HYDROGEOLOGICAL ASSESSMENT REPORT (REVISION 1)

Plant Arkwright
Ash Pond 2 Dry Ash Stockpile (AP2-DAS)
Macon, Georgia

March 2026

Prepared for:

Georgia Power

Prepared by:
Stantec Consulting Services Inc.
10745 Westside Way, Suite 250
Alpharetta, Georgia 30009-7640

CERTIFICATION STATEMENT

This Hydrogeologic Assessment Report (Revision 1 – Plant Arkwright Ash Pond 2 Dry Ash Stockpile [AP2- DAS]) has been prepared by a qualified groundwater scientist or engineer with Stantec Consulting Services, Inc. References to the appropriate sections of Chapter 391-3- 4-.10 of the Georgia Environmental Protection Division Rules of Georgia, Solid Waste Management, Coal Combustion Residuals (i.e., State CCR Rule) are incorporated throughout this document.

I hereby certify that this Hydrogeologic Assessment Report (Revision 1) was prepared by, or under the direct supervision of, a "Qualified Groundwater Scientist," in accordance with the State of Georgia Rules of Solid Waste Management. According to Chapter 391- 3-4-.01, a Qualified Groundwater Scientist is "a professional engineer or geologist registered to practice in Georgia who has received a baccalaureate or post-graduate degree in the natural sciences or engineering and has sufficient training and experience in groundwater hydrology and related fields that enable individuals to make sound professional judgments regarding groundwater monitoring, contaminant fate and transport, and corrective action."

Matt Vaughn, P.E.
Principal

GEORGIA REGISTERED No. PE041781 PROFESSIONAL ENGINEER MATTHEW C. VAUGHAN 3/10/26

March 10, 2026
Date

Katie Ross, P.G.
Senior Principal

KATIE T. ROSS GEORGIA REGISTERED PROFESSIONAL GEOLOGIST No. 1776

March 4, 2026
Date

Table of Contents

LIST OF TABLES

LIST OF FIGURES

APPENDICES

Acronyms / Abbreviations

ACM	Assessment of Corrective Measures
AP2	Arkwright Ash Pond 2
CCR	Coal Combustion Residuals
CCRMU	Coal Combustion Residuals Management Unit
cm/s	centimeters per second
DAS	Dry Ash Stockpile
feet/year	Feet per year
ft/ft	Feet per foot (hydraulic gradient)
ft bgs	Feet below ground surface
GA EPD	Georgia Environmental Protection Division
Georgia Power	Georgia Power Company
HAR	Hydrogeologic Assessment Report
k_h	Horizontal Hydraulic Conductivity
NAVD88	North American Vertical Datum 1988
PWR	Partially Weathered Rock
Site	Arkwright Ash Pond 2 Dry Ash Stockpile
SCS	Southern Company Services
US EPA	United States Environmental Protection Agency

1 Introduction

As per the requirements of Georgia Environmental Protection Division (Georgia EPD) Solid Waste Management Rule 391-3-4-.10 for coal combustion residuals (CCR) management, Jacobs Engineering prepared a Limited Hydrogeological Assessment Report (HAR) for the inactive Plant Arkwright Ash Pond 2 Dry Ash Stockpile (AP2-DAS) in November 2018. The HAR was a supplementary document in the original Georgia CCR permit application package from November 2018.

This report herein will supplant the previously submitted HAR from November 2018 and provide an updated summary of the hydrogeologic data collected to date at Plant Arkwright AP2-DAS. Its purpose is to supplement the forthcoming AP2-DAS CCR permit application submittal.

1.1 Site Location and Topographic Setting

Plant Arkwright is in Bibb County, Georgia, approximately six miles northwest of the city of Macon. The physical address of the plant is 5241 Arkwright Road, Macon, Georgia 31210. The approximate 13-acre AP2-DAS is located between Arkwright Road to the north and Beaverdam Creek to the south (Figure 1).

Plant Arkwright is located along the southern edge of the Washington Slope District (the District) within the Piedmont Physiographic Province (Clark and Zisa, 1976). The District is characterized by a gently undulating surface, which slopes to the south and southeast toward the Coastal Plain Physiographic Province located approximately 3.8 miles to the southeast of the Site. Topography of the District ranges from approximately 700 feet above mean sea level in the areas of southern Atlanta and Athens to approximately 500 feet above mean sea level at its southern limit along the Georgia Fall Line. Streams generally follow the surface topography of the underlying crystalline rocks eastward toward the Ocmulgee River. Relief throughout the District typically ranges between 50 and 100 feet. However, the greatest relief occurs along the Ocmulgee River where the surface elevations can abruptly change 150 to 200 feet within steep-walled valleys (Clark and Zisa, 1976).

1.2 Coal Combustion Residuals

Plant Arkwright's coal-fired power plant consisted of four 40-megawatt units that began commercial operation in 1941, generating approximately 25,000 tons of CCR annually (Jacobs, 2018a). In the years before retirement, the plant was used primarily to provide peaking power and operated approximately 40 to 60 days per year. AP2 received CCR via truck (Jacobs, 2018a). Soil was placed over AP2-DAS as a closure measure and the CCR unit was estimated to be closed in-place in the late 1970s to early 1980s. Plant Arkwright was retired in 2002 and decommissioned in 2003.

1.3 Ash Pond 2 Dry Ash Stockpile (AP2-DAS)

Georgia Power officially closed AP2-DAS in 2010 by removing ash from the former AP2 located due east of AP2-DAS, implementing closure with GA EPD approval and in accordance with the solid waste landfill regulations specified by GA EPD Rule 391-3-4. AP2-DAS was constructed with a soil cover and is

presently heavily vegetated. The AP2-DAS footprint is located on a southward sloping area bounded to the north by the terminus of a ridgeline, and to the south by a constructed earthen berm just north of Beaverdam Creek. The berm wraps around the west side of the DAS.

GA EPD issued a Closure Certificate for AP2-DAS on June 30, 2010. The Closure Certificate initiated the post-closure care period for the CCR unit, which has been performed in accordance with the GA EPD Permit No. 011-031D(LI). The CCR unit referred to as AP 2 DAS is defined as an inactive CCR landfill per GA EPD Rule 391-3-4-.10(2)(a)(3).

Georgia Power has elected to remove the CCR material from the AP2-DAS. Georgia Power submitted a CCR permit application to GA EPD in 2018, proposing closure by removal of AP2-DAS to a lined landfill (Jacobs, 2018a). The 2018 CCR permit application is pending approval at present. AP2-DAS is currently in post-closure care under the previously approved EPD permit No. 011-031D(LI).

AP2-DAS has a comprehensive monitoring well network designed to monitor the uppermost aquifer at the Site and provide early detections of potential releases of CCR-impacted groundwater from the unit. Figure 2 illustrates the current monitoring well network and Table 1 provides a summary of AP2-DAS monitoring well and piezometer construction details. Well construction logs are provided in Appendix A.

2 Surface and Subsurface Investigations

Multiple geotechnical and geological investigations were performed at Plant Arkwright between 2008 and 2024. Results of these investigations, in combination with published regional literature and topographic maps, were utilized to: obtain an understanding of regional and site-specific subsurface geologic conditions; support the development of a hydrogeologic conceptual site model; and identify and install a representative uppermost aquifer monitoring well network for the AP2-DAS.

2.1 Regional Geology and Hydrogeology

Alluvial deposits ranging from clay to sand and gravel are present within incised bedrock channels formed by the tributary streams and within the broader floodplains of the larger regional rivers. Reported alluvial (floodplain) deposits within the greater Ocmulgee River drainage are up to 40 feet thick and extend several thousand feet from the river axis along lower-lying river segments to the south of the Piedmont Province (LeGrand 1962). Residual soil, developed following the complete in place chemical weathering (decomposition) of the underlying crystalline bedrock, is the predominant overburden material present in upland areas of the region (Sowers and Richardson, 1983).

Bedrock in the region is composed of moderate- to high-grade metamorphic rocks, consisting of biotite-granite gneiss, schist, and amphibolite, and igneous rocks like granite. In the southernmost Piedmont, around the Site, bedrock is predominantly composed of biotite gneiss (Figure 3). The underlying bedrock consists of quartzofeldspathic gneiss, hornblende gneiss, and schist (Jacobs, 2018a). The top of bedrock surface is often highly weathered and, where exposed, is generally soft and friable (LeGrand, 1962). Major geologic structures in the region include the Ocmulgee Fault, located approximately seven miles northwest of the Site, which strikes mostly northeast – southwest.

There are no laterally extensive regional aquifers in the Piedmont Province (Miller, 1990). Groundwater is mainly supplied by infiltrating precipitation and is found in the residuum/partially weathered rock (PWR) and fractured portions of the upper bedrock in upland areas and in alluvial deposits within incised stream channels. Shallow groundwater flow direction locally mimics area topography but regionally moves southward towards the coastal plain (Miller, 1990). The competent crystalline rock underneath the unconsolidated deposits has little to no primary (intergranular) porosity. Where encountered, groundwater in the competent bedrock is found in secondary porosity features such as isolated open fractures, foliation separations, igneous/metamorphic rock contacts, and potential fault zones.

2.2 Site Geology

The general geology beneath AP2-DAS consists of clays, silty and sandy clays, silty sands, sandy silts, and minor gravel at depth, underlain by a silty sand saprolite and bedrock. Three geologic cross-sections along the alignments shown in Figure 4 were constructed to characterize lithologic conditions present at AP2-DAS. The geologic cross sections are shown in Figures 4a, 4b, and 4c.

Historical borings advanced at the Site indicate bedrock occurs at depths ranging from approximately 14 to 63 feet below ground surface and consists of weathered quartzofeldspathic gneiss, hornblende gneiss, and schist. Area boring logs (Appendix A) also indicate the presence of discontinuous zones of partially weathered rock (PWR) above a more competent bedrock. Where present in the southern portion of the Site, the PWR ranges in thickness from 1 to 20 feet. A brief description of each of the encountered overburden and bedrock units is provided in the following sections.

2.2.1 OVERBURDEN

The **overburden materials** present in the subsurface at AP2-DAS from surface grade to bedrock are:

- **Native soils –** These shallow overburden soils consist primarily of alluvial and saprolitic developed soil deposits. Material that has developed into a soil following the complete in place chemical weathering of its parent bedrock is here referred to as a saprolitic soil. At the AP2-DAS, the saprolitic soils are typically loose, range in color from dark yellow gray to red to light brown and are composed of fine sand-sized particles containing varying percentages of clay, silt, and medium sand. A wedge of alluvial fine- to medium-sand with interbedded soft, gray to black clay layers is also present and extends from Beaverdam Creek beneath the southern portion of AP2-DAS. Native soils range in thickness from 0 to 22 feet.

- **Saprolite –** Rock that has been chemically weathered and altered in place, but still retains its primary rock fabric, is referred to as saprolite. Saprolite retains the streaky banding and foliations characteristic of gneiss but readily disintegrates into varying percentages of gravel, sand, silts, and clays when mechanically disturbed. Saprolite thicknesses at AP2-DAS range from absent to 26 feet. The majority of the AP2-DAS overburden monitoring wells are screened in saprolite.

2.2.2 BEDROCK

The **bedrock** materials present beneath the overburden are*:*

- **Partially weathered rock (PWR)–** As weathering preferentially occurs along horizontal and vertical fractures present within the rock matrix, less altered, more resistant layers or blocks of rock that are bounded by weathered fractures may be preserved above the downward advancing weathering front at the bedrock contact. These less altered layers or blocks are referred to as PWR. Borings completed to date have not found laterally extensive PWR at AP2-DAS .Encountered PWR thicknesses range from 5 feet to approximately 20 feet.

- **Bedrock** – The top of biotite gneiss bedrock is at depths ranging from approximately 22 to 41 feet below original grade. Bedrock contact elevations range from 263 feet NAVD88[1] at Beaverdam Creek to 308 feet NAVD88 just north of the AP 2 DAS. The degree of fracturing near the bedrock contact (upper bedrock) varies from none noted to intensely fractured and weathered. Where present, the upper bedrock fractures are predominantly horizontal to slightly inclined with o

[1] Referenced to the North American Vertical Datum of 1988 (NAVD88).

ccasional steeper and/or intersecting fractures. Borehole lithologic descriptions and borehole geophysical logging indicate that fractures generally decrease in frequency with increasing depth below the bedrock contact and the bedrock becomes increasingly competent with rock quality designations exceeding 90 percent.

3 Site Hydrogeologic Conditions

Hydrogeologic data collected from monitoring wells installed and monitored between 2018 and 2025 were combined with the geologic data discussed in Section 2, to characterize AP2-DAS area hydrogeologic conditions described in the following sections.

3.1 Site Hydrogeology

The uppermost aquifer at AP2-DAS consists of a saturated overburden, PWR, and upper bedrock. The overburden consists of alluvial and saprolitic material up to 26-ft thick. The PWR is relatively thin, ranging from 5 to 20-ft thick, and is relatively more permeable than the overburden. The PWR is underlain by upper bedrock that has little to no primary (intergranular) porosity as evident in the bedrock and little to no permeability. Accordingly, the observed ability of the upper bedrock to transmit groundwater is largely dependent on the presence and frequency of open fractures.

The upper bedrock is characterized by an increased number of fractures immediately below the overburden/PWR and bedrock contact and its hydraulic connection of these fractures to the overburden. Comparison of recent AP2-DAS groundwater elevation data (refer to Table 2 groundwater elevations and cross-section Figures 4a, 4b, and 4c) at adjacent overburden and upper bedrock piezometers show that groundwater elevations in the overburden and upper bedrock are nearly identical. This, in combination with observed weathering and discoloration in fractured and weathered zones at the bedrock contact, suggests that groundwater in the overburden and upper bedrock fractures is hydraulically connected.

A deeper bedrock monitoring well, designated ARAMW-9, was installed in November of 2022 at the southwest corner of the AP2-DAS (Figure 2) (Stantec, 2022b). The screened interval of this well is positioned across a water-bearing fracture set identified during installation at a depth of 203.9 to 213.9 ft NAVD88 (refer to cross-section Figure 4c). The top of the screen at ARAMW-9 is approximately 52 feet below the bedrock contact. While the well is extremely low yielding, static groundwater levels collected from this well since its installation are 4 to 10 feet higher than adjacent shallow wells screened in the overburden (ARAMW-7) and upper bedrock zones of the uppermost aquifer. The marked difference in hydraulic head values between ARAMW-9 and the adjacent uppermost aquifer wells suggests that the bedrock fracture set monitored by ARAMW-9 is not hydraulically connected to the uppermost aquifer in the AP2-DAS area.

Other, more recently installed (November 2024) bedrock piezometers ARAMW-10 and ARAMW-12 (see Figure 4c) were completed with well screen intervals set at depths immediately below the current monitoring network wells but above ARAMW-9 to vertically characterize the nature and extent of the upper bedrock zone (Stantec, 2025a). Preliminary review of flowmeter data collected at bedrock piezometer boring ARAMW-12 showed that water-producing fractures may be present at approximately 26 to 28 feet below the top of bedrock (241.8 to 243.8 feet NAVD) (Stantec, 2025a). The ARAMW-12 piezometer was constructed with a well screen interval (240.90 to 255.90 feet NAVD88) designed to intersect these potential water-bearing fractures. However, to date, the fractures have produced insufficient water for sample collection and observed water levels remain below the top of the well screen

and approximately 40 feet below uppermost aquifer groundwater levels in the area. These preliminary water levels at ARAMW-12 suggest that there is no connectivity between the uppermost aquifer and the interval monitored by ARAMW-12. Additional hydrogeologic data obtained during and after the installation of the new bedrock piezometers and piezometer is still being collected, compiled, and evaluated as of the writing of this HAR.

The top of the uppermost aquifer is defined by the (unconfined) water table surface present at depths of approximately 6 to 26 feet below ground surface (feet bgs) within the AP2-DAS boundary. The water table surface is typically found within the native soil or saprolite horizons underlying the AP2-DAS.The bottom of the uppermost aquifer is competent bedrock below the upper bedrock zone of fractured and weathered bedrock. AP2-DAS investigation data show that the bottom of the uppermost aquifer ranges from approximately 15 to 30 feet below the top of bedrock and that the zone monitored by deeper bedrock well ARAMW-9 and new piezometer ARAMW-12 are not in direct hydraulic communication with the overlying uppermost aquifer.

Rising and falling head (slug) horizontal hydraulic conductivity (K_h) testing results of the overburden (3 locations) and fractured bedrock (3 locations) intervals of the Uppermost Aquifer were reported in Wood (2021a). AP2-DAS area K_h results have been included in Table 1. Measured K_h values for the Uppermost aquifer range from 9.86 x 10^{-4} centimeters per second (cm/s) to 5.34 x 10^{-3} cm/s. The geometric mean K_h values for the overburden (2.61 x 10^{-4} cm/s) and the fractured bedrock (2.71 x 10^{-4} cm/s) are similar. The geometric mean of all the currently available K_h values for Uppermost Aquifer materials is 2.66 x 10^{-4} cm/s (0.75 feet per day).

Groundwater levels have been routinely measured at AP2-DAS monitoring wells and piezometers shown in Figure 5 (see Section 3.2), starting in 2016 when ARGWA-19, ARGWA-20, and ARGWC-21 were installed. The last several years (2021 to 2025) of water level data are presented in Table 2. The most recent (February 2025) groundwater potentiometric surface at AP2-DAS is shown in Figure 5. Groundwater flow is to the south in the direction of Beaverdam Creek. These flow directions are consistent with the flow directions presented in earlier potentiometric maps. Measured groundwater hydraulic gradients ranged from 0.020 to 0.023 feet/foot [ft/ft]) during the February 2025 monitoring event.

Estimates of the average linear groundwater flow velocities in the uppermost, unconfined aquifer at the AP2-DAS were calculated using a derivation of Darcy's Law. Specifically,

$$v = \frac{K_h * i}{n_e}$$

Where:

v = average linear groundwater flow velocity (*length/time*)

K_h = average horizontal hydraulic conductivity of the aquifer material (*length/time*)

i = hydraulic gradient (*length/length*)

n_e = estimated effective porosity of aquifer material (*unitless*)

Estimates of groundwater flow velocities within the Uppermost Aquifer at AP2-DAS were calculated in Table 3 using the above equation and hydraulic gradients obtained from the February 2025 groundwater monitoring event (Stantec, 2025c). Geometric mean values of the horizontal hydraulic conductivities (Table 1) previously obtained for uppermost aquifer overburden materials (2.6 x 10^{-4} centimeters per second [cm/sec]) and 2) the upper bedrock (2.7 x 10^{-4} cm/sec), and a literature-based effective porosity of 0.20 for silty sand (US EPA, 1989) were used for the remaining equation inputs.

The calculated groundwater flow velocities at AP2-DAS were 0.086 ft/day (31 feet/year) and 0.079 ft/day (29 feet/year). These groundwater flow velocities are consistent with groundwater flow velocities calculated during previous groundwater monitoring events at the AP2-DAS.

3.2 Potentiometric Data

Recent AP2-DAS groundwater level gauging data from July of 2021 to February of 2025 is provided in Table 2. The groundwater potentiometric surface generated from uppermost aquifer groundwater levels collected during the February 2025 groundwater monitoring is presented in Figure 5.

Compiled groundwater elevation data show that the potentiometric surface elevations of the uppermost aquifer range from a historical maximum of approximately 319 feet NAVD88 at upgradient detection monitoring wells ARGWA-19 and ARGWA-20 north of AP2-DAS, to a historical minimum elevation of 294 feet NAVD88 at downgradient detection monitoring well ARGWC-19 south of AP2-DAS. Other monitoring wells positioned along the downgradient (south) edge of AP2-DAS exhibit elevations similar (i.e., within 1 to 2 feet) to those historically measured at ARGWC-21 during each measurement event. Highest groundwater elevations typically occur in the late Winter/early Spring of each year.

As shown in Figure 5, uppermost aquifer groundwater flow at AP2-DAS is to the south towards Beaverdam Creek. This observed flow regime is consistent with previous AP2-DAS potentiometric maps generated in previous annual and semi-annual corrective action reports (Stantec, 2025c, 2024a; Stantec, 2024b; Stantec, 2023a; Stantec, 2023b; Stantec, 2022a).

3.3 Conceptual Site Model

The uppermost aquifer at the AP2-DAS consists of water-bearing 1) overburden and 2) weathered margins of PWR and zones of fractured biotite-gneiss bedrock immediately underlying overburden or PWR (where present). The fractured bedrock zone is referred to as the upper bedrock zone. This zone is characterized by measured hydraulic conductivities like those of the overlying silty sand overburden. With little to no primary porosity, the relative ability of the upper bedrock to transmit groundwater is dependent on the presence, density, and interconnection of secondary porosity features (open fractures). Site boring and geophysical logs show that the frequency of the fractures generally decreases with increasing depth below the bedrock contact and that the bedrock becomes increasingly competent with increasing depth. The ability of these deeper fractures to readily transmit groundwater below the upper bedrock zone is considered extremely limited.

Groundwater in the uppermost aquifer is unconfined, recharged via precipitation and discharges to low-lying areas or valleys. The potentiometric surface elevation of the uppermost aquifer historically ranges from approximately 320 to 294 feet NAVD88 and the water table is encountered within the overburden. The groundwater flow direction is to the south toward Beaverdam Creek. The estimated groundwater linear flow velocity, based on the measured gradients from the February 3, 2025, groundwater gauging event and site-specific hydraulic conductivity values, ranged from 29 to 31 feet/year.

4 Groundwater Monitoring Network

Pursuant to 40 CFR § 257.91, Georgia Power installed a groundwater monitoring system within the uppermost aquifer at AP2-DAS. The groundwater monitoring system is designed to monitor groundwater passing the waste boundary of AP2-DAS within the uppermost aquifer. Wells were designated as upgradient or downgradient monitoring points based on the groundwater flow direction. The groundwater monitoring program for AP2-DAS is managed in accordance with Georgia Solid Waste Management Rules for Groundwater Monitoring and Corrective Action of a municipal solid waste landfill, Rule 391-3-4-.14, per GA EPD Permit No. 011-031D(LI). AP2-DAS is also subject to the GA EPD Rules for Solid Waste Management 391-3-4-.10 for CCR management.

In 2008, a groundwater monitoring network utilizing three wells (two upgradient, ARGWA-19 & ARGWA-20, and one downgradient, ARGWC-21) was installed around AP2-DAS (Jacobs, 2018b). Two additional detection monitoring wells, ARGWC-22 and ARGWC-23, were installed as per the 2018 Groundwater Monitoring Plan via a minor modification submittal to Georgia EPD on April 17, 2020. Assessment monitoring wells ARAMW-1 and ARAMW-2 were also installed and added to the AP2-DAS monitoring well network via an addendum submittal to Georgia EPD on September 30, 2020 (ACC, 2020). As a response to statistically significant detections of constituents observed at monitoring wells ARGWC-22 and ARGWC-23, two additional assessment monitoring wells, (ARAMW-7 and ARAMW-8), were installed for vertical delineation in November 2020 (Wood, 2021b). Additional vertical delineation assessment monitoring wells/piezometers were installed in 2022 (ARAMW-9) (Stantec, 2022b), and in 2024 (piezometers ARAMW-10, ARAMW-11, and ARAMW-12) (Stantec, 2025a). Piezometer ARAMW-11 is screened in the overburden) and monitoring well ARAMW-9 and piezometers ARAMW-10 and ARAMW-12 are screened at various depths below the bedrock contact (see Figure 4c). The current groundwater monitoring network is shown in Figure 2. Construction details and screened intervals for the existing AP2-DAS monitoring wells are summarized in Table 1, and well boring logs and construction details are provided in Appendix A.

4.1 Groundwater Monitoring Status

Groundwater monitoring activities are being performed in accordance with the AP2-DAS Groundwater Monitoring Plan (Jacobs, 2018b). Groundwater sampling and reporting for compliance to meet requirements of Rule 391-3-4.10 began after baseline groundwater conditions were established between August 2016 and October 2018. Based on groundwater conditions at AP2-DAS, an assessment monitoring program was initiated on November 13, 2019. An assessment of corrective measures (ACM) subsequently began on July 9, 2020. During the 2024 annual reporting period, AP2-DAS remained in assessment monitoring as corrective measures were evaluated. A Draft Remedy Selection Report (Stantec, 2024c), which summarizes the evaluation and proposed selection of a corrective measure, or measures, was submitted under separate cover to GA EPD on February 28, 2024.

Pursuant to 40 CFR § 257.96(b), Georgia Power will continue to monitor the groundwater at AP2-DAS in accordance with the assessment monitoring program regulations in 40 CFR § 257.95 while ACM efforts

continue to be evaluated. Pursuant to 40 CFR § 257.95(g)(1)(iv), the assessment monitoring wells will continue to be sampled as part of the ongoing groundwater monitoring program.

Groundwater levels and groundwater samples are collected semi-annually from each of monitoring wells in the monitoring network depicted in Figure 2. Semi-annual groundwater monitoring at AP2-DAS is performed for an approved list of analytes in accordance with the post-closure care period requirements of GA EPD Permit #: 011-031D(LI). The permit lists GA EPD 391-3-4-.10 Appendix I constituents as arsenic, barium, cadmium, chloride, lead, selenium, silver, and sulfate. A minor modification approved by GA EPD on August 9, 2017, added the CCR Rule Appendix III and IV constituents to the groundwater monitoring plan. The GA EPD Appendix I constituents overlap with the CCR Rule Appendix III and IV constituents, except for silver. Results of the AP2-DAS groundwater monitoring program are submitted to the Georgia EPD semi-annually.

In addition, network monitoring wells and piezometers are inspected semi-annually to determine if repairs or corrective actions are necessary to meet the requirements of the Georgia Water Well Standards Act (O.C.G.A. § 12-5-134(5)(d)(vii)).

5 References

ACC, 2020. September 2020 Well Installation Addendum, Ash Pond 2 Dry Ash Stockpile, Macon, Georgia. September 30, 2020.

Clark, W.Z., and A.C. Zisa. 1976. Physiographic Map of Georgia: 1:2,000,000, Georgia Department of Natural Resources, Geologic and Water Resources Division, Atlanta, Georgia. LeGrand, H. E. 1962, Geology and Ground-water Resources of the Macon Area, Georgia. The Geological Survey Bulletin No. 72.

Jacobs, 2018a. CCR Unit Permit Application - Plant Arkwright AP-2 DAS Landfill. Macon, Georgia. 2018.

Jacobs, 2018b. Groundwater Monitoring Plan for Inactive CCR Landfill. Former Plant Arkwright – AP-2 Landfill, Macon-Bibb County, Georgia.

LeGrand, H. E. 1962. Geology and Ground-water Resources of the Macon Area, Georgia. The Geological Survey Bulletin No. 72. 1962.

Miller, J. A. 1990. Ground Water Atlas of United States – Alabama, Florida, Georgia, and South Carolina, Paper HA-730-G. United States Geological Survey.

Sowers, G. F., and T.L. Richardson. 1983. Residual Soils of the Piedmont and Blue Ridge. Transportation Research Record, No. 919 (TRA-919).

Stantec Consulting Services, Inc. (Stantec), 2025a. 2024 Monitoring Well Installation (ARAMW-10, ARAMW-11, ARAMW-12) Report. Georgia Power Company, Plant Arkwright, Ash Pond 2 Dry Ash Stockpile. Macon, Georgia. February 7, 2025.

Stantec, 2025b. 2024 Semi-Annual Groundwater Monitoring and Corrective Action Report. Plant Arkwright Dry Ash Pond 2 Dry Ash Stockpile. Macon, Georgia. February 28, 2025.

Stantec Consulting Services Inc. (Stantec), 2025c. 2025 Semi-Annual Groundwater Monitoring and Corrective Action Report. Plant Arkwright Ash Pond 3 Landfill and Monofill. Macon, Georgia. July 31, 2025.

Stantec, 2024a. 2023 Semi-Annual Groundwater Monitoring and Corrective Action Report. Georgia Power Company, Plant Arkwright Dry Ash Pond 2 Dry Ash Stockpile. Macon, Georgia. February 28, 2024.

Stantec, 2024b. 2024 Annual Groundwater Monitoring Report. Georgia Power Company Plant Arkwright Ash Pond 2 DAS. Macon, Georgia. July 31, 2024.

Stantec, 2024c. 2024 Draft Remedy Selection Report. Georgia Power Company Plant Arkwright Ash Pond 2 DAS. Macon, Georgia. February 28, 2024.

Stantec, 2023a. 2022 Annual Groundwater Monitoring Report. Georgia Power Company, Plant Arkwright Ash Pond 2 DAS. Macon, Georgia. February 28, 2023.

Stantec, 2023b. 2023 Annual Groundwater Monitoring Report. Georgia Power Company, Plant Arkwright Ash Pond 2 DAS. Macon, Georgia. July 31, 2023.

Stantec, 2022a. 2022 Semi-Annual Groundwater Monitoring and Corrective Action Report. Georgia Power Company, Plant Arkwright Dry Ash Pond 2 Dry Ash Stockpile. Macon, Georgia. July 29, 2022.

Stantec, 2022b. Piezometer Installation (ARAMW-9) Report. Georgia Power Company, Plant Arkwright Ash Pond 2 Dry Ash Stockpile. Macon, Georgia. December 8, 2022.

US EPA, 1989. Interim Final RCRA Facility Investigation (RFI) Guidance - Soil, Ground Water and Subsurface Gas Releases, Vol. II of IV. USEPA Waste Management Division Office of Solid Waste. EPA 530/SW-89-031. (OSWER Directive 9502.00-6). (Table 10-4).

Wood, 2021a. Semi-Annual Remedy Selection and Design Progress Report. Georgia Power Company – Plant Arkwright Ash Pond 2 Dry Ash Stockpile, Macon, Georgia, July 30, 2021.

Wood, 2021b. Monitoring Well Installation (ARAMW-7 and ARAMW-8) Report. Georgia Power Company – Plant Arkwright Ash Pond 2 Dry Ash Stockpile, Macon, Georgia, November 2021.

TABLES

TABLE 1
AP2-DAS MONITORING WELL AND PIEZOMETER CONSTRUCTION DETAILS
Hydrogeologic Assessment Report
AP2 Dry Ash Stockpile
Georgia Power Company - Plant Arkwright
Macon, Georgia

Well/Piezometer	Installation Date	Northing [1] (feet)	Easting [1] (feet)	Top of Casing Elevation[2] (feet NAVD88)	Ground Surface Elevation[2] (feet NAVD88)	Top of Screen Elevation[2] (feet NAVD88)	Bottom of Screen Elevation[2] (feet NAVD88)	Screen Length (feet)	Groundwater Zone Screened	Hydraulic Position[3]	Horizontal Hydraulic Conductivity (K_h) Values [4] (cm/s)
Detection Monitoring Wells											
ARGWA-19	12/16/2008	1063774.24	2439488.29	343.35	340.24	300.18	290.18	10.0	Upper Bedrock	Upgradient	5.34E-03
ARGWA-20	12/4/2008	1063726.52	2439080.28	330.63	327.48	303.18	293.18	10.0	Overburden	Upgradient	2.84E-04
ARGWC-21	12/1/2008	1062940.78	2439112.34	308.46	305.47	291.70	281.70	10.0	Overburden	Downgradient	--
ARGWC-22	11/19/2019	1063038.84	2438924.29	306.80	306.74	292.31	282.31	10.0	Overburden	Downgradient	7.56E-04
ARGWC-23	11/20/2019	1062885.59	2439201.99	307.73	304.42	289.59	279.59	10.0	Overburden	Downgradient	8.32E-05
Assessment Monitoring Wells											
ARAMW-1	11/20/2019	1062937.58	2439119.98	308.35	305.33	271.37	261.37	10.0	Upper Bedrock	Downgradient	--
ARAMW-2	11/20/2019	1062926.40	2439115.34	308.28	305.08	293.42	283.42	10.0	Overburden	Downgradient	--
ARAMW-7	11/14/2020	1063048.60	2438912.71	306.95	306.83	269.43	259.43	10.0	Partially Weathered Rock/ Upper Bedrock	Downgradient	3.79E-04
ARAMW-8	11/13/2020	1062885.53	2439112.34	307.62	304.90	267.83	257.83	10.0	Upper Bedrock	Downgradient	9.86E-06
ARAMW-9	10/7/2022	1063023.25	2438935.02	306.72	306.54	213.91	203.91	10.0	Bedrock	Downgradient	--
Piezometers											
ARAMW-10	11/9/2024	1063082.33	2438902.85	308.49	308.39	260.89	250.89	10.0	Upper Bedrock	Downgradient	--
ARAMW-11	11/10/2024	1063077.03	2438902.96	308.09	308.02	278.02	268.02	10.0	Overburden	Downgradient	--
ARAMW-12	11/21/2024	1062906.98	2439199.15	309.08	305.80	255.90	240.90	15.0	Bedrock	Downgradient	--

Notes:

1. Unless otherwise noted, horizontal locations referenced to Georgia State Plane West, North American Datum (NAD) of 1983. Location coordinates were updated following a Southern Company CFS survey on 12-09-2024
2. Vertical elevations are feet referenced to North American Vertical Datum of 1988 (NAVD88). Unless othwise noted, elevations were updated following a Southern Company CFS survey on 12-09-2024.
3. Hydraulic gradient position relative to AP-2 DAS.
4. Average value of rising and falling head slug test values at well location reported in *Semi-Annual Remedy Selection and Design Progress Report, Georgia Power Company – Plant Arkwright Ash Pond 2 Dry Ash Stockpile, Macon, Georgia, (Jacobs, July 30, 2021)*.

TABLE 2
SUMMARY OF RECENT AP2-DAS GROUNDWATER ELEVATIONS - 2021 to 2025
Hydrogeologic Assessment Report
AP2 Dry Ash Stockpile
Georgia Power Company - Plant Arkwright
Macon, Georgia

			Measurement Date:	8/16/2021	9/2/2021		10/25/2021		1/31/2022		6/7/2022		8/30/2022		12/7/2022		1/30/2023		3/6/2023		6/20/2023		8/7/2023		1/22/2024		8/19/2024		2/4/2025	
Well/ Piezometer ID	Top of Casing Elevation (feet NAVD88)[1]	Top of Casing Elevation (feet NAVD88)[2]		Depth to Water (feet below TOC)[4]	Groundwater Elevation (feet NAVD88)[3]	Depth to Water (feet below TOC)[4]	Groundwater Elevation (feet NAVD88)[3]	Depth to Water (feet below TOC)[4]	Groundwater Elevation (feet NAVD88)[3]	Depth to Water (feet below TOC)[4]	Groundwater Elevation (feet NAVD88)[3]	Depth to Water (feet below TOC)[4]	Groundwater Elevation (feet NAVD88)[3]	Depth to Water (feet below TOC)[4]	Groundwater Elevation (feet NAVD88)[3]	Depth to Water (feet below TOC)[4]	Groundwater Elevation (feet NAVD88)[3]	Depth to Water (feet below TOC)[4]	Groundwater Elevation (feet NAVD88)[3]	Depth to Water (feet below TOC)[4]	Groundwater Elevation (feet NAVD88)[3]	Depth to Water (feet below TOC)[4]	Groundwater Elevation (feet NAVD88)[3]	Depth to Water (feet below TOC)[4]	Groundwater Elevation (feet NAVD88)[3]	Depth to Water (feet below TOC)[4]	Groundwater Elevation (feet NAVD88)[3]	Depth to Water (feet below TOC)[4]	Groundwater Elevation (feet NAVD88)[3]
ARGWA-19	343.30	343.35		27.95	315.35	28.15	315.15	26.99	316.31	27.94	315.36	27.40	315.90	28.70	314.60	29.50	313.80	28.62	314.68	27.15	316.15	26.77	316.53	27.77	315.53	29.55	313.75	29.31	313.99	29.58	313.77
ARGWA-20	331.28	330.63		15.34	315.94	15.51	315.77	14.67	316.61	14.88	316.40	14.42	316.86	15.88	315.40	16.82	314.46	15.70	315.58	14.40	316.88	13.91	317.37	15.03	316.25	16.85	314.43	16.86	314.42	16.92	313.71
ARGWC-21	309.15	308.46		14.36	294.79	14.26	294.89	14.14	295.01	13.92	295.23	14.09	295.06	14.39	294.76	14.29	294.86	12.70	296.45	14.23	294.92	14.38	294.77	14.37	294.78	14.00	295.15	14.40	294.75	13.17	295.29
ARGWC-22	309.95	306.80		14.28	295.67	14.20	295.75	13.82	296.13	13.95	296.00	13.85	296.10	14.15	295.80	14.32	295.63	12.12	297.83	14.28	295.67	14.14	295.81	14.15	295.80	13.58	296.37	14.25	295.70	10.62	296.18
ARGWC-23	307.70	307.73		12.43	295.27	12.43	295.27	11.87	295.83	11.77	295.93	12.19	295.51	12.41	295.29	12.42	295.28	10.48	297.22	11.70	296.00	12.10	295.60	12.19	295.51	11.79	295.91	12.67	295.03	11.78	295.95
ARAMW-1	308.51	308.35		13.64	294.87	13.56	294.95	13.44	295.07	13.21	295.30	13.34	295.17	13.53	294.98	13.59	294.92	11.93	296.58	13.41	295.10	13.58	294.93	13.58	294.93	13.21	295.30	13.76	294.75	13.10	295.25
ARAMW-2	308.27	308.28		13.80	294.47	13.69	294.58	13.59	294.68	13.34	294.93	13.51	294.76	13.65	294.62	13.66	294.61	12.02	296.25	13.61	294.66	13.80	294.47	13.71	294.56	13.42	294.85	13.76	294.51	13.32	294.96
ARAMW-7	309.81	306.95		13.22	296.59	13.11	296.70	12.73	297.08	12.88	296.93	12.84	296.97	13.15	296.66	13.32	296.49	12.05	297.76	13.14	296.67	13.04	296.77	13.20	296.61	12.69	297.12	13.26	296.55	10.01	296.94
ARAMW-8	307.36	307.62		11.97	295.39	11.92	295.44	11.40	295.96	11.30	296.06	11.80	295.56	12.40	294.96	12.04	295.32	10.08	297.28	11.38	295.98	11.81	295.55	11.84	295.52	11.43	295.93	12.27	295.09	11.44	296.18
ARAMW-9	309.28	306.72		Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	5.38	303.90	3.55	305.73	2.87	306.41	2.74	306.54	15.50	293.78[5]	7.61	301.67	8.64	300.64	8.90	297.82
ARAMW-10	Not Installed	308.49		Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	10.94	297.55
ARAMW-11	Not Installed	308.09		Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	11.06	297.03
ARAMW-12	Not Installed	309.08		Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	61.85	247.23

Notes:
1. Reference elevation based on previous survey data collected between 2020 and 2022. Groundwater elevations are feet referenced to North American Vertical Datum of 1988 (NAVD 88).
2. Reference elevation based on the most current survey data collected on December 9, 2024. Groundwater elevations are feet referenced to North American Vertical Datum of 1988 (NAVD 88).
3. Groundwater elevation are feet referenced to North American Vertical Datum of 1988 (NAVD 88).
4. Groundwater elevations were measured as depth to water from the top of casing (TOC).
5. Water level measurement taken during well recovery following water quality sample collection on 7/27/23; value not representative of static conditions.

TABLE 3
GROUNDWATER FLOW VELOCITY CALCULATIONS
Hydrogeologic Assessment Report
Ash Pond 2 Dry Ash Stockpile
Georgia Power Company - Plant Arkwright
Macon, Georgia

Potentiometric Map Date	Location	Groundwater Elevations in Well Pairs (h_1, h_2)		Change in Groundwater Elevation (dh)	Distance Measured (dl)	Hydraulic Gradient (i)	Average Hydraulic Conductivity[1][2] (K)		Effective Porosity[3] (n_e)	Calculated Groundwater Flow Velocity (V)	
		h_1 (feet)	h_2 (feet)	(feet)	(feet)	(feet/foot)	(cm/sec)	(feet/day)	-	(feet/day)	(feet/year)
February 3, 2025	ARGWA-20 to ARGWC-21	313.71	295.29	18.42	792	0.023	2.61E-04	0.74	0.20	0.086	**31**
	ARGWA-19 to ARAMW-1	313.77	295.25	18.52	907	0.020	2.72E-04	0.77	0.20	0.079	**29**

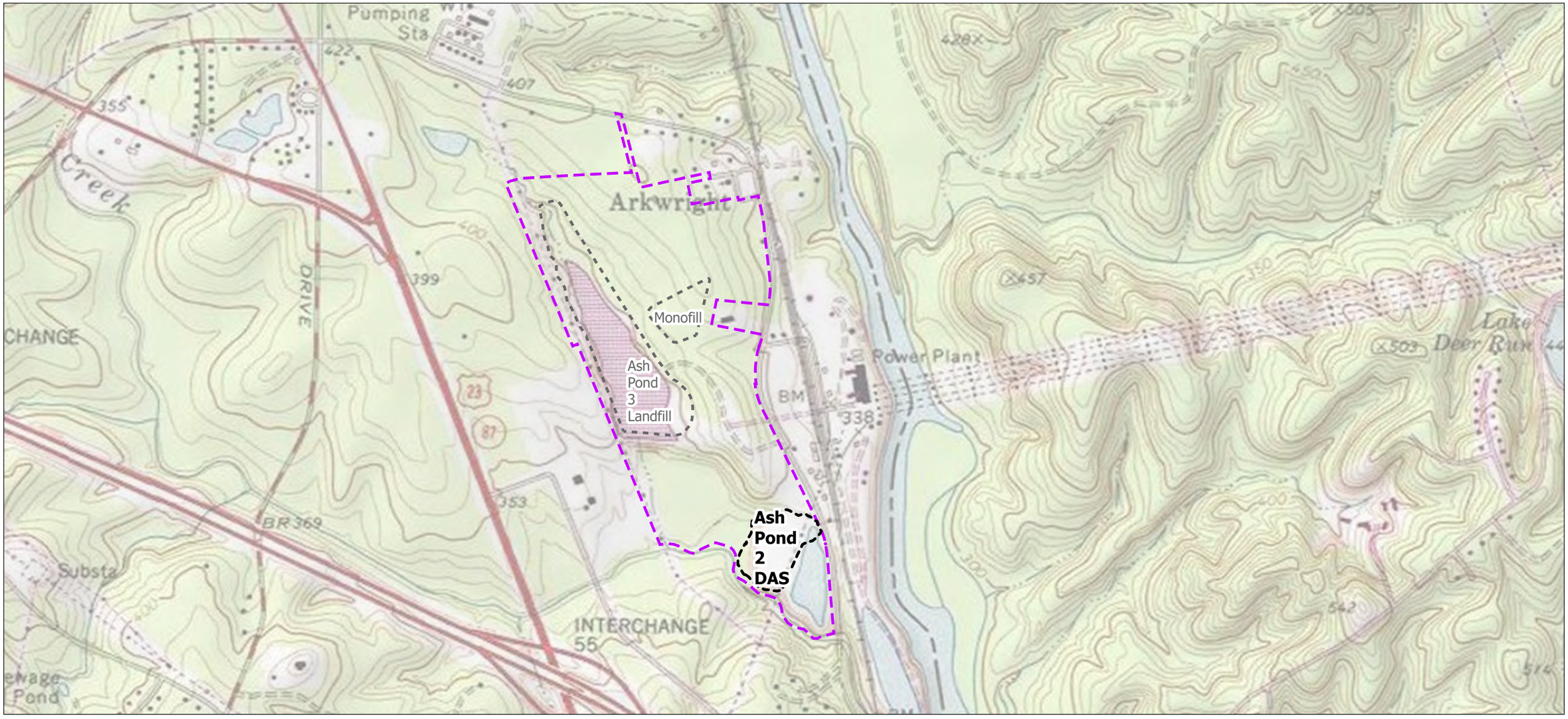
Notes:

1. Hydraulic conductivity (K) for the ARGWA-20 to ARGWC-21 well pair is the geometric mean K value determined via slug testing at three AP-2 DAS Uppermost Aquifer monitoring well locations screened in the.overburden. Refer to Table 1 for applied K values.

2. Hydraulic conductivity (K) for the ARGWA-19 to ARAMW-1 well pair is the geometric mean value determined via slug testing completed at three AP-2 DAS Uppermost Aquifer monitoring well locations screened in the upper bedrock. Refer to Table 1 for applied K values.

3. An estimated Effective porosity of 0.20 was selected for the silty sand to sandy silt gradation of the overburden based on a review of several sources, including Driscoll, 1986; US EPA, 1989; Freeze and Cherry, 1979.

FIGURES



Notes

1. Coordinate System: NAD 1983 StatePlane Georgia West FIPS 1002 Feet
2. Data Sources: Tax Parcel and AP-2 Landfill Boundary provided by Southern Company Services and Wood Environment & Infrastructure Solutions
3. Background: Copyright:© 2013 National Geographic Society, i-cubed, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, USFWS

Legend

- Approximate Property Boundary
- Ash Pond 2 Dry Ash Stockpile (DAS) (approximate location)
- Ash Pond 3 Landfill and Monofill (approximate location)

0 1,000 2,000 Feet

(At original document size of 11x17)
1:12,000

N

Stantec

Georgia Power

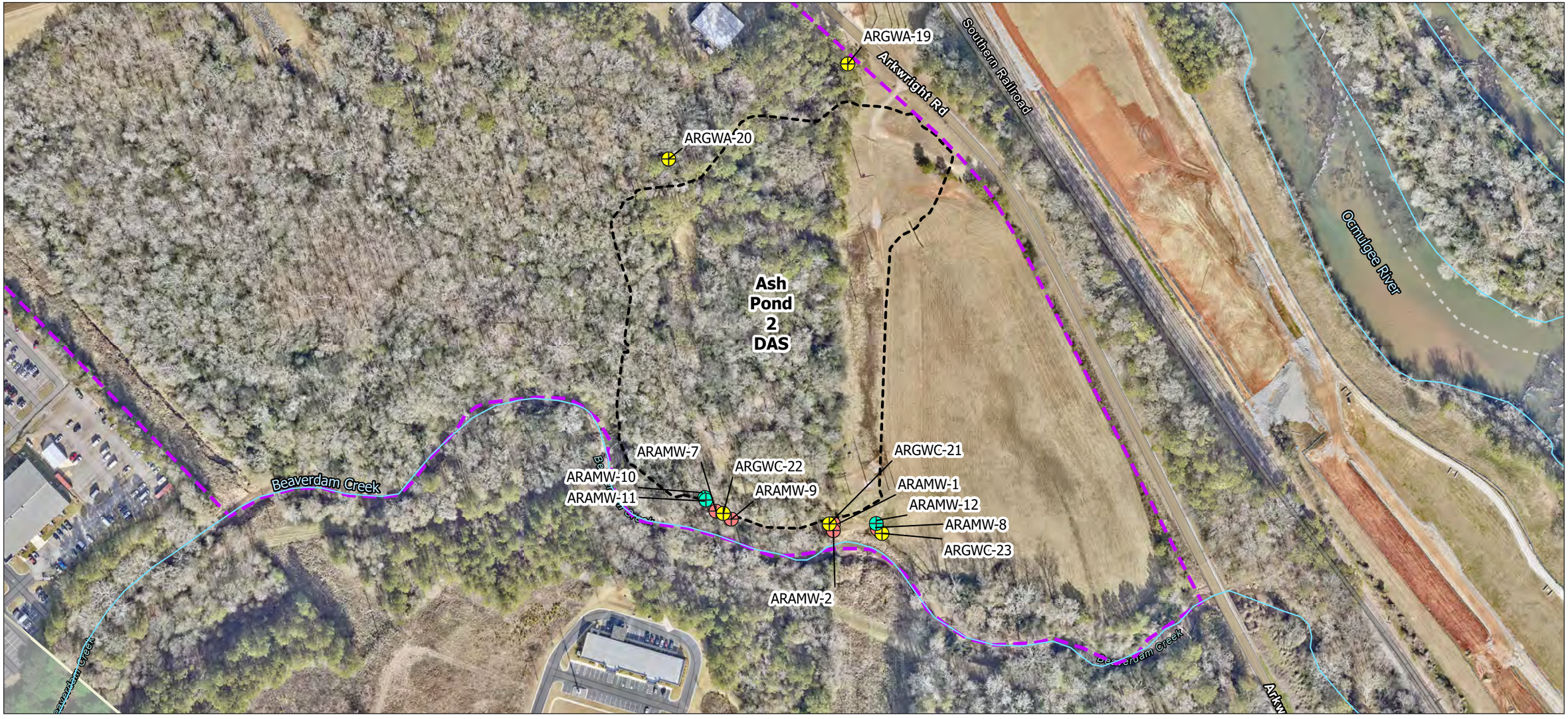
Project Location
Macon, Georgia

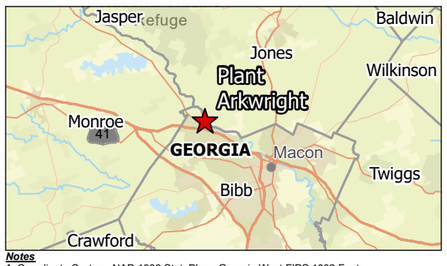
Prepared by DMB on 1/23/2025
TR by PD on 1/23/2025
IR by AW on 1/23/2025

Client/Project 175569434
Georgia Power
Hydrogeologic Assessment Report
Plant Arkwright Ash Pond 2 Dry Ash Stockpile

Figure No.
1

Title
Site Location Map





Legend

- Detection Monitoring Well
- Assessment Monitoring Well
- Piezometer
- Beaverdam Creek/Ocmulgee River (Approximate)
- Approximate Property Boundary
- Ash Pond 2 Dry Ash Stockpile (DAS) (approximate location)
- Limit of Client Imagery (dated 1/22/2024)

Piezometers ARAMW-10, ARAMW-11 and ARAMW-12 were installed in November 2024.

0 200 400 Feet

(At original document size of 11x17)
1:2,400

N

Stantec

Georgia Power

Project Location
Macon, Georgia

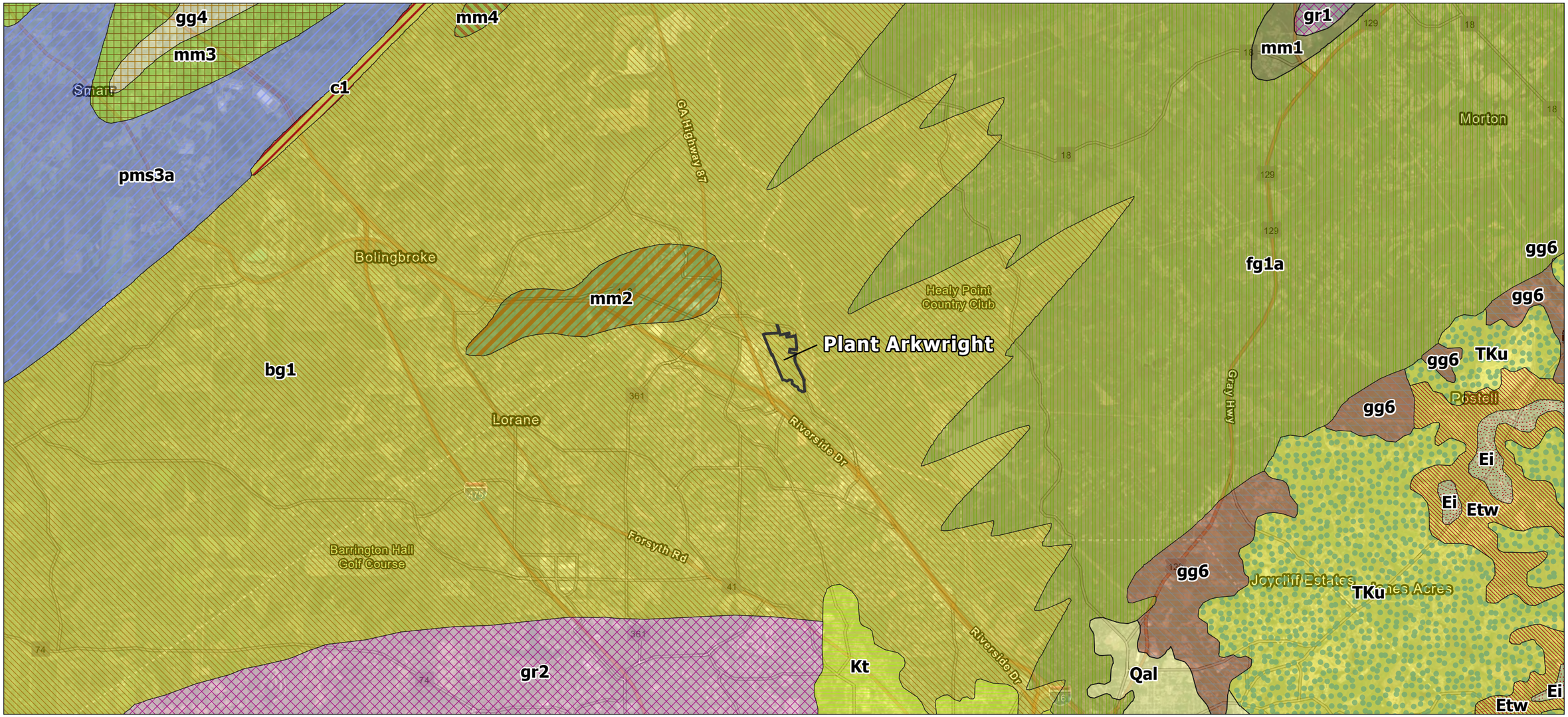
Prepared by DMB on 2/10/2025
TR by PD on 2/10/2025
IR by AW on 2/10/2025

Client/Project 175569434
Georgia Power
Hydrogeologic Assessment Report
Plant Arkwright Ash Pond 2 Dry Ash Stockpile

Figure No.
2

Title
Monitoring Well and Piezometer Location Map

Notes
1. Coordinate System: NAD 1983 StatePlane Georgia West FIPS 1002 Feet
2. Data Sources: Ash Pond Boundaries, Monitoring Wells, Piezometers, Property Boundary, and Beaverdam Creek locations provided by Southern Company Services, Wood Environment & Infrastructure Solutions, and Stantec.
3. Background: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, USFWS, Esri Community Maps Contributors, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS. Plant imagery provided by client and is dated 1/22/2024.



Notes

1. Coordinate System: NAD 1983 StatePlane Georgia West FIPS 1002 Feet
2. Data Sources: Site Boundary provided by Southern Company Services and Wood Environment & Infrastructure Solutions, Geologic Information obtained from https://mrdata.usgs.gov/geology/state/state.php?state=GA
3. Background: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, USFWS, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA, USFWS

Legend

- Approximate Property Boundary

Geology

- bg1 - Biotite Gneiss
- c1 - Mylonite & Ultramylonite
- Ei - Irwinton Sand
- Etw - Twiggs Glay
- fg1a - Biotite Granite Gneiss/Feldspathic Biotite Gneiss/Amphibolite-Hornblende Gneiss
- gg4 - Granite Gneiss/Amphibolite
- gg6 - Granite Gneiss/Granite
- gr1 - Granite Undifferentiated
- gr2 - Granite/Granite Gneiss
- Kt - Tuscaloosa Formation
- mm1 - Amphibolite
- mm2 - Hornblende Gneiss
- mm3 - Hornblende Gneiss/Amphibolite
- mm4 - Hornblende Gneiss/Amphibolite/Granite Gneiss
- pms3a - Mica Schist/Gneiss/Amphibolite
- Qal - Stream Alluvium
- TKu - Lower Teriary-Cretaceous Undifferentiated

0 1½ 3 Miles

(At original document size of 11x17)
1:95,040

N

Stantec

Georgia Power

Project Location
Macon, Georgia

Prepared by DMB on 1/23/2025
TR by PD on 1/23/2025
IR by AW on 1/23/2025

Client/Project 175569434
Georgia Power
Hydrogeologic Assessment Report
Plant Arkwright Ash Pond 2 Dry Ash Stockpile

Figure No.
3

Title
Geologic Map of General Area

U:\175\175569434\03_data\gis_cad\gis\ArcPro\AP2_HydrogeologicAssessmentReport\AP2_HydrogeologicAssessmentReport.aprx Figure 3 - Geologic Map Revised: 2025-01-23 By: mbough

Notes

1. Coordinate System: NAD 1983 StatePlane Georgia West FIPS 1002 Feet
2. Data Sources: Ash Pond Boundaries, Monitoring Wells, Piezometers, Borings, Property Boundary, and Beaverdam Creek locations provided by Southern Company Services , Wood Environment & Infrastructure Solutions, and Stantec.
3. Background: Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, USFWS, Esri Community Maps Contributors, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS. Plant imagery provided by client and is dated 1/22/2024.

Legend

- Detection Monitoring Well
- Assessment Monitoring Well
- Piezometer
- Abandoned Piezometer
- Historical Piezometer
- Porewater Piezometer
- Direct Push Boring
- SPT Borings
- Wood September 2021 Boring Location
- Stantec July 2023 Boring Location
- Beaverdam Creek
- Cross Section Alignment
- Approximate Property Boundary
- Ash Pond 2 Dry Ash Stockpile (DAS) (approximate location)

0 150 300 Feet

(At original document size of 11x17)
1:1,800

N

Stantec

Georgia Power

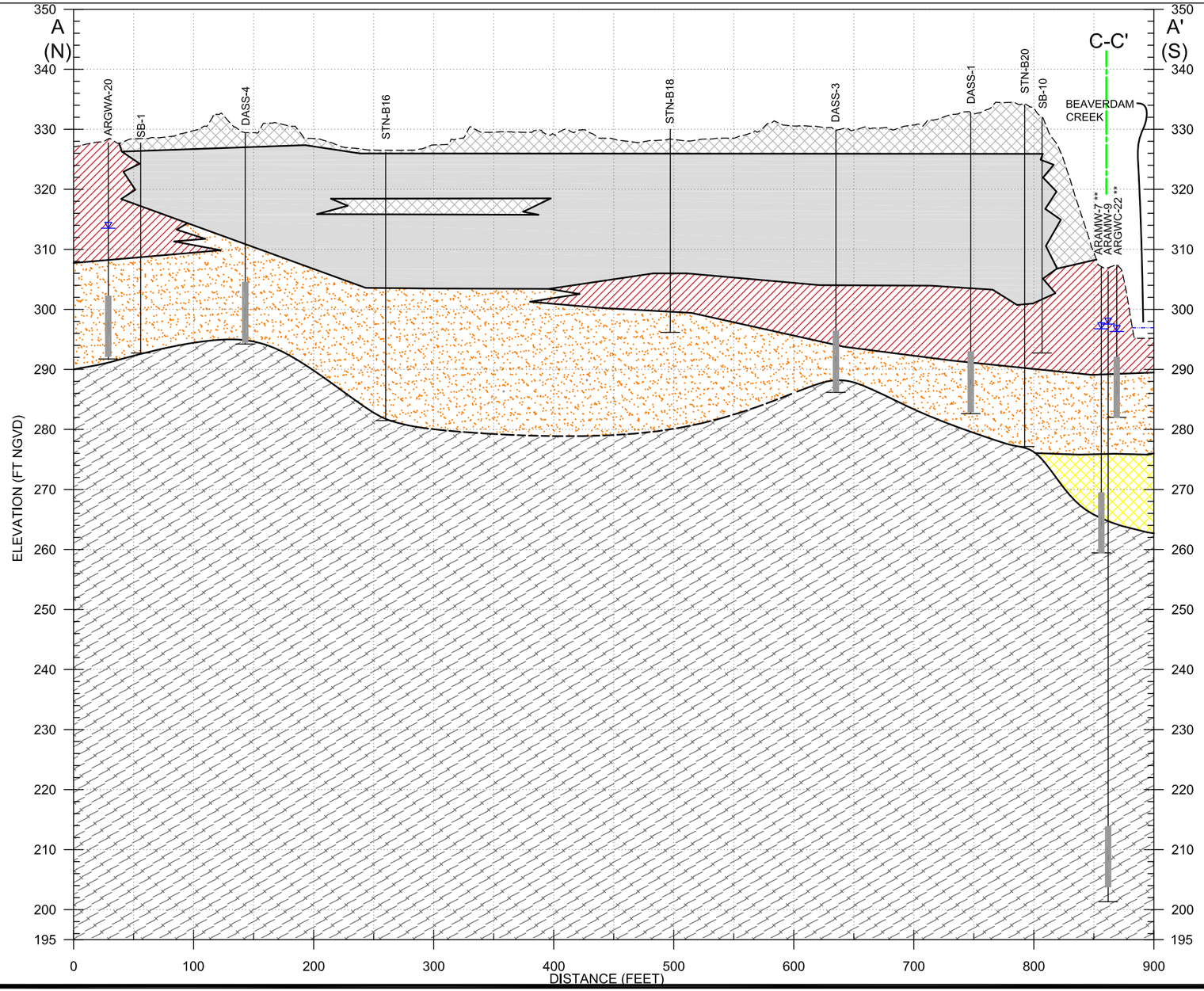
Project Location
Macon, Georgia

Prepared by DMB on 2/6/2025
TR by PD on 2/6/2025
IR by AW on 2/6/2025

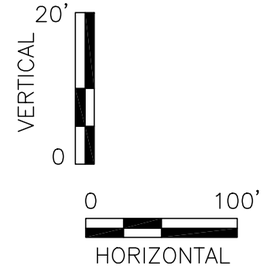
Client/Project 175569434
Georgia Power
Hydrogeologic Assessment Report
Plant Arkwright Ash Pond 2 Dry Ash Stockpile

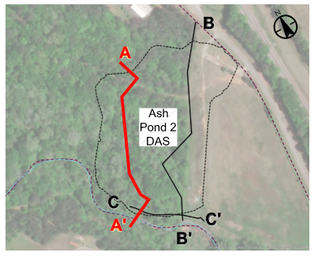
Figure No.
4

Title
Cross Section Layout Map



** INDICATES MONITORING WELL PROJECTED ONTO CROSS-SECTION LINE





CROSS-SECTION ALIGNMENTS

LEGEND

- FILL/CLAY COVER
- COAL COMBUSTION RESIDUALS
- NATIVE SOILS
- SAPROLITE
- PARTIALLY WEATHERED ROCK
- BIOTITE-GNEISS BEDROCK
- MONITORING WELL/PIEZOMETER SCREEN INTERVAL
- CROSS-SECTION INTERSECTION
- MEASURED GROUNDWATER ELEVATION (FEBRUARY 3, 2025)

Stantec

Georgia Power

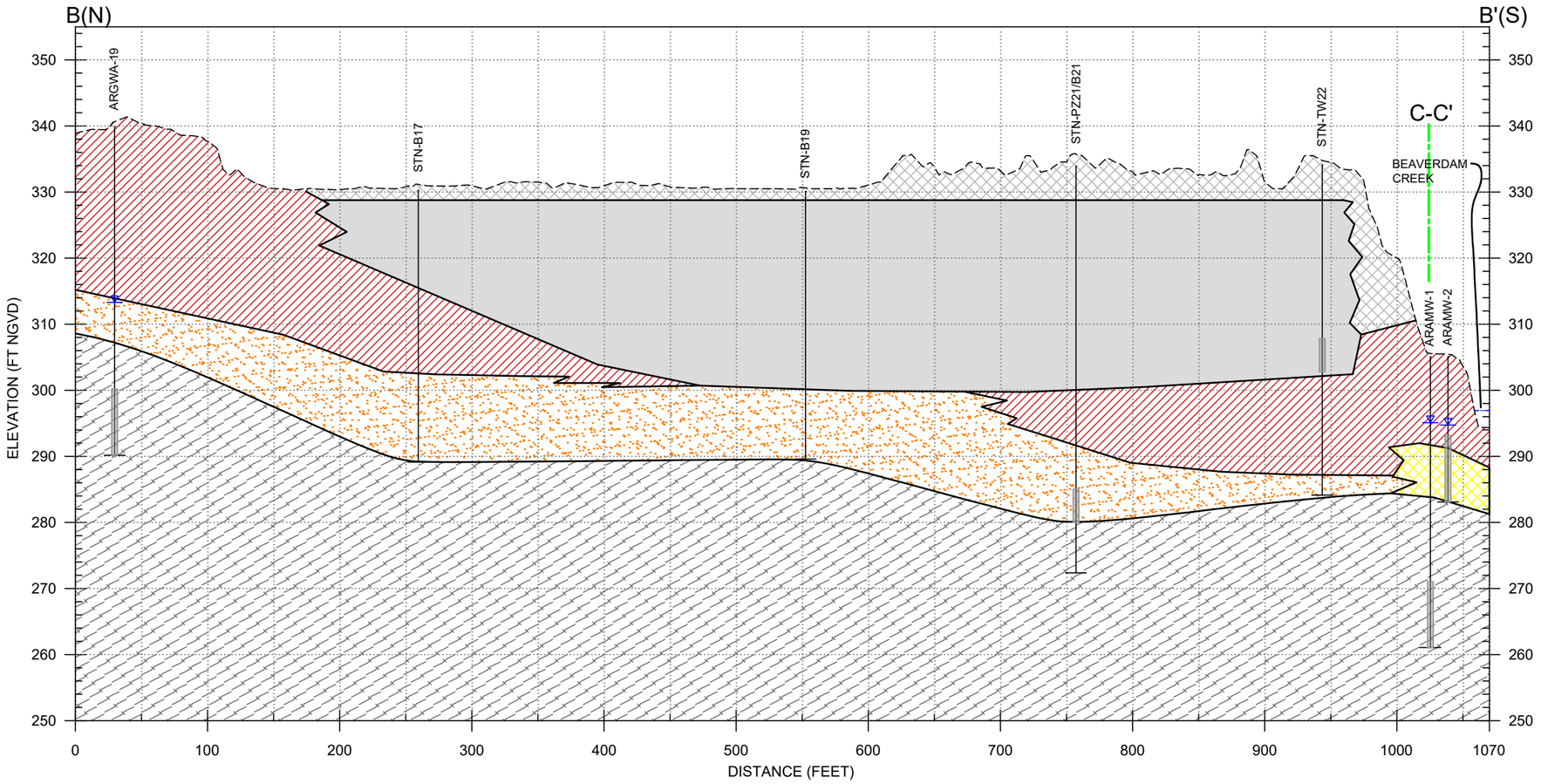
Project Location
Macon, Georgia

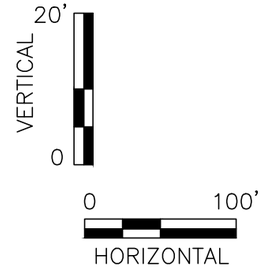
Prepared by DMB on 8/30/2023
TR by PD on 8/30/2023
IR by ES on 8/30/2023

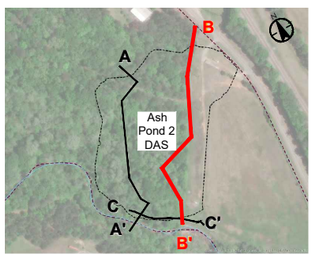
Client/Project
Georgia Power
172678281
Hydrogeologic Assessment Report
Plant Arkwright Ash Pond 2 Dry Ash Stockpile

Figure No.
4A

Title
CROSS SECTION A-A'







CROSS-SECTION ALIGNMENTS

LEGEND

- FILL/CLAY COVER
- COAL COMBUSTION RESIDUALS
- NATIVE SOILS
- SAPROLITE
- PARTIALLY WEATHERED ROCK
- BIOTITE-GNEISS BEDROCK
- MONITORING WELL/PIEZOMETER SCREEN INTERVAL
- CROSS-SECTION INTERSECTION
- MEASURED GROUNDWATER ELEVATION (FEBRUARY 3, 2025)

Stantec

Georgia Power

Project Location
Macon, Georgia

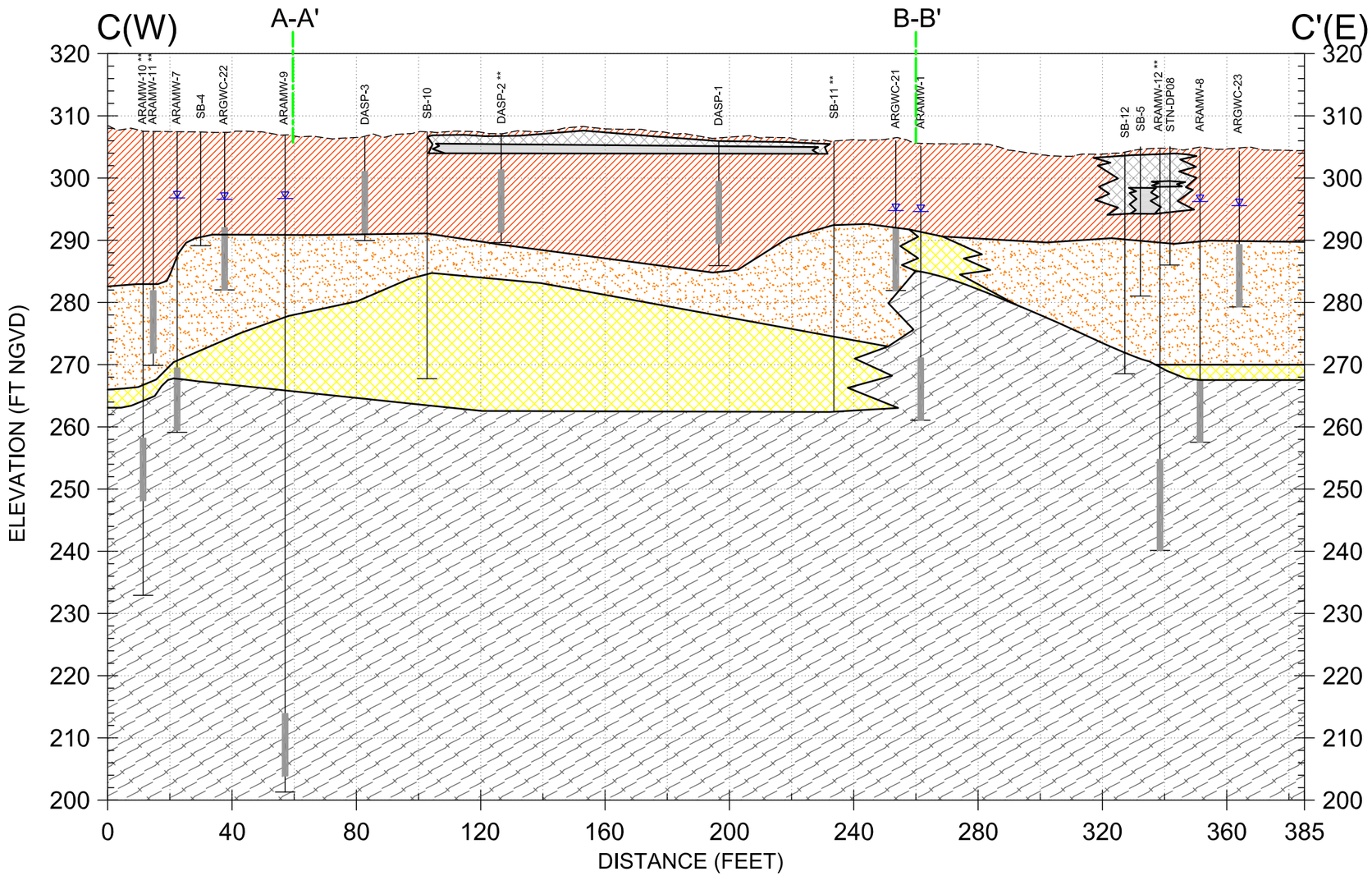
Prepared by DMB on 8/30/2023
TR by PD on 8/30/2023
IR by ES on 8/30/2023

Client/Project
Georgia Power
Hydrogeologic Assessment Report
Plant Arkwright Ash Pond 2 Dry Ash Stockpile

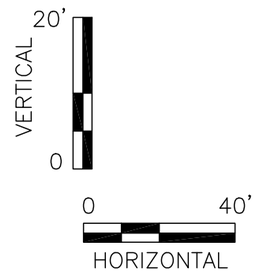
172678281

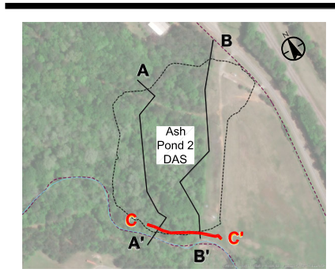
Figure No.
4B

Title
CROSS SECTION B-B'



** INDICATES MONITORING WELL PROJECTED ONTO CROSS-SECTION LINE





CROSS-SECTION ALIGNMENTS

LEGEND

- FILL/CLAY COVER
- COAL COMBUSTION RESIDUALS
- NATIVE SOILS
- SAPROLITE
- PARTIALLY WEATHERED ROCK
- BIOTITE-GNEISS BEDROCK

- MONITORING WELL/PIEZOMETER SCREEN INTERVAL
- CROSS-SECTION INTERSECTION
- MEASURED GROUNDWATER ELEVATION (FEBRUARY 3, 2025)

Stantec

Georgia Power

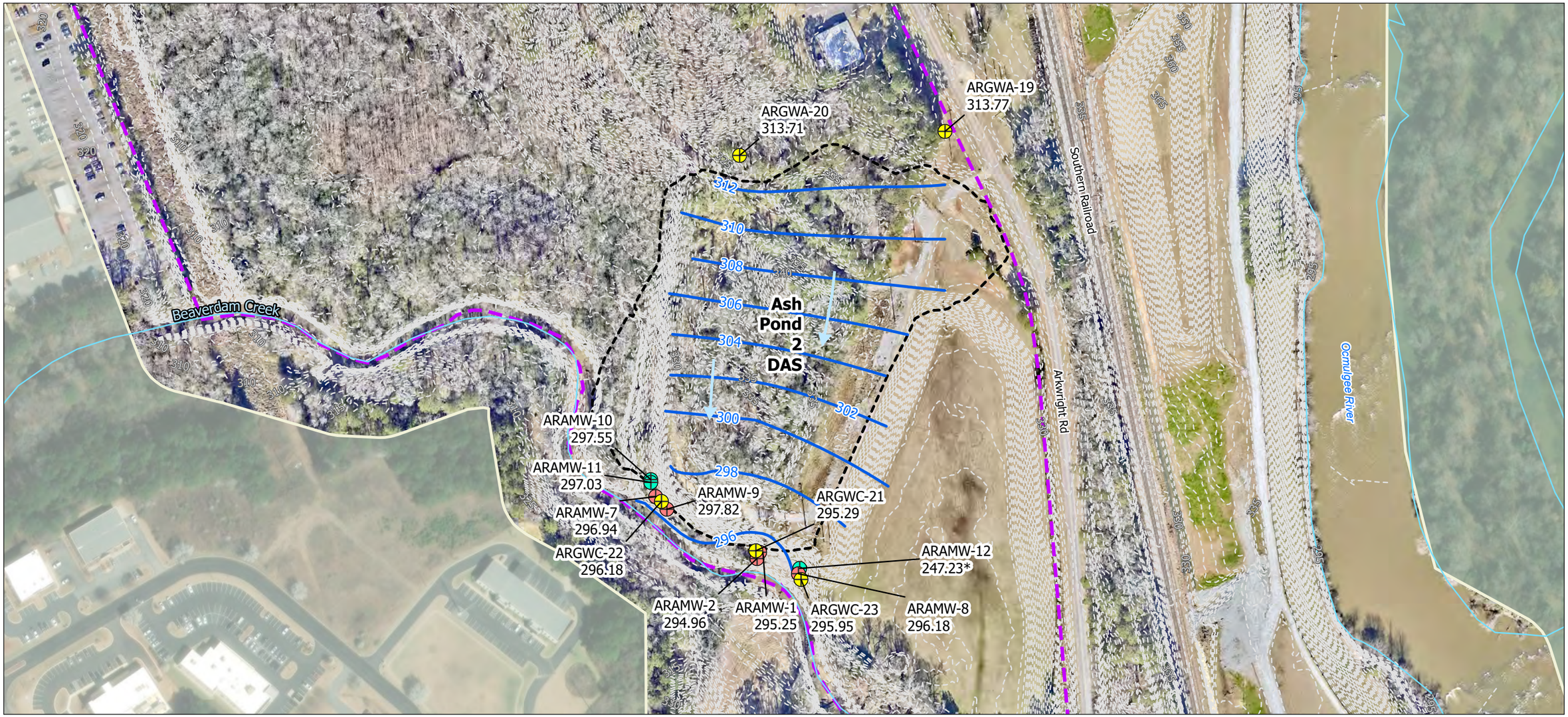
Project Location
Macon, Georgia

Prepared by DMB on 8/30/2023
TR by PD on 8/30/2023
IR by ES on 8/30/2023

Client/Project
Georgia Power
172678281
Hydrogeologic Assessment Report
Plant Arkwright Ash Pond 2 Dry Ash Stockpile

Figure No.
4C

Title
CROSS SECTION C-C'



Notes

1. Coordinate System: NAD 1983 StatePlane Georgia West FIPS 1002 Feet
2. Data Sources: Ash Pond Boundaries, Monitoring Wells, Property Boundary, Topography, and Beaverdam Creek provided by Southern Company Services and Wood Environment & Infrastructure Solutions; Contours, Flow Arrow, and Ocmulgee River provided by Stantec
3. Background: Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community. Plant imagery provided by client and is dated 1/2/2025.

Legend

- Detection Monitoring Well
- Assessment Monitoring Well
- Piezometer Installed November 2024
- Interpreted Groundwater Flow Direction
- Potentiometric Surface Contour (feet (ft) NAVD88)
- Beaverdam Creek/Ocmulgee River (Approximate)
- Topographic Contour Dec 2024 (1 ft interval)
- Approximate Property Boundary
- Ash Pond 2 Dry Ash Stockpile (DAS) (approximate location)
- Limit of Client Imagery (dated 1/2/2025)

294.96 Groundwater Elevation (ft NAVD88)
An "*" indicates groundwater elevation for ARAMW-12 was not used in contouring.
NAVD88 - North American Vertical Datum of 1988

KATIE T. ROSS
GEORGIA REGISTERED PROFESSIONAL GEOLOGIST
No. 1776

0 200 400 Feet
(At original document size of 11x17)
1:2,400

N

Stantec

Georgia Power

Project Location
Macon, Georgia

Prepared by DMB on 12/8/2025
TR by AS on 12/8/2025
IR by JK on 12/8/2025

Client/Project 175569434
Georgia Power
Hydrogeologic Assessment Report
Plant Arkwright Ash Pond 2 Dry Ash Stockpile

Figure No.
5

Title
Potentiometric Surface Contour Map
Ash Pond 2 DAS – February 3, 2025

APPENDIX A
AP-2 DAS BORING LOGS, WELL CONSTRUCTION DIAGRAMS, SURVEY CERTIFICATIONS, AND DRILLER BONDS

SOUTHERN COMPANY
Energy to Serve Your World

DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-19
Sheet 1 of 2

SITE: Former Plant Arkwright | HOLE DEPTH: 49.7 | SURF.ELEV.: 340.65
LOCATION: Solid Waste Management Area | COORDINATES N: 1063774.217 | E: 2439487.88
ANGLE: | BEARING: | CONTRACTOR: SCS, Inc. | DRILL NO.:
DRILLING METHOD: HSA/HQ Rock core with water | NO. SAMPLES: 6 | NO. U.D. SAMPLES: 0
CASING SIZE: | LENGTH: | CORE SIZE: | TOTAL % REC.:
WATER TABLE DEPTH: 28.1 | ELEV.: | TIME AFTER COMP.: | DATE TAKEN: 12/18/2008
TYPE GROUT: | QUANTITY: | MIX: | DRILLING START DATE: 12/5/2008
DRILLER: S. Milam | RECORDER: L. Garland | APPROVED: | DRILLING COMP. DATE: 12/16/2008

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	340.65								
1	339.65								
2	338.65								
3	337.65								
4	336.65								
5	335.65	Yellow brown sandy SILT	1	4.5-6	5-5-5	10			
6	334.65								
7	333.65								
8	332.65								
9	331.65								
10	330.65	Same as above	2	9.5-11	5-5-5	10			
11	329.65								
12	328.65								
13	327.65								
14	326.65								
15	325.65	Same as above	3	14.5-16	5-7-9	14			
16	324.65								
17	323.65								
18	322.65								
19	321.65								
20	320.65	Same as above	4	19.5-21	6-9-11	20			
21	319.65								
22	318.65								
23	317.65								
24	316.65								

Form GS9901 8-19-2008

SOUTHERN COMPANY
Energy to Serve Your World

DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-19
Sheet 2 of 2

SITE **Former Plant Arkwright** TOTAL DEPTH **49.7** SURF.ELEV. 340.6522

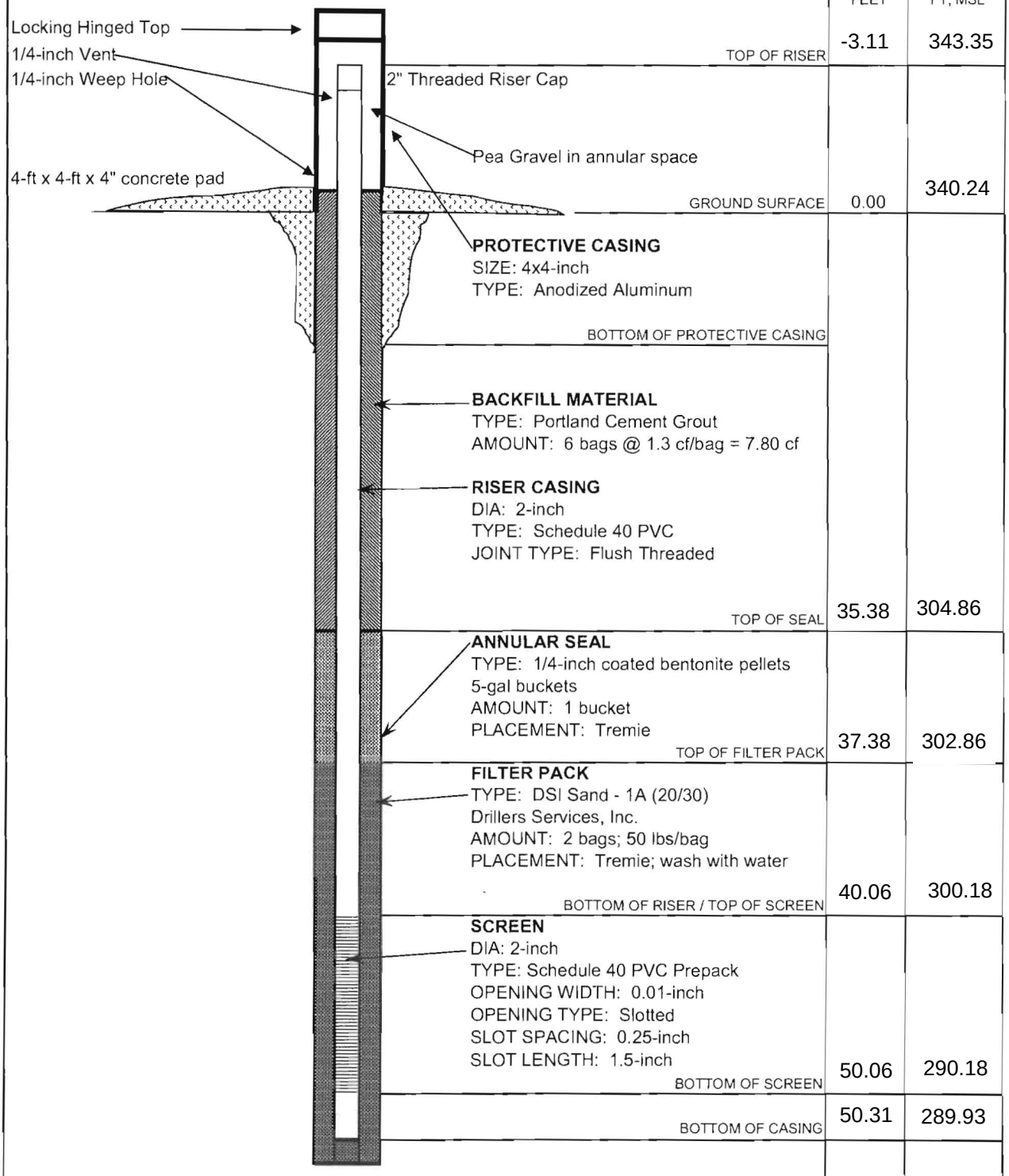
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	315.65	Yellow and brown silty SAND, medium to fine grained	5	24.5-26	16-50/2	R			
26	314.65								
27	313.65								
28	312.65								
29	311.65								
30	310.65	Same as above	6	29.5-31	50/4	R			
31	309.65								
32	308.65								
33	307.65	Auger refusal 32.8'							
34	306.65	Biotite gneiss, highly weathered, heavily fractured, heavy weathering on fracture faces		33-34.7				100	
35	305.65								
36	304.65	Same as above with less weathering		34.7-39.7				96	
37	303.65								
38	302.65								
39	301.65								
40	300.65								
41	299.65	Biotite gneiss, unweathered to slightly weathered, moderately to heavily fractured, with slight to moderatly weathered fracture faces		39.7-44.7				84	
42	298.65								
43	297.65								
44	296.65								
45	295.65								
46	294.65	Same as above		44.7-49.7				76	
47	293.65								
48	292.65								
49	291.65								
50	290.65	49.7' - Bottom of boring							
51	289.65								
52	288.65								
53	287.65								
54	286.65								
55	285.65								
56	284.65								

Form GS9901 8-19-2008

Log elevation and depth data updated with revised survey certified 12/9/2024

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Former Plant Arkwright	DRILLING CO.: SCS, Inc.	WELL NAME
Solid Waste Management Unit	DRILLER: S. Milam	
LOCATION: Ash Ponds 1, 2, 3	RIG TYPE: CME 550	
LOGGER: L. Garland	DRILLING METHODS: HSA, HQ Rock Core	GWA-19
DATE CONSTRUCTED: 12/16/2008		



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-3.11	343.35
GROUND SURFACE	0.00	340.24
BOTTOM OF PROTECTIVE CASING		
TOP OF SEAL	35.38	304.86
TOP OF FILTER PACK	37.38	302.86
BOTTOM OF RISER / TOP OF SCREEN	40.06	300.18
BOTTOM OF SCREEN	50.06	290.18
BOTTOM OF CASING	50.31	289.93

SOUTHERN COMPANY
Energy to Serve Your World

DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-20
Sheet 1 of 2

SITE: Former Plant Arkwright | HOLE DEPTH: 36 | SURF.ELEV.: 328.63
LOCATION: Solid Waste Management Area | COORDINATES N: 1063732.851 | E: 2439088.116
ANGLE: | BEARING: | CONTRACTOR: SCS, Inc. | DRILL NO.:
DRILLING METHOD: HSA | NO. SAMPLES: 7 | NO. U.D. SAMPLES: 0
CASING SIZE: | LENGTH: | CORE SIZE: | TOTAL % REC.:
WATER TABLE DEPTH: 15 | ELEV.: | TIME AFTER COMP.: | DATE TAKEN: 12/18/2008
TYPE GROUT: | QUANTITY: | MIX: | DRILLING START DATE: 12/4/2008
DRILLER: S. Milam | RECORDER: L. Garland | APPROVED: | DRILLING COMP. DATE: 12/4/2008

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	328.63								
1	327.63								
2	326.63								
3	325.63								
4	324.63								
5	323.63	Reddish brown sandy SILT, with clay	1	4.5-6	3-3-3	6			
6	322.63								
7	321.63								
8	320.63								
9	319.63								
10	318.63	Same as above	2	9.5-11	3-4-5	9			
11	317.63								
12	316.63								
13	315.63								
14	314.63								
15	313.63	Grayish yellow clayey SILT, with sand	3	14.5-16	3-6-8	14			
16	312.63								
17	311.63								
18	310.63								
19	309.63								
20	308.63	Dark yellow brown silty SAND, fine to medium grained, micaceous	4	19.5-21	6-4-5	9			
21	307.63								
22	306.63								
23	305.63								
24	304.63								

Form GS9901 8-19-2008

SOUTHERN COMPANY
Energy to Serve Your World

DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-20
Sheet 2 of 2

SITE **Former Plant Arkwright** TOTAL DEPTH **36** SURF.ELEV. 328.63308

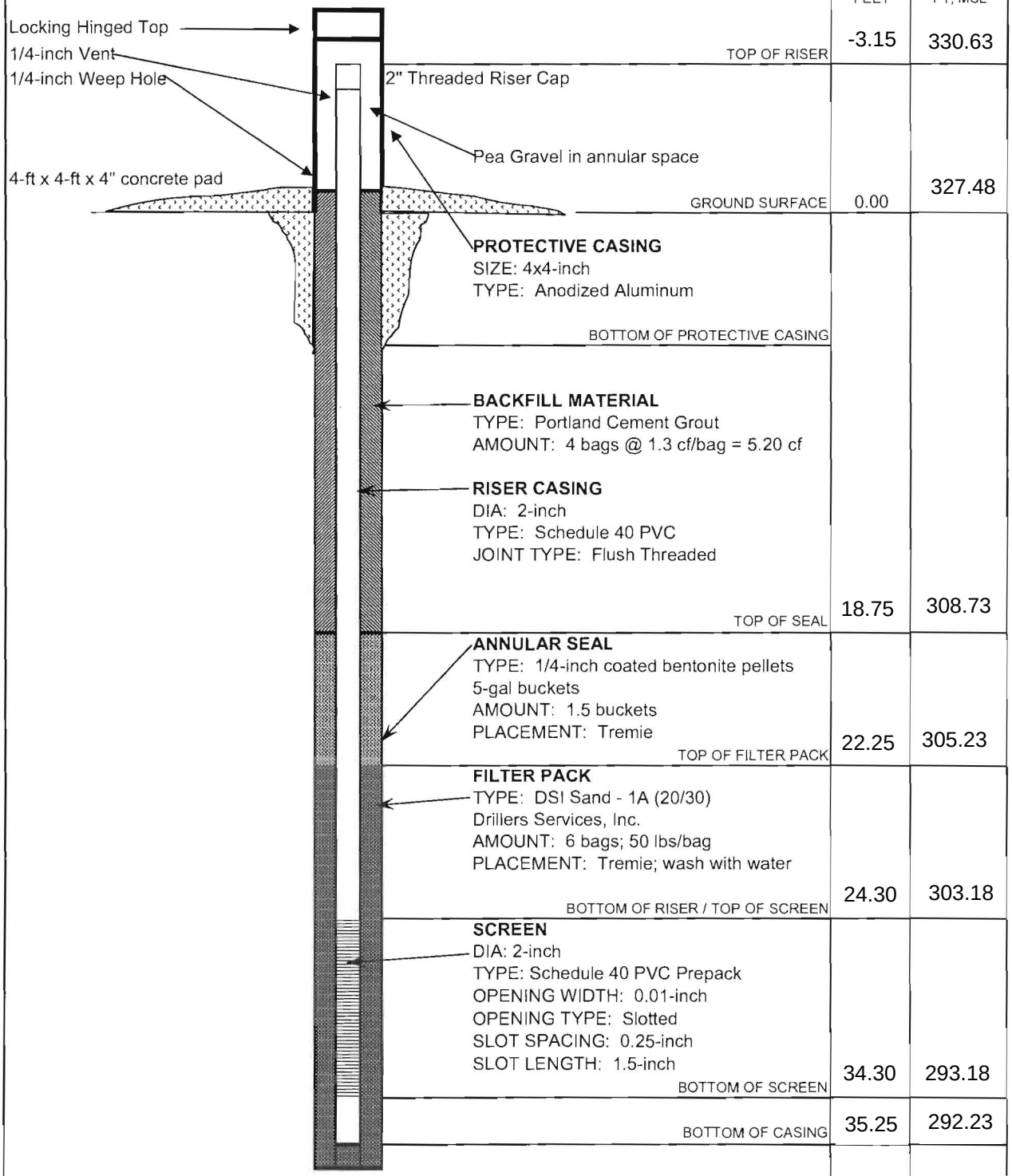
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	303.63	Tan silty SAND, fine to coarse grained	5	24.5-26	6-8-9	17			
26	302.63								
27	301.63								
28	300.63								
29	299.63								
30	298.63	Dark yellow and brown sandy SILT, micaceous	6	29.5-31	4-4-12	16			
31	297.63								
32	296.63								
33	295.63								
34	294.63								
35	293.63	Dark gray and yellow silty SAND, fine to medium grained, micaceous	7	34.5-36	14-25-26	51			
36	292.63								
37	291.63	36' - bottom of boring							
38	290.63								
39	289.63								
40	288.63								
41	287.63								
42	286.63								
43	285.63								
44	284.63								
45	283.63								
46	282.63								
47	281.63								
48	280.63								
49	279.63								
50	278.63								
51	277.63								
52	276.63								
53	275.63								
54	274.63								
55	273.63								
56	272.63								

Form GS9901 8-19-2008

Log elevation and depth data updated with revised survey certified 12/9/2024

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Former Plant Arkwright	DRILLING CO.: SCS, Inc.	WELL NAME
Solid Waste Management Unit	DRILLER: S. Milam	
LOCATION: Ash Ponds 1, 2, 3	RIG TYPE: CME 550	
LOGGER: L. Garland	DRILLING METHODS: HSA	GWA-20
DATE CONSTRUCTED: 12/4/2008		



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-3.15	330.63
GROUND SURFACE	0.00	327.48
BOTTOM OF PROTECTIVE CASING		
TOP OF SEAL	18.75	308.73
TOP OF FILTER PACK	22.25	305.23
BOTTOM OF RISER / TOP OF SCREEN	24.30	303.18
BOTTOM OF SCREEN	34.30	293.18
BOTTOM OF CASING	35.25	292.23

SOUTHERN COMPANY
Energy to Serve Your World

DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-21
Sheet 1 of 1

SITE: Former Plant Arkwright | HOLE DEPTH: 24 | SURF.ELEV.: 306.68
LOCATION: Solid Waste Management Area | COORDINATES N: 1062940.974 | E: 2439112.393
ANGLE: | BEARING: | CONTRACTOR: SCS, Inc. | DRILL NO.:
DRILLING METHOD: HSA | NO. SAMPLES: 4 | NO. U.D. SAMPLES: 0
CASING SIZE: | LENGTH: | CORE SIZE: | TOTAL % REC.:
WATER TABLE DEPTH: 10.5 | ELEV.: | TIME AFTER COMP.: | DATE TAKEN: 12/18/2008
TYPE GROUT: | QUANTITY: | MIX: | DRILLING START DATE: 12/1/2008
DRILLER: S. Milam | RECORDER: L. Garland | APPROVED: | DRILLING COMP. DATE: 12/1/2008

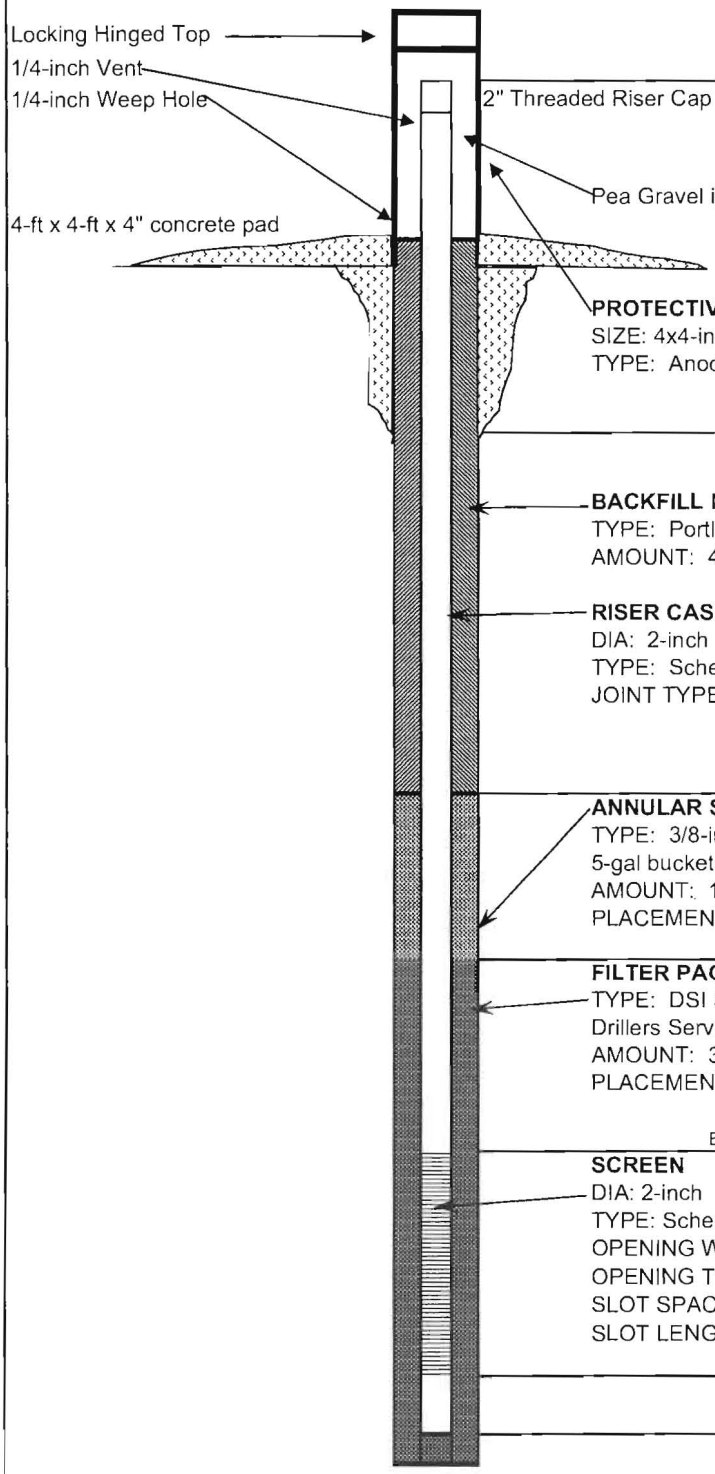
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	306.68								
1	305.68								
2	304.68								
3	303.68								
4	302.68								
5	301.68	Dark reddish brown silty SAND, fine grained	1	4.5-6	6-5-6	11			
6	300.68								
7	299.68								
8	298.68								
9	297.68								
10	296.68	Brown sandy SILT, with gray mottling and organics	2	9.5-11	1-2-2	4			
11	295.68								
12	294.68								
13	293.68								
14	292.68								
15	291.68	Gray sandy GRAVEL, with some silt and organics to medium grained sand	3	14.5-16	2-4-9	13			
16	290.68								
17	289.68								
18	288.68								
19	287.68								
20	286.68	Dark yellow and gray silty SAND, coarse to fine grained, with gravel, decomposed rock	4	19.5-21	21-50/4	R			
21	285.68								
22	284.68								
23	283.68								
24	282.68	24' - Bottom of boring							

Form GS9901 8-19-2008

Log elevation and depth data updated with revised survey certified 12/9/2024

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Former Plant Arkwright	DRILLING CO.: SCS, Inc.	WELL NAME
Solid Waste Management Unit	DRILLER: S. Milam	
LOCATION: Ash Ponds 1, 2, 3	RIG TYPE: CME 550	
LOGGER: L. Garland	DRILLING METHODS: HSA	GWC-21
DATE CONSTRUCTED: 12/2/2008		



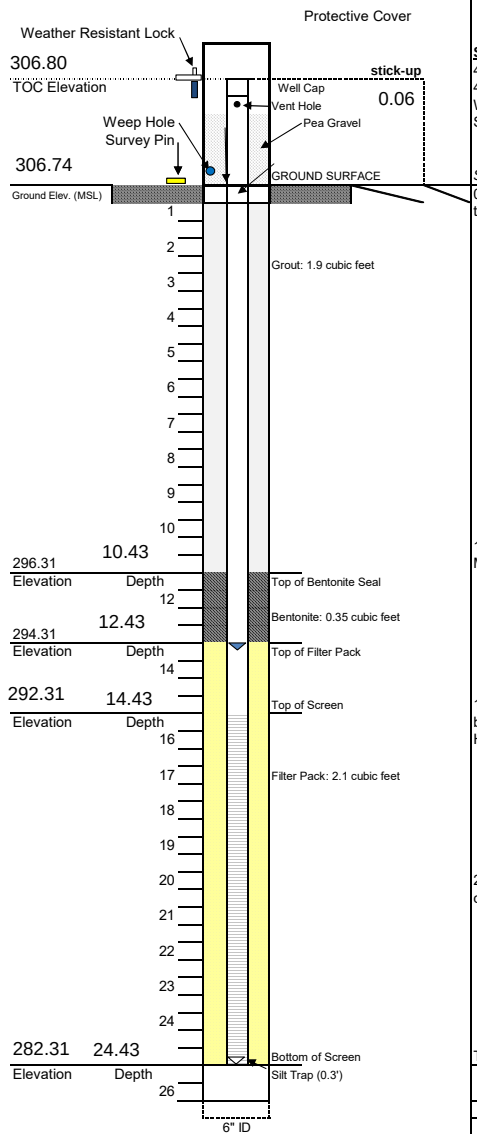
	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.99	308.46
GROUND SURFACE	0.00	305.47
BOTTOM OF PROTECTIVE CASING		
TOP OF SEAL	9.10	296.37
TOP OF FILTER PACK	11.50	293.97
BOTTOM OF RISER / TOP OF SCREEN	13.77	291.70
BOTTOM OF SCREEN	23.77	281.70
BOTTOM OF CASING	24.76	280.71

Log elevation and depth data updated with revised survey certified 12/9/2024

ATLANTIC COAST CONSULTING, INC.

ARGWC-22
BORING ID

PROJECT:	Plant Arkwright	**PROJECT NO.:**	I054-110
TOTAL DEPTH:	27.78 ft. BTOC	**SITE LOCATION:**	Macon, Georgia
DATE BEGIN:	19-Nov-2019	**DRILLER:**	Jaime Everson
DATE COMPLETE:	19-Nov-2019	**RIG TYPE:**	T-300 Rotosonic
INSTALLED BY:	Cascade	**METHOD:**	Rotosonic
SUPERVISED BY:	Taylor Goble		
WATER 1ST ENCOUNTERED:	10.95' BGS		
WATER AFTER 48 HOURS:	13.03' BTOC		



Northing: 1063038.395
Easting: 2438925.733

SURFACE COMPLETION:
4"x4" Aluminum Protective Casing
4'x4'x4" Concrete Pad
Weather Resistant Lock
Survey Pin

SOIL DESCRIPTION	Core Photos
0-10' Red silty clay (CL). Micaceous. Slight plasticity. Color change to a light brown/gray color at 7.0' BGS. Hand augered	
10-15' Dark gray silty clay (CL). Wet at ~10' bgs. High plasticity. Micaceous	
15-20' Dark gray silty sand (SC). Very coarse. Wet. Color change to a brown silty sand at ~17'. Sand grains remain course and wet. High plasticity	
20-25' Brown silty sand (SC) with some gravel pieces. Change to gray coarse sand at ~22'. Wet. High plasticity.	
Total well depth 27.9' BGS	

MATERIALS:

GROUT:	Bentonite Grout
MANUFACTURER:	AquaGuard
BENTONITE SEAL:	3/8" Bentonite Pellets
MANUFACTURER:	Pel-Plug
FILTER PACK SAND:	20/30 Mesh
MANUFACTURER:	Standard Sand & Silica
WELL SCREEN:	Sch. 40 - 2" PVC
MANUFACTURER:	Campbell Monoflex
SLOT SIZE:	0.010-Inch Slot
WELL CASING:	Sch. 40 - 2" PVC
MANUFACTURER:	Campbell Monoflex

Soil Descriptions from Unified Soil Classification System

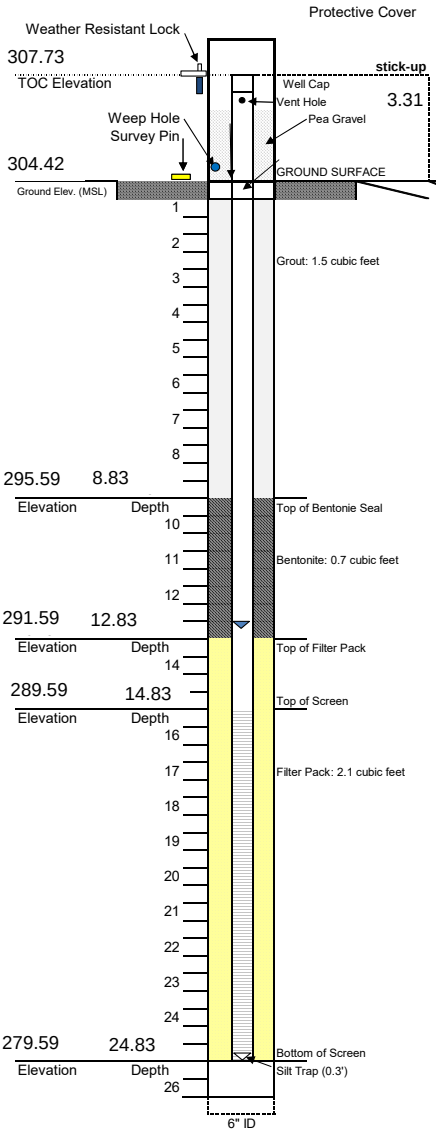
BTOC - Below Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

EVAN B. PERRY
GEORGIA REGISTERED PROFESSIONAL GEOLOGIST
No. 1744

ATLANTIC COAST CONSULTING, INC.

ARGWC-23
BORING ID

PROJECT:	Plant Arkwright	**PROJECT NO.:**	I054-110
TOTAL DEPTH:	27.21 ft. BTOC	**SITE LOCATION:**	Macon, Georgia
DATE BEGIN:	20-Nov-2019	**DRILLER:**	Isaac Young
DATE COMPLETE:	20-Nov-2019	**RIG TYPE:**	T-300 Rotosonic
INSTALLED BY:	Cascade	**METHOD:**	Rotosonic
SUPERVISED BY:	Taylor Goble		
WATER 1ST ENCOUNTERED:	10.95' BGS		
WATER AFTER 48 HOURS:	12.51' BTOC		



Northing: 1062885.484
Easting: 2439201.881

SURFACE COMPLETION:
4"x4" Aluminum Protective Casing
4'x4'x4" Concrete Pad
Weather Resistant Lock
Survey Pin

SOIL DESCRIPTION

0-9' Red silty clay (CL). Slight plasticity. Color change to a light brown at ~7.0 bgs. Hand augered

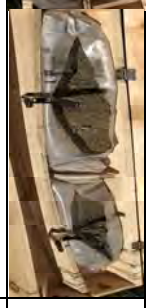
9-14' Light brown silty sand (SC). Micaceous. Dry. Progression to a darker brown silty sand at ~11' bgs. Moist after this point.

14-19' Dark brown/gold colored silty sand (SC). Moist. Mottled white and black.

19-25' Brown/gray silty sand (SC) with some gravel pieces. Moist. Progresses to a coarse gray sand at ~22. bgs. Very wet.

Total well depth 28.4' BGS

Core Photos



MATERIALS:

GROUT:		Bentonite Grout
MANUFACTURER:		AquaGuard
BENTONITE SEAL:		3/8" Bentonite Pellets
MANUFACTURER:		Pel-Plug
FILTER PACK SAND:		20/30 Mesh
MANUFACTURER:		Standard Sand & Silica
WELL SCREEN:		Sch. 40 - 2" PVC
MANUFACTURER:		Campbell Monoflex
SLOT SIZE:		0.010-Inch Slot
WELL CASING:		Sch. 40 - 2" PVC
MANUFACTURER:		Campbell Monoflex

Soil Descriptions from Unified Soil Classification System

BTOC - Below Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

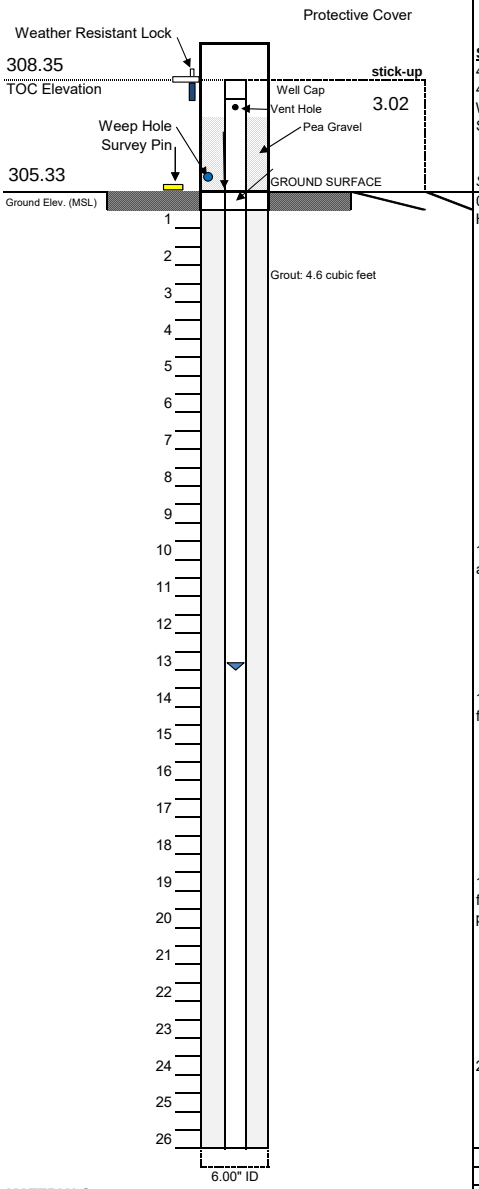
EVAN B. PERRY ★ GEORGIA REGISTERED PROFESSIONAL GEOLOGIST ★ No. 1744

ATLANTIC COAST CONSULTING, INC.

ARAMW-1

BORING ID

PROJECT:	Plant Arkwright	**PROJECT NO.:**	I054-110
TOTAL DEPTH:	45.33 ft. BTOC	**SITE LOCATION:**	Macon, Georgia
DATE BEGIN:	20-Nov-2019	**DRILLER:**	Isaac Young
DATE COMPLETE:	20-Nov-2019	**RIG TYPE:**	T-300 Rotosonic
INSTALLED BY:	Cascade	**METHOD:**	Rotosonic
SUPERVISED BY:	Taylor Goble		
WATER 1ST ENCOUNTERED:	14' BGS		
WATER AFTER 48 HOURS:	13.43' BTOC		



Northing: 1062937.141
Easting: 2439119.673

SURFACE COMPLETION:
4"x4" Aluminum Protective Casing
4'x4'x4" Concrete Pad
Weather Resistant Lock
Survey Pin

SOIL DESCRIPTION

0-10' Red silty clay (CL). Micaceous. Color change to light brown. Hang augered

10-14' No recovery when driller switched to rock coring techniques at 14' bgs

14-19' Rock. Gneiss with high quartz content. Iron staining and light fracturing evident from 14-17'. Harder rock from 17-19'

19-24' Extremely fractured section. Mottled dark brown moist silty sand from 19-20'. Return to gneiss found above at 20'. Extremely large core pieces. No fracturing or iron staining.

24-29' As above.

Core Photos

MATERIALS:

GROUT:	Bentonite Grout
MANUFACTURER:	AquaGuard
BENTONITE SEAL:	3/8" Bentonite Pellets
MANUFACTURER:	Pel-Plug
FILTER PACK SAND:	20/30 Mesh
MANUFACTURER:	Standard Sand & Silica
WELL SCREEN:	Sch. 40 - 2" PVC
MANUFACTURER:	Campbell Monoflex
SLOT SIZE:	0.010-Inch Slot
WELL CASING:	Sch. 40 - 2" PVC
MANUFACTURER:	Campbell Monoflex

Soil Descriptions from Unified Soil Classification System

BTOC - Below Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

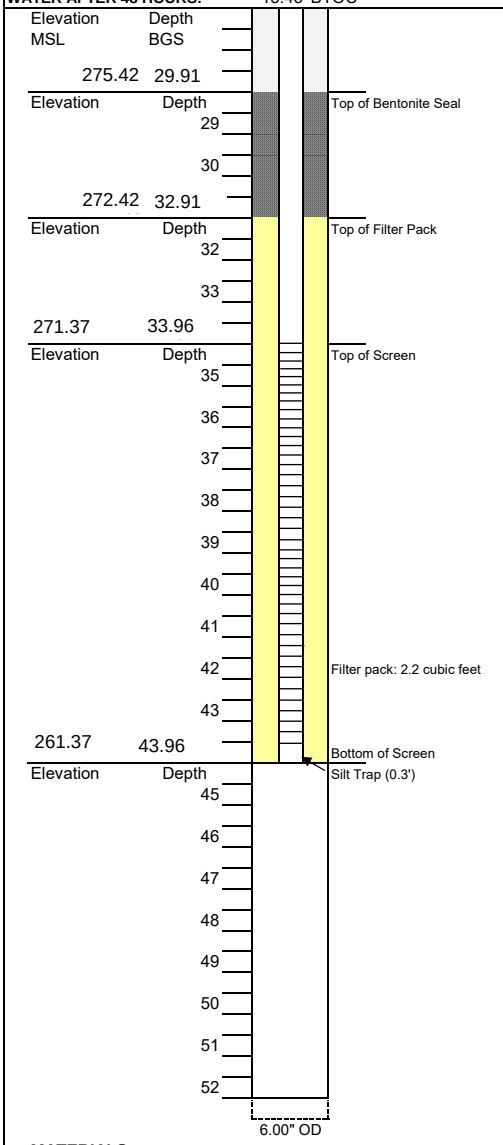
Log elevation and depth data updated with revised survey certified 12/9/2024

ATLANTIC COAST CONSULTING, INC.

ARAMW-1

BORING ID

PROJECT:	Plant Arkwright	**PROJECT NO.:**	I054-110
TOTAL DEPTH:	45.33 ft. BTOC	**SITE LOCATION:**	Macon, Georgia
DATE BEGIN:	20-Nov-2019	**DRILLER:**	Isaac Young
DATE COMPLETE:	20-Nov-2019	**RIG TYPE:**	T-300 Rotosonic
INSTALLED BY:	Cascade	**METHOD:**	Rotosonic
SUPERVISED BY:	Taylor Goble		
WATER 1ST ENCOUNTERED:	14' BGS		
WATER AFTER 48 HOURS:	13.43' BTOC		



29-34' As above. Some fracturing and iron staining present. Layer of mottled gold and black sand, moist, from 32-34'

34-39' Hard gneiss. No fracturing or iron staining. Large pieces.

39-44' As above. Some fracturing and iron staining ~44'. Limited recovery

Total well depth 44.0' BGS

Core Photos

MATERIALS:

GROUT:	Bentonite Grout
MANUFACTURER:	AquaGuard
BENTONITE SEAL:	3/8" Bentonite Pellets
MANUFACTURER:	Pel-Plug
FILTER PACK SAND:	20/30 Mesh
MANUFACTURER:	Filter Media
WELL SCREEN:	Sch. 40 - 2" PVC
MANUFACTURER:	Silver-Line
SLOT SIZE:	0.010-Inch Slot
WELL CASING:	Sch. 40 - 2" PVC
MANUFACTURER:	Silver-Line

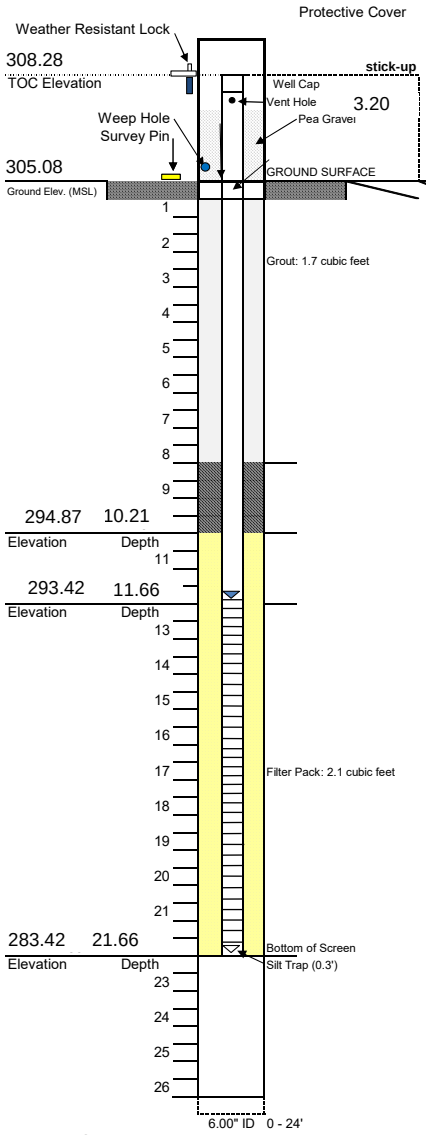
TOC - Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

ATLANTIC COAST CONSULTING, INC.

ARAMW-2

BORING ID

PROJECT:	Plant Arkwright	**PROJECT NO.:**	I054-110
TOTAL DEPTH:	24.80 ft. BTOC	**SITE LOCATION:**	Macon, Georgia
DATE BEGIN:	20-Nov-2019	**DRILLER:**	Isaac Young
DATE COMPLETE:	20-Nov-2019	**RIG TYPE:**	T-300 Rotosonic
INSTALLED BY:	Cascade	**METHOD:**	Rotosonic
SUPERVISED BY:	Taylor Goble		
WATER 1ST ENCOUNTERED:	12.0' BGS		
WATER AFTER 48 HOURS:	13.49' BTOC		



Northing: 1062926.908
Easting: 2439115.223

SURFACE COMPLETION:
4"x4" Aluminum Protective Casing
4'x4'x4" Concrete Pad
Weather Resistant Lock
Survey Pin

SOIL DESCRIPTION

0-9' Red silty clay (CL). Micaceous. Color change to light brown. Hand augered.

9-15' Gray silty sand (SC). Dry. Becomes wet around 12'. Changes in color to a red brown coarse sand (S) around 13.5'.

15-22' Continue gray coarse sand (S). Moist. Transitions into a dry and gravelly brown sand at 19'. Bigger gravel pieces and rock pieces apparent from 19-22' (SG).

Total well depth 25.0' BGS

Core Photos

MATERIALS:

GROUT:	Bentonite Grout
MANUFACTURER:	AquaGuard
BENTONITE SEAL:	3/8" Bentonite Pellets
MANUFACTURER:	Pel-Plug
FILTER PACK SAND:	20/30 Mesh
MANUFACTURER:	Filter Media
WELL SCREEN:	Sch. 40 - 2" PVC
MANUFACTURER:	Campbell Monoflex
SLOT SIZE:	0.010-Inch Slot
WELL CASING:	Sch. 40 - 2" PVC
MANUFACTURER:	Campbell Monoflex

Soil Descriptions from Unified Soil Classification System

BTOC - Below Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

wood.

BORING ARAMW-7

CLIENT Georgia Power
PROJECT NAME Plant Arkwright
PROJECT NUMBER 6122201429
PROJECT LOCATION Bibb County, Georgia
DATE STARTED 11/14/20 **COMPLETED** 11/14/20
GROUND ELEVATION 306.83 ft **HOLE SIZE** 6-in
DRILLING CONTRACTOR Cascade
GROUND WATER LEVELS:
DRILLING METHOD Sonic
AT TIME OF DRILLING ---
LOGGED BY KN **CHECKED BY** NJM
AT END OF DRILLING ---
COORDINATES N:1063049.07, E: 2438913.27
AFTER DRILLING 12.81ft (11/18/2020)

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	ENVIRONMENTAL DATA	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0						Casing Top Elev: 306.95 (ft) Casing Type: 2 in SCH 40 PVC
					-SILTY SAND (SM), reddish brown, loose, moist, with some clay.	
10					10.0 / 297.1	
					-POORLY GRADED GRAVELLY SAND (SG), gray, loose, moist, with organics.	
					13.5 / 293.6	
15					-SAND (SP), gray-brown, medium dense, moist, with some silt and clay.	
					15.5 / 291.6	Grout
					16.5 / 290.6 -CLAYEY SAND (SC), gray-brown, dense with some silt and trace cobbles.	
					-SILTY SAND (SM), yellow-brown to brown, medium dense, saprolitic, wet, with plagioclase/quartz rich areas.	2 in SCH 40 PVC
20						
25						
30					(Same as above) small schist fragments.	
					32.0 / 275.1	Top of Bentonite Seal 276.23
					-PARTIALLY WEATHERED GNEISS, brown-gray, highly fractured.	Bentonite seal
35						Top of Filter Pack 272.73
						Top of Screen 269.43
40					-GNEISS, competent with some fractures.	Gravel Pack #1-Southern Product and Silica Co.
						10 feet of 0.01-inch slotted 2" OD PVC (SCH 40)
45						Bottom of Screen 259.43
					48.0 (Same as above) weathered. / 259.1	Sump and cap (0.3 ft)

Boring terminated at 48 feet.

wood.

BORING ARAMW-8

CLIENT Georgia Power
PROJECT NAME Plant Arkwright
PROJECT NUMBER 6122201429
PROJECT LOCATION Bibb County, Georgia
DATE STARTED 11/13/20 **COMPLETED** 11/13/20
GROUND ELEVATION 304.90 ft **HOLE SIZE** 6-in
DRILLING CONTRACTOR Cascade
GROUND WATER LEVELS:
DRILLING METHOD Sonic
AT TIME OF DRILLING ---
LOGGED BY KN **CHECKED BY** NJM
AT END OF DRILLING ---
COORDINATES N:1062895.98, E: 2439197.40
AFTER DRILLING 11.97ft (11/17/2020)

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	ENVIRONMENTAL DATA	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0						Casing Top Elev: 307.62 (ft) Casing Type: 2 in SCH 40 PVC
					-CLAYEY SAND (SC), brownish orange, loose to medium dense, moist	
12.5					292.0	
					-SILTY SAND (SM), grayish brown, saprolitic, medium dense, wet, with quartz and plagioclase grain rich areas.	Grout
						2 in SCH 40 PVC
					trace clay and mica.	
					(Same as above) poor recovery from 30-35 feet, saprolite and PWR.	Top of Bentonite Seal 273.23
						Bentonite seal
35.0					269.5	Top of Filter Pack 270.23
					-GNEISS, fractured, slightly weathered.	Top of Screen 267.83
						Gravel Pack #1-Southern Product and Silica Co.
					micaceous seam.	10 feet of 0.01-inch slotted 2" OD PVC (SCH 40)
						Bottom of Screen 257.83
47.0					257.79	Sump and cap (0.3 ft)

Boring terminated at 47 feet.

SUBSURFACE LOG

Client Borehole ID	ARAMW-9	Stantec Boring No.	**ARAMW-9**
Client	Georgia Power Company	Boring Location	1,063,022.92 N; 2,438,935.47 E
Project Number	175569434	Surface Elevation	306.31 ft
		Elevation Datum	NAVD88
Project Name	AP-2 ARAMW-9 Installation	Date Started	10/4/22
		Completed	10/7/22
Project Location	Bibb Co, Macon, Georgia	Depth to Water	43.3 ft
		Date/Time	10/11/22
Inspector	B. Steele, PG	Logger	J. Bankston
Depth to Water	24.6 ft	Date/Time	10/20/22
Drilling Contractor	Cascade Drilling / C. Franklin	Drill Rig Type and ID	TSI 150 CC Sonic
Overburden Drilling and Sampling Tools (Type and Size)	4" x 6" Rotosonic		
Sampler Hammer Type	N/A	Weight	N/A
Drop	N/A	Efficiency	N/A
Reviewed By	B. Steele, PG	Approved By	E. Smith, PG

Lithology Depth Ft[2]	Elevation	Description	Overburden: / Rock Core:	Sample[1] / RQD %	Depth Ft[2] / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	306.3	Top of Hole						
0.1	306.2	Topsoil						
		SILTY SAND WITH CLAY, fine to medium, non-plastic, loose, dry to moist, Reddish-brown		RS01	0.0 - 10.0	3.2	N/A	
13.3	293.0	SANDY POORLY GRADED GRAVEL, medium to coarse, non-plastic, loose, moist, Gray		RS02	10.0 - 20.0	7.4	N/A	
16.5	289.8	SILTY SAND, non-plastic, loose, moist, Yellow brown to brown						
20.0	286.3							

SUBSURFACE LOG

Client Borehole ID: ARAMW-9 | Stantec Boring No.: **ARAMW-9**

Client: Georgia Power Company | Boring Location: 1,063,022.92 N; 2,438,935.47 E

Project Number: 175569434 | Surface Elevation: 306.31 ft | Elevation Datum: NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample[1] / RQD %	Depth Ft[2] / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
20		SILTY SAND WITH CLAY, very fine to medium, non-plastic, medium dense to loose, moist, no staining, Blocky, Red brown to brown						
25				RS03	20.0 - 30.0	10.0	N/A	
30.0	276.3	WELL GRADED SAND, coarse, non-plastic, loose, wet, Light brown to dark gray						
35.0	271.3	GRAVELLY POORLY GRADED SAND WITH CLAY, very fine to coarse, non to low plasticity, medium dense, wet, Gray-brown		RS04	30.0 - 40.0	6.3	N/A	ARAMW-9 30.0 - 40.0 collected for treatability analysis
38.5	267.8	SANDY WELL GRADED GRAVEL WITH SILT, fine to coarse, non-plastic, loose, Dark brown						
40								
41.0	265.3	Gneiss, white to black, medium crystalline to finely crystalline, very hard, dry, biotite, plagioclase, quartz, Quartz cemented fracture present at 41.5'						ARAMW-9 41.0 - 43.0 collected for geochemical and treatability analysis

SUBSURFACE LOG

Client Borehole ID: ARAMW-9 | Stantec Boring No.: **ARAMW-9**

Client: Georgia Power Company | Boring Location: 1,063,022.92 N; 2,438,935.47 E

Project Number: 175569434 | Surface Elevation: 306.31 ft | Elevation Datum: NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample[1] / RQD %	Depth Ft[2] / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
45		Gneiss, white to black, medium crystalline to finely crystalline, very hard, dry, biotite, plagioclase, quartz, Quartz cemented fracture present at 41.5' *(Continued)*		RS05	40.0 - 50.0	3.6	N/A	
		Minor iron oxide discoloration 47.4' remainder of run competent						
50		Fractures present at 51.2-51.9 and 55-56.1 feet (no weathering discoloration present)						
55				RS06	50.0 - 60.0	9.2	N/A	
		Higher plagioclase and quartz content, trace muscovite from 57.7 to 58.4 feet						
60								
		Highly fractured from 62.0 to 65.0 feet. Weathering discoloration suggests water-bearing fractures in this zone. Fractures appear to be hydraulically connected to fractures present in screened interval of ARAWM-7.						
65	65.0 241.3	Gneiss, very competent, non-fractured		RS07	60.0 - 70.0	8.9	N/A	

SUBSURFACE LOG

Client Borehole ID: ARAMW-9 | Stantec Boring No.: **ARAMW-9**

Client: Georgia Power Company | Boring Location: 1,063,022.92 N; 2,438,935.47 E

Project Number: 175569434 | Surface Elevation: 306.31 ft | Elevation Datum: NAVD88

Lithology Depth Ft[2]	Elevation	Description	Overburden: / Rock Core:	Sample[1] / RQD %	Depth Ft[2] / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
70		Gneiss, very competent, non-fractured *(Continued)*						
75				RS08	70.0 - 80.0	7.9	N/A	
80								
85				RS09	80.0 - 90.0	8.4	N/A	
90								

SUBSURFACE LOG

Client Borehole ID ARAMW-9 | Stantec Boring No. **ARAMW-9**

Client Georgia Power Company | Boring Location 1,063,022.92 N; 2,438,935.47 E

Project Number 175569434 | Surface Elevation 306.31 ft | Elevation Datum NAVD88

Lithology			Description	Overburden: / Rock Core:	Sample[1] / RQD %	Depth Ft[2] / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
Depth Ft[2]	Elevation								
95			Gneiss, very competent, non-fractured *(Continued)* Heavily fractured from 95.2 to 96.0 (weathering discoloration present)		RS10	90.0 - 100.0	8.3	N/A	ARAMW-9 95.0 - 96.5 collected for geochemical and treatability analysis
100			Heavily fractured from 100.7 to 102.0 (weathering discoloration present)						ARAMW-9 100.7 - 102.0 collected for geochemical and treatability analysis
					RS11	100.0 - 105.0	5.0	N/A	
105	105.0	201.3	No Refusal / Bottom of Hole at 105.0 Ft.						

Depths are reported in feet below ground surface

Log elevation and depth data updated with revised survey certified 12/9/2024

Georgia Power

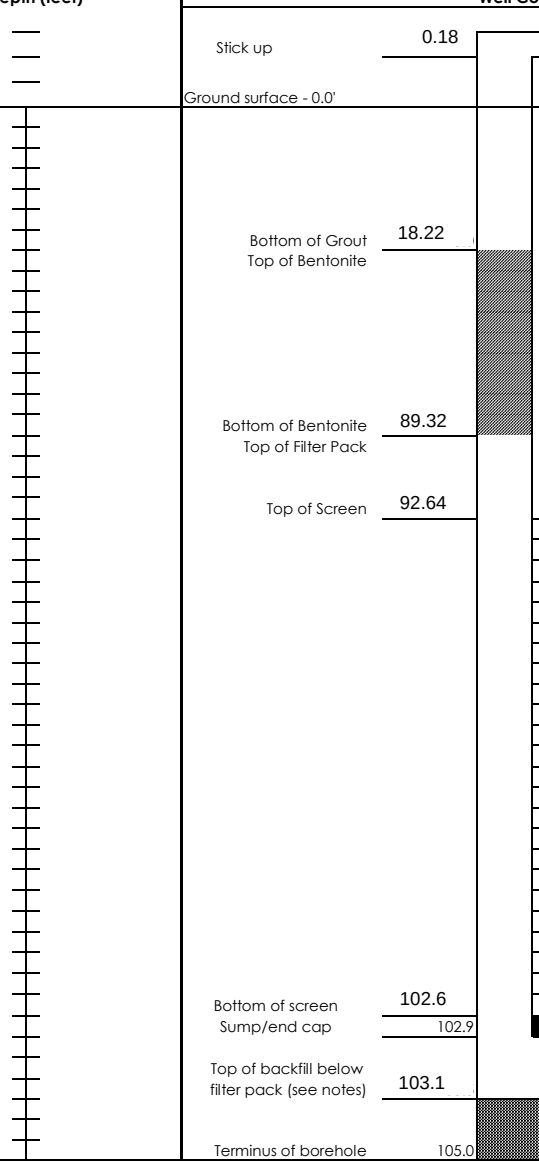
Well Installation Field Log

Project Name:	Plant Arkwright Vertical Groundwater Delineation	Date Started:	10/4/2022	Date Completed:	10/7/2022
Borehole/Well No:	ARAMW-9	Northing (ft):	1063022.92	Easting (ft):	2438935.47
Plant Name:	Arkwright	Latitude:	32.921665	Longitude:	-83.702746
Plant Address:	5241 Arkwright Road, Macon, Georgia, 31210	Location Datum:	NAD83	Elevation Datum:	NAVD88
Project & Task Number:	175569434/ 2.3	Surface/ Ground Elevation (ft):	306.54	Stickup (ft, ags):	2.6
Goals/Task:	AP-2 ARAMW-9 Well Installation	Borehole Diameter (in):	6.0	Borehole Depth (ft, bgs):	105.0
Drilling Company:	Cascade Drilling	Well Casing Diameter (in):	2.0	Well Depth (ft, bgs):	102.9
Drilling Equipment/Rig Type:	TSI-150CC	Top of Casing elev (ft):	306.72	Screen length (ft):	10
Drilling Method:	4" x 6" Rotosonic	DTW at Completion (ftoc):	43.30		
Sampling Method:	Sonic 4" core barrel				
Prepared By:	Jackson Bankston				
Review By:	Edgar Smith				

***Not to Scale**

Depth (feet)

Well Construction



Materials Inventory

Stick up: 2.6 ft, ags

Casing Type (steel or PVC, schedule 40 or 80): 2" ID PVC

Casing Top: 2.6 ft, ags Bottom: 92.4 ft, bgs

Screen Type: PVC U-Pack Type II

Screen Slot Size: 0.010

Screen Top: 92.4 ft, bgs Bottom: 102.4 ft, bgs

Sump/end cap Top: 102.4 ft, bgs Bottom: 102.9 ft, bgs

Grout Quantity: 2 (50 lb) bags of Aqua Guard and 30 gallons H2O

Grout Type: Baroid Aqua Guard 30% Solids Grout.

Grout Top: 0.0 ft, bgs Bottom: 18.0 ft, bgs

Bentonite Type: Pel Plug 3/8" PDS TR30 pellets / Halliburton 3/8" uncoated chips

Bentonite Quantity: 12 (50 lb) bags

Bentonite Seal Top: 18.0 ft, bgs Bottom: 89.1 ft, bgs

Filter Pack - Pre-pack and Annular Space
Type (manufacturer, size):
Southern Product & Silica Co. Filter Sand and Gravel #1. Used 4.5 (14 L) bags

Filter Pack: Top: 89.1 ft, bgs Bottom: 103.5 ft, bgs

Notes: Bentonite seal hydrated 2-hours prior to grout backfill placement.

Backfill was not necessary due to crushed rock that settled at the bottom of the bore hole from 105-103.5

Elevation in feet NAVD88 (North American Vertical Datum 1988)

Stantec **ARAMW-10** BORING LOG

PROJECT NUMBER 175569434	**DRILLING COMPANY** Southern Company C.F.S.	**BORING LOCATION** N1063082.33, E2438902.85
PROJECT NAME Plant Arkwright	**DRILLER** S. Denty	**COMPLETION** Flush-mount with 3 ft x 3 ft pad
CLIENT Georgia Power	**RIG TYPE/ METHOD** CME 550/ HSA & wireline	**SURFACE ELEVATION** 308.39 ft
ADDRESS 5241 Arkwright Road, Macon, Ga	**TOOL DIA.** 5.63-in OD/ 2.25-in ID Aug, PQ core	**WELL TOC** 308.49 ft
LOCATION AP-2. Lower bench	**BORING DEPTH** 74.8 ft	**COORD SYS** NAD83, NAVD88

COMMENTS Started drilling on 10/22/2024 and completed drilling on 10/26/2024. Well construction completed on 11/21/2024 with installation of manhole, locking cover and concrete pad.

LOGGED BY A. Shoredits
CHECKED BY E. Smith

Depth (ft)	Samples (ft)	Soil sample ID & depth taken (ft)	Blow counts	Recovery (ft)	Drilling Method	RQD (%)	Graphic Log	Material Description	USCS	Well Diagram	Elevation (ft)
0	0-1.5 (SPT01)		1-1-1	0.95	HSA w/ SPT			0.3-0.5 ft: CCR fly ash, blue grey Silty SAND, red, loose, moist, rootlets	SM		308
1											
2											307
3											
4	3.5-5.0 (SPT02)		3-2-2	1.35				SAA - No CCR, loose, moist			306
5											
6											305
7											
8	8.5-10 (SPT03)		2-4-4	1.4							304
9								CLAY trace fine grained sand, dark brown, non-plastic to low plasticity, soft, moist	CL		
10											303
11											
12											302
13											
14	13.5-15.0 (SPT04)		WH-2-4	1.5				Sandy CLAY, grey, soft to medium stiff, medium plasticity, moist	CL-SC		301
15											
										Bentonite grout	300
											299
											298
											297
											296
											295
											294

Depth (ft)	Samples (ft)	Soil sample ID & depth taken (ft)	Blow counts	Recovery (ft)	Drilling Method	RQD (%)	Graphic Log	Material Description	USCS	Well Diagram	Elevation (ft)
16											293
17											292
18											291
19	18.5-20.0 (SPT05)		8-10-8	1.4				Silty SAND trace sub-rounded gravel and silt, brown/ grey/ tan, loose, wet, fine to coarse grained, micaceous, saprolitic	SP		290
20											289
21											288
22											287
23											286
24	23.5-25.0 (SPT06)		21-50/5	0.92						Bentonite grout	285
25	25.0-27.0 (SPT07)		50/5	0.42				Silty gravelly SAND, brown/ white, loose, dry, fine to coarse grained, saprolitic	SP-SM		284
26											283
27	27.0-29.0 (SPT08)		50/5	0.42							282
28											281
29	29.0-31.0 (SPT09)	ARAMW-10 -SOIL (29.0-31.0 ft)	50/5	0.42				Saprolite with very weathered rock lenses, dry			280
30											279
31	31.0-33.0 (SPT10)	ARAMW-10 -SOIL (31.0-33.0 ft)	28-50/3	0.75				31.6 ft: Very weathered rock lens, dry			278
32											277
											276

Depth (ft)	Samples (ft)	Soil sample ID & depth taken (ft)	Blow counts	Recovery (ft)	Drilling Method	RQD (%)	Graphic Log	Material Description	USCS	Well Diagram	Elevation (ft)
33	33.0-35.0 (SPT11)		50/2	0.0							275
34											274
35	NS										273
36											272
37											271
38										Bentonite grout	270
39											269
40											268
41											267
42											266
43	NS				WL w/ PQ core			Weathered rock, auger refusal at 42.5 ft.	PWR		265
44								Temporary steel surface casing set to 44.1 ft.			264
45	44.8-49.8 (P01)			5.0		76		Gravel, sub-angular, fine to coarse grained Biotite gneiss, black/grey/white, mod to intensely fractured, 45° mineral banding, alternating qtz veins with dark biotite/hornfels zones, mod weathering 45.0-45.8 ft: 70° fracture, brown surface staining, mod weathering	-	Bentonite plug	263
46								46.0 ft: 45° fracture, med decomp, slight staining			262
47		ARAMW-10 -ROCK (47.7-47.9 ft) (545 g)						46.5-46.8 ft: 2x45° bisecting fractures, staining, slight decomp 47.4-47.8 ft: 45° fracture, highly weathered zone, qtz veins w/ coarse sand on planes			261
48								48.0-48.1 ft: 45° fracture wide, mod weathering, coarse gravel SAA, slight to mod fracturing	-	U-pack & annular sand pack	260
49								49.1-49.6 ft: 80° healed fracture			259
50	49.8-54.8 (P02)			4.8		96		50.6-52.0 ft: 80° healed fracture			258

Depth (ft)	Samples (ft)	Soil sample ID & depth taken (ft)	Blow counts	Recovery (ft)	Drilling Method	RQD (%)	Graphic Log	Material Description	USCS	Well Diagram	Elevation (ft)
51											257
52								52.0 ft: 45° fracture, metallic red/ bn minerl inclusions 0.75-in dia			256
53											255
54								54.1 ft: 45° fracture, metallic minerals, slight weathering		U-pack & annular sand pack	254
55	54.8-56.8 (P03)	ARAMW-10 -ROCK (55.7-55.9 ft) (545 g)		2.2		100		55.7 ft: 45° fractures, black fracture surface, micaceous fine sand on plane, slightly weathered			253
56								56.4 ft: Sub-horizontal fracture, brown/red staining, slight to mod weathering, very narrow aperture			252
57	56.8-59.8 (P04)			2.9		87		57.1 ft: 45° fracture, green minerals, mod disintegration 57.6 ft: 45° fracture, green minerals, slight weathering			251
58								58.8 ft: 45° fracture, green minerals, mod disintegration			250
59								59.2 ft: Partial 45° fracture, brown staining along edge			249
60	59.8-64.8 (P05)			5.1		89		59.9-60.0 ft: qtz vein			248
61								61.1 ft: 45° fracture, slight brown staining			247
62								62.4 & 62.6 ft: 45° fracture, slight brown staining			246
63		ARAMW-10 -ROCK (64.3-64.5 ft) (480 g)								Bentonite sump backfill	245
64								63.9 ft: 45° fracture, slight brown staining			244
65	64.8-69.8 (P06)			5.0		91		64.4 ft: 45° fracture, slight brown staining, metallic minerals present 64.6-64.8 ft: qtz vein			243
66								66.1 & 66.4 ft: 45° fracture, slight brown staining			242
67											241
68								67.6 ft: 45° fracture, slight brown staining, slight decomp.			240

Stantec **ARAMW-10** BORING LOG

Depth (ft)	Samples (ft)	Soil sample ID & depth taken (ft)	Blow counts	Recovery (ft)	Drilling Method	RQD (%)	Graphic Log	Material Description	USCS	Well Diagram	Elevation (ft)
69											239
70	69.8-74.8 (P07)			4.7		100		70.6 ft: Partial 45° fracture, metallic minerals present			238
71											237
72										Bentonite sump backfill	236
73								73.0-73.8 ft: 70° healed fracture, dark fine grained crystals w/ intense foliation, metallic minerals present			235
74											234
75								BOH 74.8 ft bgs. Boring terminated at a predetermined depth.			233
76											232
77											231
78											230
79											229
80											228
81											227
82											226
83											225
84											224
85											223
86											222

Stantec ARAMW-11 BORING LOG

PROJECT NUMBER 175569434	**DRILLING COMPANY** Southern Company C.F.S.	**BORING LOCATION** N1063077.03, E2438902.96
PROJECT NAME Plant Arkwright	**DRILLER** A. Castleberry	**COMPLETION** Flush-mount with 3 ft x 3 ft pad
CLIENT Georgia Power	**RIG TYPE/ METHOD** CME 550/ HSA	**SURFACE ELEVATION** 308.02 ft
ADDRESS 5241 Arkwright Road, Macon, Ga	**TOOL DIA.** 5.63-in OD/ 2.25-in ID Augers	**WELL TOC** 308.09 ft
LOCATION AP-2. Lower bench	**BORING DEPTH** 40.5 ft	**COORD SYS** NAD83, NAVD88

COMMENTS Started and completed drilling on 11/10/2024. Well construction completed on 11/21/2024 with installation of manhole, locking cover and concrete pad. Lithologic description from 0.0 to 33.5 based on adjacent boring ARAMW-10.

LOGGED BY A. Shoredits
CHECKED BY E. Smith

Depth (ft)	Samples (ft)	Soil sample ID & depth taken (ft)	Blow counts	Recovery (ft)	Drilling Method	RQD (%)	Graphic Log	Material Description	USCS	Well Diagram	Elevation (ft)
0					HSA w/ SPT			0.3-0.5 ft: CCR fly ash, blue grey Silty SAND, red, loose, moist, rootlets	SM		308
1											307
2											306
3											305
4											304
5											303
6											302
7										Bentonite grout	301
8											300
9								CLAY, dark brown, non plastic to low plasticity, soft, moist, fine grained sand mixed in	CL		299
10											298
11											297
12											296
13											295
14								Sandy CLAY, grey, soft to medium stiff, medium plasticity, moist	CL-SC		294
15											293

Depth (ft)	Samples (ft)	Soil sample ID & depth taken (ft)	Blow counts	Recovery (ft)	Drilling Method	RQD (%)	Graphic Log	Material Description	USCS	Well Diagram	Elevation (ft)
16											292
17											291
18											290
19								Silty SAND trace sub-rounded gravel and silt, brown/ grey/ tan, loose, wet, fine to coarse grained, micaceous, saprolitic	SP		289
20										Bentonite grout	288
21											287
22											286
23											285
24											284
25								Silty gravelly SAND, brown/ white, loose, dry, fine to coarse grained, saprolitic	SM		283
26											282
27										Bentonite plug	281
28											280
29								Saprolite with very weathered rock lenses, dry			279
30										U-pack & annular sand pack	278
31								31.6 ft: Very weathered rock lens, dry			277
32											276

Stantec **ARAMW-11** BORING LOG

Depth (ft)	Samples (ft)	Soil sample ID & depth taken (ft)	Blow counts	Recovery (ft)	Drilling Method	RQD (%)	Graphic Log	Material Description	USCS	Well Diagram	Elevation (ft)
33											275
	33.5-35.0 (SPT01)	ARAMW-11 -SOIL (33.5-35.0 ft)	44-50/2	0.67				Silty SAND with sub-rounded to sub-angular gravel, brown/ black, dense, wet, fine gravel to fine sand			
34											274
35											273
36											272
37										U-pack & annular sand pack	271
38											270
	38.5-40.0 (SPT02)		50/2	0.0							
39											269
40											268
41								BOH 40.5 ft bgs. Boring terminated at auger refusal depth.			267
42											266
43											265
44											264
45											263
46											262
47											261
48											260
49											259
50											258

Stantec ARAMW-12 BORING LOG

PROJECT NUMBER 175569434
PROJECT NAME Plant Arkwright
CLIENT Georgia Power
ADDRESS 5241 Arkwright Road, Macon, Ga
LOCATION AP-2. Lower bench

DRILLING COMPANY Southern Company C.F.S.
DRILLER S. Denty
RIG TYPE/ METHOD CME 550/ HSA & wireline
TOOL DIA. 5.63-in OD/ 2.25-in ID Aug, PQ core
BORING DEPTH 65.4 ft

BORING LOCATION N1062906.98, E2439199.15
COMPLETION Stick-up with 3 ft x 3 ft pad
SURFACE ELEVATION 305.80 ft
WELL TOC 309.08 ft
COORD SYS NAD83, NAVD88

COMMENTS Started drilling on 10/28/2024 and completed drilling on 11/8/2024. Well construction completed on 11/21/2024 with installation of 6-in stick-up protective cover and concrete pad.

LOGGED BY A. Shoredits
CHECKED BY E. Smith

Depth (ft)	Samples (ft)	Soil sample ID & depth taken (ft)	Blow counts	Recovery (ft 0	Drilling Method	RQD (%)	Graphic Log	Material Description	USCS	Well Diagram	Elevation (ft)
0	0-1.5 (SPT01)		3-4-4	1.3	HSA w/ SPT			Silty SAND (Fill), red/ brown, loose, moist, rootlets, fine grained, grass cover 0.7-0.8 ft: Gravel seam	SM GS		305
1								Silty SAND (Fill), red/ brown, loose, dry, trace clay	SM-CL		
2								Medium dense with some clay			304
3											303
4	3.5- 5.0 (SPT02)		4-4-6	0.5							302
5											301
6											300
7										Bentonite grout	299
8											298
9	8.5- 10 (SPT03)		1-1-1	1.4				Sandy CLAY, dark grey, soft, medium to high plasticity, moist, fine grained	CL-SC		297
10											296
11											295
12											294
13								▽			293
14	13.5- 15.0 (SPT04)		3-5-6	1.5				Gravelly SAND, brown/ grey, loose, wet, coarse grained	SW		292
								CLAY, grey, medium stiff, high plasticity, wet	CH		
								Gravel, brown/ tan, loose, wet, angular, fine grained with medium sand mixed in	GS SM		
15								Silty gravelly SAND, brown/ white, loose, moist, fine to coarse grained, micaceous, saprolitic			291

Depth (ft)	Samples (ft)	Soil sample ID & depth taken (ft)	Blow counts	Recovery (ft 0	Drilling Method	RQD (%)	Graphic Log	Material Description	USCS	Well Diagram	Elevation (ft)
16											290
17											289
18											288
19	18.5-20.0 (SPT05)	ARAMW-12-SOIL (18.5-20.0 ft) (202 g)	30-25-50/3	1.2							287
20											286
21											285
22											284
23											283
24	23.5-25.0 (SPT06)		20-49-50/1	1.1						Bentonite grout	282
25											281
26											280
27											279
28								29.2-29.4 ft: Qtz gravel lens, white, loose, fine grained, micaceous, saprolitic			278
29	28.5-30.0 (SPT07)		16-34-29	1.5							277
30											276
31											275
32											274
33											273

Depth (ft)	Samples (ft)	Soil sample ID & depth taken (ft)	Blow counts	Recovery (ft 0	Drilling Method	RQD (%)	Graphic Log	Material Description	USCS	Well Diagram	Elevation (ft)
34	33.5-35.0 (SPT08)		6-20 -50/4	1.3							272
35											271
36								Weathered rock (drilling response)	PWR		270
37	36.9-42.1 (P01)	ARAMW-12 -ROCK (39.1-39.6 ft) (500 g)		5.2	WL w/ PQ core	100		Auger refusal depth Biotite gneiss, black/ grey/ white, slightly weathered, 45° mineral banding, alternating quartz veins with dark biotite/ hornfels zones	-		269
38											268
39								39.0-39.6 ft: 70° frac, brown surface staining, moderate weathering, dark brown to black weathered nodules, adjacent re-mineralized healed fractured		Bentonite grout	267
40											266
41											265
42	42.1-46.9 (P02)			4.7		100					264
43								43.0-43.3 ft: Quartz vein, 0.1 ft thick			263
44											262
45											261
46										Bentonite plug	260
47	46.9-51.9 (P03)			4.8		100					259
48											258
49											257
50										U-pack & annular sand pack	256
51											255

Stantec **ARAMW-12** BORING LOG

Depth (ft)	Samples (ft)	Soil sample ID & depth taken (ft)	Blow counts	Recovery (ft 0	Drilling Method	RQD (%)	Graphic Log	Material Description	USCS	Well Diagram	Elevation (ft)
52	51.9-56.9 (P04)			5.3		100		Amphibolite biotite gneiss, black/ dark grey, fine crystalline			254
53											253
54											252
55											251
56											250
57	56.9-61.9 (P05)			4.8		100		57.0-57.6 ft: Quartz vein, white, 0.1-0.3 ft wide, green mineral discoloration, pocked surface features			249
58											248
59		ARAMW-12-ROCK (59.6-59.9 ft) (608 g)								U-pack & annular sand pack	247
60											246
61											245
62	61.9-65.4 (P06)			3.7		100		61.8-62.4 ft: 70° Partial to fully healed fracture			244
63		ARAMW-12-ROCK (64.3-64.4 ft) (493 g)									243
64								64.2 ft: Mineral foliation direction change, possible joint			242
65								65.4 ft green mineral discoloration			241
66								BOH 65.4 ft bgs. Boring terminated at a predetermined depth.			240
67											239
68											238
69											237
											236

AP-2 DAS
Monitoring Well and Piezometer
Survey Certifications

12/18/20
11/22/22
12/09/2024 (ARMWA-10,11,12)

GEORGIA POWER
PLANT ARKWRIGHT
MONITORING WELL SURVEY DATA
December 18, 2020
DGA JOB # 6620-002-D1, C1335

WELL ID	NORTHING	EASTING	ELEVATIONS			
			GROUND	NAIL	TOP OF	TOP OF
			ELEVATION	IN CONCRETE	WELL PAD	CASING
AP3PZ-1	1066652.20	2436953.26	361.53		NO PAD	364.22
AP3PZ-1A	1066656.17	2436950.62	361.37		NO PAD	364.36
AP3PZ-2	1065960.86	2437314.65	361.69		NO PAD	364.93
AP3PZ-2A	1065955.86	2437317.22	361.55		NO PAD	364.74
AP3PZ-3	1065501.28	2437527.97	360.11		NO PAD	362.69
AP3PZ-3A	1065495.58	2437530.17	360.25		NO PAD	363.23
AP3PZ-4	1065047.94	2437729.54	358.54		NO PAD	361.32
AP3PZ-4A	1065042.69	2437732.09	358.56		NO PAD	361.57
AP3PZ-5A	1064633.46	2437909.87	357.02		NO PAD	360.14
ARAMW-1	1062938.38	2439120.01	305.07		305.49	308.51
ARAMW-2	1062925.96	2439114.97	305.12		305.23	308.27
ARAMW-3	1064530.73	2437569.81	352.20		352.41	355.39
ARAMW-4	1065463.83	2438004.43	364.56	364.83		367.86
ARAMW-6	1064439.35	2437606.99	334.23		334.56	337.46
ARAMW-7	1063049.07	2438913.27	307.13	307.13		309.81
ARAMW-8	1062895.98	2439197.40	304.53	304.94		307.36
ARGWA-12	1067003.79	2436788.45	369.27		369.56	372.72
ARGWA-13	1065951.25	2438129.93	368.10		368.72	371.57
ARGWA-14	1066023.70	2438384.80	384.94		385.46	388.25
ARGWA-19	1063774.45	2439488.71	339.86		340.38	343.30
ARGWA-20	1063732.73	2439088.01	327.73		328.37	331.28
ARGWA-24	1066895.28	2437012.63	370.85	371.08		373.75
ARGWA-3	1066899.39	2437431.05	386.53		386.94	388.33
ARGWA-5	1066885.12	2437209.22	373.51		373.69	376.15
ARGWC-10	1065419.44	2437192.51	367.56		367.77	370.67
ARGWC-15	1065475.43	2438360.90	371.76		372.51	375.64
ARGWC-16	1065263.69	2438174.15	361.52		361.98	364.90
ARGWC-17	1065458.82	2438009.52	365.04		365.31	368.24
ARGWC-18	1064482.45	2437961.15	351.92		352.42	355.20
ARGWC-21	1062941.24	2439112.52	305.97		306.34	309.15
ARGWC-22	1063039.36	2438925.04	307.01		307.08	309.95
ARGWC-23	1062884.38	2439202.38	304.29		304.67	307.70
ARGWC-7	1064410.59	2438355.19	348.97		349.13	352.42
ARGWC-8	1064521.98	2437572.92	352.19		352.26	355.53
ARGWC-9	1065139.64	2437297.96	363.44		363.87	367.07
CCRLF-1	1065801.62	2437806.69	354.06	354.39		357.51
CCRLF-2	1066565.98	2437457.04	367.27	367.64		370.67
CCRLF-3	1066338.44	2437920.60	372.06	372.37		375.19
CCRLF-4	1066801.77	2437509.61	370.11	370.47		373.35
CCRLF-5	1066251.06	2438257.93	385.88	386.16		388.73
INV. 24" PIPE	1064401.47	2437857.62	318.50			
WET WELL	1064422.09	2437710.35			330.81	329.20 (TOP OF WELL PIPE)

COORDINATES ARE GA STATE PLANE, WEST ZONE, NAD 83.
ELEVATIONS ARE BASED ON MEAN SEA LEVEL, NAVD 88.

Survey data shown below has a horizontal positional tolerance of +/-0.5 feet and a vertical positional tolerance of +/- 0.01 feet at the 95% level of confidence.
Equipment used to obtain horizontal and vertical coordinates was a LEICA SYSTEM 1200 GPS RECEIVER WITH A LEICA RX1200 DATA COLLECTOR.
Benchmark used to establish horizontal and vertical positions was established from LEICA SMARTNET REAL TIME NETWORK.

METRO ENGINEERING & SURVEYING CO., INC.
SURVEYORS - ENGINEERS - PHOTOGRAMMETRISTS
PROVIDING PROFESSIONAL SERVICE SINCE 1967

1469 HIGHWAY 20 WEST • MCDONOUGH, GA 30253
phone: 770-707-0777 fax: 770.707-0755
WWW.METRO-ENGINEERING.COM

SURVEYOR'S REPORT

SCOPE OF WORK:

Field survey of existing monitoring wells at Georgia Power Company, Plant Arkwright in Macon, GA.

Horizontal and vertical datum was derived from provided coordinates of nails at existing monitoring wells ARAMW-7 and ARGWC-22 using conventional surveying methods and equipment. Horizontal datum is Georgia State Plane, West Zone, NAD83(2011) and vertical datum is NAVD88.

PROVIDED COORDINATES:

ARAMW-7, NORTH=1,063,049.07, EAST=2,438,913.27, EL=307.13, PK NAIL
ARGWC-22, NORTH=1,063,039.36, EAST=2,438,925.04, PK NAIL

EQUIPMENT USED TO ESTABLISH THE MONITORING WELL LOCATIONS:

Leica TS16 Total Station
Leica DNA10 Digital Level

CERTIFICATION:

I hereby certify that based on the provided coordinates list above that the center of well casing has a horizontal accuracy of 0.5+/- feet or better referencing the Georgia State Plane, West Zone, NAD83(2011) coordinate system in US survey feet. The top of well, nail in the concrete pad and rebar set elevations was determined to be accurate within 0.01 foot through a closed level check loop with a Leica DNA10 digital level having a published accuracy of 0.9mm per dual-traverse kilometer.

James R. Green R.L.S. No. 2543

GEORGIA REGISTERED NO. LS002543 PROFESSIONAL LAND SURVEYOR JAMES RANDOLPH GREEN

Date: 11/22/2022

WELL	LATITUDE	LONGITUDE	WELL NORTH	WELL EAST	TOP OF CASING	NAIL NORTH	NAIL EAST	NAIL EL	GRD SUR NORTH	GRD SUR EAST	GRD SUR ELEV	PAD EL
ARAMW-9	32.921665	-83.702746	1063022.92	2438935.47	309.28	1063024.53	2438936.09	306.83	1063023.52	2438937.49	306.31	306.87

	TOP ELEV	BASE ELEV
CREEK GAUGE	297.02	293.60

PLANT ARKWRIGHT AS-Built Wells 12-09-2024 FL Bullard - Surveyor, Southern Company CFS

WELL ID	NORTHING	EASTING	GROUND	TOP REFERENCE NAIL	BLACK MARK AT TOP CASING
ARAMW - 1	1062937.58	2439119.98	305.33	305.63	308.35
ARAMW - 2	1062926.40	2439115.34	305.08	305.48	308.28
ARAMW - 7	1063048.60	2438912.71	306.83	307.13	306.95
ARAMW - 8	1062885.53	2439112.34	304.90	305.20	307.62
ARAMW - 9	1063023.25	2438935.02	306.54	306.83	306.72
ARAMW - 10	1063082.33	2438902.85	308.39	308.69	308.49
ARAMW - 11	1063077.03	2438902.96	308.02	308.32	308.09
ARAMW - 12	1062906.98	2439199.15	305.80	306.13	309.08
GWA - 19	1063774.24	2439488.29	340.24	340.53 (Top slab no nail))	343.35
GWA - 20	1063726.52	2439080.28	327.48	327.78 (Top slab no nail)	330.63
GWC - 21	1062940.78	2439112.34	305.47	305.76	308.46
ARAMW - 22	1063038.84	2438924.29	306.74	307.04	306.80
ARGWC - 23	1062885.59	2439201.99	304.42	304.72	307.73

12-09-2024

SURVEY DATA CERTIFICATION
REFERENCE NAIL VERTICAL 0.01' HORIZ 0.10'
BLACK MARK ON PVC CASING 0.001'

Horizontal Datum is Georgia
State Plane West Zone Coordinate System,
North American Datum of 1983 (NAD83)
Elevation Datum referenced to NGVD 1988
Both measured in US Feet

PLANT ARKWRIGHT AS-Built Wells 12-09-2024

FL Bullard - Surveyor, Southern Company CFS

WELL ID	NORTHING	EASTING	GROUND	TOP REFERENCE NAIL	BLACK MARK AT TOP CASING
ARAMW - 12	1062906.98	2439199.15	305.80	306.13	309.08

12-09-2024

SURVEY DATA CERTIFICATION
REFERENCE NAIL VERTICAL 0.01' HORIZ 0.10'
BLACK MARK ON PVC CASING 0.001'

Horizontal Datum is Georgia
State Plane West Zone Coordinate System,
North American Datum of 1983 (NAD83)
Elevation Datum referenced to NGVD 1988
Both measured in US Feet

AP-2 DAS
Drillers Bonds

COPY

CONTINUATION CERTIFICATE

Atlantic Specialty Insurance Company , Surety upon

a certain Bond No. **800031223**

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

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

and in favor of State of Georgia
(OBLIGEE)

does hereby continue said bond in force for the further period

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

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

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

Description of bond Water Well Contractor Performance Bond

Premium: $1,200.00

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

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

By _____
Attorney-in-Fact Elizabeth R. Hahn

Parker, Smith & Feek, Inc.
Agent

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

(425) 709-3600
Telephone Number of Agent

S-0157/GE 8/08

XDP

OneBeacon
INSURANCE GROUP

Power of Attorney

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

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

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

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

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

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

ATLANTIC SPECIALTY INSURANCE COMPANY CORPORATE SEAL 1986 NEW YORK

By _____
Paul J. Brehm, Senior Vice President

STATE OF MINNESOTA
HENNEPIN COUNTY

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

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

_____
Notary Public

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

Signed and sealed. Dated 9 day of May 2019

ATLANTIC SPECIALTY INSURANCE COMPANY CORPORATE SEAL 1986 NEW YORK

This Power of Attorney expires
October 1, 2019

_____
Christopher V. Jerry, Secretary

CONTINUATION
CERTIFICATE

Atlantic Specialty Insurance Company , Surety upon

a certain Bond No. 800033976

dated effective 09/27/2017
(MONTH-DAY-YEAR)

on behalf of Ricky Davis / Cascade Drilling, L.P.
(PRINCIPAL)

and in favor of Department of Natural Resources, State of Georgia
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on 06/30/2021
(MONTH-DAY-YEAR)

and ending on 06/30/2023
(MONTH-DAY-YEAR)

Amount of bond Thirty Thousand and 00/100 Dollars ($30,000.00)

Description of bond Performance Bond for Water Well Contractors

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 12th , 2021
(MONTH-DAY-YEAR)

Atlantic Specialty Insurance Company

By Andrew P. Larsen
Attorney-in-Fact Andrew P. Larsen

Parker, Smith & Feek, Inc.
Agent

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

425-709-3600
Telephone Number of Agent

S-0157/GE 8/08

XDP

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, William M. Smith, Derek Sabo, Charla M. Boadle**, 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: **unlimited** 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 twenty-fifth day of September, 2012:

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-seventh day of April, 2020.

ATLANTIC SPECIALTY INSURANCE COMPANY CORPORATE SEAL 1986 NEW YORK

By _____
Paul J. Brehm, Senior Vice President

STATE OF MINNESOTA
HENNEPIN COUNTY

On this twenty-seventh day of April, 2020, 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.

ALISON DWAN NASH-TROUT
NOTARY PUBLIC - MINNESOTA
My Commission Expires
January 31, 2025

_____
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 12 day of April, 2021.

ATLANTIC SPECIALTY INSURANCE COMPANY CORPORATE SEAL 1986 NEW YORK

This Power of Attorney expires
January 31, 2025

_____
Kara Barrow, Secretary

Please direct bond verifications to surety@intactinsurance.com

CONTINUATION CERTIFICATE

SAFECO Insurance Company of America , Surety upon

a certain Bond No. **4993104**

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

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

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

does hereby continue said bond in force for the further period

beginning on June 30, 2024
(MONTH-DAY-YEAR)

and ending on June 30, 2025
(MONTH-DAY-YEAR)

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

Description of bond Water Well Contractors & Drillers

Premium: $100.00

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

Signed and dated on 05/31/2023
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

175 Berkeley Street, Boston, MA 02116

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

McGriff Insurance Services, LLC
Agent

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

(205) 252-9871
Telephone Number of Agent

S-0157/GE 8/08

XDF

TRAVELERS

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

POWER OF ATTORNEY

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

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

State of Connecticut

City of Hartford ss.

By: _____
Robert L. Raney, Senior Vice President

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

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

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

_____
Anna P. Nowik, Notary Public

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

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

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

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

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

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

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

_____
Kevin E. Hughes, Assistant Secretary

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