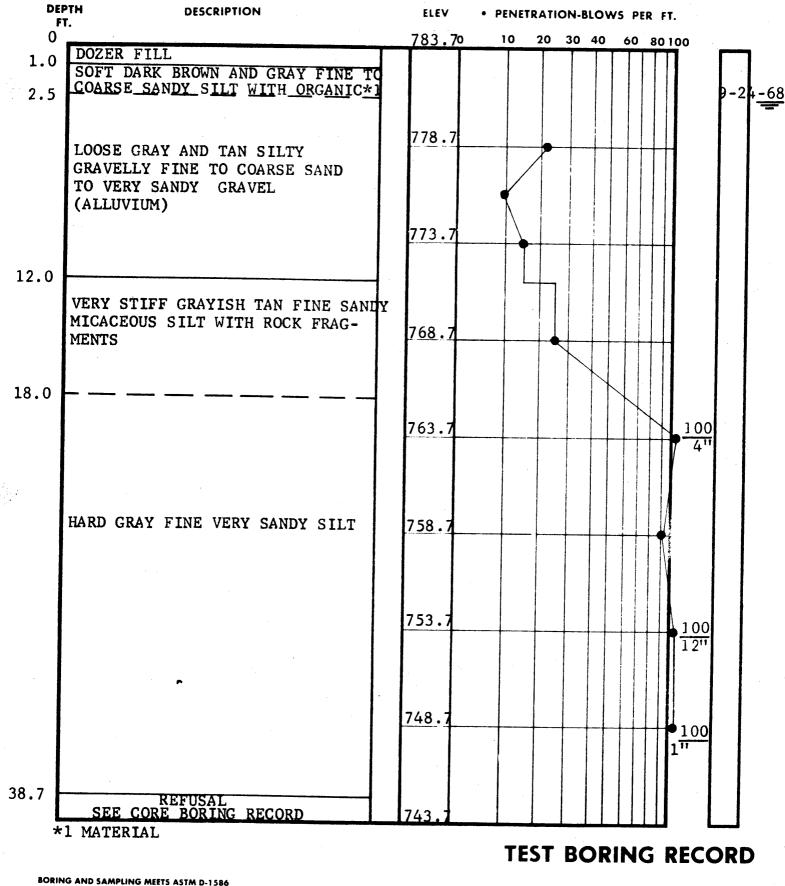
NO DRILLING WATER LOSS RECORDED

CORE BORING RECORD

PAGE 3 OF 3

WATER TABLE

BORING NO. B-139 JOB NO. 5862



PAGE 1 OF 2

BORING NO. <u>B-140</u>

DATE DRILLED <u>8/29/68</u>

JOB NO. <u>5862</u>

UNDISTURBED SAMPLE

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.

LOSS OF DRILLING WATER

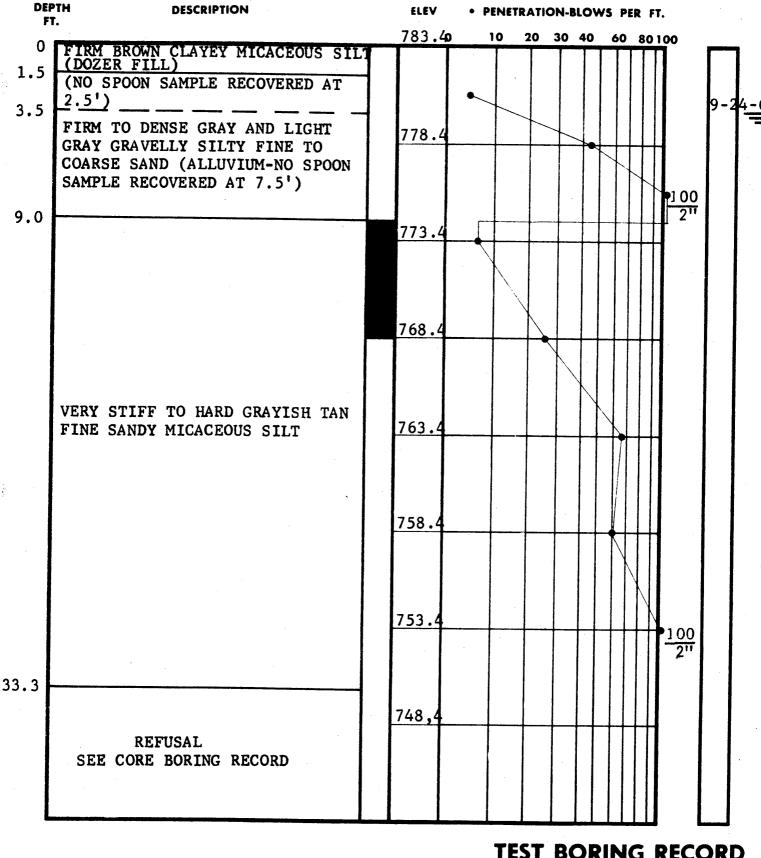
DEPTH FT. 38.7	DESCRIPTION	cori	E BIT SIZ	ELE V. E745.0	
	MODERATELY HARD GRAY	37			38.7'-43.7'FRACTURED AND BROKEN (PIECES 1"-2" IN LENGTH)
	GNEISS	97		740.0	43.7'-46.1'BROKEN (PIECES 6"-12" IN LENGTH) 46.1'-48.7'FRACTURED (PIECES 1"-10" IN
48.7		93	ВX		LENGTH) 50.5'-51.0'TWO OPEN STAINED FRACTURES AND ONE CLOSED VERTICAL JOINT
	HARD GRAY GNEISS	100	9	-	53.7'-58.7'SLIGHTLY FRACTURED (PIECES 6"-10" IN LENGTH) 54.5'-55.1'NUMEROUS FRACTURES
63.1	•	74 87	AX	720.0	58.7'-61.8'SLIGHTLY BROKEN (PIECES 6"- 10" IN LENGTH) 61.8'-63.1'BROKEN
	CORING TERMINATED				(PIECES 1"-3" IN LENGTH)

NO DRILLING WATER LOSS RECORDED

CORE BORING RECORD

PAGE 2 OF 2

BORING NO. 140 JOB NO. 5862



BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

PAGE 1 OF 2

B - 141BORING NO._ DATE DRILLED 9/4/68 5862 JOB NO. _____

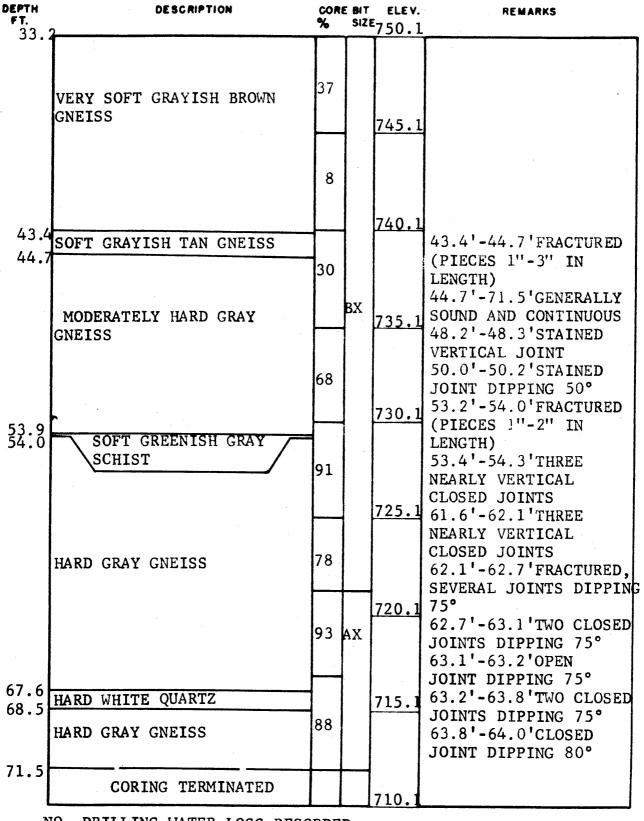
UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

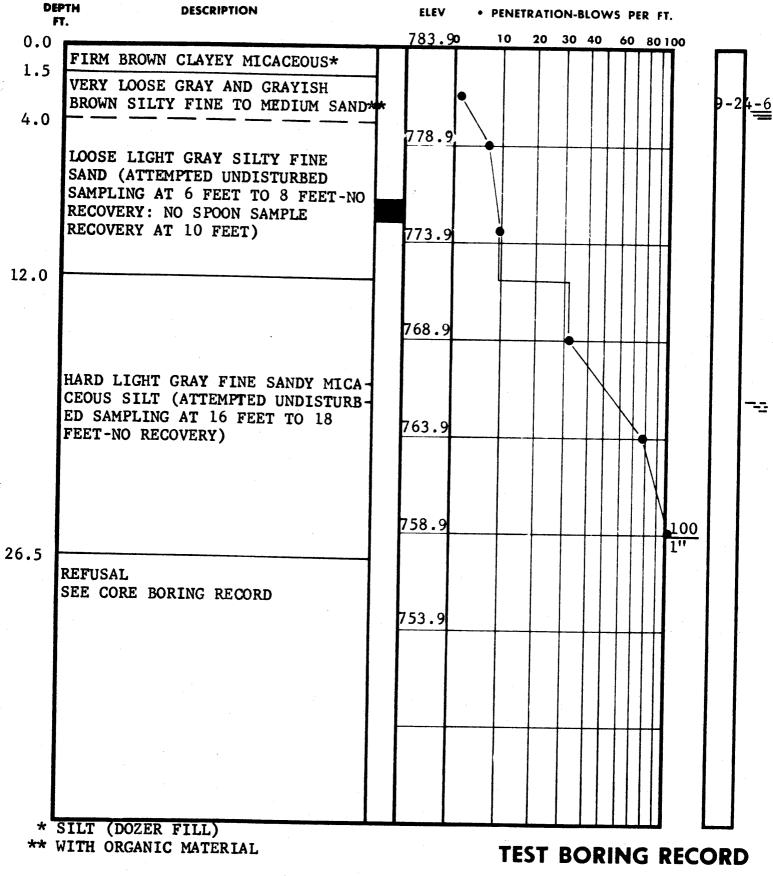


NO DRILLING WATER LOSS RECORDED

Page 2 of 2

CORE BORING RECORD

141 BORING NO._ JOB NO.



BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113

UNDISTURBED SAMPLE

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.

WAT

WATER TABLE, 1 HR.

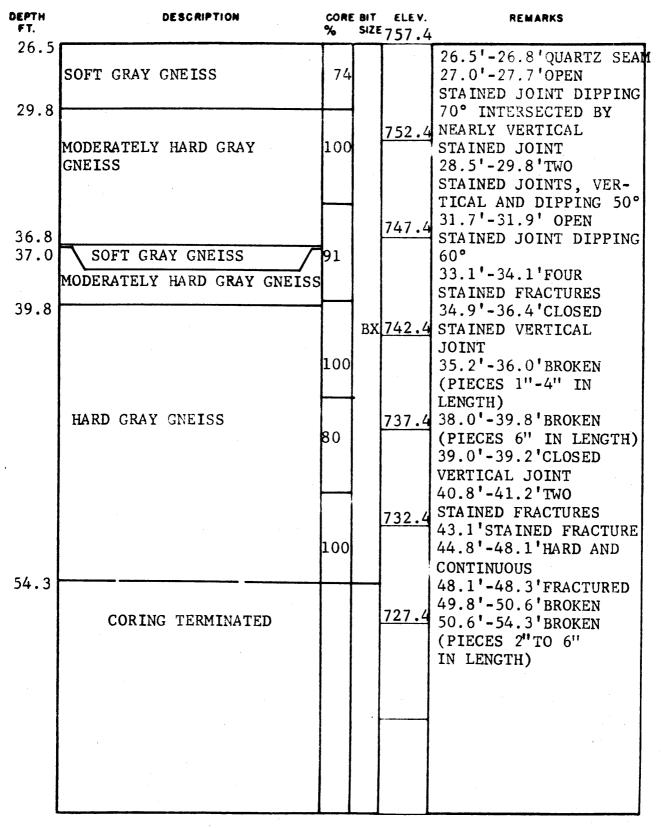
50 % ROCK CORE RECOVERY

abc

LOSS OF DRILLING WATER

DATE DRILLED 9-5-68

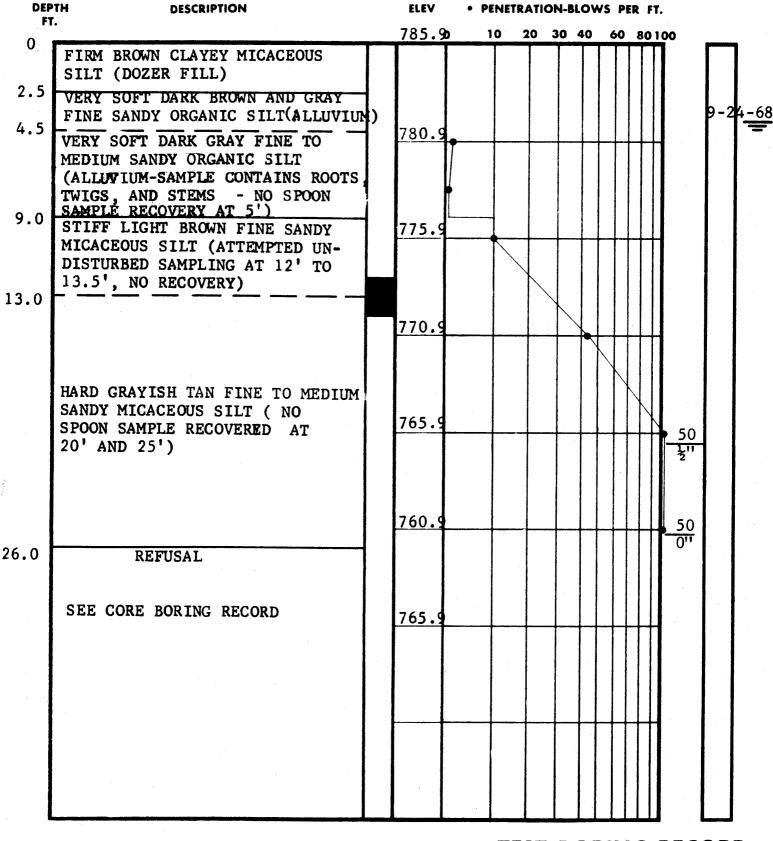
JOB NO. ______5862



NO DRILLING WATER LOSS RECORDED

CORE BORING RECORD

BORING NO. 142 JOB NO. 5862



PAGE 1 OF 2

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, 1 HR.

LOSS OF DRILLING WATER

WATER TABLE, 24 HR.

9/10/68 DATE DRILLED _ 5862 JOB NO. -

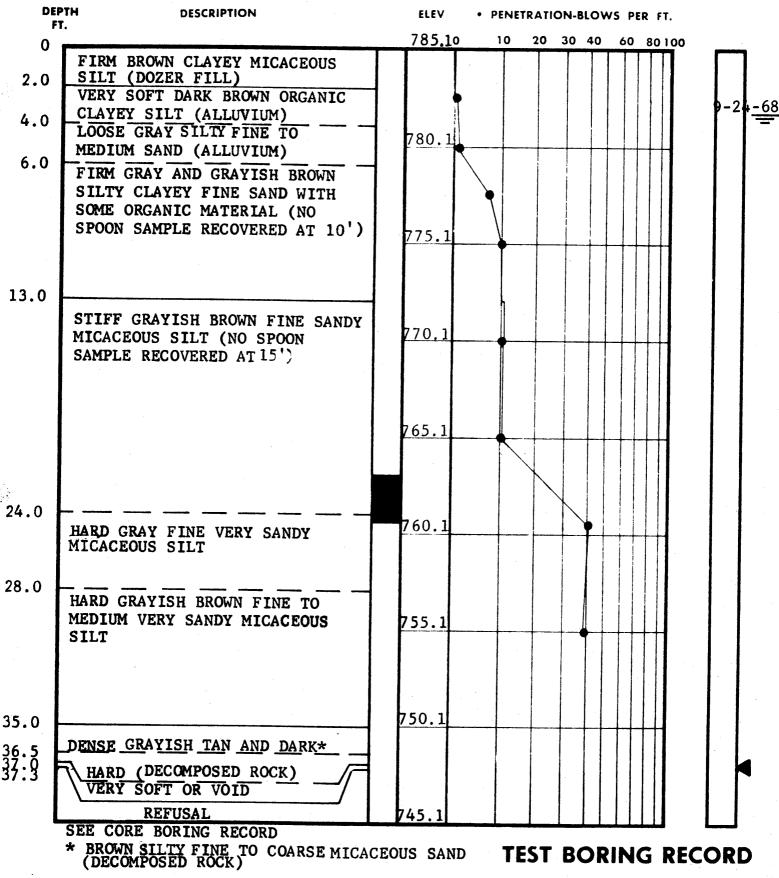
jj

UNDISTURBED SAMPLE

DEPTH FT. 26.0	DESCRIPTIO)N	CORE	E BIT SIZE	ELEV. 759.9	REMARKS
26.5	SOFT GRAY GNEISS				139.5	
	MODERATELY HARD GR	AY CNEISS	84	вх	754.9	26.7'-26.9' FRACTURED 26.9'-31.0' SLIGHTLY FRACTURED (PIECES 6". 12" IN LENGTH)
35.5			85			27.4'-29.0' CLOSED VERTICAL JOINT WITH CLOSED INTERSECTING VERTICAL JOINTS
			90		49.9	32.0'-33.0' FRACTURED (PIECES 1"-2" IN LENGTH)
F	IARD GRAY GNEISS		A	X 7	44.9	33.8'-34.0' FRACTURED (PIECES 1"-½" IN LENGHT)
		10	00		1	6.5'-37.3' FRACTURED PIECES ½"-3" IN LENGHT)
5.5 C	ORING TERMINATED		+	73	9.9 (7.3'-45.5' BROKEN PIECES 3"-1") 4.4'-44.9' CLOSED
					J	OINT DIPPING 80°
				-	\dashv	
					1	

CORE BORING RECORD

PAGE 2 OF 2 BORING NO. 143
JOB NO. 5862



BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

WATER TABLE, 24 HR.
WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

DATE DRILLED 9-10-68
JOB NO. 5862

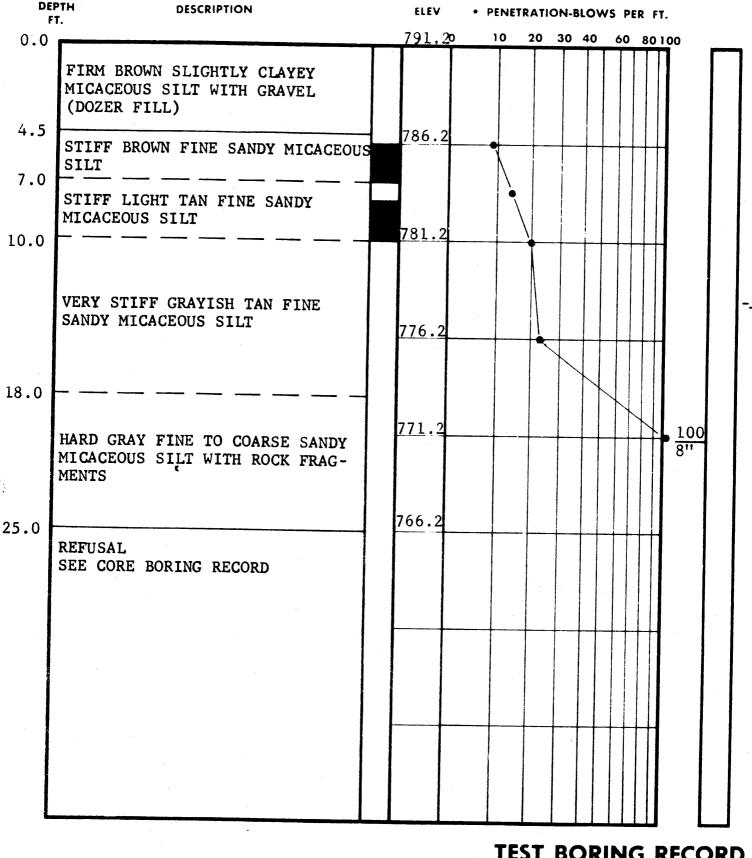
DEPTH FT. 37.3	DESCRIPTION		cori %	E BIT SIZ	ELEV. E747.8	
37.3			95			37.3'-37.7'FRACTURED 40.3'-41.1'STAINED FRACTURES 42.3'-44.9'BROKEN
	HARD GRAY GNEISS		92			PIECES 1"-6" IN LENGTE) 44.9'-47.3'CONTINUOUS 47.3'-49.3'CONTINUOUS 49.5' FRACTURE 50.5'-50.7'CLOSED JOINT DIPPING 70° 50.6 FRACTURE
		100	BX	732.8	51.7'-52.3'FRACTURED AND STAINED NEARLY VERTICAL JOINT 52.3'-52.6'OPEN STAINED JOINT DIPPING 80°	
57.3			100		727.8	53.1'-53.4'FRACTURE AND CLOSED JOINT
37.3	CORING TERMINATED					JOINT DIPPING 70° 55.8'-57.3'FRACTURED (PIECES 1"-6" IN LENGTH)
				·		

LOST DRILLING WATER AT 37 FEET

PAGE 2 of 2

CORE BORING RECORD

BORING NO. 145 JOB NO. 5862



BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

Page 1 of 2

BORING NO. _B-146 DATE DRILLED 9-24-68 5862 JOB NO. _

UNDISTURBED SAMPLE

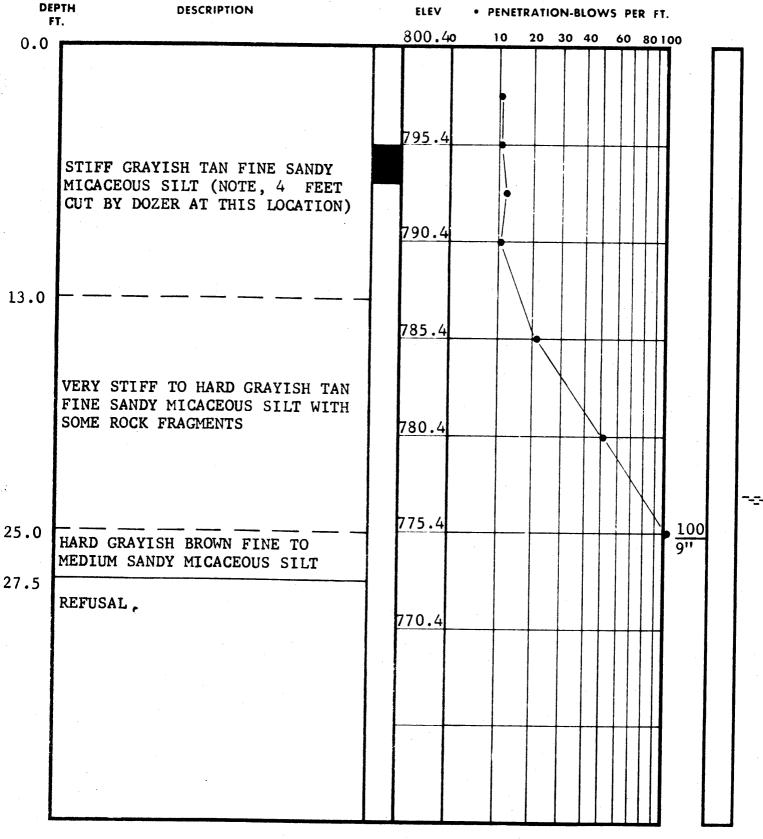
50 % ROCK CORE RECOVERY

WATER TABLE, 24 HR. WATER TABLE, 1 HR. LOSS OF DRILLING WATER

	DESCRIPTION	CORE	BIT SIZI	ELEV. E766.2	REMARKS
	SOFT GRAY GNEISS	72	NX		25.0 - 30.0 SOME OPEN FRACTURES
	VERY SOFT GRAY GNEISS			761.2	31.5 OPEN FRACTURE 32.4 - 33.3 THREE
	ODERATELY HARD GRAY GNEISS	100			OPEN FRACTURES 34.4 OPEN FRACTURE
	HARD GRAY GNEISS			756.2	
•	CORING TERMINATED			750.2	
	•				
			-		

CORE BORING RECORD

BORING NO. <u>B-146</u> JOB NO. <u>5862</u>



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.

abc undisturbed SAMPLE

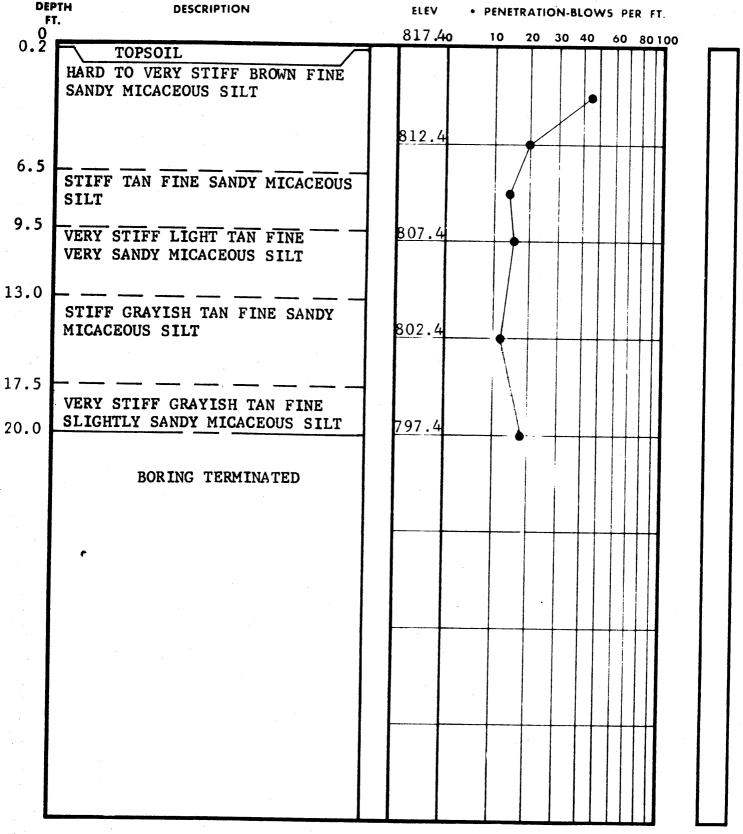
50 % ROCK CORE RECOVERY

BORING AND SAMPLING MEETS ASTM D-1586

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

BORING NO. <u>B-147</u>
DATE DRILLED <u>9-26-68</u>
JOB NO. <u>5862</u>



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

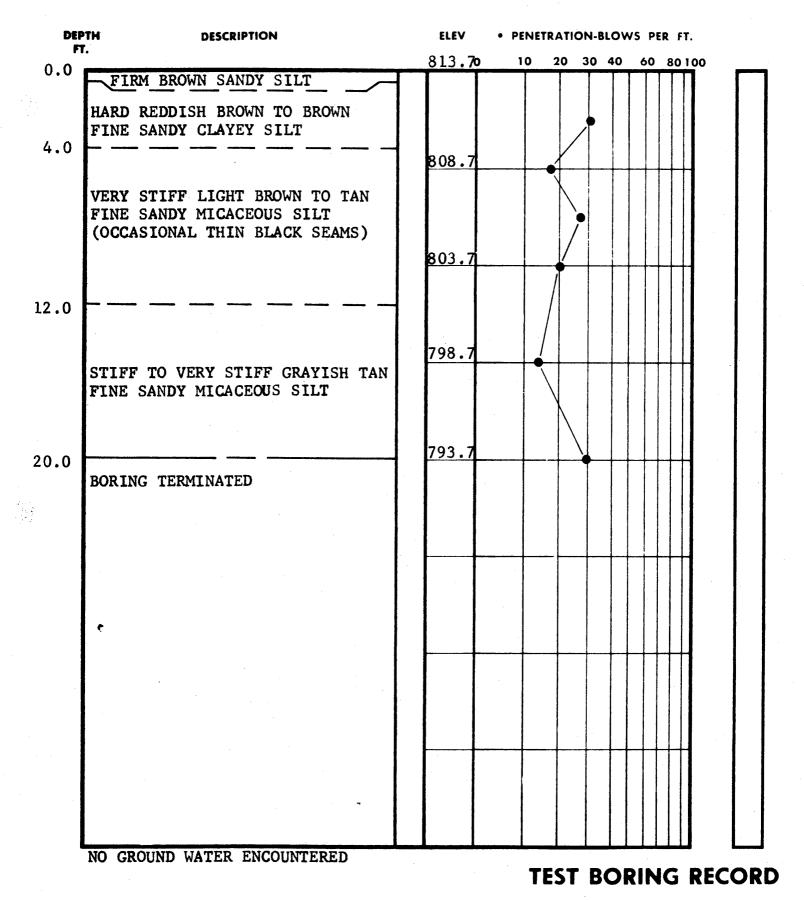
50 % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

DATE DRILLED 9-16-68

JOB NO. 5862



BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

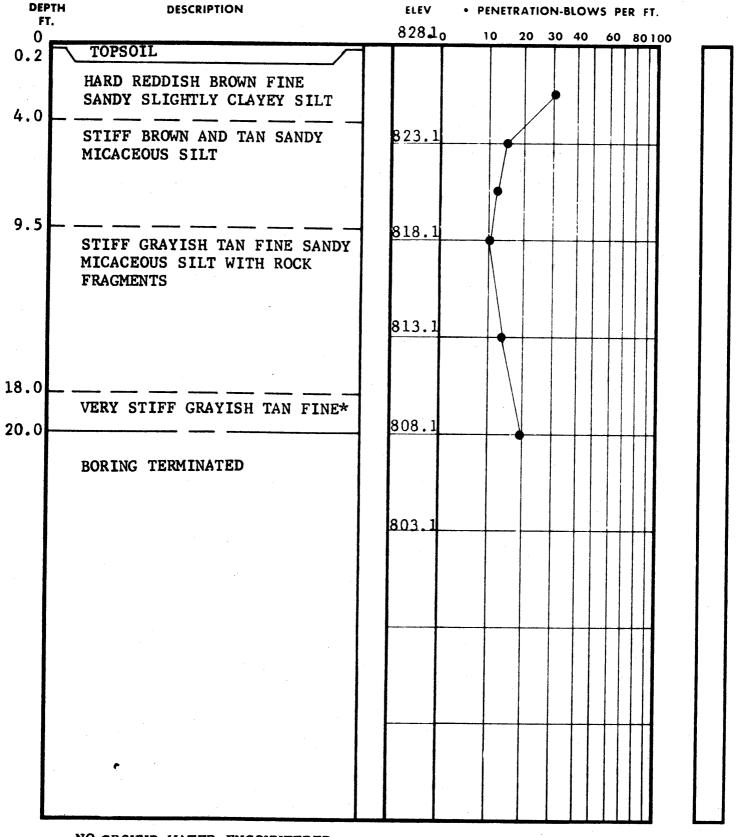
UNDISTURBED SAMPLE

| SO % ROCK CORE RECOVERY

WATER TABLE, 24 HR.
WATER TABLE, 1 HR.

DATE DRILLED 9-16-68
JOB NO. 5862

LOSS OF DRILLING WATER



NO GROUND WATER ENCOUNTERED
*SANDY TO VERY SANDY MICACEOUS SILT

TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

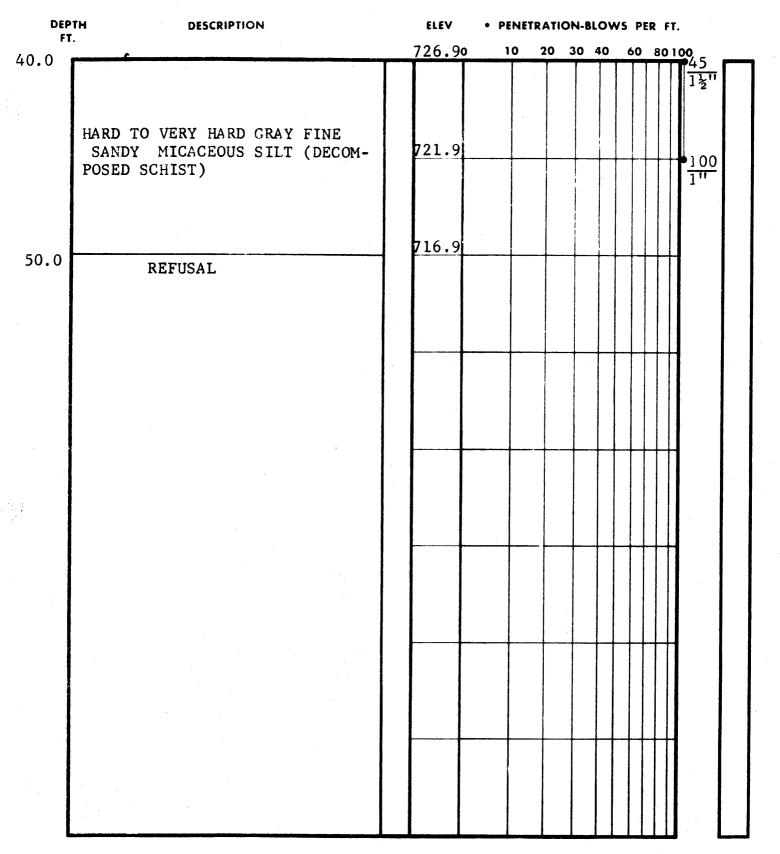
sm

WATER TABLE, 24 HR.
WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

DATE DRILLED 9-16-68

JOB NO. 5862



PAGE 2 of 2

BORING AND SAMPLING MEETS ASTM D-1586
CORE DRILLING MEETS ASTM D-2113
PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

WATER TABLE, 24 HR.
WATER TABLE, 1 HR.

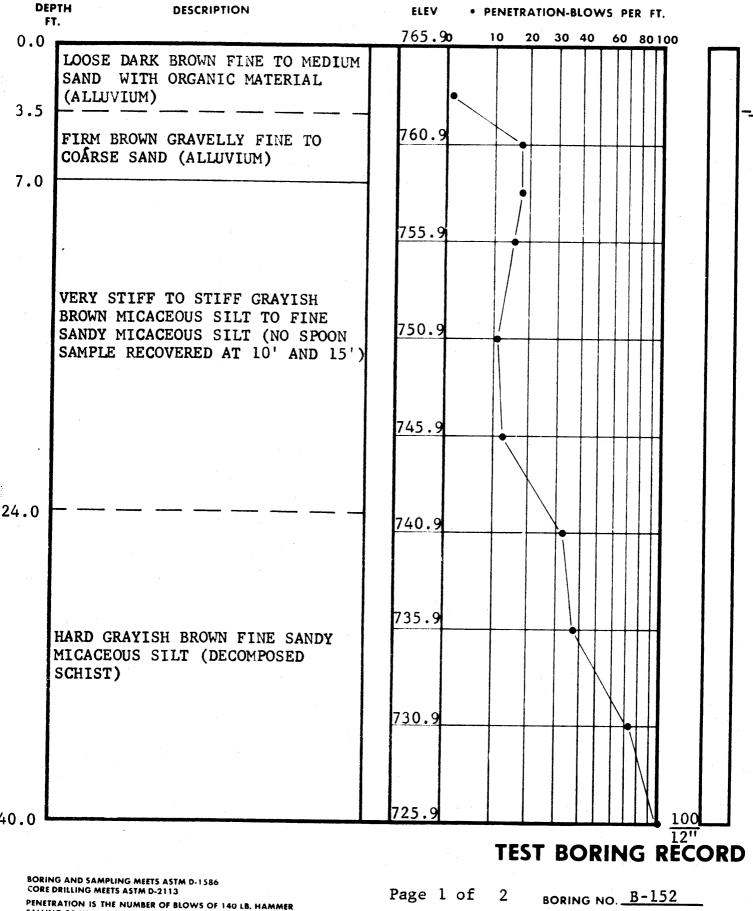
BORING NO. B-151

DATE DRILLED 8/6/68

JOB NO. 5862

UNDISTURBED SAMPLE

jj



UNDISTURBED SAMPLE

FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

50 % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

OSS OF DRILLING WATER

BORING NO. B-152 DATE DRILLED 9-17-68 5862 JOB NO.

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

50 % ROCK CORE RECOVERY

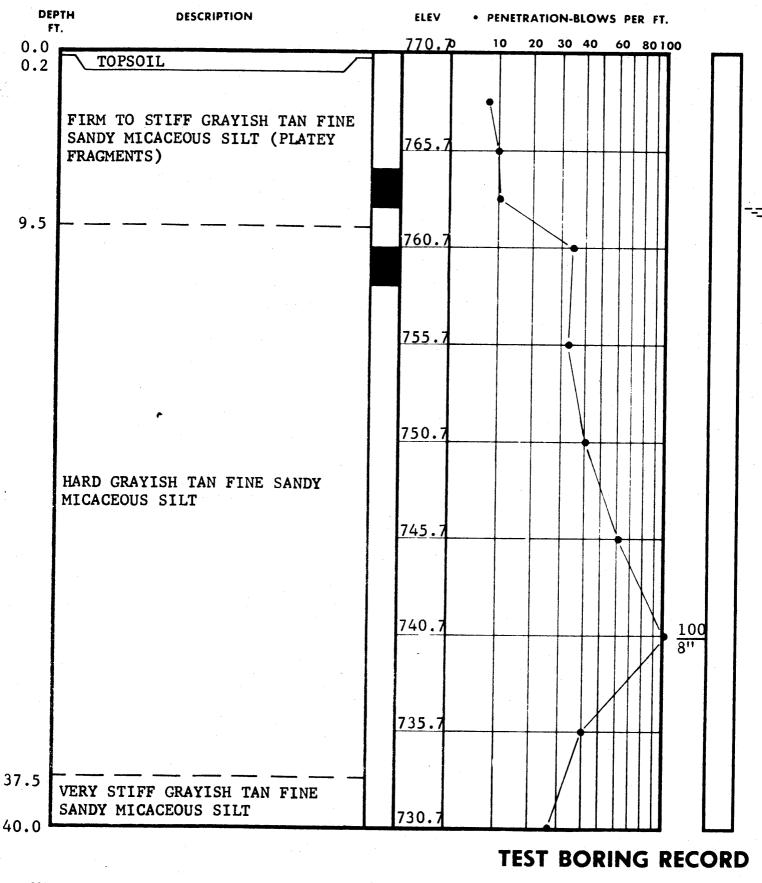
abc

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

Page 2 of 2

DATE DRILLED 9-17-68 5862 JOB NO. _



BORING AND SAMPLING MEETS ASTM D-1586
CORE DRILLING MEETS ASTM D-2113
PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

Page 1 of 2

BORING NO. <u>B-153</u>

DATE DRILLED <u>9-17-68</u>

JOB NO. <u>5862</u>

UNDISTURBED SAMPLE

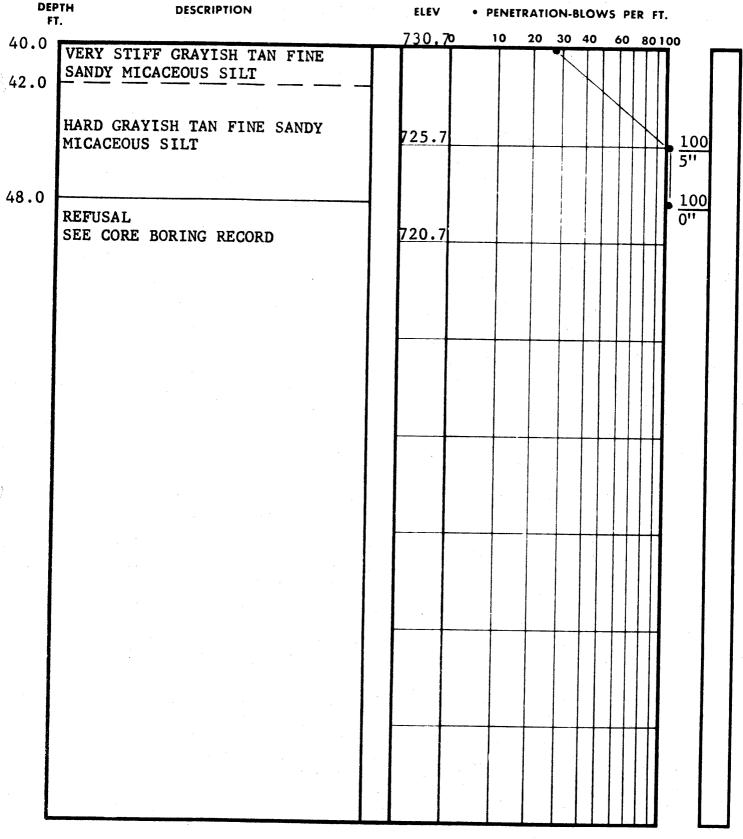
/ حقت

WATER TABLE, 24 HR.
WATER TABLE, 1 HR.

50 % ROCK CORE RECOVERY

LOSS OF DRILLING WATER

I AW FNGINFFPING TESTING CO



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.

Page 2 of 3

UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

,

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

BORING NO. <u>B-153</u>

DATE DRILLED <u>9-17-68</u>

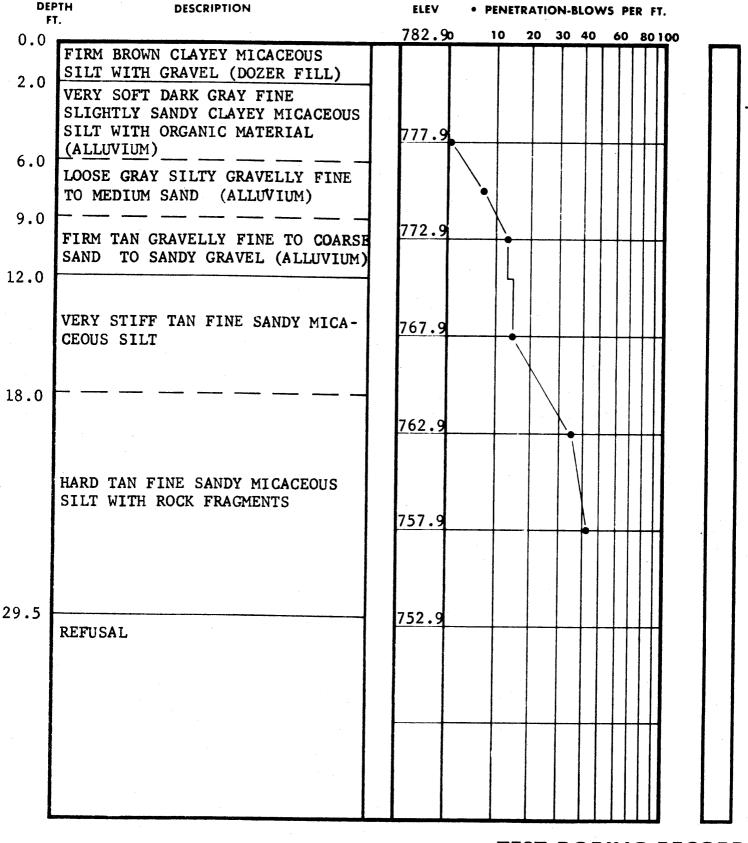
JOB NO. <u>5862</u>

рер тн FT. 48.0	DESCRIPTION	co# %	IE 8/1 Siz	ELEV.	REMARKS
40.0	MODERATELY HARD GRAY SCHIST	10	В	x	48.0'- 53.0'BROKEN AND FRACTURED (PIECES 1" - 8" IN LENGHT)
53.0	CORING TERM NATED			717.7	49.9'-50.1' OPEN JOINT DIPPING 65°
					51.6' - 51.7' VERTICAL JOINT
					·
				·	

CORE BORING RECORD

Page 3 of 3

BORING NO. <u>B-153</u> JOB NO. <u>5862</u>



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 % POCK CORE RECOVERY

---- v

WATER TABLE, 24 HR

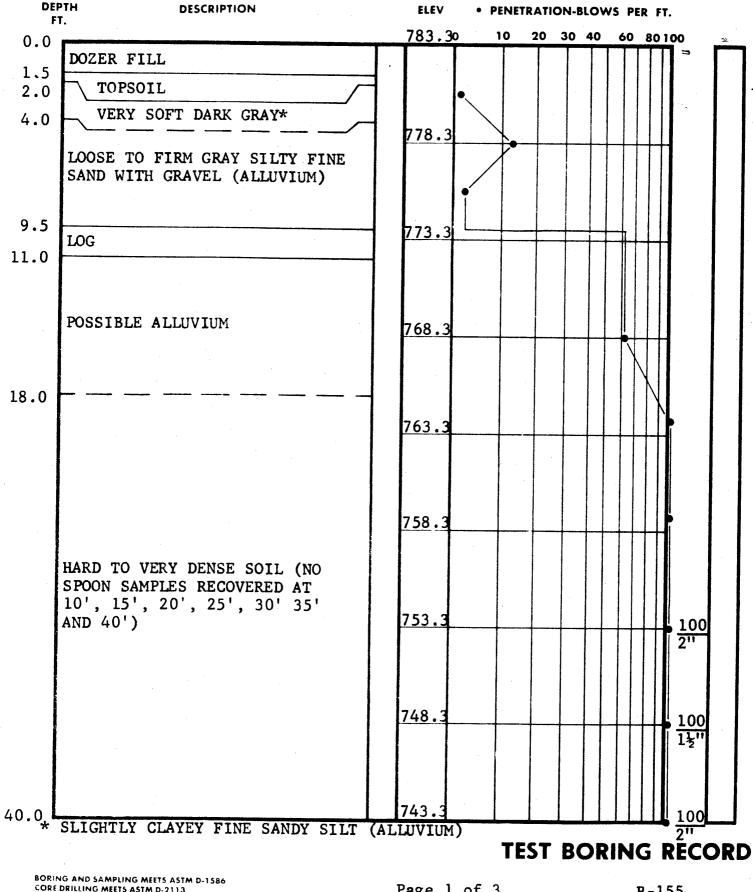
WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

BORING NO. <u>B-154</u>

DATE DRILLED <u>9-23-68</u>

JOB NO. <u>5862</u>



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.

Page 1 of 3

BORING NO. B-155 DATE DRILLED 9-23-68 5862 JOB NO. _

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

50 % ROCK CORE RECOVERY



Page 2 of 3

DATE DRILLED 9-23-68 5862 JOB NO. _

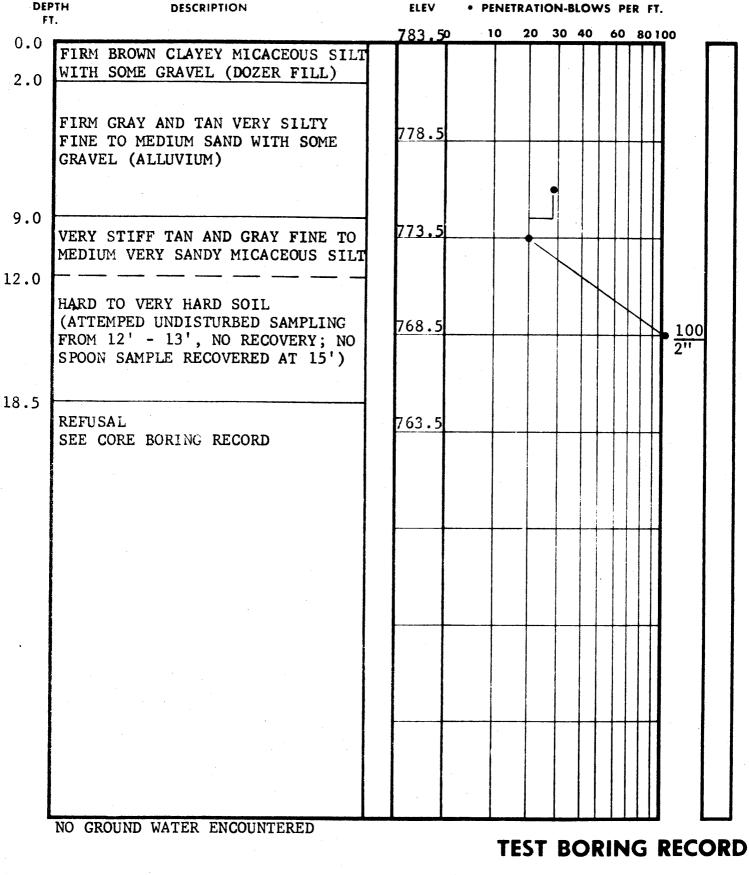
1055 OF DRILLING WATER

DEPTH FT. 46.0	DESCRIPTION	CORI	E BIT SIZI	ELE V. E737.3	REMARKS
•	MODERATELY HARD GRAY GNEISS	44	ВХ	732.3	46.0' - 51.0' OPEN VERTICAL JOINT, 1.2' IN LENGTH
		90	вх		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

Page 3 of 3

BORING NO. <u>B-155</u>
JOB NO. <u>5862</u>



BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

Page 1 of 2

BORING NO. <u>B-156</u>

DATE DRILLED <u>9-23-68</u>

JOB NO. <u>5862</u>

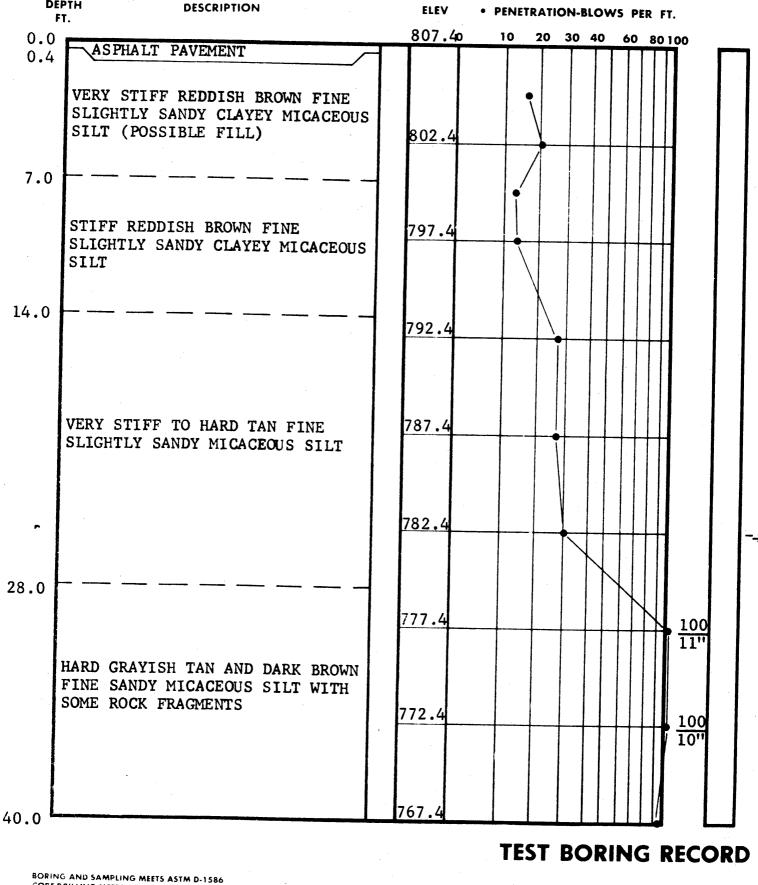
abc un

UNDISTURBED SAMPLE

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER



CORE DRILLING MEETS ASTM D-2113 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN: I.D. SAMPLER 1 FT.

Page 1 of 2

BORING NO. _ B-157 DATE DRILLED 9-27-68 5862 JOB NO. ...

UNDISTURBED SAMPLE

DEPTH

WATER TABLE, 24 HR. WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

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

WATER TABLE, 24 HR

WATER TABLE, 1 HR

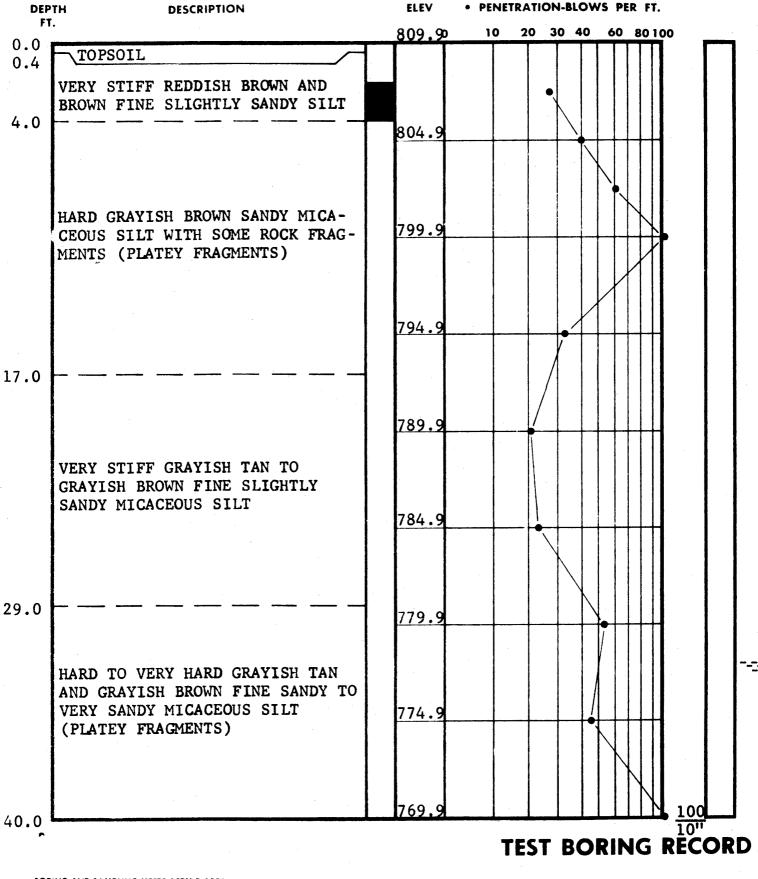
◀ 1055 OF DRILLING WATER

Page 2 of 2

BORING NO. <u>B-157</u>

DATE DRILLED 9-27-68

5862 JOB NO._



PENETRATION IS THE NUMBER OF BLOWS OF 140 LB, HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

UNDISTURBED SAMPLE

WATER TABLE, 24 HR.

LOSS OF DRILLING WATER

Page 1 of 2

DATE DRILLED 9-27-68

JOB NO. 5862

LAW ENGINEERING TESTING CO.

abc

TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM 0-1586 CORE DRILLING MEETS ASTM D-2113

UNDISTURBED SAMPLE

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 50 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

WATER TABLE, 24 HR

WATER TABLE, 1 HR.

50 % POCK CORE RECOVERY

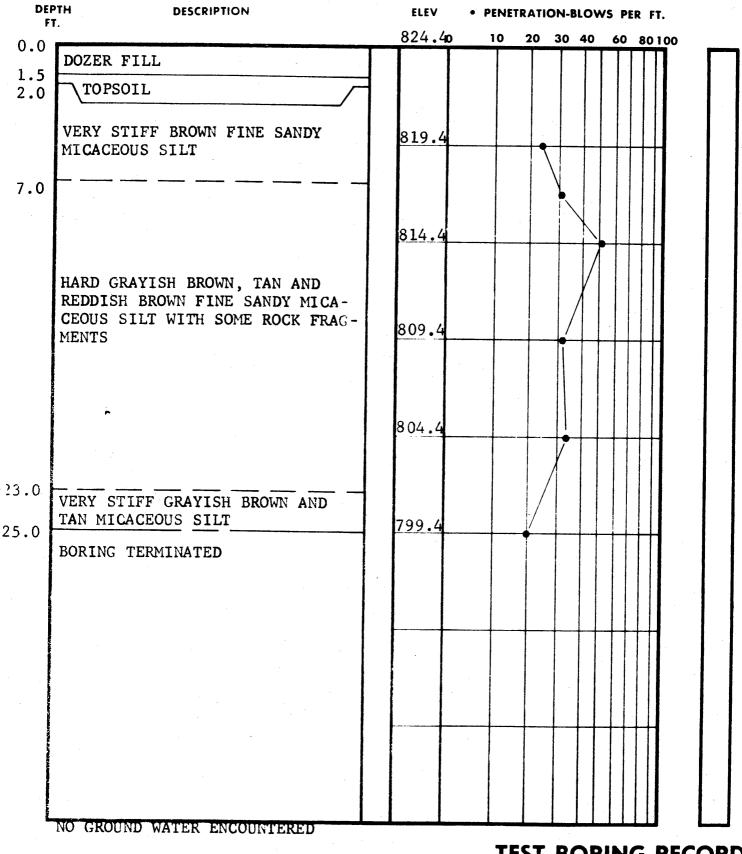
LOSS OF DRILLING WATER

Page 2 of 2

BORING NO. B-158

DATE DRILLED 9-27-68

5862 JOB NO._



TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586 CORF DRILLING MEETS ASTM D-2113 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

abc UNDISTURBED SAMPLE

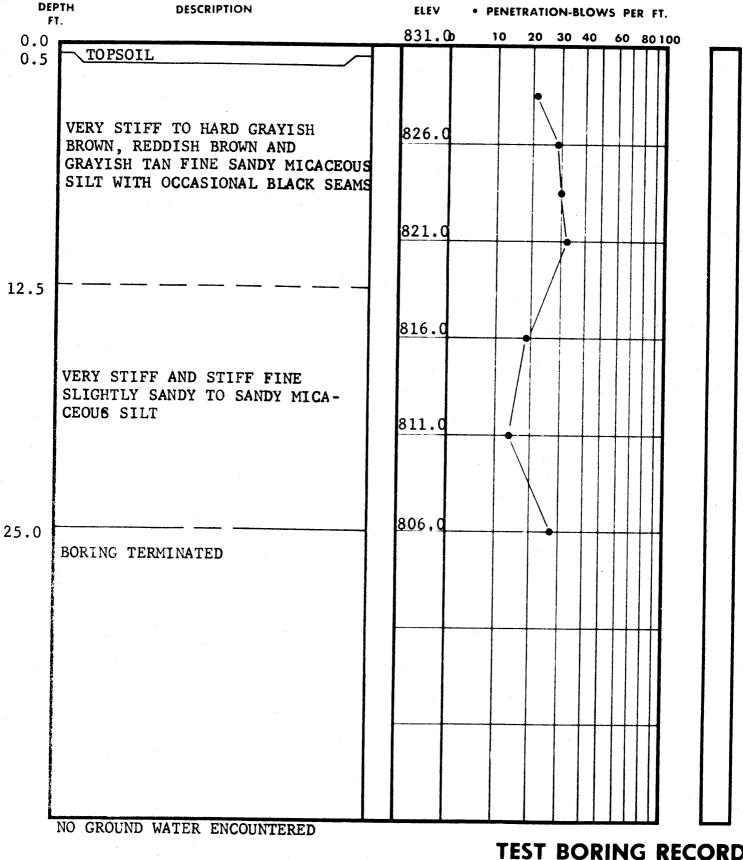
50 % ROCK CORE RECOVERY

WATER TABLE, 24 HR

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

BORING NO. B-159 DATE DRILLED 9-26-68 5862 JOB NO. _



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

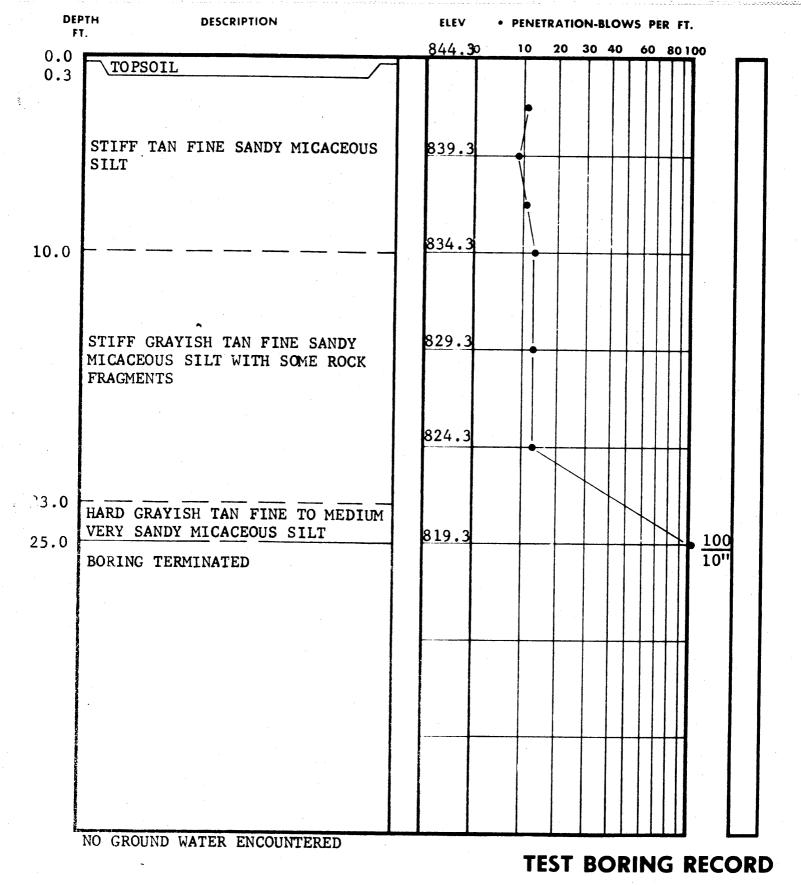
WATER TABLE, 24 HR. WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

TEST BORING RECORD

BORING NO. _ B-160 DATE DRILLED 9-26-68

5862 JOB NO. _



PENFTRATION 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.

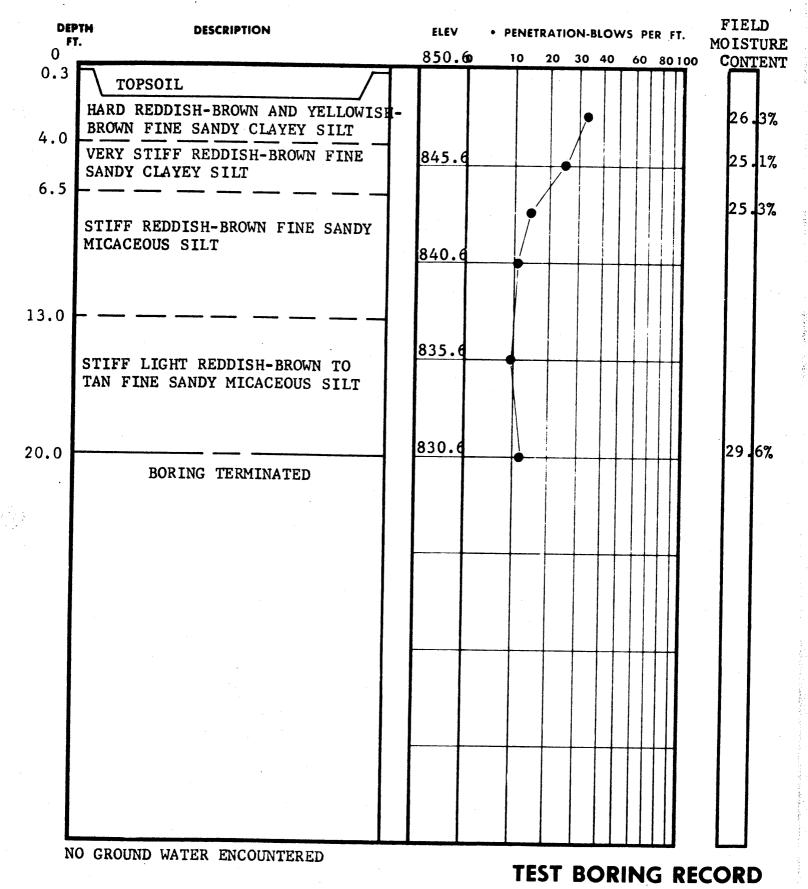
WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

BORING NO. <u>B-161</u>

DATE DRILLED <u>9-26-68</u>

JOB NO. <u>5862</u>



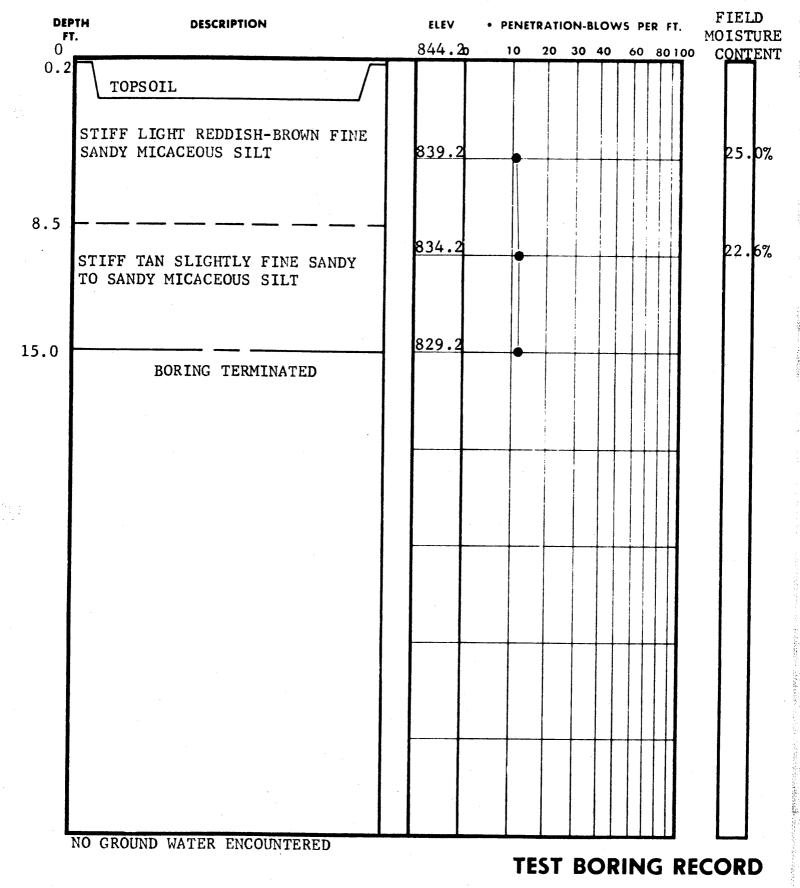
BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113 PENETRATION IS THE NUMBER OF BLOWS OF 140 LI

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

LOSS OF DRILLING WATER



PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

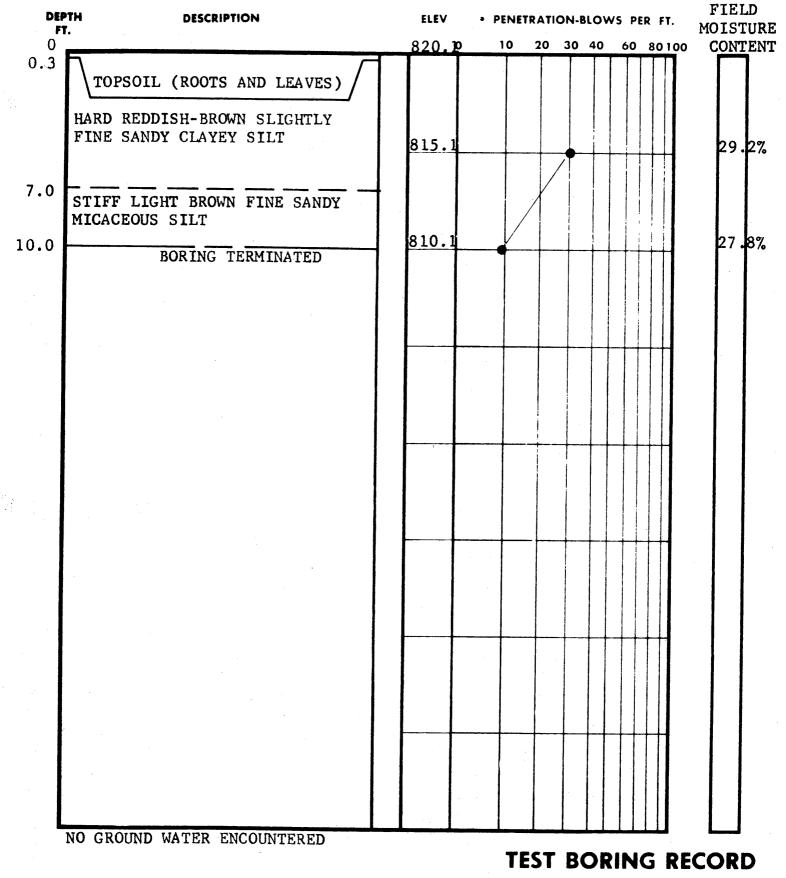
UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

WATER TABLE, 24 HR. WATER TABLE, 1 HR.

B-202 BORING NO. ____ DATE DRILLED _7/24/68 5862 JOB NO. _

LOSS OF DRILLING WATER

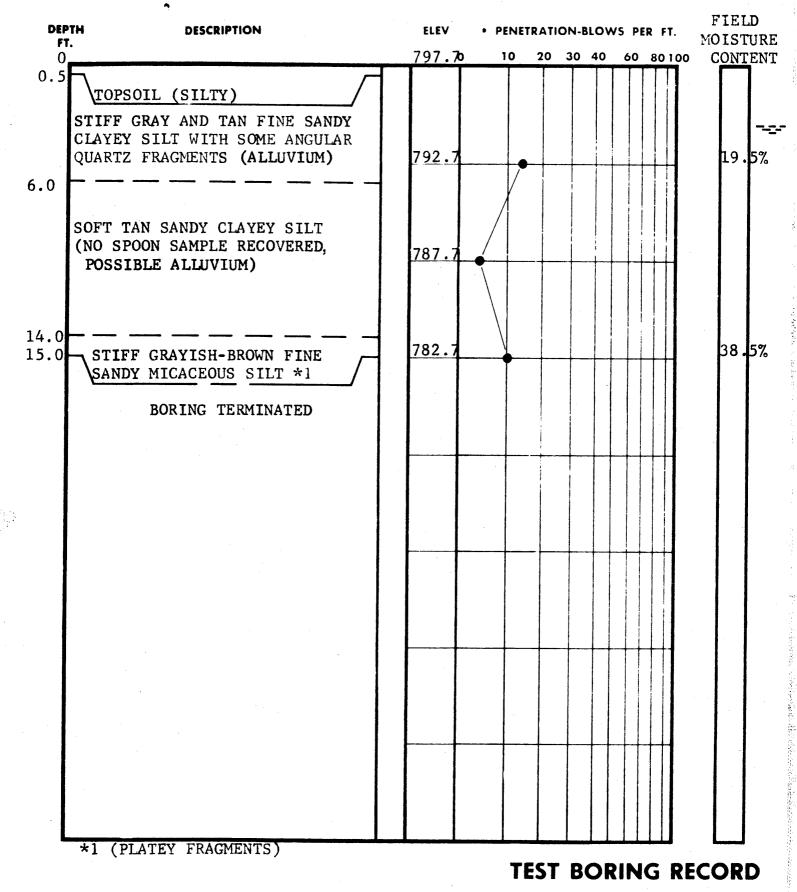


PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

WATER TABLE, 24 HR.
WATER TABLE, 1 HR.
LOSS OF DRILLING WATER



BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER

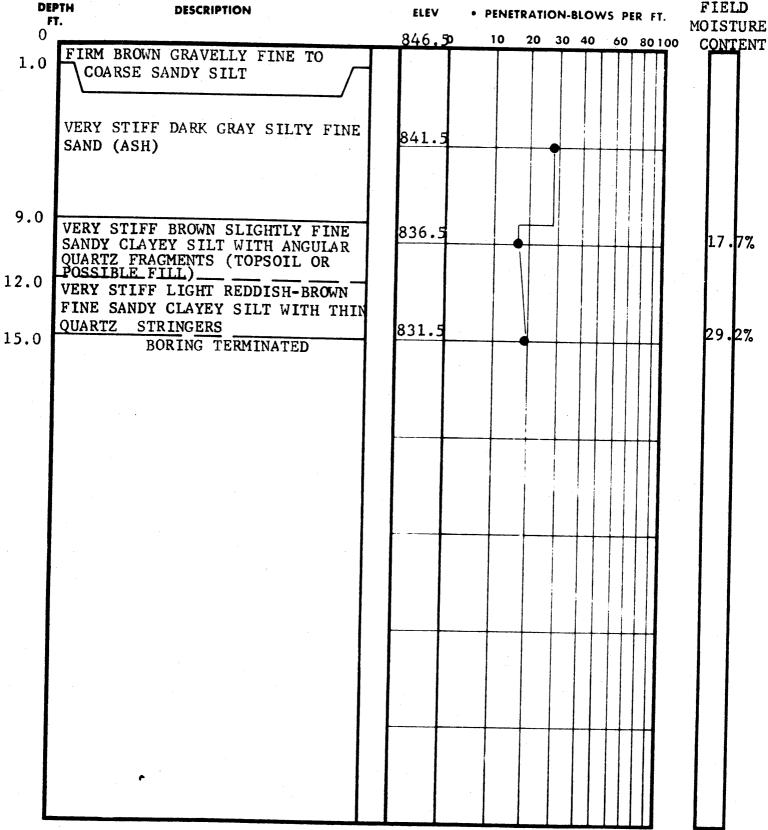
FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

UNDISTURBED SAMPLE 50 % ROCK CORE RECOVERY

WATER TABLE, 24 HR. WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

B - 204BORING NO. __ DATE DRILLED 7/31/68 5862 JOB NO.



NO GROUND WATER ENCOUNTERED

TEST BORING RECORD

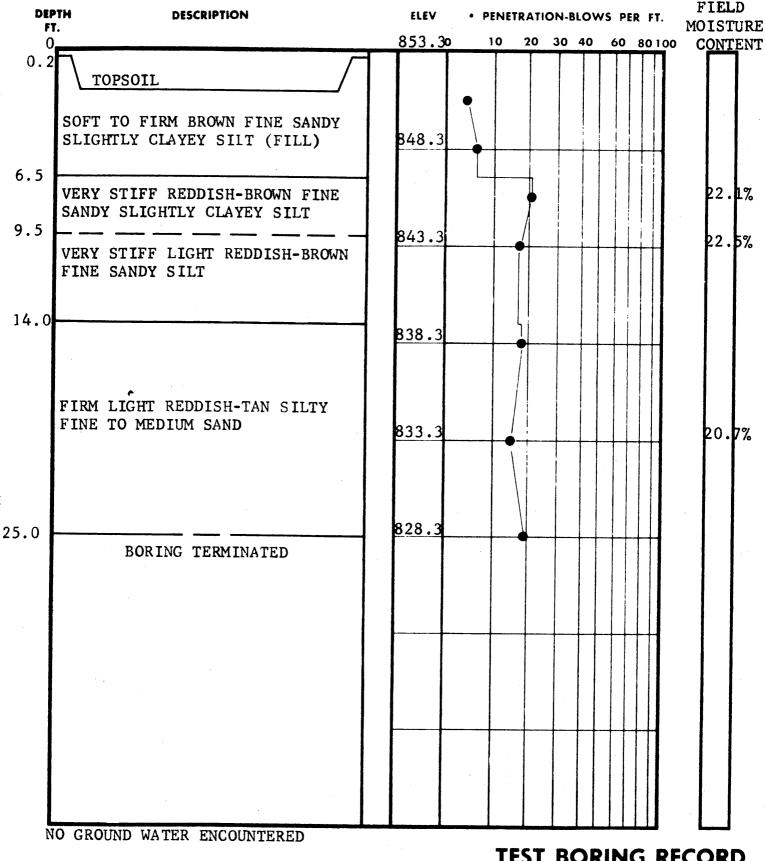
BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

WATER TABLE, 24 HR.

50 % ROCK CORE RECOVERY

UNDISTURBED SAMPLE

LOSS OF DRILLING WATER



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.

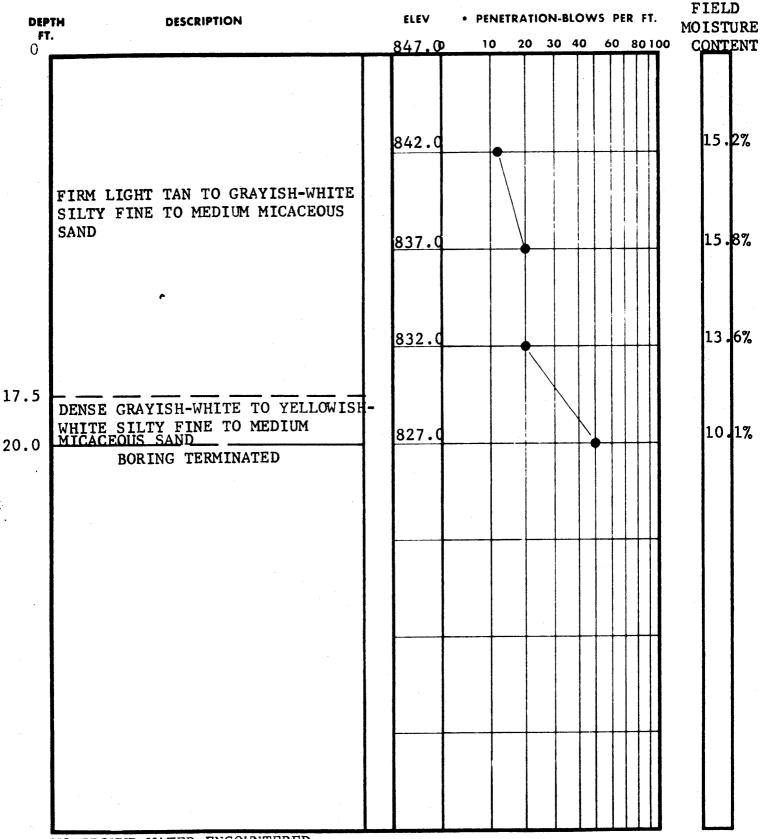
50 % ROCK CORE RECOVERY

UNDISTURBED SAMPLE

LOSS OF DRILLING WATER

TEST BORING RECORD

B-206 BORING NO. _ 7/22/68 DATE DRILLED __ 5862 JOB NO. __



NO GROUND WATER ENCOUNTERED

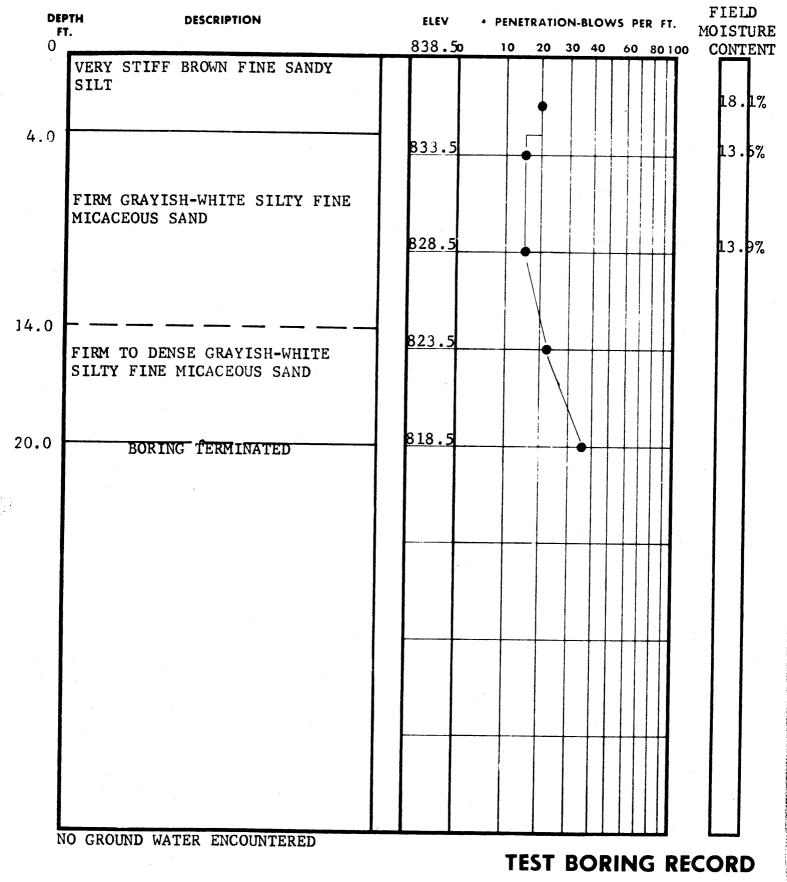
TEST BORING RECORD

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

LOSS OF DRILLING WATER



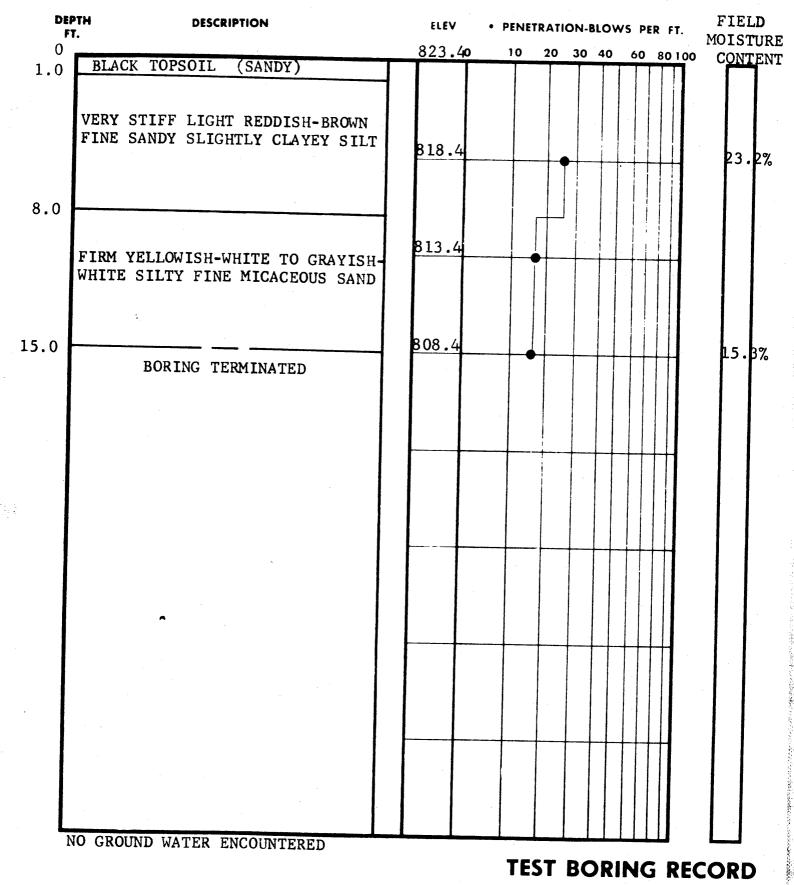
BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB, HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

WATER TABLE, 24 HR.
WATER TABLE, 1 HR.

LOSS OF DRILLING WATER



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

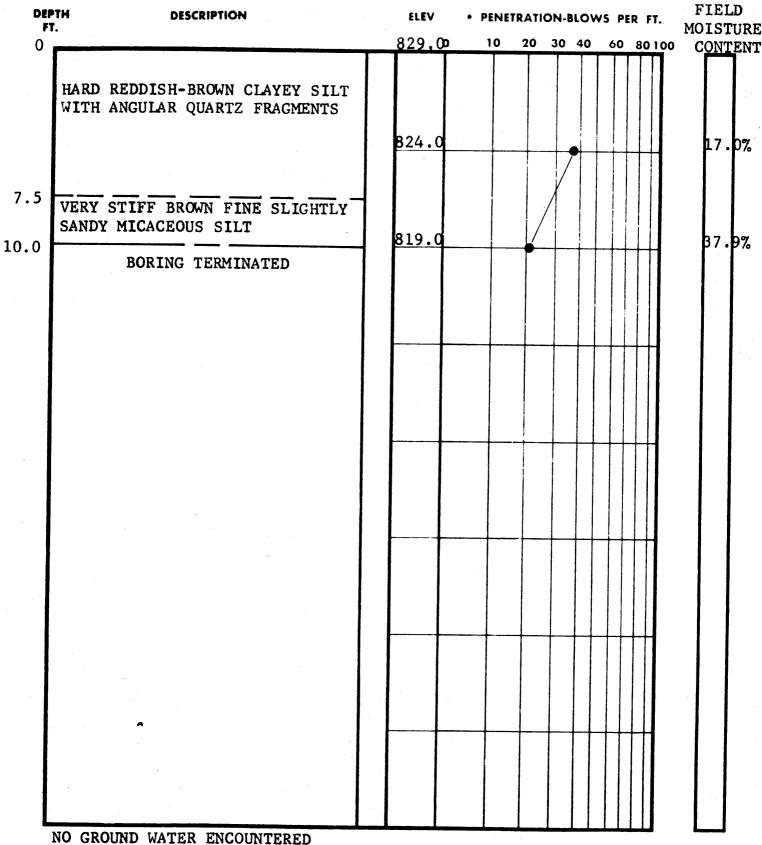
WATER TABLE, 24 HR.
WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

BORING NO. <u>B-209</u>

DATE DRILLED 7/31/68

JOB NO. <u>5862</u>



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.

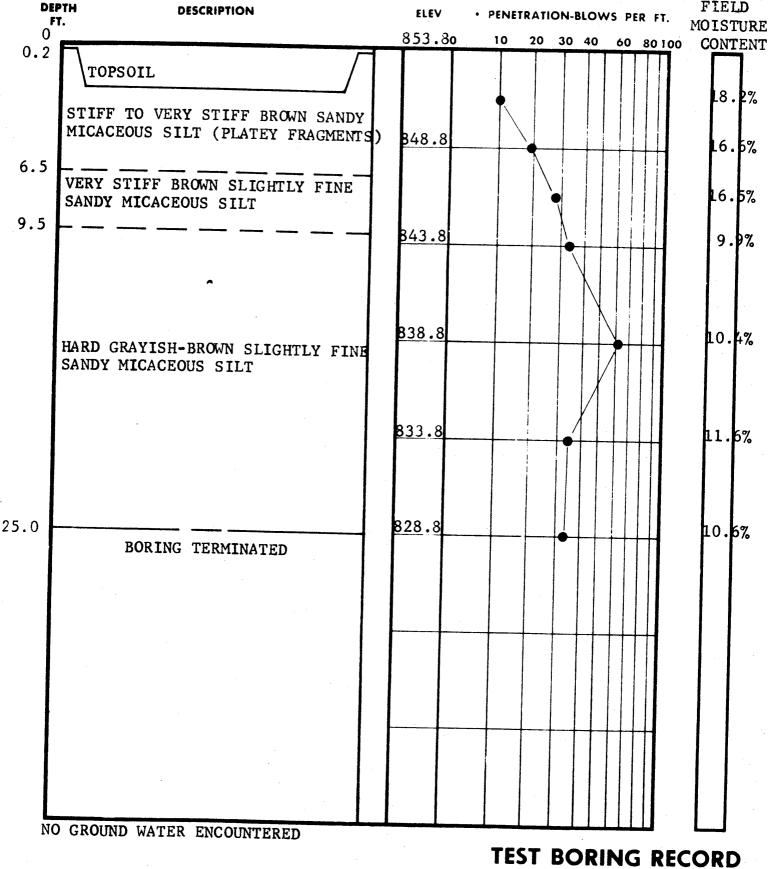
50 % ROCK CORE RECOVERY

UNDISTURBED SAMPLE

LOSS OF DRILLING WATER

TEST BORING RECORD

JOB NO. ______5862



PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

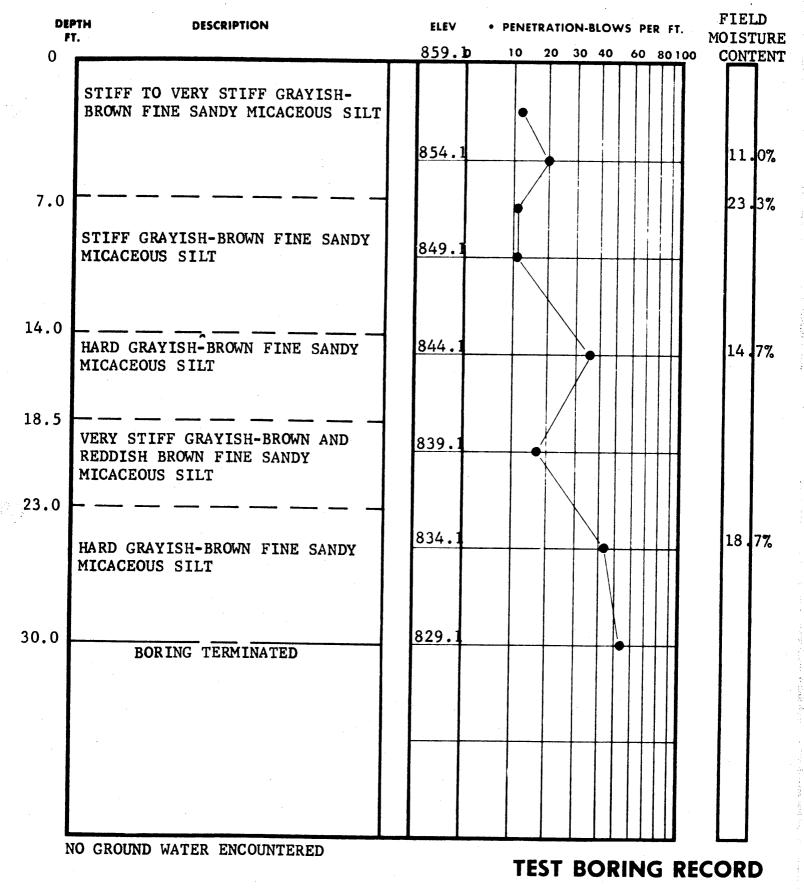
UNDISTURBED SAMPLE

% ROCK CORE RECOVERY

WATER TABLE, 24 HR. WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

BORING NO. B-211 DATE DRILLED 7/22/68 5862 JOB NO.

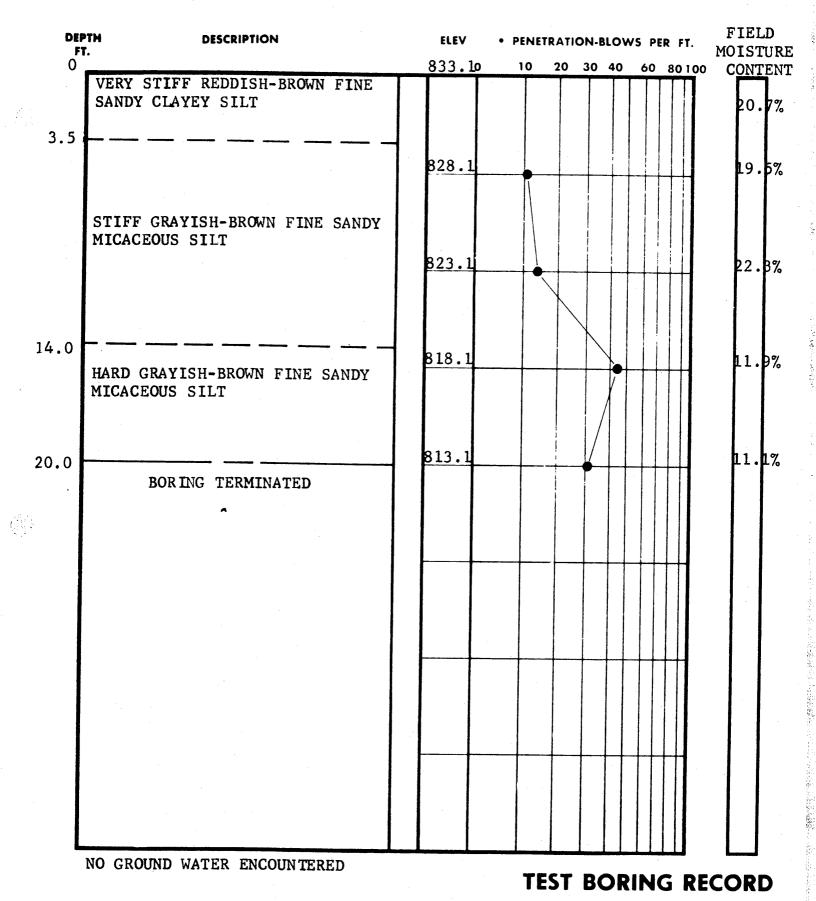


PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

WATER TABLE, 24 HR. WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

BORING NO. _____B-212 7/23/68 DATE DRILLED __ 5862 JOB NO. __

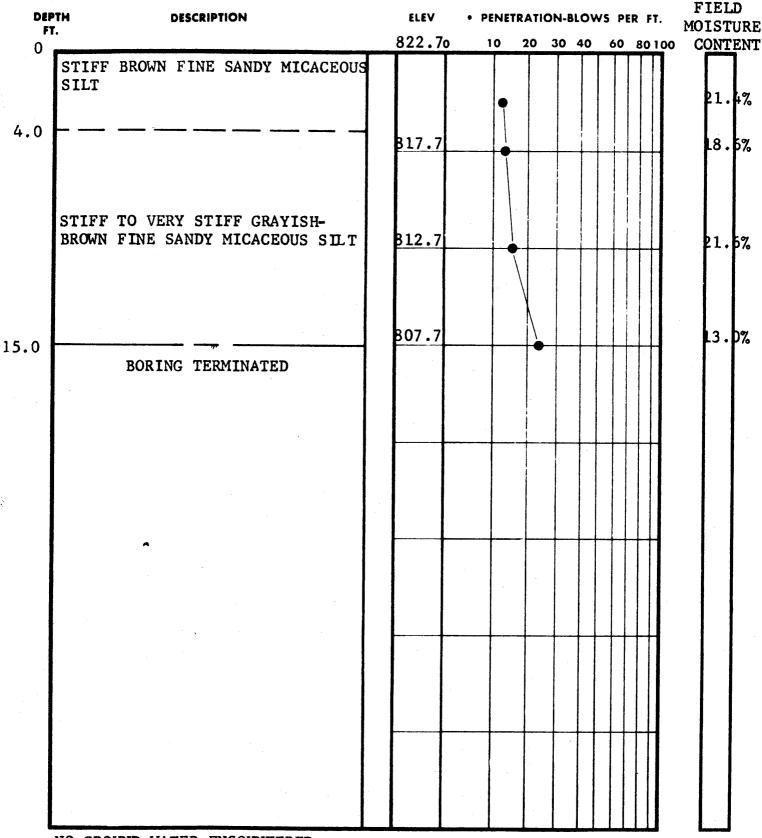


PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

UNDISTURBED SAMPLE

WATER TABLE, 24 HR.
WATER TABLE, 1 HR.

LOSS OF DRILLING WATER



NO GROUND WATER ENCOUNTERED

TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

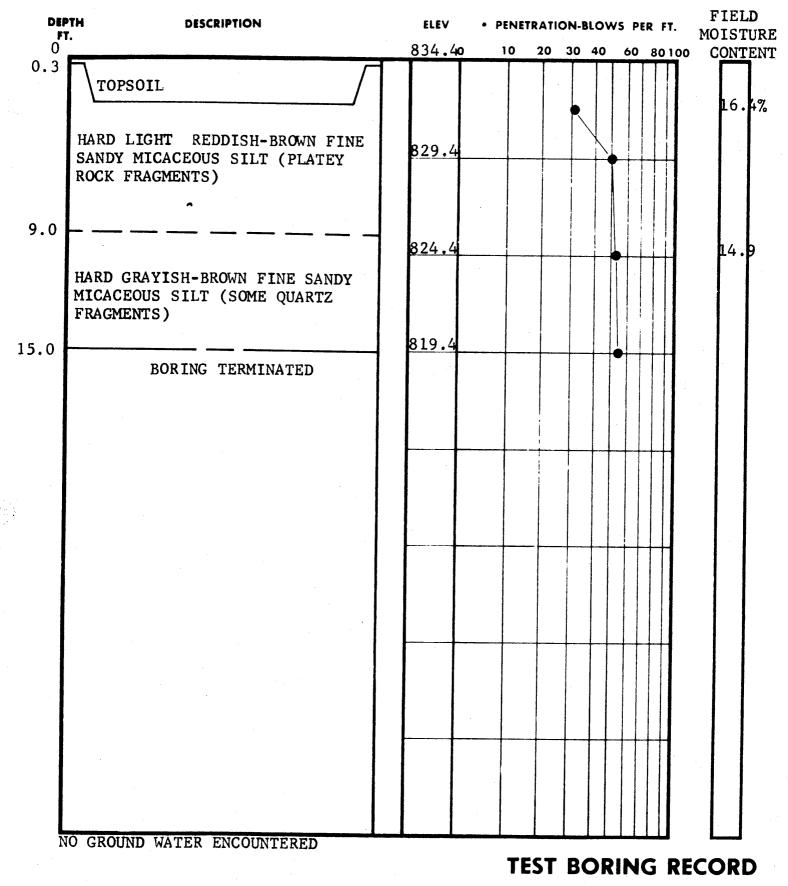
WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

50 % ROCK CORE RECOVERY

UNDISTURBED SAMPLE

LOSS OF DRILLING WATER



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

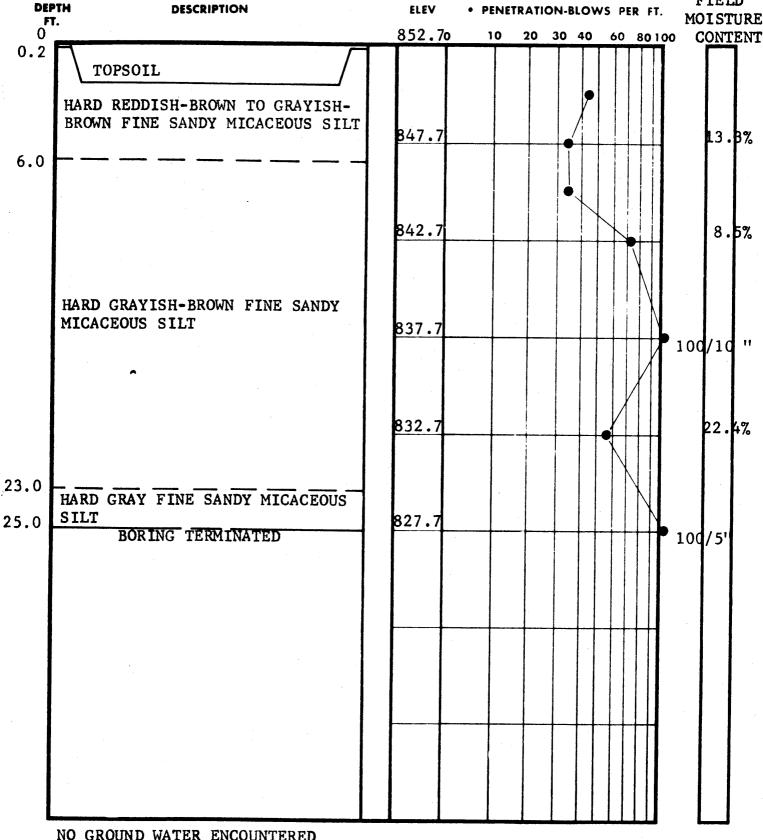
WATER TABLE, 24 HR.
WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

BORING NO. <u>B-215</u>

DATE DRILLED 7/25/68

JOB NO. 5862



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.

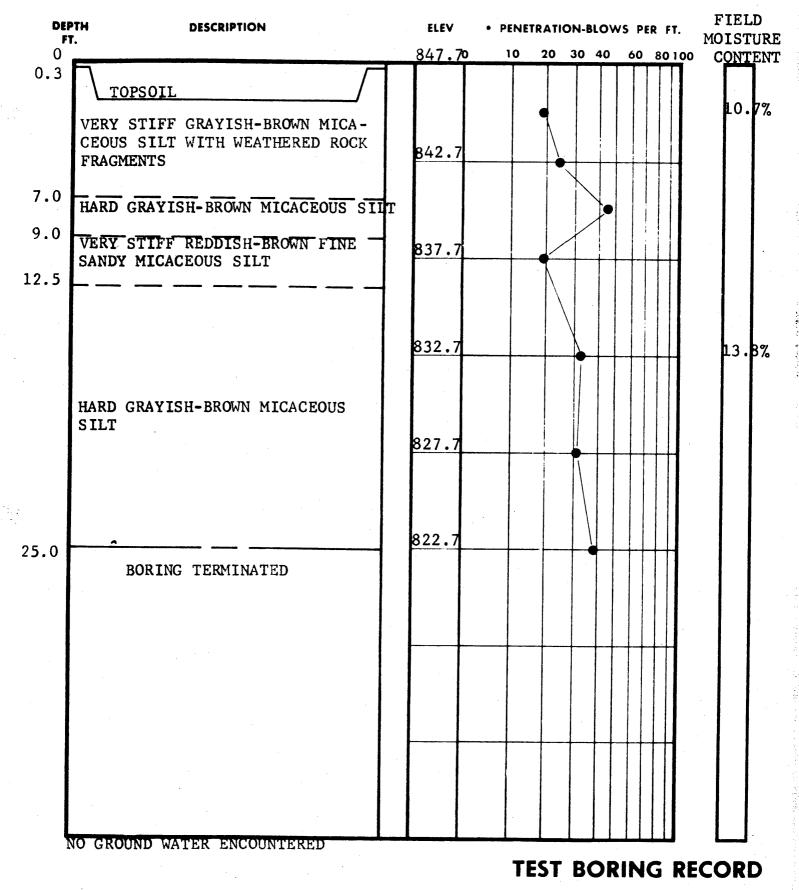
> WATER TABLE, 24 HR. WATER TABLE, 1 HR.

B-216BORING NO. _ 7/22/68 DATE DRILLED _ 5862 JOB NO. _

50 % ROCK CORE RECOVERY

UNDISTURBED SAMPLE

LOSS OF DRILLING WATER

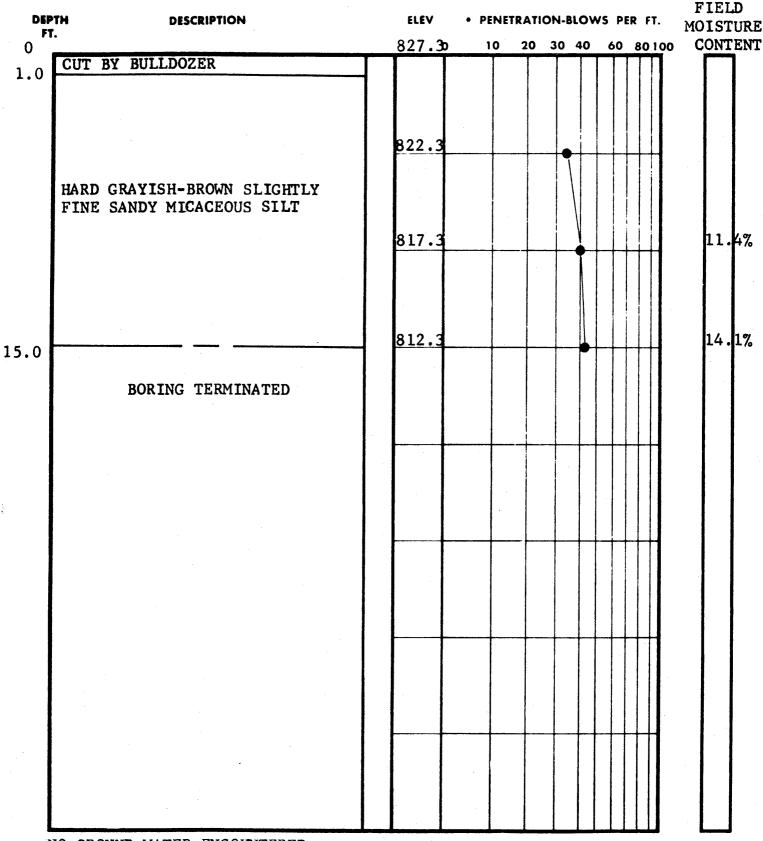


PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

UNDISTURBED SAMPLE

WATER TABLE, 24 HR.
WATER TABLE, 1 HR.

LOSS OF DRILLING WATER



NO GROUND WATER ENCOUNTERED

TEST BORING RECORD

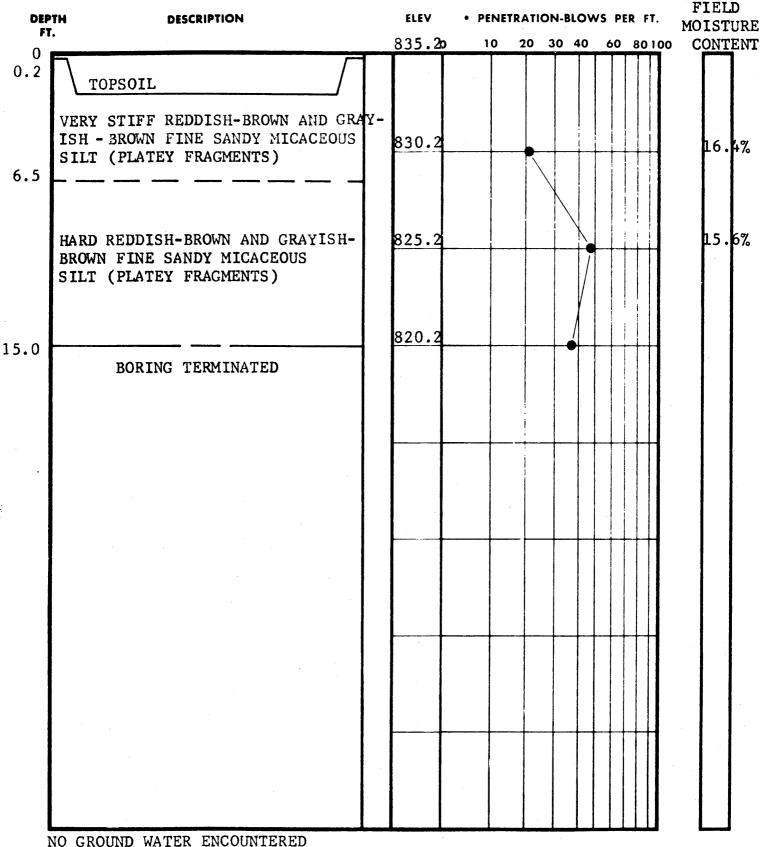
BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

WATER TABLE, 24 HR.
WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

DATE DRILLED 7/31/68

JOB NO. 5862



BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER

FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

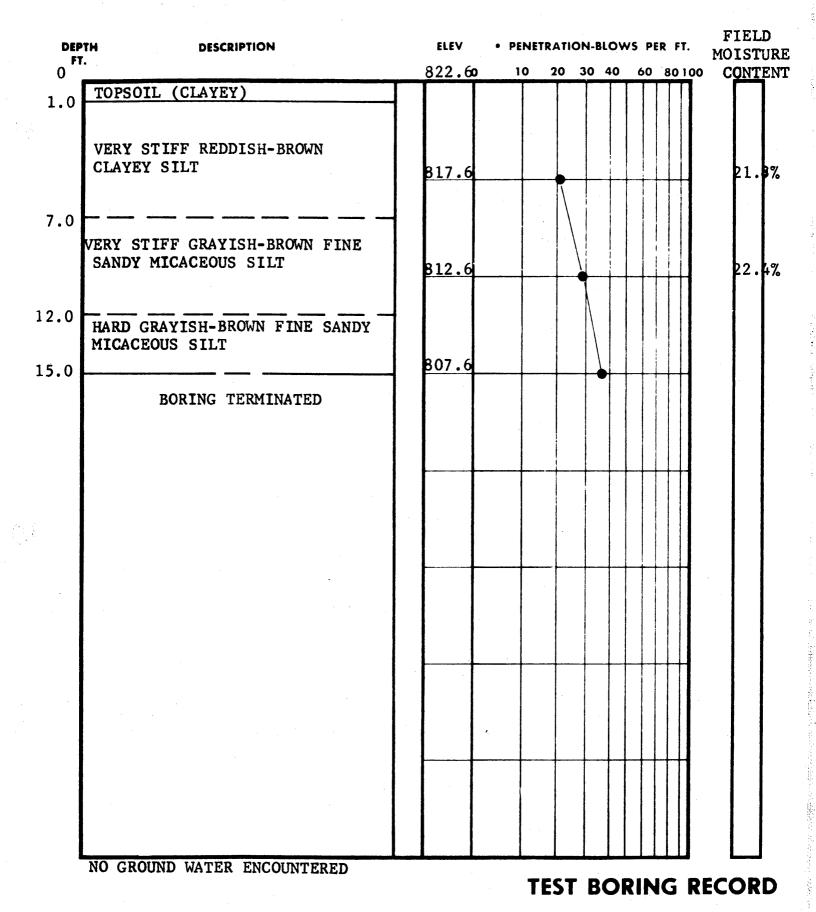
50 % ROCK CORE RECOVERY

UNDISTURBED SAMPLE

LOSS OF DRILLING WATER

TEST BORING RECORD

B-219 BORING NO. ___ DATE DRILLED 7/24/68 5862 JOB NO. ____

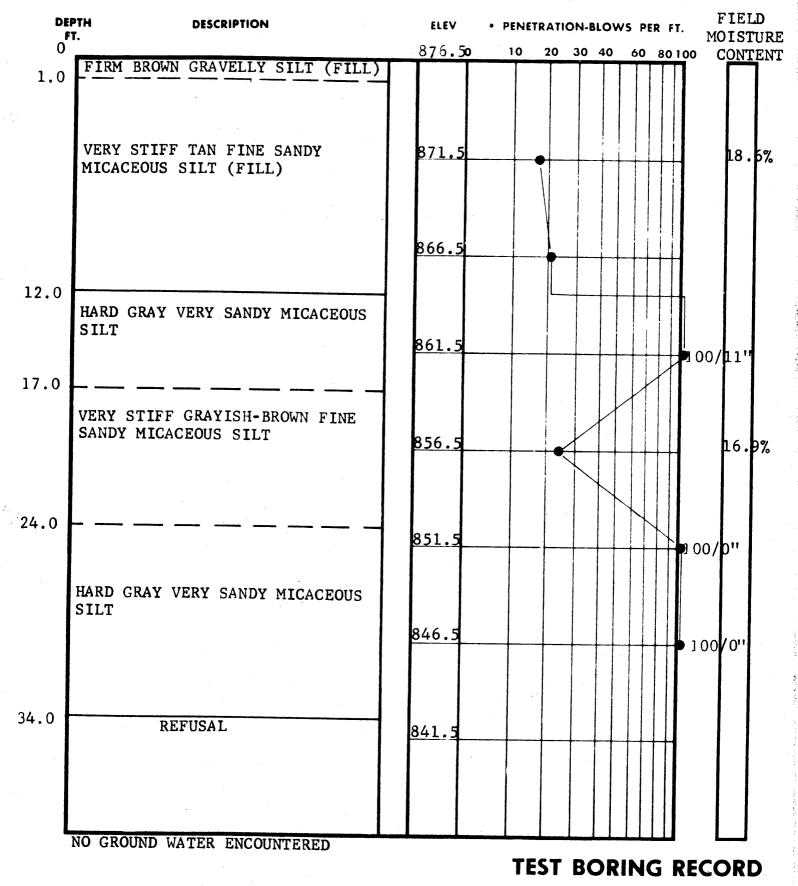


PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

> WATER TABLE, 24 HR. WATER TABLE, 1 HR.

DATE DRILLED 7/30/68 5862 JOB NO.

50 % ROCK CORE RECOVERY



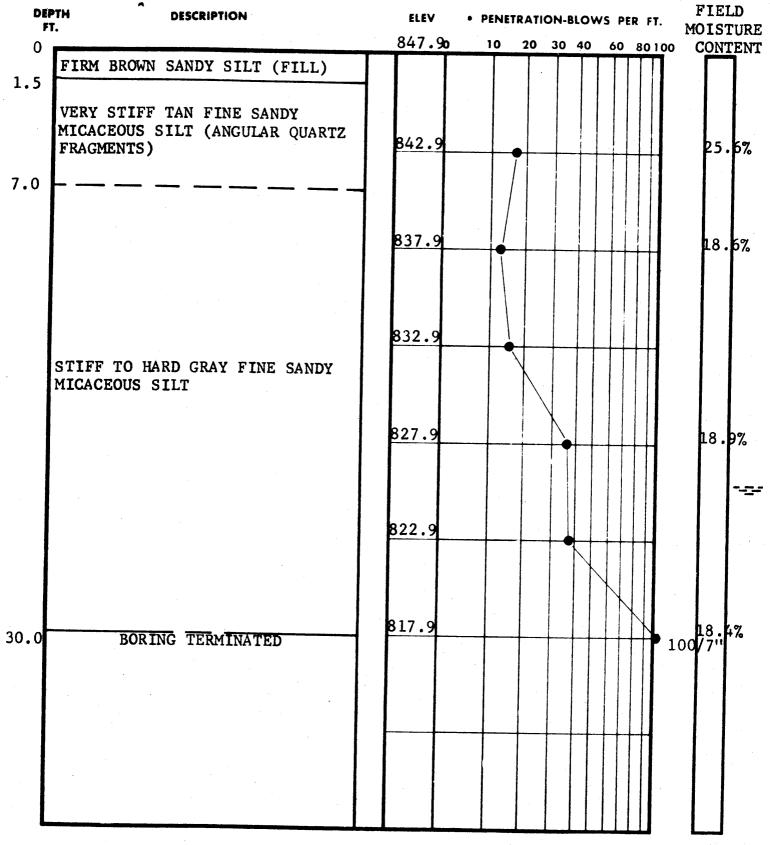
PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

LOSS OF DRILLING WATER



TEST BORING RECORD

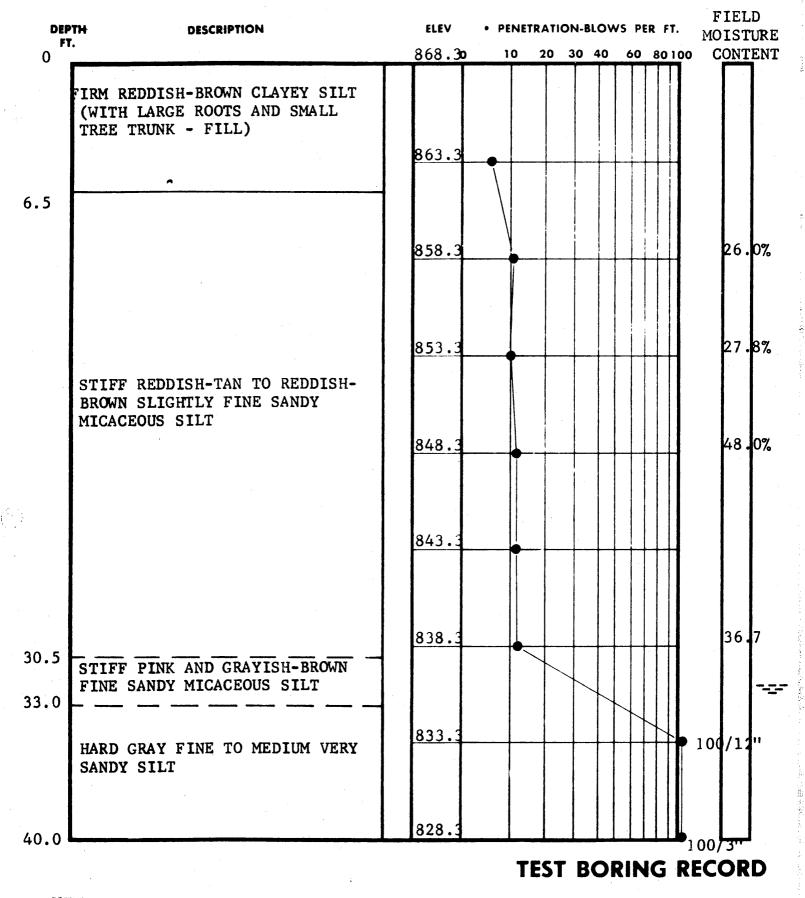
BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

WATER TABLE, 24 HR.

50 % ROCK CORE RECOVERY

UNDISTURBED SAMPLE

LOSS OF DRILLING WATER



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.

IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

WATER TABLE, 24 HR.
WATER TABLE, 1 HR.

PAGE 1 of 2

BORING NO. B-223

DATE DRILLED 7/31/68

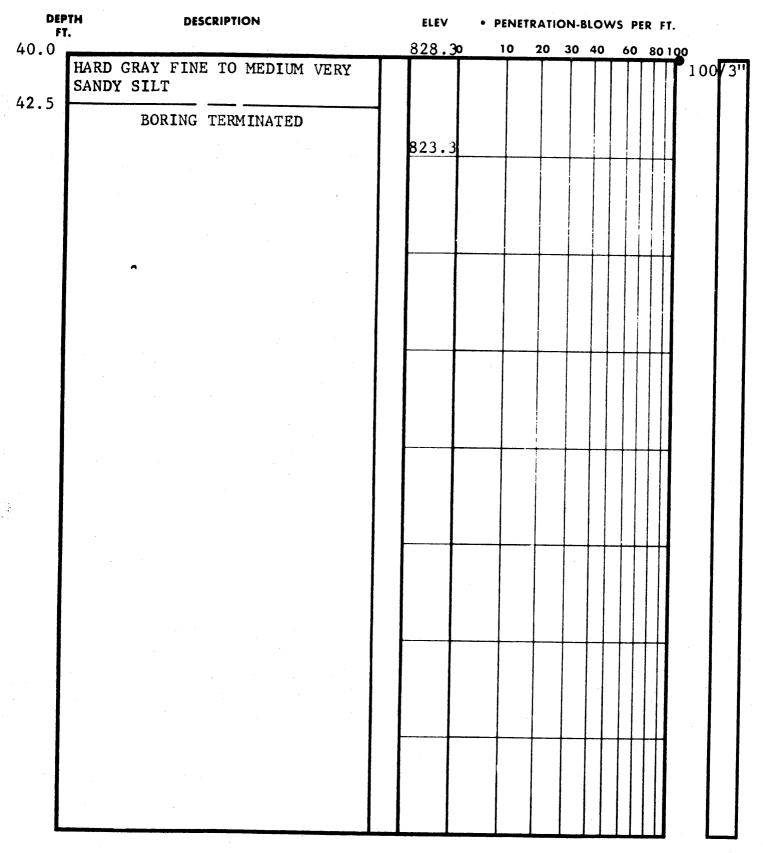
5862

JOB NO.

UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

LOSS OF DRILLING WATER



TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586 CORE DRILLING MEETS ASTM D-2113 PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.

UNDISTURBED SAMPLE

WATER TABLE, 24 HR.

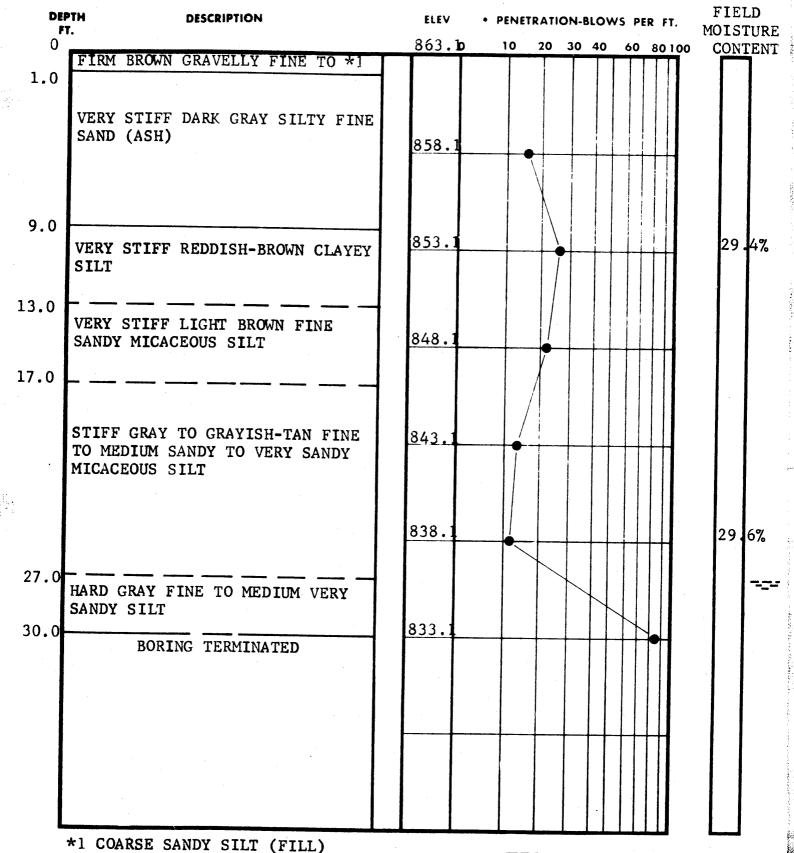
WATER TABLE, 1 HR.

PAGE 2 of 2

B-223 BORING NO. ____

JOB NO.__

<u> 5862</u>



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.

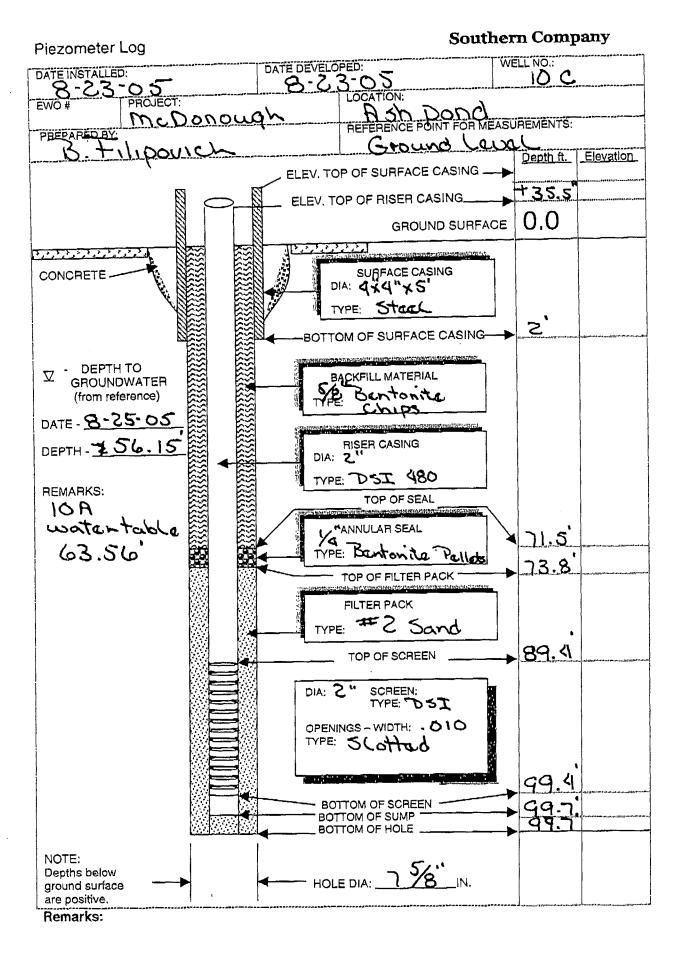
WATER TABLE, 1 HR.

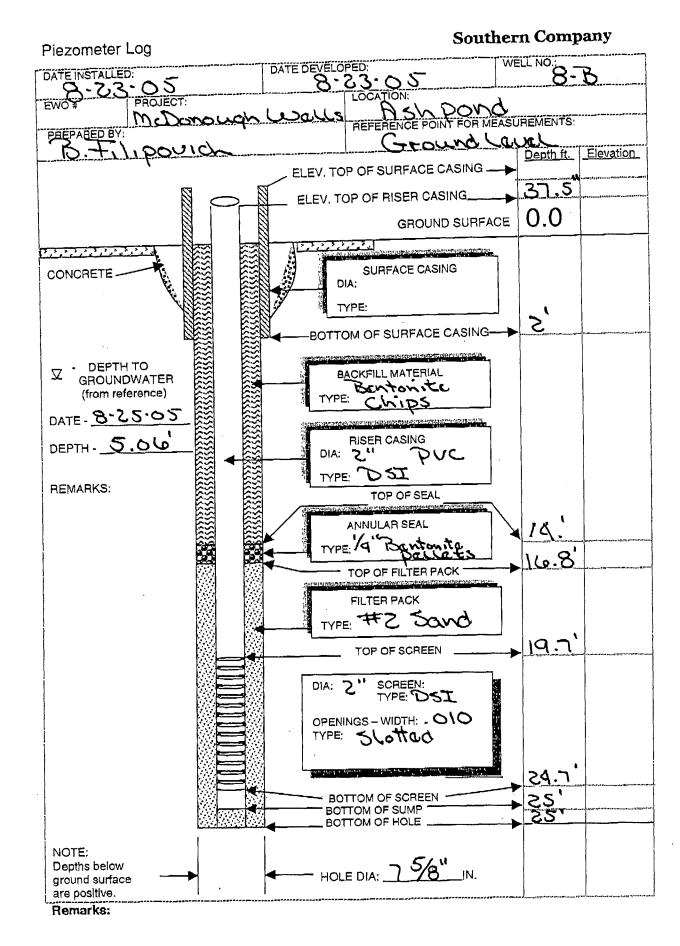
50 % ROCK CORE RECOVERY

UNDISTURBED SAMPLE

LOSS OF DRILLING WATER

TEST BORING RECORD





Field Test Boring Record Geotechnical Field Services

Southern Company Services 🛦 .

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Field Test Boring Record Geotechnical Field Services

Southern Company Services 🛦 .

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	PRO	JEC ⁻	ΓNO.:	RECOR McDonough Ash Pond 3&4 Investigation a 1539180 / 1538098 Dry Stack #1	RD O and De-V	FBC Vatering	DRIL	LING END	CPT-2 October 26. October 26. N: 1,393,99	, 2015	13:39	SHEET: 1 of 1 GS ELEV: 858.0 OC ELEV: na DATUM:	
				SOIL PROFILE					SAMPLES		■ PENETRATION RESISTANCE		ق پــ
Ē	0 (#)	BORING METHOD	0.0	DESCRIPTION	<u>}</u> ⊞ 858.0	nscs	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic hamme	REC ATT	BLOWS / ft 20 40 60 80 WATER CONTENT (%) W _p 0 60 80	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
-	-		2.0 gr 2.0 gr no	LL, (SP), SAND and GRAVEL, gravel fine ained, angular, sand fine to coarse ained, some non plastic fines; gray; on-cohesive, loose, moist, gravel road ase / fill	8 <u>56</u> .0_	SP					_		
-	5 -	3-1/4" HSA	nc da nc	SH, (CL-ML), silty CLAY, poorly graded, on plastic fines, some sand fine grained; ark gray with black, homogeneous; on-cohesive, very loose, dry to moist, oostly fine-size particles / fly ash		CL-ML		DO S-1	1-3-2 (5)	13 18	5		
F	10		10.5		847.5			DO S-2	0-1-1 (2)	<u>18</u> 18	2		
39180 MCDONOLARH POWS 3 ND 4 CLOSURE/300 FIELD INFORMATION/GINT/PLANT MCD AP384 BORINGS. GPJ	115			ottom of borehole at 10.5 ft. ackfilled with auger cuttings.									
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RECORD OF BOREHOLE McDonough Ash Pond 3&4 Investigation and De-Waterin®RILLING START: CPT-32-AP4 (boring)
October 27, 2015 08:30
October 27, 2015 08:50 SHEET: 1 of 1 PROJECT: GS ELEV .: 858.0 PROJECT NO.: 1539180 / 1538098 DRILLING END: TOC ELEV .: LOCATION: Dry Stack #1 COORDINATES: N: 1,393,697 E: 2,203,600 DATUM: SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft BORING METHOD DEPTH (ft) SAMPLE TYPE & NUMBER **BLOWS** GRAPHIC LOG 40 60 **NOTES USCS** per 6 in Depth **REC** WATER LEVELS WATER CONTENT (%) **DESCRIPTION** Elev ASTM D1586 140 lb hamme 30 inch drop utomatic hamm ---W W_D (in) 0.0 858.0 20 40 60 80 SP 8 FILL, (SP), SAND, sand fine to medium 3-3-5-5 <u>24</u> 24 grained, some non plastic fines; dark S-1 (8) gray-brown with black, trace coal refuse; non-cohesive, loose, moist SM 17 FILL, (SM), SILTY SAND, sand fine to 5-4-13-26 <u>24</u> 24 medium grained, non plastic fines, trace 853.5 S-2 (17) gravel fine grained, angular; light 3-1/4" gray-brown, homogeneous; cohesive, firm, moist ASH, (CL-ML), silty CLAY, poorly graded, AS CL-ML non plastic fines, sand fine grained; very Bulk-60 dark gray with black, homogeneous; DO 1-1-2-1 <u>15</u> 24 non-cohesive, very loose, dry to moist, mostly fine-size particles / fly ash S-3 (3) 10 10.0 848.0 Bottom of borehole at 10.0 ft. Backfilled with auger cuttings. 15 R - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 12/22/15 11:07 SOUTHERN COMPANY1539180 MCDONOUGH ASH PONDS 3 AND 4 CLOSURE\300_FIELD INFORMATION\GINT\PLANT MCD AP3&4 BORINGS.GPJ 20 25 30 35 40 45 50 55 DRILLING CO.: Premier Drilling LOGGED: P. Callahan / R. Pettyjohn Golder DRILLER: Scott Towe CHECKED: Draft DRILL RIG: CME 550 REVIEWED: Draft

I - GOLDER - I

CPT-33-AP4 (boring)
October 27, 2015 09:00
October 27, 2015 09:20 RECORD OF BOREHOLE SHEET: 1 of 1 McDonough Ash Pond 3&4 Investigation and De-Waterin@RILLING START: GS ELEV .: 856.0 PROJECT: PROJECT NO.: 1539180 / 1538098 DRILLING END: TOC ELEV .: LOCATION: Dry Stack #1 COORDINATES: N: 1,393,675 E: 2,203,570 DATUM: SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft BORING METHOD DEPTH (ft) SAMPLE TYPE & NUMBER **BLOWS** GRAPHIC LOG 40 60 **NOTES USCS** per 6 in Depth **REC** WATER LEVELS **DESCRIPTION** Elev ASTM D1586 140 lb hamme 30 inch drop utomatic hamm WATER CONTENT (%) ---W W_D (in) 856.0 20 40 60 80 SP FILL, (SP), SAND, sand fine to medium 3-2-3-4 <u>20</u> 24 grained, some non plastic fines, trace gravel fine grained, angular; dark gray, trace coal SM S-1 (5) 2.0 854.0 refuse; non-cohesive, very loose, moist FILL, (SM), SILTY SAND, sand fine to SM 2-4-5-10 <u>18</u> 24 medium grained, non plastic fines, trace S-2 (9) 8<u>5</u>1.0 gravel fine grained, angular; dark 3-1/4" gray-brown, homogeneous; non-cohesive, loose, moist FILL, (SM), SILTY SAND, sand fine to AS CL-ML medium grained, non plastic to medium Bulk-60 plasticity fines, trace gravel fine grained, DO 1-2-2-1 <u>12</u> 24 angular; light brown, homogeneous; S-3 (4) 10 10.0 846.0 cohesive, firm to stiff, moist 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 Bottom of borehole at 10.0 ft. 15 Backfilled with auger cuttings. 20 25 30 35 40 45 50 55 DRILLING CO.: Premier Drilling LOGGED: P. Callahan / R. Pettyjohn Golder DRILLER: Scott Towe CHECKED: Draft DRILL RIG: CME 550 REVIEWED: Draft

R - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 12/22/15 11:07 SOUTHERN COMPANY1539180 MCDONOUGH ASH PONDS 3 AND 4 CLOSURE\300_FIELD INFORMATION\GINT\PLANT MCD AP3&4 BORINGS.GPJ

I - GOLDER - I

RECORD OF BOREHOLE McDonough Ash Pond 3&4 Investigation and De-Waterin®RILLING START: CPT-39-AP4 (boring) October 28, 2015 13:53 SHEET: 1 of 1 PROJECT: GS ELEV.: 854.0 PROJECT NO.: 1539180 / 1538098 DRILLING END: October 28, 2015 14:08 TOC ELEV .: LOCATION: Dry Stack #1 COORDINATES: N: 1,393,878 E: 2,203,710 DATUM: SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft BORING METHOD DEPTH (ft) SAMPLE TYPE & NUMBER **BLOWS** GRAPHIC LOG 40 60 **NOTES USCS** per 6 in Depth **REC** WATER LEVELS DESCRIPTION WATER CONTENT (%) Elev ASTM D1586 140 lb hammer 30 inch drop Automatic hamm ATT ---W W_p F (in) 0.0 854.0 20 40 60 80 FILL, (SP), SAND and GRAVEL, gravel fine SP grained, angular, sand medium to coarse 2.0 852.0 grained, some non plastic fines; gray; non-cohesive, loose, moist ASH, (CL-ML), silty CLAY, poorly graded, 12 non plastic fines, some sand fine grained; DO 4-5-7/0" <u>18</u> brown-gray, homogeneous; non-cohesive, S-1 (12) 18 3-1/4" loose, moist, mostly fine-size particles / fly CL-ML AS 60 Bulk-1-2-2/0" DO <u>18</u> 18 10 10.5 843.5 S-2 (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 LOGGED: P. Callahan / R. Pettyjohn Golder DRILLER: Scott Towe CHECKED: Draft DRILL RIG: CME 550 REVIEWED: Draft

R - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 12/22/15 11:07 SOUTHERN COMPANY1539180 MCDONOUGH ASH PONDS 3 AND 4 CLOSURE\300_FIELD INFORMATION\GINT\PLANT MCD AP3&4 BORINGS.GPJ

1 - GOLDER - '

	PRO	JEC ⁻	T NO.:	RECOR McDonough Ash Pond 3&4 Investigation at 1539180 / 1538098 Dry Stack #1	RD O nd De-V	FBC Vatering	DRIL	LING END	CPT-4 : October 28, : October 28, : N: 1,393,70	, 2015	09:10 T	SHEET: 1 of 1 GS ELEV.: 859.0 OC ELEV.: na DATUM:	
				SOIL PROFILE					SAMPLES		■ PENETRATION RESISTANCE		ى ــــــــــــــــــــــــــــــــــــ
i i i	O DEPTH	BORING METHOD	0.0	DESCRIPTION	<u>§</u> ⊞ 859.0	nscs	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in ASTM D1586 140 lb hammer 30 inch drop Automatic hammer	REC ATT	BLOWS / ft 20 40 60 80 WATER CONTENT (%) W _p 1	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
-	-		2.0 a	FILL, (SP), SAND and GRAVEL, sand fine or medium grained, gravel fine grained, ingular, some non plastic fines; dark gray with black, trace coal refuse; non-cohesive,	857.0	SP		DO S-1	18-22-23-17 (45)	<u>2</u> 24	45 •		
-	5		n A	compact, moist to wet ASH, (CL-ML), silty CLAY, poorly graded, ion plastic fines, sand fine grained; dark gray, homogeneous; non-cohesive, very]			DO S-2	2-2-3-3 (5)	<u>14</u> 24	5		
-	-	3-1/4" HSA	lo	oose, dry to moist, mostly fine-size particles fly ash		CL-ML		1.00			5		
-	10	ç				CL-IVIL		DO S-3	3-3-2-2 (5)	24 24	Ĭ		
-	- -							DO S-4	2-2-2-3	<u>24</u> 24	4		
	15			Bottom of borehole at 15.0 ft.	844.0			5-4	(4)	24			+
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CPT-42-AP4 (boring) October 28, 2015 09:20 RECORD OF BOREHOLE SHEET: 1 of 1 PROJECT: McDonough Ash Pond 3&4 Investigation and De-Waterin@RILLING START: GS ELEV .: 859.0 PROJECT NO.: 1539180 / 1538098 DRILLING END: October 28, 2015 09:35 TOC ELEV.: LOCATION: Dry Stack #1 COORDINATES: N: 1,393,507 E: 2,202,698 DATUM: SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft DEPTH (ft) SAMPLE TYPE & NUMBER **BLOWS** GRAPHIC LOG 40 60 **NOTES** per 6 in Depth **USCS REC** WATER LEVELS WATER CONTENT (%) **DESCRIPTION** Elev ASTM D1586 140 lb hamme 30 inch drop utomatic hamm ----W W_D 13 (in) 0.0 859.0 40 60 80 FILL, (SP-SM), SAND, sand fine to coarse 3-5-8-8 <u>24</u> 24 DO grained, low plasticity fines, trace gravel fine S-1 (13) grained; dark brown, trace organics; SP-SM AS cohesive, firm, moist 60 Bulk-0 24 24 855.0 4-2-2-2 DO ASH, (CL-ML), silty CLAY, poorly graded, S-2 (4) 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 3-1/4" DO 2-2-2-2 <u>24</u> 24 S-3 (4) 10 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, CL-ML DO S-4 2-1-1-1 <u>19</u> 24 mostly fine-size particles / fly ash (2) 15 844.0 Bottom of borehole at 15.0 ft. Backfilled with auger cuttings. 20 25 30 35 40 45 50 55 DRILLING CO.: Premier Drilling LOGGED: Patrick Callahan Golder DRILLER: Scott Towe CHECKED: Draft DRILL RIG: CME 550 REVIEWED: Draft

R - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 12/22/15 11:07 SOUTHERN COMPANY1539180 MCDONOUGH ASH PONDS 3 AND 4 CLOSURE\300_FIELD INFORMATION\GINT\PLANT MCD AP3&4 BORINGS.GPJ

I - GOLDER - I

RECORD OF BOREHOLE CPT-46-AP4 (boring) SHEET: 1 of 1 October 27, 2015 10:05 October 27, 2015 11:15 McDonough Ash Pond 3&4 Investigation and De-Waterin@RILLING START: GS ELEV.: 847.0 PROJECT: PROJECT NO .: 1539180 / 1538098 DRILLING END: TOC ELEV.: LOCATION: Dam Crest - Ash Pond 4 COORDINATES: N: 1,393,609 E: 2,204,021 DATUM: SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft BORING METHOD DEPTH (ft) **BLOWS** GRAPHIC LOG SAMPLE TYPE & NUMBER 40 60 **NOTES** per 6 in **USCS** Depth **REC** WATER LEVELS **DESCRIPTION** Elev WATER CONTENT (%) ASTM D1586 140 lb hamme 30 inch drop utomatic hamn ----W W_D (in) 0.0 847.0 20 40 60 80 10 FILL, (SM), SILTY SAND, sand fine to 4-5-5-7 <u>24</u> 24 SM medium grained, medium plasticity fines, S-1 (10) 845.0 trace gravel fine grained, angular; light gray-brown, trace organics; non-cohesive, compact, moist 13 4-5-8-11 <u>24</u> 24 FILL, (SM), SILTY SAND, sand fine to SM S-2 (13)5 medium grained, medium plasticity fines, trace gravel fine grained, angular; light gray-brown, homogeneous, trace organics; cohesive, firm to compact, moist AS FILL, (SP-SM), SILTY SAND, sand fine to 3ulk-0 60 medium grained, non plastic fines, trace DO 4-3-6-10 <u>24</u> 24 gravel fine grained, angular; light yellow-gray and brown, homogeneous, trace mica; S-3 (9) 10 micaceous, non-cohesive, loose, dry to 11 DO S-4 3-4-7-9 <u>24</u> 24 15 (11)AS 3ulk-02 60 10 2-3-7-8 DO <u>24</u> 24 S-5 (10)SP-SM 20 2-3-6-7 DO <u>24</u> 24 S-6 (9) 25 3-1/4" 28 - 30: Drill rods 28 chattering DO 15-13-15-12 <u>8</u> 24 (28)30 33.0 (SP-SM), SILTY SAND, sand fine to coarse 1-2-3-3 24 Ĭ grained, gravel fine grained, angular, flat, S-8 (5) 24 35 medium plasticity fines; red-brown and black, mottled, RESIDUUM, trace mica; micaceous, non-cohesive, loose, moist to ▼ 36.7 ft, 10/27/2015 15:20 wet 22 16-9-13-12 <u>5</u> 24 S-9 (22)40 SP-SM 10 <u>4</u> 24 DO 5-4-6-7 S-10 (10)45 800.0 (SP), SAND, sand fine to coarse grained, some gravel fine grained, angular, flat, trace non plastic fines; dark brown and black-gray, 26 SP 5-9-17-19 DO S-11 (26)mottled, RESIDUUM, trace mica; 50 50.0 797.0 micaceous, non-cohesive, dense, moist to Bottom of borehole at 50.0 ft. Backfilled with bentonite grout. Backfilled with bentonite grout 55 DRILLING CO.: Premier Drilling LOGGED: Patrick Callahan Golder DRILLER: Scott Towe CHECKED: Draft DRILL RIG: CME 550 REVIEWED: Draft

BOREHOLE RECORD - DF STD US LAB E-M.GDT - 12/22/15 11:07 DUTHERN COMPANY1539180 MCDONOUGH ASH PONDS 3 AND 4 CLOSURE\300 FIELD INFORMATION\GINT\PLANT MCD AP3&4 BORINGS. GPJ

- GOLDER -

CPT-49-AP4 (boring) RECORD OF BOREHOLE SHEET: 1 of 1 October 27, 2015 12:35 October 27, 2015 13:20 McDonough Ash Pond 3&4 Investigation and De-Waterin@RILLING START: GS ELEV.: 847.0 PROJECT: PROJECT NO .: 1539180 / 1538098 DRILLING END: TOC ELEV.: LOCATION: Dam Crest - Ash Pond 4 COORDINATES: N: 1,394,266 E: 2,203,855 DATUM: SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft BORING METHOD DEPTH (ft) **BLOWS** GRAPHIC LOG SAMPLE TYPE & NUMBER 40 60 **NOTES** per 6 in **USCS** Depth REC WATER LEVELS **DESCRIPTION** Elev WATER CONTENT (%) ASTM D1586 140 lb hamme 30 inch drop -OW W_D (in) 20 40 60 80 10 (GP), GRAVEL, gravel fine grained, angular, GP 846.8 5-4-6-5 <u>24</u> 24 sand fine to coarse grained, trace non SP S-1 (10) 2.0 845.0 plastic fines; Gravel road base FILL, (SP), SAND, sand fine to coarse grained, trace gravel fine grained, angular, 5-4-7-10 <u>24</u> 24 SM trace non plastic fines; dark gray-brown, S-2 (11) 5 trace organics; non-cohesive, compact, 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, 3-3-4-6 Bulk-0 36 moist (7) 10 DO <u>24</u> FILL, (SP-SM), SILTY SAND, sand fine to 24 S-3 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 10 DO S-4 3-4-6-9 <u>24</u> 24 <u>15</u> (10)SP-SM 15 DO 4-6-9-8 <u>24</u> 24 S-5 (15) 20 3-1/4" HSA 15 DO 5-6-9-10 24 24 S-6 (15)25 28.4 818.6 15 DO 5-8-7-9 <u>8</u> 24 FILL, (SP), SILTY SAND, sand fine grained, SP (15) some medium plasticity fines; light 30 30.0 gray-brown; non-cohesive, loose, moist (SM), SILTY SAND, sand fine to medium grained, low plasticity fines; dark AS SM gray-brown, mottled, RESIDUUM; ulk-02 60 7 non-cohesive, loose, moist ▼ 33.8 ft, 10/27/2015 BOREHOLE RECORD - DF STD US LAB E-M GDT - 12/22/15 11:07 DUTHERN COMPANY/1539180 MCDONOUGH ASH PONDS 3 AND 4 CLOSURE(300 DO 3-3-4-5 <u>24</u> Ė (7) 24 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 6 2-3-3-1 <u>5</u> 24 MH S-9 (6) 40 804.0 (SM), SILTY SAND, sand fine to medium 11 <u>4</u> 24 DO 2-4-7-12 SM grained, low plasticity fines; dark red-brown S-10 (11) 45 and gray, mottled, RESIDUUM, trace mica; 802.0 micaceous, non-cohesive, loose, moist Bottom of borehole at 45.0 ft. Backfilled with bentonite grout Backfilled with bentonite grout 50

DRILLING CO.: Premier Drilling DRILLER: Scott Towe

DRILL RIG: CME 550

55

- GOLDER -

FIELD INFORMATION/GINT/PLANT MCD AP3&4 BORINGS.GP.

LOGGED: Patrick Callahan

CHECKED: Draft REVIEWED: Draft

RECORD OF BOREHOLE PZ-2 McDonough Ash Pond 3&4 Investigation and De-WateringRILLING START: October 29, 2015 08:35 1539180 / 1538098 October 29, 2015 11:00 SHEET: 1 of 2 PROJECT: GS ELEV.: 858.0 PROJECT NO.: TOC ELEV .: LOCATION: Dry Stack #1 COORDINATES: N: 1,393,757 E: 2,203,537 DATUM: SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft BORING METHOD DEPTH (ft) GRAPHIC LOG SAMPLE TYPE & NUMBER **BLOWS** 40 60 **NOTES NSCS** per 6 in Depth REC ATT WATER LEVELS DESCRIPTION WATER CONTENT (%) Elev ASTM D1586 140 lb hammer 30 inch drop Automatic hamme ____W W_p (in) 20 40 60 0.0 858.0 80 ASH, (CL-ML), silty CLAY, poorly graded, non plastic fines, sand fine grained; dark gray and black, homogeneous;

ADDITIONAL LAB TESTING non-cohesive, very loose, moist to wet, mostly fine-size particles / fly ash; stingers of medium sand, black bottom ash (38-58 5 ft-bgs) 10 15 01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 12/22/15 11:07 X:\CLIENTS\SOUTHERN COMPANY1539180 MCDONOUGH ASH PONDS 3 AND 4 CLOSURE\300_FIELD INFORMATION\GINTIPLANT MCD AP3&4 BORINGS.GPJ 20 25 7-inch drag bit CL-ML 1 v DO 0-0-0-1 (0) 30 35 12 24 1-1-1-1 S-2 (2) 40 45 DO S-3 0-0-0-0 24 24 (0) 50 55 Log continued on next page

DRILLING CO.: Premier Drilling DRILLER: Scott Towe

CME 550

DRILL RIG:

LOGGED: P. Callahan / J. Myers

CHECKED: Draft REVIEWED: Draft

RECORD OF BOREHOLE PZ-2

McDonough Ash Pond 3&4 Investigation and De-Watering RILLING START: October 29, 2015 08:35

DRILLING END: October 29, 2015 11:00 SHEET: 2 of 2 PROJECT: GS ELEV.: 858.0 PROJECT NO.: TOC ELEV .: LOCATION: Dry Stack #1 COORDINATES: N: 1,393,757 E: 2,203,537 DATUM: SOIL PROFILE SAMPLES ■ PENETRATION RESISTANCE BLOWS / ft DEPTH (ft) SAMPLE TYPE & NUMBER **BLOWS** GRAPHIC LOG 40 60 **NOTES** per 6 in Depth **USCS REC** WATER LEVELS DESCRIPTION WATER CONTENT (%) Elev ASTM D1586 140 lb hammer 30 inch drop Automatic hamm ATT ----W W_p F (in) 55 55.0 803.0 20 40 60 80 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 24 24 0-0-0-0 S-4 (0) 60 ft-bgs) (continued) 65 DO S-5 0-0-1-0 24 24 (1) 70 7-inch drag CL-ML 75 DO 1-1-1-1 <u>24</u> 24 S-6 (2) 80 85 24 0 24 769.0 0-0-0-0 FILL, (SM), SILTY SAND, sand fine to S-7 (0) SM 90 90.0 768.0 medium grained, trace coarse sand, high plasticity fines; dark brown and red-brown, trace organics; cohesive, soft to firm, moist Bottom of borehole at 90.0 ft. Completed as well. Refer to diagram. Piezometer installed after SPT sampling 95 100 105 110 DRILLING CO.: Premier Drilling LOGGED: P. Callahan / J. Myers Golder DRILLER: Scott Towe CHECKED: Draft Associates DRILL RIG: CME 550 REVIEWED: Draft

R - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 12/22/15 11:07 SOUTHERN COMPANY1539180 MCDONOUGH ASH PONDS 3 AND 4 CLOSURE\300_FIELD INFORMATION\GINT\PLANT MCD AP3&4 BORINGS.GPJ

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845		FIRM TAN & GRAY MICACEOUS		T			5	10 1	5 20	30 40	60	7 80	
		SILTY MEDIUM TO FINE SAND TO			1								
835		VERY STIFF REA BROWN MICACEDUS											
1733		SANOY SILTY CLAY (FILL)					-	-	1		$\dashv \downarrow$	$\!$	
825	1 ,					ļ							
			=	12.	3-76								
815	1							1					
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		FIRM TO DENSE RED, TAN											
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		THE SAME						,		/		\prod	1
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765	77												
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REMARKS:

LOCATION: STA 6+75

DRILLED BY WM

INSTALLED: 35' SOLID PYC (4") (GROUTED)

LOGGED BY MRT CHECKED BY _SAS

35' 50LID PYC (2") 50' SLOTTED PYC (2") BORING NUMBER P-/A DATE STARTED DATE COMPLETED 11-17-76 SA - 1401 JOB NUMBER

SHEET 10FZ

765 BO VERY DEMS THIN BROWN MILLIAND BS BORINE TERMINATED & BS' TSS	YELEV.	DEPTH FEET					PE1			N-BL0 5 20			FO 60	OT 81	0 10
PORTHE TERMINATED & 85'	765	80	VERY DENSE TAN-BROWN MICACHUS SILTY MEGIUM TO FINE SAND											\int	\prod
PORTHE TERMINATED & 85'	·	85												1	\mathbf{I}
			BORING TERMINATED @ 85'												
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REMARKS:

LOCATION: STA 6+75

DRILLED BY WM
LOGGED BY MRT
CHECKED BY SAS

LESTIMATED FROM SITE PLAN

BORING NUMBER P-/A

DATE STARTED //- 15-76

DATE COMPLETED //- /7-76

JOB NUMBER SA-/401

SHEET ZOFZ

ELEV.	DEPTH FEET	DESCRIPTION			PEN 0	ETRA 5 10	TION-1	PE!		10
820	0	FIRM TAN AND GRAY MICACEOUS SILTY MEDIUM TO FINE SAND (FILL)					/			
<u>8/o</u>	14		 12-	3-76			/ - -			
800		AUGER BORING TO 49.5' NO SAMPLES TAKEN								
79 <i>0</i>		THE SHIFTES TALEN								
780										
770.	49.5	BORING TERMINATED @ 49.5'								

REMARKS:

LOCATION: STA 6+75

INSTALLED: 40' SOLIO Prc (2")

10' SLOTTED PYC (2")

DRILLED BY _ WS LOGGED BY MRT CHECKED BY _ SAS

BORING NUMBER P-Z DATE STARTED //-22-76

DATE COMPLETED 11-22-76

JOB NUMBER

* Estimated From Site Plan

#ELEV.	DEPTH FEET	DESCRIPTION				PE?	VETR	ATIO	N-BL 5 20	0WS 30	PER	FO	ОТ	1 1
845	0						Ţ .				T		T	Ī
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		FIRM TAN & GRAY MILACEOUS				-		.	7					
<i>B35</i>		SILTY MEDIUM TO FINE SAND											$\cdot \ \cdot \ $	
		RED BROWN & TAN SANDY SILTY				ļ. -							П	\prod
		CLAY WITH GRAVEL (FILL)								-				
825									1	_		\perp	Ш	
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815									$\left \right $					
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805									X					
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795									+					
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775					-		\dashv	+	-	+	+	-	#	
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765	80										X			

REMARKS:

LOCATION: STA 16+50

INSTALLED . 90' SOLID PVC (4")

(AROUTED) 93 SOLIO PIC (2")

20' SLOTED PYC (2")

DRILLED BY _HC LOGGED BY MRT CHECKED BY SAS

BORING NUMBER P-4A DATE STARTED DATE COMPLETED 11-23-76

JOB NUMBER

SHEET 1 OFZ

* Estimated Flom Site Plan

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765	80	DESCRIPTION			0 5	10 1	5 20 3	SPER FOOT 0 40 60 8	r 80
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755	- 05	DENSE TO YERY DENSE TAND GRAY			+				
		MICACEOUS SILTY MEDIUM TO FINE SAND					+	,	H
	97								
745									
						++	+++	++++	
735	110	PARTIALLY WEATHERED ROCK SAMPLED AS VERY DENSE TAN & GRAY MICACEOUS SILTY MEDIUM TO FINE SAND WITH GRAVEL							
733		BORING TERMINATED & 110'				++	+		_
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REMARKS:

LOCATION: STA

STA 16+50

DRILLED BY HC

CHECKED BY SAS

* Estimated From Site Plan

BORING NUMBER P-4A

DATE STARTED 11-22-76

DATE COMPLETED 11-23-76

JOB NUMBER

5A-1401

SHEET 2 OF Z

KeLEV.	DEPTH FEET	DESCRIPTION			PE1		N-BL 5 20	OWS P	OOT	10
845 835	0	FIRM TAN & GRAY MICACEOUS SILTY MEDIUM TO FINE SAND WITH GRAVEL TO VERY STIFF TAN-BROWN MICACEOUS SANDY SILTY CLAY WITH GRAVEL (FILL)								
825			12-	3-14						
815	27	VERY STIFF TAN-BROWN AND GRAY								
805		MICACEOUS SANDY SILT								
795	44	DENSE TAN-BROWN MICALEOUS SILTY MEDIUM TO FINE SAND WITH WEATHERED ROCK LAYERS								
785	58	VERY DENSE TAN-BROWN MICACEOUS						•	>	
775	. 67 70	PARTIALLY WEATHERED ROCK SAMPLED AS TAN-BROWN MICACEOUS SILTY MEDIUM TO FINE SAND								
		BORING TERMINATED @ 70'								

REMARKS:

LOCATION : STA 25+00

INSTALLED: 30' SOLIO PYC (4")

30' SULID Arc (2") 40' SLOTTED Arc (2")

DRILLED BY HC LOGGED BY MRT CHECKED BY SAS

BORING NUMBER P-7A DATE STARTED

DATE COMPLETED 11-18-76

JOB NUMBER

SA-1401

X Estimated Feom Site Plan

XELEV.	DEPTH FEET	1 DESCRIPTION				PE 0	NETR	ATI	ON-B	LOW	PEF			
845	0		T		Π	Ť	<u> </u>	T	1 7].	1	 ∏ ∏		
		FIRM TAN-BROWN AND GRAY												
835		MICACEOUS SILTY MEDIUM TO FINE SAND WITH GRAVEL AND					ŀ			/				
		VERY STIFF REO-BROWN				<u> </u>	+	+	- {	-	+	+	++	H
		MICACEOUS SANDY SILTY CLAY												
		WITH GRAVEL (FILL)								\				
825														
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815														
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765		×								П				

LOCATION: STA 33+00

INSTALLED: 80' SOLID PYC (4")

80' SULIA PIC (2")

20' SCOTTED PIC (2")

DRILLED BY #C LOGGED BY MRT CHECKED BY SAS

P-10A BORING NUMBER DATE STARTED DATE COMPLETED 11-19-76

JOB NUMBER

* Estimated From Set Plan

XELEV.	DEPTH FEET	DESCRIPTION		, O	ENET					
765	80	DENSE TO VERY DENSE TAN AND GRAY MILACEOUS SILTY MEDIUM TO PINE . SAND			3	10 1	5 20	30	60 B	
755	88									
		PARTIALLY MEATHERED ROCK SAMPLED AS VERY DENSE TAN AND GRAY MICACEOUS SILTY MEDIUM TO FINE								1
	99	SAND								
745		BORING TERMINATED @ 99'		-		-	_		4	
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	21									
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REMARKS:

LOCATION: STA 33+00

CHECKED BY MET

CHECKED BY SAS

* Estimated Feom Site Plan

DATE STARTED //-/8-76

DATE COMPLETED //-/9-%

JOB NUMBER SA-144

*ELEV.	DEPTH FEET	DESCRIPTION		PENETRATION-BLOWS PER FOOT 0 5 10 15 20 30 40 60 80 10
845	0			
		· · · · · · · · · · · · · · · · · · ·		
		FIRM TAN & GRAY MICACEOUS		
835		SILTY MEDIUM TO FINE SAND		
		RED BROWN & TAN SANDY SILTY		
		CLAY WITH GRAVEL (FILL)		
825	.			
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815				
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805				
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795.			12-3-74	
	,			
785		•		
775				
765	80			

REMARKS:

LOCATION STA 16+50 INSTALLED 90' SOLID PYC (4")

(4ROUTER)
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 OFZ

* Estimated From Site Plan

FELEV.	DEPTH FEET	DESCRIPTION		PENET	RATION-B 10 15 20	LOWS PER FOOT 30 40 60 80 10
765	8 8	DENSE TO YERY DENSE TAN & GRAY MICACEOUS SILTY MEDIUM TO FINE SAND WITH GRAYEL				
735	110	PARTIALLY WEATHERED ROCK SAMPLED AS VERY DENSE TAN & GRAY MICACEOUS TILTY MEDIUM TO FINE SAND WITH GRAVEL				
		BORING TERMINATED @ 110'	i			
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REMARKS:

STA 16+50

DRILLED BY HC

LOGGED BY MRT
CHECKED BY SAS

* Estimated From Site Plan

BORING NUMBER P-4A DATE STARTED DATE COMPLETED 11-23-76

11-22-76

JOB NUMBER

5A-1401

SHEET 2 OF 2

KELEV.	DEPTH FEET	DESCRIPTION	- 0		TION-		VS PEF	₹ FOO	80	100
845 835	0	FIRM TAN & GRAY MICACEOUS SILTY MEDIUM TO FINE SAND WITH GRAVEL TO VERY STIFF TAN-BROWN MICACEOUS SANDY								
		SILTY CLAY WITH GRAVER (PILL)				\				
825		= 12-3	-14		1					
	27	Was 57 To Town Ready And Colley		•						
815		WERY STIFF TAN-BROWN AND GRAY MICACEOUS SANDY SILT								
805	44				•					
795,		DENSE TAN-BROWN MICALEOUS SILTY MEDIUM TO FINE SAND WITH WEATHERED ROCK LAYERS	·							
	,									
785	58	VERY DENSE TAN-BROWN MICACEOUS SILTY MEDIUM TO FINE SAND								
	67	PARTIALLY WEATHERED ROCK SAMPLED								
775	70	AS TAN-BROWN MILACEOUS SILTY MEDIUM TO FINE SAND BORING TERMIN ATED @ 70'			-	i.			+	
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REMARKS:

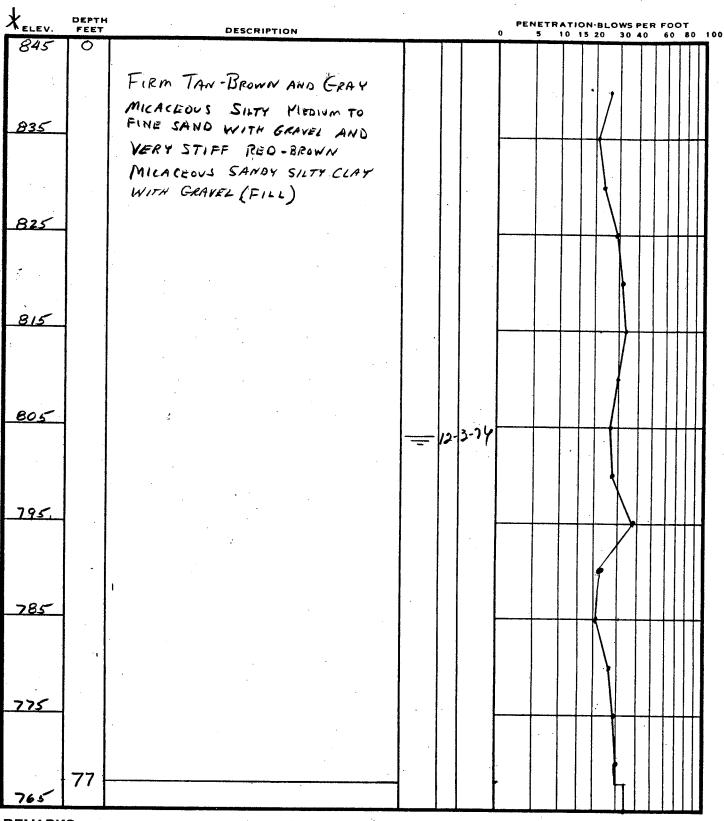
LOCATION: STA 25+00

INSTALLED: 30' SOLID PVC (4")
30' SULID PVC (1")
40' SLOTTED PVC (2")

DRILLED BY HC LOGGED BY MRT CHECKED BY SAS

BORING NUMBER P-7A DATE STARTED DATE COMPLETED 11-18-76 JOB NUMBER

* Estimated Feom Site Plan



LOCATION: STA 33+00

INSTALLED: 80' SOLID PYC (4")

BO' SOLID PIC (2")

20' SCOTTED PIC (2")

DRILLED BY #C LOGGED BY MRT CHECKED BY SAS

BORING NUMBER P-10A 11-18-76 DATE STARTED DATE COMPLETED 11-19-76 5A-1401 JOB NUMBER

* Estimated From Site Plan

ELEV.	DEPTH FEET	DESCRIPTION		•	PE	NETRA 5 1	TION 0 15	-BLOV	VS PE	R FO	OT 80	100
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	2 //	1									\prod_{i}
		BORING TERMINATED @ 99'					_		\dashv	$\dagger\dagger$	$\dagger\dagger$	 *"
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REMARKS:

LOCATION: STA 33+00

DRILLED BY HC
LOGGED BY MET
CHECKED BY SAS

* Estimated Feom Site Plan

DATE COMPLETED //-/9-Z

JOB NUMBER SA-140/

HELEV.	DEPTH FEET	DESCRIPTION				PEN	TION 0 15		WS PE 30 40		OT 80	100
820	0	FIRM TAN AND GRAY MICACEOUS SILTY MEDIUM TO FINE SAND (FILL)						P				
8/0			=	12-	3-76		+					
	14			7			7					
800		AUGER BORING TO 49.5								++	\coprod	\blacksquare
.		NO SAMPLES TAKEN					•					
790												
780		4						<u> </u>		+		
770.	49.5											
		BORING TERMINATED @ 49.5'										
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REMARKS:

LOCATION: STA 6+75

INSTALLED: 40' SOLID PYC (2")
10' SLOTTED PYC (2")

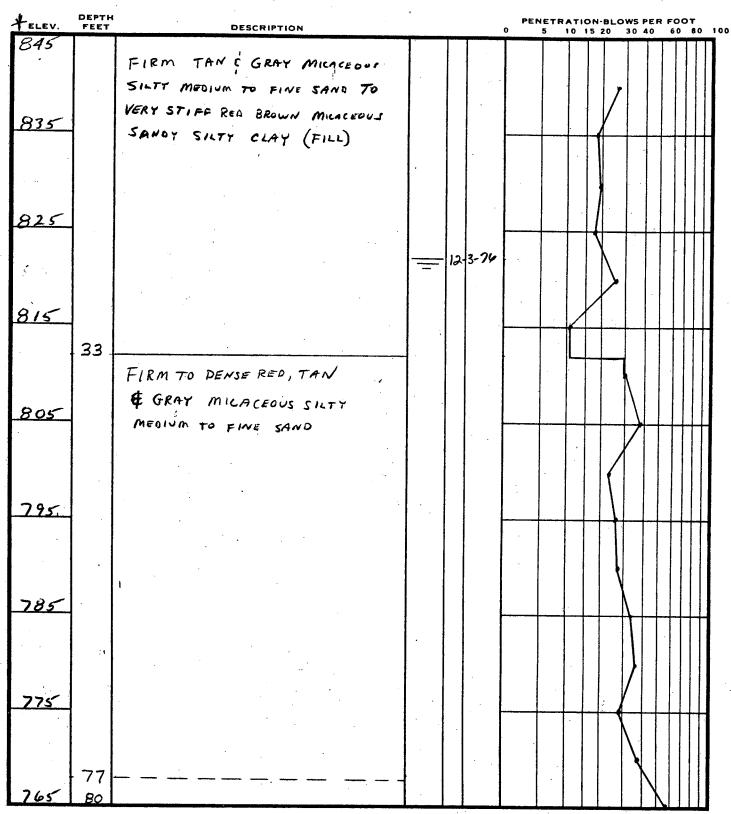
DRILLED BY WS LOGGED BY

CHECKED BY

BORING NUMBER P-Z DATE STARTED

DATE COMPLETED 11-22-76 JOB NUMBER

* Estimated From Site Plan



REMARKS:

LOCATION: STA 6+75

DRILLED BY WM
LOGGED BY MRT
CHECKED BY SAS

INSTALLED: 35' SOLID PYC (4")

(GROUTED)

35 SOLID PYC (2") 50' SLOTTED PYC (2")

BORING NUMBER P-/A

DATE STARTED //-/5-76

DATE COMPLETED //-/7-76

JOB NUMBER

SA - 1401

SHEET 1 UF 2

¥ELEV.	DEPTH FEET					PEN 0	ETR/	0 15	1-BLC	WS P 30 4	ER 1	F00 60	T 80	100
765	80	VERY DENSE TAN-BROWN MICACHOUS SILTY MEGIUM TO FINE SAND										N	\prod	1
	85	*											N	
		BORING TERMINATED @ 85'										$\ \cdot\ $		1
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REMARKS:

LOCATION: STA 6+75

DRILLED BY WM
LOGGED BY MRT
CHECKED BY SAS

JOB NUMBER

BORING NUMBER P-/A

DATE STARTED //-/5-76

DATE COMPLETED //-/7-76

+ESTIMATED FROM SITE PLAN

SHEET ZOF 2

XELEV.	DEPTH FEET	DESCRIPTION				PE N		ATIO1 10 15		WS PE	R FO	ЮТ) 80	10
780	0	1) 1655	-	12	3-74								П
		AUGER BORING TO 40'											
		NO SAMPLES TAKEN]							
770						<u> </u>			-	++	+	#	Н
		•											
760													
										11	++	$\dagger \dagger$	
			•										
750			,							1	11		
740	40												
743	70	BORING TERMINATED @ 40'								\Box	$\dagger \dagger$	+++	1
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LOCATION: STA 33+00

INSTALLED: 18' SOLID DYC (2")
23' SLOTTED PVC (2")

DRILLED BY H.C. CHECKED BY 545

DATE COMPLETED 12-4-76

SA-1401 JOB NUMBER

X-ESTIMATED FROM Site Plans

XELEV.	DEPTH FEET	DESCRIPTION	,		,	ETRAT	TION-BL 15 20	OWS PER 30 40	FOOT 60 80	100
780	0	AUGER BORING TO 40'	=	/2	3-74					
770										
760										
750 740	40									
		BORING TERMINATED @ 40'								
		I.								

LOCATION: STA 33+00 DRILLED BY HC

LOGGED BY MRT

LOGGED BY SAS

20'SLOTED PIC (2") CHECKED BY SAS

DATE COMPLETED 12-3-76

JOB NUMBER

* ESTIMATED FROM Site Plan

XELEV.	DEPTH FEET	DESCRIPTION		PE 1	NETRATIO 5 10 1		OWS PER 30 40	FOOT 60 80 100
820	0	AUGER BORING TO 80'						
,		NO SAMPLES TAKEN						
810								
800								
790			/2 3·	-74				
780								
3=0								
770.								
760								
						-		
	.1							
750						.	-	
740	80	POKING TERMINATED @ 80'						

LOCATION: STA 33+00

INSTALLED 63'SOLIO PVC(2")
20' SLOTTED PVC(1")

DRILLED BY HC LOGGED BY MRT CHECKED BY SAS

BORING NUMBER P-11

DATE COMPLETED 12-2-76

JOB NUMBER

* ESTIMATED FROM Site Plan

LELEV.	DEPTH FEET	DESCRIPTION				PE!		ATIO:	N-BLC	WS P		FOO 60	Τ.	101
845	0			T			Ť				Ť	Ť	Ť	7
-		AUGER BORING TO 75'	ł											
	,	NO SAMPLES TAKEN												l
835		·										Ш	Ш	
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795				12-	3-74									
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775									+		+	$\dashv \vdash$	++	1
	75						·							
·	15	BORING TERMINATED @ 75'												l
765						,								

LUCATION: STA 32+50

INSTALLED 53'SOLIO PVC(2") LOGGED BY MRT

DRILLED BY /+ C

25' SLOTTED PIL (2") CHECKED BY SAS

BORING NUMBER P-10B

DATE COMPLETED 12-1-76

JOB NUMBER

* Estimated From Site Plan

XELEV.	DEPTH FEET	DESCRIPTION			*PE*\	ATION 10 15		WS PE	R FOO'	T 80 10	00
845	0										
		AUGER BORING TO 75'	·								
835		NO SAMPLES TAKEN								Ш	
••											
825					· 					\coprod	
815										\mathbb{H}	
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775					Ì						
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	75	Daniel Tramination G ST			-						
1		BORING TERMINATED & 75'									
765	<u></u>										

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 COMPLETED 11-19 -76

JOB NUMBER

* Estimated From Site Plan

ELEV.	DEPTH FEET	DESCRIPTION				PEN	VETRA	TION 0 15		WS PI		00T		0
815	0		=	12	3-7¢									
		AUGER BORING TO 40'												
805		NO SAMPLES TAKEN							_					
		,												
795						·			-		-	-		
785			 - 											
100								+	-				\parallel	
775	40													
		BORING TERMINATED @ 40'						,	<u> </u>					
-		*												
								-				\dashv	\parallel	
								_					\parallel	
	٠,													

REMARKS:

LOCATION: STA 25+00

INSTALLED: 23' SOLID PUL (2")
20' SLOTTED PUL (2")

DRILLED BY HC LOGGED BY MRT CHECKED BY SAS

BORING NUMBER DATE STARTED DATE COMPLETED 12-3-76

JOB NUMBER

XEstimated From Site Plan

HELEV.	DEPTH FEET	DESCRIPTION	PENETRATION-BLOWS PER FOOT 0 5 10 15 20 30 40 60 80 1
810	0	AUGER BORING TO 40' NO SAMPLES TAKEN	
800			
790			
780	40		
		BORING TERMINATED @ 40'	
,			

REMARKS:

LOCATION; STA 25+00

INSTALLED: 22' SOLID AVE(2")

20' SLOTTED PIC (1")

DRILLED BY W.S. LOGGED BY MRT CHECKED BY SAS

BORING NUMBER DATE STARTED DATE COMPLETED 11-23-76 SA-1401

JOB NUMBER

* Estimated Feom Site Plan

XELEV.	DEPTH FEET	DESCRIPTION				PEN	ETRA		i-BLO 20			T 80 1	100
845	0	AUGER BORING TO 20'											
		NO SAMPLES TAKEN	·										
R35					;	·		<u> </u>			\coprod		
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825	20		=	12-3-	· ገሦ				<u> </u>		4	Ш	!
		BORING TERMINATED @ 20'											!
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LOCATION: STA 25+00

DRILLED BY #C

INSTALLED: 10' SOUID PYC (2") LOGGED BY MRT

18' SCOTTED PYC (2') CHECKED BY SAS

BORING NUMBER P-7 DATE STARTED

DATE COMPLETED 11-17-76

JOB NUMBER

SA-1401

* Estimated From Site Plan

YELEV.	DEPTH FEET	DESCRIPTION				PEN 0				WS PE	R FOO	T 80 10
780	0		=	12.	3-76							
	·			'								
		AUGER BORING TO 40'										
770	ļ ·	No SAMPLES TAKEN										
1		•				İ						
760		·										
1 .												
:												
750	4					ļ			-		111	
			. '				·					
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740	46	BORING TERMINATED @ 40'				<u> </u>		-	-	-	+++	┼┼┫
		DOKING TERMINATION C 40						$ \cdot $				
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REMARKS:

LOCATION: STA 16+50

INSTALLED: 20' SOLID PIC (2")

20' SLOTTED PIC (2")

DRILLED BY WS LOGGED BY MRT

CHECKED BY _SAS

BORING NUMBER P-6 DATE STARTED

DATE COMPLETED //- 23-76

JOB NUMBER

SA-1401

* Estimated Feom Site Plan

YELEV.	DEPTH FEET	DESCRIPTION			C		TION 0 15	1-BLO 20	WS PE	R FOC	90 80) 1
820 800	0	AUGER BORING TO 100'										
		NO SAMPLES TAKEN		12.	3-74							
780						-						
760			;									
740		3										
700							,					
720.	100	BURING TERMINATED @ 100'	, .									
	.,		·									

REMARKS: NOTE: SCALE / "= 20"

LOCATION: STA 16+50

DRILLED BY HC

INSTALLED: 83' 50270 Prc (2")
20' SLOTTED Prc (2")

LOGGED BY MRT CHECKED BY SAS

BORING NUMBER DATE COMPLETED 11-30-76

JOB NUMBER

SA-1401

HELEV.	DEPTH FEET	DESCRIPTION		PENETE 0 5	BLOWS PER FOOT 0 30 40 60 80 1
845	0	AUGER BORING TO 85'			
		NO SAMPLES TAKEN			
835					
825					
815					
805					
•					
795.					
			- 12-3-74		
	,	1 · · · · · · · · · · · · · · · · · · ·			
785	1				
775	-				:
765	85	BORING TERMINATED @ 85'		<u> </u>	

BORING TERMINATED @ 85'

LOCATION . STA 16+50

INSTALLED: 65' SOLID PVC (2")
20' SCOTTED PVC (2")

DRILLED BY HC LOGGED BY MRT

CHECKED BY SAS

BORING NUMBER

DATE COMPLETED 11-23-76

JOB NUMBER

ELEV.	DEPTH FEET	DESCRIPTION		PENETR 0 5	ATION-E 10 15 2	0 30 40	
		P-3 NOT DRILLED					
		3					
-							
			-				
	24						
						:	

DRILLED BY	NA
LOGGED BY	
CHECKED DA	,

BORING NUMBER	P-3
DATE STARTED	NA
DATE COMPLETED	NIA
IOD NUMBER	SA- 140

*ELEV.	DEPTH FEET	DESCRIPTION		PENETRATIO 0 5 10 1	
845	0				
835	·	AUGER BORING T. 30'			
		NO SAMPLES TAKEN			
825					
			12-3-76		
815	30				
		BORING TERMINATED & 30°	-		
	•				
<u></u>	·				
		1			
<u> </u>					
	21				
·					

REMARKS:

LOCATION: STA 6+75

INSTALLED: 10 SOLIO PYC(2")

DRILLED BY WM LOGGED BY MRT CHECKED BY JAS

BORING NUMBER P-1 DATE STARTED DATE COMPLETED 11-17-76

5A-1401 JOB NUMBER

* ESTIMATED PROM SITE PLAN



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