Report of Dam Safety Assessment
Coal Combustion Surface Impoundments
Georgia Power
Plant Mitchell, Albany, GA

AMEC Project No. 3-2106-0174.0600

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3 DEC 2010

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I certify that the management units referenced herein:

Southern Company, Georgia Power, Plant Mitchell: Ash A, Ash Pond 1, and Ash Pond 2 were assessed on May 13, 2010.

Signature ______________________________
Douglas Tate, PE
Senior Geotechnical Engineer

List of AMEC Participants who have participated in the assessment of the management units and in preparation of the report:

- James Black, PE
  Project Engineer
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1.0 INTRODUCTION AND PROJECT DESCRIPTION

1.1 Introduction

AMEC was contracted by the United States Environmental Protection Agency (EPA), via contract BPA EP09W001702, to perform site assessments of selected coal combustion byproducts surface impoundments. As part of this contract with EPA, AMEC was assigned to perform a site assessment of Georgia Power Company's Plant Mitchell, which is located, approximately 8 miles south of Albany, Georgia as shown on Figure 1, the Project Location Map.

A site visit to Plant Mitchell was made by AMEC on May 13, 2010. The purpose of the visit was to perform visual observations, to inventory coal combustion waste (CCW) surface impoundments, assess the containment dikes, and to collect relevant historical impoundment documentation.

AMEC engineers, Douglas Tate, PE and James Black, PE were accompanied during the site visit by the following individuals:

Table 1. Site Visit Attendees

Company or Organization	Name and Title
Georgia Power	Ronnie Walston, Plant Manager
Georgia Power	Lisa Whittaker, Environmental Specialist
Georgia Power	Robert Rush, Compliance Team Leader
Georgia Power	Mike Thompson, Senior Compliance Specialist
Georgia Power	Rochelle Routman, Environmental Specialist
Southern Company	Jake Jordan, Senior Engineer - Earth Science and Environmental Engineering
Southern Company	Gary McWhorter, P.E., Earth Science and Environmental Engineering
Southern Company	Larry Wills, P.E., Principal Engineer, Dam Safety Hydro Services
Troutman Sanders	Hollister Hill, Attorney

1.2 Project Background

CCW results from the power production processes at coal fired power plants like Georgia Power's Plant Mitchell. Impoundments (dams) are designed and constructed to provide storage and disposal for the CCW that are produced. Georgia Power refers to the three CCW impoundments at the Plant Mitchell facility as "Ash Pond A," "Ash Pond 1," and "Ash Pond 2."

The National Inventory of Dams (NID), administered by the U.S. Army Corps of Engineers (USACE), provides a list of many dams within the United States, as well as hazard potentials related to the listed dams. Plant Mitchell's Ash Pond A is not listed in the database; however, Ash Ponds 1 and 2 are listed in the database and have been assigned NID identification numbers GA04917 and GA04918, respectively. Although Ash Ponds 1 and 2 have assigned NID identification numbers, they have not been given a hazard categorization.

The Safe Dams Program is the body within the Georgia Department of Natural Resources Environmental Protection Division (EPD) that defines the term dam, as well as regulates dam design, construction, and repair. The Safe Dams Program also evaluates dams to assign a dam category classification to each structure. Each dam within the state that is over 25 feet in height or has at least 100 acre-feet of storage capacity is assigned either a Category I or Category II classification upon review. The Category I classification is assigned to structures "where improper operation or dam failure would result in probable loss of human life. Situations constituting probable loss of life are those situations involving frequently occupied structures or facilities, including, but not limited to, residences, commercial and manufacturing facilities, schools, and churches." A Category II classification indicates, "improper operation or dam failure would not expect to result in probable loss of human life." These definitions are from the Georgia EPD Chapter 391-3-8 Rules for Dam Safety, Section 391-3-8.02(d) and (e). According to the Safe Dam Rules, Category I dams are permitted and monitored periodically, while Category II dams are not permitted, but are re-inventoried once every five (5) years. The re-inventory procedure is conducted to determine if adjacent or downstream development has changed, or has been proposed to change, in a manner that would necessitate a reclassification to a Category I dam. GA EPD has classified Plant Mitchell's Ash Pond 1 and Ash Pond 2 as Category II dams and has assigned them identification numbers 101-016-4002 (October 1983) and 101-001-0015 (September 1978), respectively. Ash Pond A is not categorized by GA EPD.

As part of the observations and evaluations performed at Plant Mitchell, AMEC completed EPA's Coal Combustion Dam Inspection Checklists and Coal Combustion Waste (CCW) Impoundment Inspection Forms. Copies of the ash Impoundment Inspection Forms are provided in Appendix A. The Impoundment Inspection Forms include a section that assigns a "Hazard Potential" that is used to indicate what would occur following failure of an impoundment. "Hazard Potential" choices include "Less than Low," "Low," "Significant," and "High." Based on the site visit evaluation of the impoundments, AMEC engineers assigned a "Less than Low Hazard Potential" to Ash Pond A, a "Low Hazard Potential" to Ash Pond 1, and a "Significant Hazard Potential" to Ash Pond 2. As defined on the Inspection Form, dams assigned a "Significant Hazard Potential" classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. "Low Hazard Potential" classification definition is reserved for dams where "failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property."

1.2.1 State Issued Permits

The Georgia Department of Natural Resources has issued Georgia EPD National Pollutant Discharge Elimination System (NDPES) Permit No. GA0001465 to Georgia Power Company. This NPDES Permit authorizes the Georgia Power Company to discharge from Plant Mitchell to the Flint River (Flint River Basin). The permit became effective on March 5, 2010 and is set to expire on February 28, 2015.

The State of Georgia issues operating permits for those impoundments that are given the Category I classification. There are no Category I impoundments at Plant Mitchell; therefore, the state has not issued operating permits for this facility.

1.3 Site Description and Location

Georgia Power's Plant Mitchell is located approximately 8 miles south of Albany, Georgia. The area surrounding the plant boundary is primarily rural. The Flint River is located to the west of the plant facilities. The distances between the closest point of the ash ponds and the Flint River is approximately 915 feet, 700 feet, and 915 feet for Ash Ponds A, 1, and 2, respectively. Radium Springs Road (also known as Old State Route 3), is located to the west of the plant between the ash ponds and the Flint River. The Photo Site Plan, included as Figure 2, shows the location of Ash Ponds A, 1, and 2 and their proximity to the Flint River.

An aerial photograph of the region indicating the location of Plant Mitchell's ash ponds in relation to schools, hospitals, and other critical infrastructure located within approximately 5 miles down gradient of the structures is included as Figure 3, the Critical Infrastructure Map. A table that provides names and coordinate data for the infrastructure is included on the map.

1.4 Process Ponds

1.4.1 Ash Handling and Flow Summary

Plant Mitchell utilizes coal in the production of electricity. In this process, two types of CCW ash are generated: bottom ash and fly ash. Currently, Ash Ponds A and 1 are inactive and no longer receive liquid-borne material. Ash Pond 2 is an active ash pond. All ash from Plant Mitchell's production of electricity, including fly ash, bottom ash, and pyrites is sluiced from the single generating unit (Unit 3) to Ash Pond 2, using one of two ash sluice pumps. Additionally, low volume sump discharge containing building sump discharge, precipitator wash down pad discharge, coal pile runoff sump discharge, and chemical cleaning basin discharge is routed to Ash Pond 2.

The ash handling summary detailed above was provided to AMEC by Southern Company (Georgia Power's parent company) engineers who are responsible for design, evaluation, and inspection of the Plant Mitchell's coal combustion byproduct surface impoundments. Design, communication, inspection, and regulatory documents provided to AMEC by Southern Company and Georgia Power indicate the following background information for the ash ponds at Plant Mitchell.

1.4.2 Ash Pond A

Ash Pond A was commissioned in circa 1948 with a total storage capacity of 99,080 cubic yards (CY) and a corresponding surface area of 4.1 acres. A drawing dated May 23, 1955 (MIT-API 0001) indicates plans for the pond to be expanded to the east for additional storage. The expansion included raising the original pond crest from an elevation of 180 feet to 188 feet, with a pond bottom elevation of 167 feet. From proposed dike elevation and contours, AMEC estimates the dike height varied from six to 20 feet. Due to removal of the dike in 1962, AMEC cannot definitively confirm the previous dike configuration.

The pond is currently full, inactive, covered, no longer receives liquid-borne material, and is completely incised. The embankment dikes have been removed and the site has been graded. The site is now occupied by the combustion turbine installation at Plant Mitchell. Documentation indicated that Georgia Power was unable to determine whether the pond was designed and constructed under the supervision of a professional engineer. Currently, neither on-site personnel nor off-site personnel inspect Ash Pond A because it is incised.

1.4.3 Ash Pond 1

Current Pond Conditions

Ash Pond 1 was commissioned in 1963 with a total storage capacity of 1,063,295 CY, a corresponding surface area of 44 acres, and a maximum embankment height of 23 feet. Currently the pond is full, inactive, and no longer receives liquid borne material. The pond received dredged material from Ash Pond 2 in 2008. Documentation cannot be located to indicate if the dam was designed and constructed under the supervision of a Professional Engineer; however, MIT-API 7 & 8, are unsealed drawing that seem to indicate that Ash Pond 1 was designed by Georgia Power Company. Currently, the pond is inspected by a professional engineer.

Previous Pond Issues

A July 12, 1972 interoffice memo, included in MIT-API 040, described that on July 1, 1972, the existence of a boil was noticed along the south side of Ash Pond 1 (approximate coordinates E 23 +60, S 3+60). The boil was filled and choked off by plant personnel. However, by July 6, 1972, the level of the ash pond had dropped two feet. The boil reopened following discovery, by plant personnel, of another, large, active boil that had appeared approximately 30 feet southeast of the first boil site. The present leak, although initially lowering the lake level at a rate of 1.5 to 2 feet over a two to three day period, had slowed to two to three inches per day. The memo described the difficulty personnel would have locating a hole that had drained the few feet of water from the pond. Reference was then made to locating data for an “existing sink,” which had been “first observed a number of years” before, and had drained the pond in a two to three day period, by what appeared to be “a natural pipeline to the river.” The memo writer seemed to think that the previously noted “existing sink” might be related to the location of the July 1972 leak.

Following the appearance of these two boils, several other boils were noted. Vegetation on the dike was mowed a minimum of 20 feet to the north and south of the leak to better observe seepage. The boils were filled with crushed limerock in an attempt to prevent piping. The entire area exhibiting boils was covered with a 1.5-inch size minimum diameter, free draining material. The rock was placed outside the dike to an elevation of 1.5 to 2 feet above the pond water elevation. A total rock volume of 180 CY was estimated to raise the area two feet. A berm was constructed of on-site materials overtop the free draining rock and extended 15 to 20 feet north and south of the treated area. The berm was considered a success, as the water flowing from the downstream toe was said to be “clear,” following the berm’s construction. A low sorption dye was then used in an attempt to locate the source of the leak. The leak was located at approximate plant grade N 53+90 and E 24 + 80. The dye showed up at the boils less than nine minutes after application. At that time, the flow of water through the sink was the only method used to lower the water within the pond; additionally, the provided calculations estimate the pond was releasing 2,530,000 gallons per day.

On July 26, 1972, a crack in the dike near the original boil was noted; the crack was two inches wide at its maximum and extended in plan in a semi-circular fashion on approximately a 20-foot radius centered about the dike toe. A berm was constructed on the downstream toe of the dike, and appeared to prevent further enlargement of the crack. Several additional cracks were noted in the dike at the edge of the berm.

According to the *Report of Plant Mitchell Ash Pond Leak* (MIT-API 040), Law Engineering was consulted in late July of 1972 to conduct exploratory drilling to determine the extent of the damage to the underlying soils due to the leakages. Law Engineering was also asked to determine if on-site soils were suitable for construction of a temporary dike (MIT-API 040). Based on provided documentation, it appears that a low dividing dike was constructed within the pond, in a north-south direction, for ash storage while the repair of the dike leak and failure was being studied. The temporary dike was built to an elevation of 190 feet with an 8-foot wide roadway along the crest, and side slopes of 1.5 horizontal to 1 vertical (1.5:1). Estimations for the dike indicate approximately 13,000 to 15,000 CY of material would be needed and on-site soils in the southeast end of the pond would be suitable for construction (MIT-API 040).

On August 2, 1972, a new sinkhole was observed “in the vicinity of the original boil, but in the top of the berm” (MIT-API 040). The newly discovered sinkhole appeared atop the toe berm that was constructed as a response to the July 1 and July 6 boil discoveries, noted previously. Reportedly, the hole was an inverted cone approximately eight feet deep and three to four feet in diameter. A high water level noted within the hole concerned on site personnel who recommended emergency measures to reduce the pond’s water elevation to a safe level. Three pumps were placed into operation and directed water into an adjacent field. Within five days, the water level was lowered to an elevation of one foot above the bottom of the pond in the immediate area of the boil.

Installation of a grout curtain began in August 1972 (MIT-API 040). Grout holes at ten feet on center, were placed at Coordinate N 1+66, E 24+07 and extended approximately 1,200 feet along the centerline of the dike to Coordinate S11+48, E 27+34 to create a grout curtain. In areas of large grout takes, the spacing of grout holes was reduced to 5 feet. A double grout curtain was placed in the berm at an angle of 36 degrees from the vertical and at the intersection of the berm and dike and another 13 feet back from that. Grout was placed in the berm below the original ground line so as not to clog up an existing filter blanket beneath the berm. Twenty-three holes, a volume of 465 cubic feet, were grouted within the berm (MIT-API 040 page 1 of 137). The total volume of grout required to repair the remainder of the dike was not provided. Following installation of the grout curtain, the historically wet areas along the southwest corner of the dike appeared to be sealed.

Overall, 14 sinkholes were noted within and around the pond during the 1972 explorations, with holes varying in size from 5 to 20 feet in diameter and 2 to 20 feet in depth (MIT-API 040). Over the course of the ash pond leak, the water level was lowered from elevation 187 feet, the level prior to the first boil, to 177 feet, the water level following emergency measures described within MIT-API 040. The existing top of dike elevation was 192 feet; and, the bottom of the pond elevation adjacent to the failure area was 176 feet.

To divert water away from the southwestern corner of the pond where the sinkholes and recycle structure were located, as detailed in interoffice memos and reports included within MIT-API 039, a 1000-foot channel, was completed on March 15, 1973. The channel extended from the pond's southwest portion, at approximately elevation 177 feet, to the emergency overflow structure located in the pond's northwest corner. The diversion channel was designed as two, 500-foot sections, with the narrower, upper section having an invert elevation of 176 feet. The lower, wider section was designed with an average invert elevation of 174 feet, slopes of generally 4 feet horizontal to 1 foot vertical, and an average water surface width of 50 feet.

1.4.4 Ash Pond 2

Current Pond Conditions

Ash Pond 2 was commissioned in 1979 with a total storage capacity of 1,039,129 CY, a corresponding surface area of 43 acres, and a maximum embankment height of 33 feet. As of October 2008, the volume within the pond was 673,144 CY. The Ash Pond is currently active, contains fly ash, bottom ash, boiler slag, pyrites and low volume waste as defined under 40 CFR 423.11. The Ash Pond was designed, constructed, and is currently inspected by a professional engineer.

Previous Pond Issues

A Plant Mitchell New Ash Pond Geophysical and Geotechnical Study was completed in August 1980 by The Geotechnical Division, at the request of the Hydraulics Section of the Power Supply Engineering and Services Department of Georgia Power Company (MIT-API 042). The purpose of this study was to determine the existence of any anomalies, cavities, or voids, immediately underneath and around the dike along the southwestern corner of the pond. Previous studies for the pond indicated an irregular limestone surface, but did not pinpoint the location of any existing sinks or cavities. Survey lines were run along the crest of the dike, the dike berm, the downstream toe, downstream of the toe, and through open sinks within the pond. The sinkhole locations within the pond were identified when the pond drained. That pond-draining event was alluded to in the study, but AMEC was not provided documentation regarding it. The study concluded that the ash pond embankment did not appear to be jeopardized. The geophysical profiles did not indicate any voids, cavities, or anomalies underneath the embankment, except at station 19+50, where an anomaly was indicated at the downstream toe. However, two drawings (MIT-API 0025 and MIT-API 0005) illustrate that 13 sinkholes and a 75-foot radial depression were located throughout the southwest corner of the pond.

The August 1980 Geotechnical and Geophysical Study refers to a prior event as "the time the pond drained," and a May 30, 1980 interoffice memo references "current sinkhole repair work." No other documentation or repair details have been provided regarding the pond draining or sinkhole issues at Ash Pond 2 that were alluded to in the Study.

1.5 Previously Identified Safety Issues

Minimal background information was provided for Ash Pond A, therefore, AMEC cannot definitively state if there have been any previously identified safety issues for that pond. Previous concerns regarding Ash Pond 1 have been detailed in Section 1.4.3. Provided documentation for Ash Pond 2, included in Section 1.4.4, indicates a release from the pond and/or sinkhole development in 1979 to 1980; however, no additional details were provided by Georgia Power to comment upon this incident(s).

1.6 Site Geology

Law Engineering completed a subsurface investigation, dated September 29, 1961 (MIT-API 040). Within the report, the site geology was described as follows:

> *"The primary formation underlying the site is the Flint River formation, a soft impure limestone deposited during the Oligocene epoch. This is covered by the younger sediments which are primarily clay and probably date from the Miocene period. The surface zone is a sandy soil, which is probably a remnant of the coastal terrace deposits, resulting from fluctuations of the sea during Pleistocene times. The subsurface profile at the site is typical of that which is described above."*

The report further describes the irregularity of the bedrock formation. The report states that:

> *"Because of the irregularity of the upper surface of the soft limestone of the Flint River formation, the top of rock should not be considered as a smooth horizontal plane. It is more accurate to imagine the rock level as the surface of a giant sponge, pitted with relatively deep chimneys and bowl-shaped depressions. This irregularity is caused by the fact that the material in its original state was soft and porous, and subsequently has been subjected to solution by ground water. In the process of the solution, some voids have been produced in the surface depressions. Soft clays have slumped into these voids, leaving very weak soils immediately above the calcareous stratum."*

The August 1980 Geotechnical and Geophysical Investigation, (MIT-API 042) referenced in Section 1.4.4, describes the site, which is located within the Dougherty Plain as a plain of low altitude, very slight topography and well developed solution topography. Shallow sinks; such as those identified in both Ash Pond 1 and 2 are typical for the plain, and do not typically exceed 10 feet in depth. The sinks are irregular in shape and can range in the horizontal dimension from a few feet to more than a mile.

1.7 Inventory of Provided Materials

Southern Company and Georgia Power provided AMEC with numerous documents pertaining to the design and operation of Plant Mitchell. These documents were used in the preparation of this report and are listed in Appendix D, Inventory of Provided Materials.

2.0 FIELD ASSESSMENT

2.1 Visual Observations

AMEC performed visual assessments of Plant Mitchell's three ash pond units on 13 May 2010. Assessment of the ash ponds was completed in general accordance with *FEMA's Federal Guidelines for Dam Safety, Hazard Potential Classification System for Dams, April 2004*. The EPA Coal Combustion Dam Inspection Checklist and Coal Combustion Waste (CCW) Impoundment Inspection Forms were completed for each ash pond during the site visit. The completed forms were provided to the EPA via email five business days following the site visit. Copies of the completed checklists are included in Appendix A. In addition to completing the checklist and assessment forms, photographs were taken of each impoundment during the site visit. Photo location maps and descriptive photos are included in Appendix B.

Rainfall data for nearby Cordele, Georgia indicates 3.16 inches of rain was recorded in the area for the month of April. A rather sizeable rain of 2.85 inches fell eight days before the visit. Table 2, below, summarizes the rainfall data for the days immediately preceding AMEC's site visit.

Table 2. Plant Mitchell Rainfall Data

Rainfall Prior to Site Visit	
Date	**Rainfall (in.)**
May 3, 2010	0.25
May 4, 2010	2.85
May 5 thru May 12, 2010	0.0
Total (10 days prior to visit)	**3.10**
Total (42 days prior to visit)	**6.26**

2.2 Visual Observations - Ash Pond A

Ash Pond A, commissioned around 1948, is currently inactive, covered, and receives no liquid-borne material. Ash Pond A, constructed to hold ash from Plant Mitchell Facility Units 1 and 2, is the original and oldest ash pond. The impoundment for Ash Pond A had a side-hill and incised configuration, a surface area of 4.1 acres, and a total storage capacity of 99,080 CY. The pond is located on the southeast side of the plant, and north of the current main plant road. The dike for Ash Pond A was removed in 1962 and the ash was covered. Therefore, Ash Pond A is currently incised (photos A-1 and A-2). A combustion turbine installation currently occupies the location of Ash Pond A.

2.3 Visual Observations - Ash Pond 1

Ash Pond 1, commissioned in 1963 as a part of the construction of Unit 3 Facility, is full, inactive, and no longer receives liquid-borne material. The ash pond has a diked configuration, a maximum embankment height of 23 feet, a storage surface area of 44 acres, and a current freeboard of 3 feet between the top of ash and top of dike. Ash Pond 1 is located directly south of the plant and adjacent to the main plant road. The dike was constructed to an elevation of 192 feet with 1.5:1 slopes. The pond contains fly ash, bottom ash, boiler slag, pyrites, and other low volume wastes.

2.3.1 Ash Pond 1- Embankments and Crest

Although Ash Pond 1 was originally constructed as a separate unit, its southern dike was incorporated into the northern dike of Ash Pond 2, upon the construction of Ash Pond 2 in 1979. The common dike is grass covered on the upstream embankment and gravel on the crest (photos 1-1 and 1-2). The surface of the crest for Ash Pond 1 transitions to grass at the west end of the common dike (photo 1-3). The embankment at the west end of the common dike has been repaired from toe to crest with rip-rap (photo 1-4 and 1-5). At this groin location between Ash Pond 1 and 2, a 3-foot wide chimney drain, consisting of washed river sand, was installed to elevation 182 feet along the existing dike of Ash Pond 1. Seepage from the chimney drain flows into a 6-inch polyethylene (PE) pipe which is located two feet below natural ground surface and directs seepage to Drain Outlet 1 (photos 1-4, 1-5). The drain does not appear to run the length of the common dike.

The surface of the west dike embankments and crest is primarily grass. During the site visit, a depression was noted in the downstream embankment in this area and was reported as being caused by work crews (photo 1-7). Two slope repairs consisting of rip-rap were noted, approximately 200 feet apart along the downstream slope of the western dike (photos 1-7, 1-8, and 1-9). Although station numbers are not provided to confirm repair locations, they appear to coincide with areas marked “slough” in drawing H 5329 issued in 1995 (MIT-API 0005). A toe berm, constructed in 1973, was observed along the downstream toe of the western dike (photos 1-10 and 1-11). Details regarding the berm were provided previously in Section 1.4.3. Due to a 1994 flood event, a levee was constructed at the northwest corner of Ash Pond 1 (photo 1-12).

The north dike faces the plant and the surface cover of the embankment and crest is generally grass (photo 1-23). A newly installed piezometer, AP1-2, is located on the crest at the west end of the north dike (photo 1-18). A slope repair, consisting of rip-rap and located along the northern embankment adjacent to sluiced ash discharge pipes from Unit 3, appears to coincide with areas marked “slough” on drawing H5329, dated 1995 (photos 1-13 and 1-14). The sluiced ash discharge pipes from Unit 3 are located along the northern and eastern crest of Ash Pond 1 (photos 1-12 and 1-13), and continue to the southeast corner of Ash Pond 2. An inactive Low Volume Sump discharge line is located within the embankment (photo 1-16) along the northern section of the eastern dike. At the time of the site visit, the pond was filled to design capacity and was covered with vegetation including grass and pine trees (photo 1-15).

During the site visit, steep slopes were noted along Ash Pond 1. Design drawings indicate a maximum embankment height of 23 feet with embankment slopes constructed at 1.5 feet horizontal to 1 foot vertical. Previous repairs along the western and northern downstream face appear to be a result of sloughing on the steep slopes.

2.3.2 Ash Pond 1 - Outlet Control Structure

The plant water recycle/primary pond discharge structure inlet is located adjacent to the crest at the south end of the west dike (photos 1-20, 1-21, and 1-22). The structure is a concrete box with a side weir inlet. A 30-inch fiberglass outlet pipe is located at the bottom western wall of the concrete box structure and has an invert elevation of 183 feet. The recycle pipe exits an embankment that is located at the southwest corner of Ash Pond 1 and then ties into the existing recycle pipe from Ash Pond 2 (photos 1-6 and 1-7). On-site personnel indicated the Ash Pond 1 discharge structure currently receives storm water runoff only. The outlet from Ash Pond 1, when valved in, ties to the outlet from Ash Pond 2 and feeds the Ash Sluice Pumps.

The emergency outlet structure for Ash Pond 1 is located within the northwest corner of the impoundment. The vertical concrete outlet structure contains 8-inch by 2-foot openings throughout the height of the structure, which were covered by steel plates to allow variability of the ash pond's pool elevation. Flow from the structure is regulated by a 30-inch corrugated metal pipe (CMP) at elevation 167.9 feet. The outlet pipe is connected to the catch basin (photo 1-11) that is located along the northeastern downstream toe of Ash Pond 1. A pipe conveys flow that enters the catch basin to the Flint River. The top of the emergency outlet structure is at elevation 190 feet; currently only the upper 12 to 14-inch section of the structure is above the ground surface (photo 1-19).

2.4 Visual Observations - Ash Pond 2

Ash Pond 2 was commissioned in 1979. Ash Pond 2 is active and receives/contains fly ash, bottom ash, boiler slag, pyrites, and other low volume wastes. The ash pond has a dike configuration, a maximum embankment height of 33 feet, a storage area of 43 acres, and a current freeboard of 11.4 feet. Ash Pond 2 is located directly south of Ash Pond 1. Ash Pond 2 was constructed to a dike elevation of 195 feet with two horizontal to one vertical upstream and 3:1 downstream slope.

2.4.1 Ash Pond 2 - Embankments and Crest

Ash Pond 2 has a dike configuration and was constructed immediately to the south of Ash Pond 1. As a result, the north dike of Ash Pond 2 and the south dike of Ash Pond 1 is a common, shared structure. The north/common dike of the Ash Pond 2 is covered with grass on the downstream embankment and gravel on the crest (photos 2-1 2-2 and 2-3). The embankment at the west end of the common dike has been repaired from toe to crest with rip-rap (photos 2-4 and 2-29). The west dike of Ash Pond 2 is covered with grass on the embankments and gravel on the crest (photo 2-6). At the north end of the west dike, a Low Volume Sump Inlet pipe discharges into the pond (photo 2-5).

Internal blanket drains (MIT-API 0024), as illustrated on Figure 8, were installed in Ash Pond 2 just downstream of the dike's centerline and extend from Station 0+00 and Station 30+00. The blanket drain is 20 feet wide, 3 feet thick and is comprised of washed river sand. A 6-inch diameter slotted pipe with a 6-inch minimum cover of number 78 stone is embedded in the blanket drain. In addition, nine transverse finger drains are located in the topographic low areas along the dike alignment. Each finger drain, a 6-inch diameter slotted PE pipe encased in sand is slotted within the blanket drain region and solid outside the region. The finger drains are connected to the slotted pipe located within the blanket drain. The purpose of the finger drains is to collect additional seepage in the dike, as well as seepage from the blanket drainpipe, and convey the seepage to the downstream toe of the embankment. The seepage then follows a drainage ditch to culverts located beneath Radium Springs Road (Georgia Highway 3), finally discharging into the Flint River (photo 2-25). During the site inspection, slight flow was observed at finger Drain Outlet 8, which is located along the south side of the pond and flows year round according to on-site personnel (photo 2-24). Slight flow was also noted at Drain Outlet 2, which is located along the northwest side of Ash Pond 2 (photo 2-28). The remaining drains were not flowing (photos 2-6, 2-27, and 2-29).

The south dike of Ash Pond 2 is covered with grass on the embankments and gravel on the crest (photo 2-15, 2-16, and 2-18). Fire-ant hills are shown in these photos. Bare and/or irregular surface areas, shown in these photos, were more prevalent toward the south end of Ash Pond 2. A wet area along the downstream toe was observed from the fence line below the toe of the south embankment and extended approximately 500 feet to the west (photo 2-22).

The ash sluice pipe from Facility Unit 3 is located on the crest of the east dike and discharges into Ash Pond 2 near its southeast corner (photo 2-19). The east dike has a gravel crest and grass covered embankment surfaces with downstream slopes that are in good to fair condition with isolated bare areas (photos 2-20 and 2-21).

2.4.2 Ash Pond 2 - Outlet Control Structure

A primary outlet structure is located along the inside slope of the northwest portion of the western dike at Station 11+50. The outlet is a 9-foot, 4-inch by 11-foot, 4-inch rectangular box standing 29 feet high. Water enters the structure over a variable height weir (variability appears to be provided using stop logs) and exits through a 30-inch diameter steel pipe located at the invert of the rectangular box (photos 2-9, 2-10, and 2-11). Flow is transported in the pipeline to the facility, for reuse purposes, or discharged to the Flint River.

The emergency spillway structure for Ash Pond 2 is located on the upstream slope of the southwestern dike at Station 17+00 (photos 2-13 and 2-14). The structure consists of a sloping concrete trench located on the upstream embankment face that is connected to a concrete junction box located at the upstream toe of the dike. The junction box houses a 30-inch corrugated metal discharge pipe that discharges to the west through the dike. Water enters the structure over a variable height weir (regulated by stop logs) and flows through the CMP to beyond the downstream toe at the southwest corner of the impoundment. Once discharged from this outlet, the flow travels down a drainage ditch along southwestern toe of the dam, combining with flow from the blanket and finger drains, to the culverts located beneath Radium Springs Road (Georgia Highway 3), where it is discharged to the Flint River (photo 2-25). During the site visit, a trickle flow was noted at the outlet of the emergency spillway (photo 2-26).

2.5 Monitoring Instrumentation

Historically, impoundment monitoring equipment has been used and expanded at the Plant Mitchell facility. Documentation provided to AMEC (MIT-API 5) indicates 32 piezometers were initially installed at Ash Pond 2 (photos 2-8, and 2-15). Currently, 27 piezometers are monitored at Ash Pond 2. Six piezometers (photo 1-18) were installed in Ash Pond 1 in March 2010 in support of the 2010 Slope Stability Analyses.

3.0 DATA EVALUATION

3.1 Design Assumptions

This section provides a summary of relevant, methodology, design criteria, data, and analyses information that was provided for the Plant Mitchell ash ponds concerning hydrologic and hydraulic issues, as well as for structural adequacy and stability issues.

3.2 Hydrologic and Hydraulic Design

The 1978 Safe Dams Act sets criteria for the hydraulic design of outlet structures for all dams covered by this legislation. According to the Act, each Category I dam shall be designed to pass a percentage of the Probable Maximum Precipitation (PMP) event. The percentage (up to 100 percent) is based on the design containment volume and embankment height of the pond, with larger structures being required to pass a higher percentage of the PMP event. However, for all dams that are assigned a Category II classification, spillway capacity is left to the discretion of the design engineer.

3.2.1 Ash Pond A

There was no information provided regarding hydrologic and hydraulic design of Ash Pond A. Currently, Ash Pond A is full, covered, no longer receives liquid borne material, and is completely incised.

3.2.2 Ash Pond 1

Although[1] information regarding hydrologic and hydraulic design of Ash Pond 1 was not provided for the Draft Report, Southern Company submitted additional studies (MIT-API 053), as part of their comments to the Draft Report, on September 21, 2010.

The September 2010 hydrologic and hydraulic information submitted for Ash Pond 1 utilized the following criteria:

1) Georgia Stormwater Manual, Table A-1, Albany, Georgia;
2) Ash Pond 2 dredging plans; and,
3) Dredged material volume calculations for material transferred from Ash Pond 2 in to Ash Pond 1.

Additionally, a curve number, CN, of 100 was used in hydrologic calculations to conservatively estimate runoff on the dry pond, the pond was assumed to be holding no standing water, and material volumes represents what was dredged from Pond 2 into Pond 1.

Equations that were used to calculate runoff in acre-feet are as follows:

$CN = 1000 / (10+S)$, for $S = 0$, $CN = 100$
$Q = (P-0.2)^2 / (P+0.8S)$, for $S = 0$, $Q = P - 0.4 + 0.04/P$
$RO = Q / 12 * A$

---

[1] AMEC provided a Draft Report to EPA dated June 2010

CN is the SCS curve number, P is precipitation in inches as reported in Georgia Stormwater Manual, S is storage capacity of soil (assumed to be zero), Q is the runoff flow in inches, A is the watershed area in acres, and RO is the calculated runoff volume for the entire site in acre-feet.

Runoff volumes for the 24-hour storm duration are shown in Table 3.

Table 3. Rainfall Runoff Calculation Data for Ash Pond 1

Return Period, Yrs.	10 Yr	25 Yr	50 Yr	100 Yr
CN	100	100	100	100
S	0	0	0	0
24-hr intensity (inches/hr)	0.26	0.31	0.35	0.38
P, rainfall, inches	6.24	7.44	8.4	9.12
Q, runoff, inches	6.24	7.44	8.4	9.12
Area[1], acres	50	50	50	50
Runoff, ac-ft	26.0	31.0	35.0	38.0

[1] Ash Pond 1 area at crest elevation of 192.0 feet.

The elevation of the emergency spillway outlet structure in Ash Pond 1 is 190.0 feet, while the crest elevation is elevation 192.0 feet. Calculated available storage volumes at elevation 190 feet and 191 feet (chosen to provide 1.0 foot of freeboard below the crest elevation), available storage depths, and related storm frequency are shown in Table 3. Available storage volumes as shown in Table 4 have been reduced by the volume of dredged material stored in Ash Pond 1 (identified as 49.65 ac-ft). Storage calculation for pond elevation 191.0 assumes that the entire volume of rainfall is held inside the pond boundaries; in other words, there is no flow exiting through the outlet structure. Calculations provided by Southern Company included a semi-log plot of rainfall and return period data that was used to determine the 24-hour storm duration return frequency that would correlate to the calculated rainfall depth.

Table 4. Hydrologic Summary for Ash Pond 1

	Elevation 190.0	Elevation 191.0
Calculated Available Volume (ac-ft)	28.6	70.4
Corresponding Depth (inches)	6.86	16.9
Equivalent Return Period	15 year	Greater than 10,000 year

In summary, Southern Company reports that the emergency spillway outlet structure in Ash Pond 1 will begin to operate at rainfall greater than 6.86 inches, which is between the 10- and 25-Year, 24-Hour rainfall. Furthermore, 16.90 inches of rain runoff storage, which is significantly greater than the 100-year 24-hour rainfall, is available up to elevation 191 (providing 1 feet of freeboard). Southern Company concludes that storm rainfall storage for Ash Pond 1 is adequate.

3.2.3 Ash Pond 2

A *Design Memorandum No. 2 for Plant Mitchell Ash Pond 2,* dated May 30, 1980, (MIT- API 045) contained reference to hydrologic and hydraulic design of the pond and outlets. The emergency overflow for Ash Pond 2 (a Category II dam), was designed to pass the maximum plant output of 16 cubic feet per second (cfs) with 1.5 feet of head under unsubmerged conditions. The 10-year 24-hour design storm was noted to produce approximately 0.25 inches per hour of rainfall, which would result in a 6-inch rise in the pond level. A typical pond free board of two feet was reported to exist between the design maximum pond elevation of 193.0 feet and the top of the dike elevation of 195.0 feet. Georgia Power reports an operational pond free board of 7.5 feet is typically maintained between the maximum pond elevation of 187.5 feet and the top of the dike elevation of 195.0 feet.

No additional information was provided regarding hydrologic and hydraulic design of Ash Pond 2 prior to submittal of the Draft Report. However, Southern Company submitted additional studies (MIT-API 052), as part of their comments to the Draft Report, on September 21, 2010.

The September 2010 hydrologic and hydraulic information submitted for Ash Pond 2 utilized the following criteria:

1) Georgia Stormwater Manual, Table A-1, Albany, Georgia;
2) Ash Pond 2 co-treatment summary documents, including calculations;
3) 2008 Ash Pond 2 survey information;
4) Drawing 10-701-H75 for Ash Pond 2 top of dike and emergency spillway elevation information;
5) Mitchell 4th Quarter 2009 Dam Safety Surveillance Report; and ,
6) Ash Pond 2 volume calculations

Equations that were used to calculate runoff in acre-feet for Ash Pond 1 were used in the Ash Pond 2 calculations.

Runoff volumes for the 24-hour storm duration are shown in Table 5.

Table 5. Rainfall Runoff Calculation Data for Ash Pond 2

Return Period, Yrs.	10 Yr	25 Yr	50 Yr	100 Yr
CN	100	100	100	100
S	0	0	0	0
24-hr intensity (inches/hr)	0.26	0.31	0.35	0.38
P, rainfall, inches	6.24	7.44	8.4	9.12
Q, runoff, inches	6.24	7.44	8.4	9.12
Area[1], acres	43	43	43	43
Runoff, ac-ft	22.4	26.7	30.1	32.7

The elevation of the emergency spillway outlet structure in Ash Pond 2 is 193.0 feet, while the crest elevation is elevation 195.0 feet. Calculated available storage volumes at elevation 193 feet and 194 feet (chosen to provide 1.0 foot of freeboard below the crest elevation), available storage depths, and related storm frequency are shown in Table 5. Available storage volumes are shown in Table 6. Storage calculation for pond elevation 194.0 assumes that the entire volume of rainfall is held inside the pond boundaries; in other words, there is no flow exiting through the outlet structure. Calculations provided by Southern Company included a semi-log plot of rainfall and return period data that was used to determine the 24-hour storm duration return frequency that would correlate to the calculated rainfall depth.

Table 6. Hydrologic Summary for Ash Pond 2

	Elevation 193.0	Elevation 194.0
Calculated Available Volume (ac-ft)	133.3	170.1
Corresponding Depth (inches)	37.21	47.46
Equivalent Return Period	4.1 times the 100-Year, 24-Hour event	5.2 times the 100-Year, 24-Hour event

In summary, Southern Company reports that the emergency spillway outlet structure in Ash Pond 2 will begin to operate at rainfall greater than 37.21 inches, which is significantly larger than the 100-Year, 24-Hour rainfall. Furthermore, 47.46 inches of rain runoff storage is available up to elevation 194 (providing 1 feet of freeboard). Southern Company concludes that storm rainfall storage for Ash Pond 2 is adequate.

3.3 Structural Adequacy & Stability

The Georgia Department of Natural Resources Environmental Protection Division, Chapter 391-3-8 Rules for Dam Safety outlines dam inventory, classification, inspection, and permitting information. Category II dams in Georgia are inventoried (every five years) and categorized, but are specifically excluded from the rules and regulations that pertain to Category I dams, per Section 391-3-8-.04.(d). Although as written, Section 391-3-8-.09 (Standards for the Design and Evaluation of Dams) pertains to Category I dams, this section provides guidelines useful for sound dam design and evaluation. Section 391-3-8-.09-(3)-(a) states that, “all dams must be stable under all conditions of construction and/or operation of the impoundment.” Further, earthen embankments, when analyzed using the methods, guidelines, and procedures of the agencies listed in the regulations to determine safety factors, can be considered to have acceptable stability if the analyses yield at least the minimum safety factors shown in Table 7.

To analyze the structural adequacy and stability of the Ash Ponds at Plant Mitchell, AMEC reviewed the material provided by Georgia Power with respect to the applicable load cases. Factors of safety documented in the provided material were compared with those factors outlined in Table 7 to help determine whether the impoundments meet the requirements for acceptable stability.

Table 7. Georgia EPD Minimum Required Dam Safety Factors

Load Case	Required Minimum Factor of Safety
End of Construction	1.3
Steady State Seepage	1.5
Steady State Seepage with Seismic Loading	1.1
Rapid Drawdown (Upstream)	1.3
Submerged Toe with Rapid Drawdown	1.3

3.3.1 Ash Pond A

Information regarding structural adequacy and stability was not provided for Ash Pond A. Currently, Ash Pond A is full, covered, no longer receives liquid borne material, and is completely incised.

3.3.2 Ash Ponds 1 & 2

1979 Ash Pond 2 Historic Design, Investigation, and Analyses Information

Design Memorandum No. 2 for Ash Pond 2 (MIT- API 045) dated May 30, 1980 details a slope stability analysis that was performed. The primary programs used were SLOPE and SNOB. The program SLOPE analyzes the stability of earth slopes by Sowers' variant method of slices, also known as the Fellenius method, to compute a factor of safety for a circular slip surface. Georgia Power states that the method is less conservative than the pure Fellenius method, but more conservative than several other methods. The SNOB program analyzes the stability of an earth slope by the New York State and the Simplified Bishop Methods and computes a factor of safety assuming failure occurs along a circular arc.

AMEC understands that soil parameters were determined from 18 unconsolidated-undrained (Q) and 18 saturated consolidated-undrained (R) triaxial shear tests. Pore pressure measurements were performed on the remolded borrow samples obtained from the test pits. All samples were compacted to approximately 98 percent of standard Proctor values. The Q tests are considered applicable for the construction condition, while the R tests are applicable for the steady state, drawdown, and earthquake conditions. Additionally, 21 Q and 21 R tests were performed on the undisturbed samples obtained from the dike foundation materials. The following soil parameters, shown in Table 8, were used in the 1979 analysis; the layer numbers referenced in the table correspond to layers and soil parameters assigned to the different analyses conditions. Laboratory results for the soil were not provided to AMEC prior to submittal of the Draft Report; therefore the soil parameters utilized within the analysis could not be confirmed. However, GP submitted a revised 2010 stability analysis with updated parameters.

Table 8. 1979 Slope Stability Analysis Soil Parameters

Soil Strengths					
Layer No.	**Description**	**C' or C (psf)**	**Φ' or Φ (degrees)**	**γ_{sat} (pcf)**	**γ_{moist} (pcf)**
1	Compacted Fill	0	37.9	130	125
2	Blanket Drain	0	36.0	135	-
3	Residual Material	0	31.9	130	-
4	Residual Material	0	23.0	115	-
5	Residual Material	0	35.0	135	-
6	Fly Ash	0	0.0	90	-
7	Compacted Fill	1480	17.0	130	125
8	Blanket Drain	0	26.0	-	130
9	Residual Material	450	16.4	-	125
10	Residual Material	400	14.4	115	110
11	Residual Material	0	30.0	135	-

The dike was analyzed under several conditions, including the short term or end-of-construction condition, long term steady state, rapid drawdown, and earthquake conditions. The short term or end-of-construction condition was analyzed using total stress methods with strengths determined from unconsolidated, undrained triaxial shear tests. In the long term or steady state conditions, it was assumed that primary consolidation had been completed, and that no excess pore pressures existed. This condition was checked using effective stress methods with strength parameters determined from saturated consolidated-undrained triaxial shear tests with pore pressure measurements. The rapid drawdown analyses assumed that the slope had consolidated under one loading condition and was then subjected to a rapid change in loading condition with insufficient time for drainage. Effective stress parameters were determined in the same manner as the long term condition parameters. The earthquake condition involved the computation of the minimum factor of safety against sliding when a static horizontal force of some magnitude was included in the analysis. This analysis was treated as a static problem, and the horizontal force was expressed as an empirical value of 0.1 g. The slopes were analyzed under a steady state condition.

The slope stability analyses results for the ash pond dikes are reported on Drawing No. H80 (MIT-API 023) and summarized in Table 9.

Table 9. 1979 Slope Stability Analysis Safety Factors

Safety Factors			
Condition	**Upstream**	**Downstream**	**Corps of Engineers Minimum Safety Factor (As reported in 1979)**
Steady State	1.49	1.51	1.5
Rapid Drawdown	1.29	-	1.2
Earthquake	1.04	1.05	1.0
Construction	2.17	2.27	1.4

Based on results from a subsurface investigation, in which the in-place fill material within the pond was sampled and tested in November 1979 by Law Engineering (MIT-API 044), the 1980 Geotechnical and Geophysical Investigation Report revised the slope stability analysis. The 1980 report analyzed the steady state condition with an increased effective angle of friction for the intermediate zone (noted as layer 4 in Table 8) of 28 degrees instead of the original 23 degrees. The steady state condition, re-analyzed using the corrected angle of 28 degrees, yielded an increased factor of safety of 1.9. AMEC noted that an increased effective friction angle was used based on results from Law Engineering in-place laboratory results for the intermediate zone. An effective friction angle of 37.9° was used for the compacted fill zone in the initial slope stability analysis; however, lab results from Law Engineering report a maximum phi angle of 32.9° for the compacted fill.

June 2010 and September 2010 updated Slope Stability Analyses

Southern Company Engineering and Construction Services (SCECS) completed *Slope Stability Analyses for Ash Ponds 1 and 2* (2010 Analyses) calculations in June 2010 (MIT-API 051), which were updated in September 2010 (MIT-API 051A). Methodology for the calculations included the use of GeoStudio software (Version 7.16, Build 4840), Copyright 1991-2008, GEO-SLOPE International, Ltd. Additionally, Bishop, Ordinary, Janbu, and Morgenstern-Price analytical methods were evaluated; however, only the Morgenstern-Price method results were reported in the 2010 Analyses.

Design criteria and assumptions utilized by SCECS are as follows:

- Seismic criteria - applied ground motion of 0.05g, based on 2 percent probability of exceedence in 50 years, from Plant Mitchell vicinity USGS earthquake acceleration maps;
- Factors of Safety - GA EPD, Rules for Dam Safety, Rule 391-3-8-.09 Standards for the Design and Evaluation of Dams and US Corps of Engineers Manual EM 1110-2-1902, October 2003;
- Soil properties - in accordance with ASTM D 4767, obtained from triaxial shear testing performed on undisturbed samples collected from Ash Ponds 1 and 2 (MIT-API 037 and 038) during March 2010 drilling operations, as well as historical parameters used in the 1979 Ash Pond 2 stability analysis (MIT-API 047);
- Ash properties - laboratory analyses performed on ash samples from Ash Pond 1;
- Ash Pond 2 Phreatic data - based on historic monitoring data for approximately 30 crest and toe instruments (MIT-API 0033);
- Ash Pond 1 Phreatic data - based on six, recently installed piezometers (March 2010) in conjunction with survey data;
- Ash Pond 1 Cross Section - original design Drawing H-2503 (MIT-API 0007) and March 2010 boring and survey data;
- Ash Pond 2 Cross Section - original design Drawing H-76 (MIT-API 0019) for upstream and downstream dike surfaces, original design Drawing H-81 (MIT-API 0024) for dike dimensions, and March 2010 boring and survey data; and,
- Groundwater elevations - historic piezometer data in the case of Ash Pond 2 and newly installed piezometers for Ash Pond 1.

Cross sections modeled in the 2010 SCECS Stability Analyses are shown on Figure 9 of this assessment report. SCECS reported the following soil parameters utilized in the analyses for Ash Ponds 1 and 2, as shown in Table 10.

Table 10. 2010 Stability Analyses: Soil Parameters Summary

		Effective Stress Parameters		Total Stress Parameters	
Soil Description	**Moist Unit Weight, pcf[1]**	**Cohesion, psf[2]**	**Phi Angle, degrees**	**Cohesion, psf**	**Phi Angle, degrees**
Ash Pond 1					
Dike Fill	132.8	86	29	--	--
Residual Soil	135.0	144	29	--	--
Weathered Limestone	137.7	245	29	--	--
Ash	90.0	72	30	--	--
Ash Pond 2					
Dike Fill	123.9	245	31.6	14	38.8
Residual Soil 1	127	200	30.7	345	27.0
Residual Soil 2	118.2	260	23.6	216	25.8
Weathered Limestone	137.7	245	29	--	--

1 pounds per cubic foot
2 pounds per square foot

In response to the recommendations regarding the failure surface optimization and utilization of different analyses that AMEC provided in the Draft Report, additional documentation, provided by SCECS, reported computed factors of safety for various slope stability failure conditions as listed in Table 11. All failure conditions are steady state, except where noted. Finally, all resulting SCECS calculated factors of safety indicate that Ash Pond 1, as well as Ash Pond 2, are stable.

Table 11. 2010 Updated Stability Analyses: Factors of Safety Summary

Failure Condition	Computed Factor of Safety	Required Minimum Factor of Safety[1]
Ash Pond 1		
Downstream Steady State	1.6	1.5
Downstream Steady State - Surface Slough	1.3	1.5
Downstream Seismic	1.6	1.1
Downstream Seismic - Surface Slough	1.2	1.1
Ash Pond 2		
Downstream Steady State	2.7	1.5
Downstream Seismic	2.2	1.1
Upstream Steady State	1.4	1.5
Upstream Seismic	1.2	1.1
Upstream Rapid Drawdown	1.3	1.3
Max. Surcharge Pool	2.4	1.4[1]
Max. Ash Loading	2.7	1.5

[1] USCOE EM 1110-2-1902 (2003)

In general, the reported factors of safety exceed the minimum required except for the two cases highlighted above. The following SCECS' discussions regard the low calculated factors of safety for Ash Ponds 1 and 2 (from MIT API 051A page 5 of 198):

> *"The analyses indicate that the Ash Pond 1 dike is stable in all cases except for a shallow seated failure surface along the downstream slope. This is likely due to the relatively steep slopes (1½ H: 1V). As noted during the inspection, this type of shallow seated surface slide (slough) has occurred at various locations in the past on the downstream slope. This does not endanger the integrity of the dike, as the occurrences of this type failure are repaired and are monitored during the routine inspections."*

And:

> *"Ash Pond 2 is stable for all loading cases except for the steady case for the upstream slope, where a marginal factor of safety of 1.4 is shown. This is also likely due to the relatively steep (2H:1V) saturated, upstream slope. As indicated in COE EM1110-2-1902, 2003, "Acceptable values of factors of safety for existing dams may be less than those for the design of new dams, considering the benefits of being able to observe the actual performance of the embankment over a period of time". Since no visible surface failures of the upstream slope have been identified over the 31*

> *year history of Ash Pond 2 and since this is not a new embankment, this factor of safety is acceptable."*

3.4 Foundation Conditions

Subsurface conditions underlying the ash ponds generally consist of 25 to 60 feet of soils overlying the Flint River Formation. *Design Memorandum No. 2* (MIT- API 045) indicates the soil profile can vary considerably over short distances both laterally and vertically, which is typical in stream deposits where the currents and channels are meandering. The subsurface profile can be generalized into four zones. The upper zone consists of a gray fine to coarse sand ranging in thickness from 1.5 to 5 feet (probable alluvium). The second zone is reddish-brown silty fine sand, with varying amounts of clay (probable residuum). The third strata (which can be intermixed with the second) consist of multi-colored brown, white and purple silty clay (residuum). The fourth zone is the soft limestone known as the Flint River Formation.

The sandy limestone is poorly indurated, containing shells and fossil imprints and is soft, white, tan-white or gray-white in color. Due to the irregularity of the limestone surface, the rock limestone should not be considered a smooth horizontal plane, however, there is, usually, a distinct interface between the residual soil and the bedrock. Groundwater solutioning has created depressions and voids on the surface of the limestone, which have subsequently filled with unconsolidated clay. In almost all test borings, drilling fluid was lost at the clay and limestone interface.

3.5 Operations and Maintenance

SCG Hydro Services performs semi-annual safety and surveillance inspections for the embankments of Ash Ponds 1 and 2 at Plant Mitchell and provides reports to Georgia Power. Ash Pond A is not inspected. Review of provided reports seems to indicate inspections were performed quarterly prior to 2010. AMEC was provided copies of these reports for 8 of the 16 reports over the time span between July 2005 and December 2009. Reportedly, plant personnel inspect the ponds and embankments weekly, however, they are not normally documented, and no documentation was provided for these inspections.

No safety issues were reported in the quarterly reports that were reviewed. Review of these reports indicates that dams at Plant Mitchell are operated properly and maintained well. The reports and any maintenance recommendations are clearly written and typically documented as being addressed on the subsequent semi-annual report discussion of past recommendations. Sinkhole development along the south, west, and southwest woody area outside of Ash Pond 2 has been noted in the 2006, 2007, and 2008 quarterly reports. Inspection reports indicate the holes were backfilled with gravel and/or soil soon after discovery. The facility also has occasional instances of excessive vegetation, ant hills, animal burrowing, and erosion; but, the issues appear to be addressed in a timely manner. The site visit and observation performed by AMEC in May 2010 showed no major operational or maintenance issues that needed to be addressed.

3.5.1 Instrumentation

Historically, impoundment monitoring equipment has been used and expanded at the Plant Mitchell facility. We understand that data from the embankment piezometers, and blanket and toe drains that were initially installed at Ash Pond 2, added during years of operation at Plant

Mitchell, or recently installed, provide information that facility personnel will use to guide operation and maintenance of the facility.

Documentation provided to AMEC (MIT-API 5) indicates 32 piezometers have been installed at Ash Pond 2. Notes indicate one piezometer is plugged and two are damaged. Piezometers are concentrated to the east and north of the ash pond's southwest corner and coincide with the area of holes that were previously discovered in the pond's interior during initial filling. The provided inspection reports include the readings over the past 10 years for 27 of the piezometers. Plant personnel collect data from this instrumentation on a monthly basis. The reports note that piezometer water levels have remained in a normal historic range and vary only in relation to the pond's water level, area rainfall, and river levels (Flint River). The shallower piezometers primarily vary with the water surface within the ash pond, while the deeper piezometers vary almost instantaneously with the rise and fall of the Flint River. A review of the data graphs included in the December 9, 2009 biannual inspection report indicates a slight increase in the piezometer levels over the past 10 years. Appendix C contains corresponding piezometer data graphs.

In support of the 2010 slope stability analysis, 6 piezometers were installed in Ash Pond 1. The well details indicate the piezometers typically consist of a 2-inch PVC pipe, with a 10-foot slotted screen at the base of the borehole. Piezometers AP1-1, AP1-2 and AP1-3 were installed along the northwestern crest. The remaining three piezometers, AP1-4, AP1-5, and AP1-6, are located at the southern edge of the western dike. Piezometer locations, as well as cross sections modeled in the 2010 Slope Stability Analyses, are illustrated in Figure 9. The provided documentation indicates that two piezometers were discovered at Ash Pond 1 in 1992. No other data regarding these or other historic piezometers at Ash Pond 1 could be found in the provided information.

The 1980 geotechnical geophysical report indicates 22 settlement monuments are located around the crest of Ash Pond 2. At the time of the report, the monuments did not indicate any substantial settlement of the dam centerline. An accumulated settlement of 1.21 inches was noted at station 10+00 on January 22, 1980, after the pond drained. As stated in section 1.4.4, AMEC was not provided with any documentation regarding this incident. Recent readings for the settlement monuments were not provided; and, review of quarterly inspection reports do not indicate the monuments are currently monitored.

3.5.2 State or Federal Inspections

Since Plant Mitchell's Ash Pond A is not classified (currently covered over and built upon) and Ash Ponds 1 and 2 are classified as Category II structures, as a rule, the state does not inspect these ponds. Additionally, there was no evidence of past inspections by State or Federal regulatory agencies found in the provided documentation. The state does reevaluate each Category II dam once each 5-year period to determine if adjacent downstream development has increased to a level that would prompt a change in the assigned dam classification category.

4.0 COMMENTS AND RECOMMENDATIONS

Condition assessment definitions, per the BPA Performance Work Statement, are as follows:

SATISFACTORY

No existing or potential management unit safety deficiencies are recognized. Acceptable performance is expected under all applicable loading conditions (static, hydrologic, seismic) in accordance with the applicable criteria. Minor maintenance items may be required.

FAIR

Acceptable performance is expected under all required loading conditions (static, hydrologic. seismic) in accordance with the applicable safety regulatory criteria. Minor deficiencies may exist that require remedial action and/or secondary studies or investigations.

POOR

A management unit safety deficiency is recognized for any required loading condition (static, hydrologic, seismic) in accordance with the applicable dam safety regulatory criteria. Remedial action is necessary. **POOR** also applies when further critical studies or investigations are needed to identify any potential dam safety deficiencies.

UNSATISFACTORY

Considered unsafe. A dam safety deficiency is recognized that requires immediate or emergency remedial action for problem resolution. Reservoir restrictions may be necessary.

Additionally, if the dam has not been inspected, is not under state jurisdiction, or has been inspected but, for whatever reason, has not been rated. The condition assessment is assigned "**NOT RATED**."

4.1 Acknowledgement of Management Unit Conditions

I certify that the management unit referenced herein (Ash Ponds A, 1, and 2) was personally assessed by me and was found to be in the following condition:

Ash Pond 1: Satisfactory

Ash Pond 1 is rated satisfactory because, although further analysis may be warranted, the studies or investigations that were completed appear to address the most critical potential dam safety deficiencies. Further analyses of less critical failure modes and clarification of the latest analyses appear to be needed.

Ash Pond 2: Satisfactory

Ash Pond 2 was rated poor in the Draft Report because documentation of critical studies or investigations were not available at the time and additional information was needed to identify potential dam safety deficiencies. The additional information provided by Georgia Power on September 21, 2010, addressed the critical potential dam safety deficiencies.

Ash Pond A: Not Rated

Ash Pond A is not rated because it was assessed as “less than low hazard” due to grading activities that backfilled over the embankment, rendering it essentially indiscernible from the surroundings. Ash Pond A appears incapable of retaining water or failing in normally accepted modes.

Additional Information regarding recommendations for instrumentation and analyses can be found in Sections 4.2 through 4.5.

4.2 Ash Pond 1

4.2.1 Hydrologic and Hydraulic Recommendations

June 2010 Draft Report. Ash Pond 1 is currently inactive and does not receive CCW. The impoundment is essentially full of ash and scrub trees and brush are growing atop the ash. The dam can still impound storm water that falls within its watershed. The dam is, for all practical purposes, a ring dike, the watershed is the area of the impoundment, and the service spillway is still in place and working. The dam is a maximum of 23 feet high and the surface of the ash is sufficiently low to allow accumulation of water. The impoundment does not have an open channel emergency spillway. AMEC recommends that the appropriate design storm rainfall should be applied to the impoundment‘s watershed to assure that the dam and decant system can safely store or control the design flow. The analysis should be documented.

Final Report. Based upon additional information provided by Georgia Power on September 21, 2010, in AMEC’s opinion, the analyses that were provided address the ability of the impoundment to safely control or pass appropriate storm events.

4.2.2 Geotechnical and Stability Recommendations

June 21 Draft Report. It appears that the stability analyses were performed for the existing loading condition plus a seismic acceleration. It is unclear if the steady state condition includes the peak pool due the design storm event. The analyses notes results for “Downstream Steady State - Surface Slough” and “Downstream Seismic- Surface Slough” for Ash Pond 1 but fails to describe what that case entails; it is unclear from the table heading. AMEC recommends that the Failure Conditions analyzed be clarified, describing what is meant by “surface slough.” The analyses presented depicted a grid and radius type search; however, the grid appears to be small and seems to limit the radii of the potential failure circles. The analyses should include an entry and exit type of search that would allow long radius failure surfaces. Furthermore, the failure surfaces appear to be limited to circular surface; the failure surfaces should be optimized. AMEC recommends that the analyses should include entry-exit type analyses and optimization of failure surfaces.

Final Report. AMEC has reviewed the additional information and geotechnical analyses, provided by Georgia Power, for Ash Pond 1 and determined that Georgia Power has adequate inspection practices. The stability analyses were performed for the existing loading condition plus a seismic acceleration. The analyses notes results for “Downstream Steady State - Surface Slough” for Ash Pond 1, which results in a factor of safety less than the regulatory agencies minimum factor of safety. The SCECS, in AMEC’s opinion, adequately addressed the deficiency and have indicated that that particular failure mode is checked in their regular inspection. AMEC recommends that the slopes continue to be routinely and regularly inspected as part the current inspection program and practices for this ash pond.

4.2.3 Monitoring and Instrumentation Recommendations

This ash pond is not actively receiving CCW, but may be impacted by storm water accumulation. There are currently six recently installed piezometers for this structure. These instruments were installed early 2010, so it would be prudent for Plant Mitchell to document monitoring more frequently than normal until base line phreatic readings are apparent. AMEC recommends that the current inspection program and practices be continued for this ash pond.

4.2.4 Inspection Recommendations

AMEC has reviewed provided information and inspection records for Ash Pond 1 and determined that Georgia Power has adequate inspection practices. AMEC recommends that the current inspection program and practices be continued for this ash pond except that future reports should include the new piezometer readings.

4.3 Ash Pond 2

4.3.1 Hydrologic and Hydraulic Recommendations

June 2010 Draft Report. Ash Pond 2 is currently used for disposal and processing of CCW. The dam is, for all practical purposes a ring dike and the watershed is the area of the impoundment. The dam is a maximum of 33 feet high and the ash is primarily deposited in the north and east portions of the pond; the southwest portion of the pond is primarily occupied by water. The impoundment does not have an open channel emergency spillway. AMEC recommends that the appropriate design storm rainfall should be applied to the impoundment‘s watershed to assure that the dam and decant system can safely store or control the design flow.

Final Report. Based upon additional information provided by Georgia Power on September 21, 2010, in AMEC’s opinion, the analyses that were provided adequately address the ability of the impoundment to safely control or pass appropriate storm events.

4.3.2 Geotechnical and Stability Recommendations

June 2010 Draft Report. It appears that the stability analyses were performed for the existing loading condition plus a seismic acceleration. It is unclear if the steady state condition includes the peak pool due to the design storm event. Likewise, the analyses appear to lack other stages of development for the impoundment, such as the load condition when the impoundment is nearly full of low strength ash that has a unit weight much higher than water. The analyses presented depict several methods of search; however, the extent of the searches appears to be limited and seems to prevent several modes of failure. The failure surfaces should also be optimized to allow for non-circular or non-planer failures.

AMEC reviewed the soil strength properties used for the stability analyses and see that the values selected for the dike soil appear to have soil strength properties for the total stress and effective stress envelopes that appear unusual (MIT-API 51, page 158 of 175). The effective stress envelope appears to have gained significant cohesion and reduced phi angle from the total stress envelope. AMEC recommends that the soil strength tests be revisited to clarify the results; and, that the analyses should include entry-exit type analyses and optimization of failure surfaces.

Final Report. Based upon additional information provided by Georgia Power on September 21, 2010, AMEC has reviewed provided information and geotechnical analyses for Ash Pond 2 and determined that Georgia Power has adequate inspection practices. Additional analyses were made for maximum pool surcharge and for maximum ash loading. The analyses notes results for “Upstream Steady State” for Ash Pond 2, which results in a factor of safety less than the regulatory agencies minimum factor of safety. The SCECS, in AMEC’s opinion, adequately addresses the deficiency. AMEC recommends that the current inspection program and practices be continued for this ash pond.

4.3.3 Monitoring and Instrumentation Recommendations

AMEC has reviewed provided information and instrumentation records for Ash Pond 2 and determined that Georgia Power has adequate inspection practices. AMEC recommends that the current inspection program and practices be continued for this ash pond.

4.3.4 Inspection Recommendations

AMEC has reviewed provided information and inspection records for Ash Pond 2 and determined that Georgia Power has adequate inspection practices. AMEC recommends that the current inspection program and practices be continued for this ash pond.

4.4 Ash Pond A

4.4.1 Hydrologic and Hydraulic Recommendations

Ash Pond A is full, covered, no longer receives liquid borne material, and is completely incised. Stormwater runoff from this unit flows overland. Erosion and vegetation appear to be under control. AMEC recommends that Georgia Power continue to maintain this unit to provide erosion and vegetation control.

4.4.2 Geotechnical and Stability Recommendations

No stability analyses were provided for Ash Pond A. The dam has been removed since 1962. AMEC rated this unit as less than low hazard. AMEC recommends that only routine maintenance of vegetation and prevention of erosion is necessary for this unit.

4.4.3 Monitoring and Instrumentation Recommendations

No instrumentation was available for review for this unit since the dam for Ash Pond A was removed in 1962. AMEC rated this unit as less than low hazard. AMEC recommends that only routine maintenance of vegetation and prevention of erosion is necessary for this unit.

4.4.4 Inspection Recommendations

This pond has, historically, not had routinely documented inspections. AMEC recommends that only routine maintenance of vegetation and prevention of erosion is necessary for this unit.

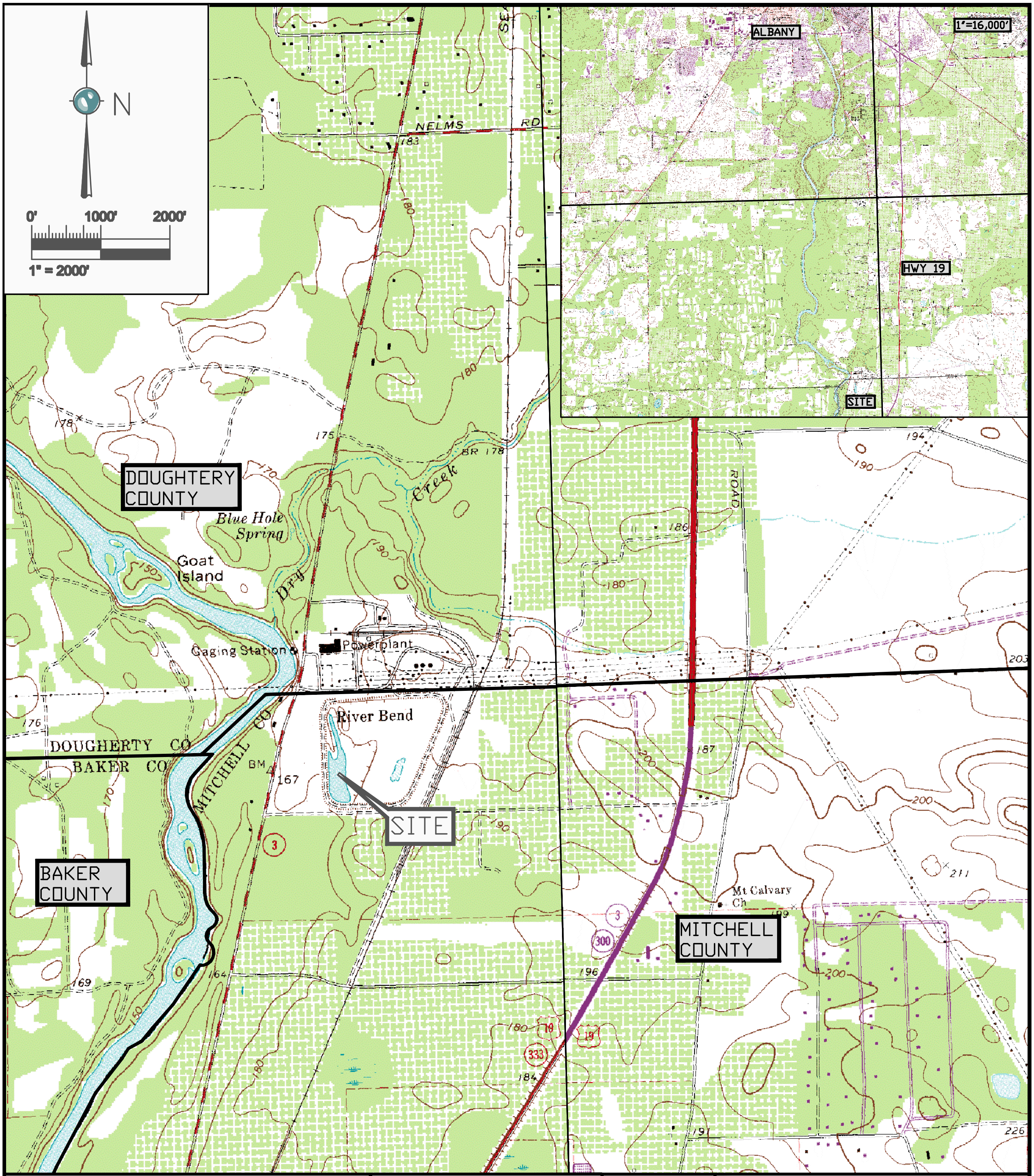
5.0 CLOSING

This report is prepared for the exclusive use of the Environmental Protection Agency for the site and criteria stipulated herein. This report does not address regulatory issues associated with storm water runoff, the identification and modification of regulated wetlands, or ground water recharge areas. Further, this report does not include review or analysis of environmental or regional geo-hydrologic aspects of the site, except as noted herein. Questions or interpretation regarding any portion of the report should be addressed directly by the geotechnical engineer.

Any use, reliance on, or decisions to be made based on this report by a third party are the responsibility of such third parties. AMEC accepts no responsibility for damages, if any, suffered by any third party because of decisions made or actions based on this report.

The conclusions and recommendations given in this report are based on visual observations, our partial knowledge of the history of Plant Mitchell impoundments, and information provided to us by others. This report has been prepared in accordance with normally accepted geotechnical engineering practices. No other warranty is expressed or implied.

FIGURES



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PROTECTION AGENCY

PROJECT
ASSESSMENT OF DAM SAFETY OF COAL COMBUSTION SURFACE IMPOUNDMENTS

DWN BY: CAE

DATUM:

DATE: 6/24/10

TITLE
GEORGIA POWER
PLANT MITCHELL, ALBANY, GA
SITE LOCATION & VICINITY MAP

CHK'D BY: MS

REV. NO.:

PROJECT NO: 3-2106-0174.0600

PROJECTION:

SCALE:

PAGE NO. 1

UNITED STATES
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DWN BY: ATJ

DWN BY: MS

Datum: NAD 83

Projection: Albers

Scale: As Shown

ASSESSMENT OF DAM SAFETY OF COAL COMBUSTION SURFACE IMPOUNDMENTS

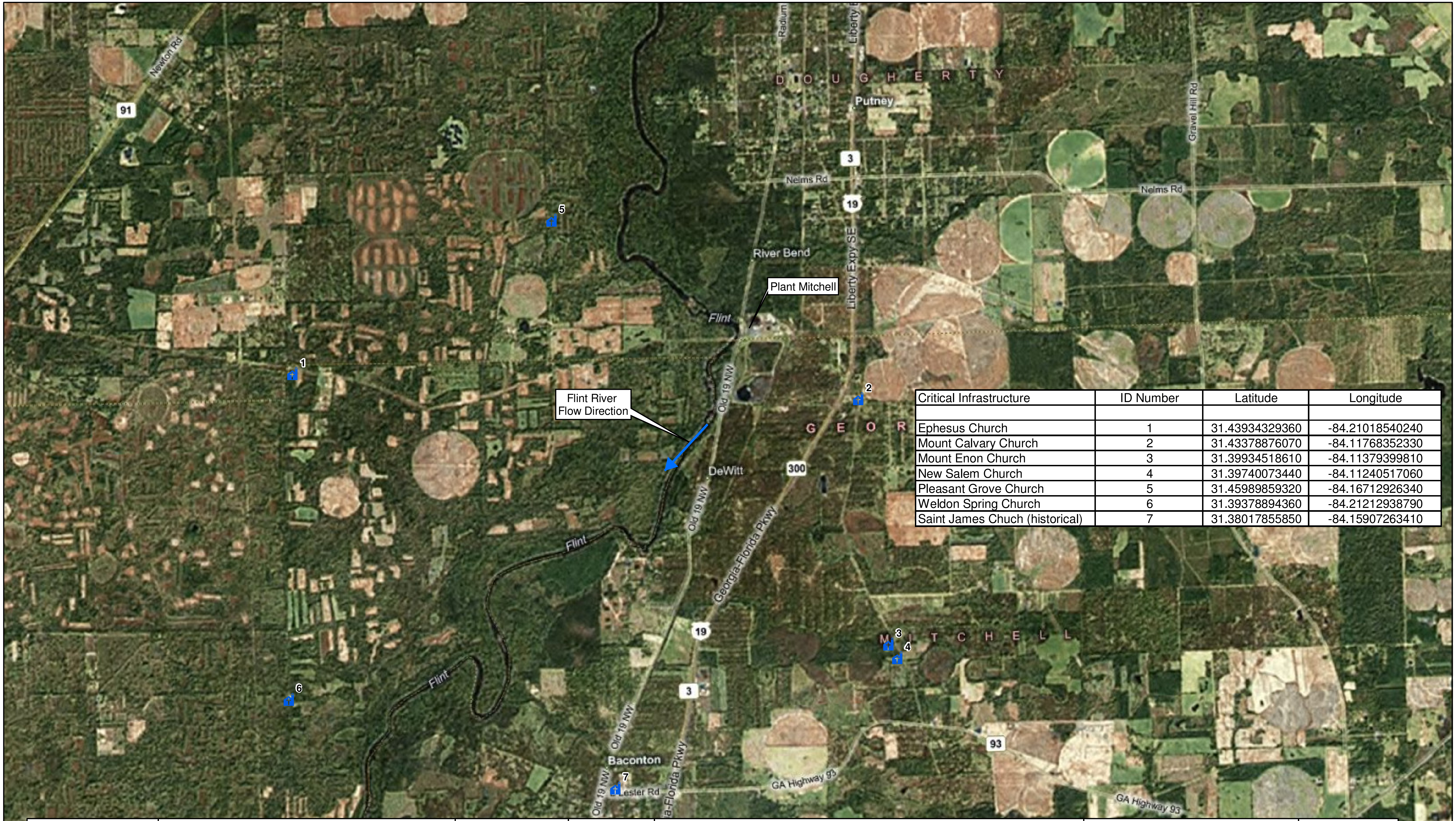
GEORGIA POWER
PLANT MITCHELL ALBANY, GA
AERIAL SITE PLAN

REV. No.: A

Date: 6-23-2010

Project No: 3-2106-0174-0100

Figure No: 2



Critical Infrastructure	ID Number	Latitude	Longitude
Ephesus Church	1	31.43934329360	-84.21018540240
Mount Calvary Church	2	31.43378876070	-84.11768352330
Mount Enon Church	3	31.39934518610	-84.11379399810
New Salem Church	4	31.39740073440	-84.11240517060
Pleasant Grove Church	5	31.45989859320	-84.16712926340
Weldon Spring Church	6	31.39378894360	-84.21212938790
Saint James Chuch (historical)	7	31.38017855850	-84.15907263410

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DATUM: NAD83
PROJECTION: Albers
SCALE: AS SHOWN
DATE: 5/21/2010

ASSESSMENT OF DAM SAFETY OF
COAL COMBUSTION SURFACE IMPOUNDMENTS

GEORGIA POWER
PLANT MITCHELL ALBANY, GA
CRITICAL INFRASTRUCTURE MAP

N
0 1 Miles
0 1 Kilometers

Notes: Critical infrastructure data provided by ESRI

FIGURE
3

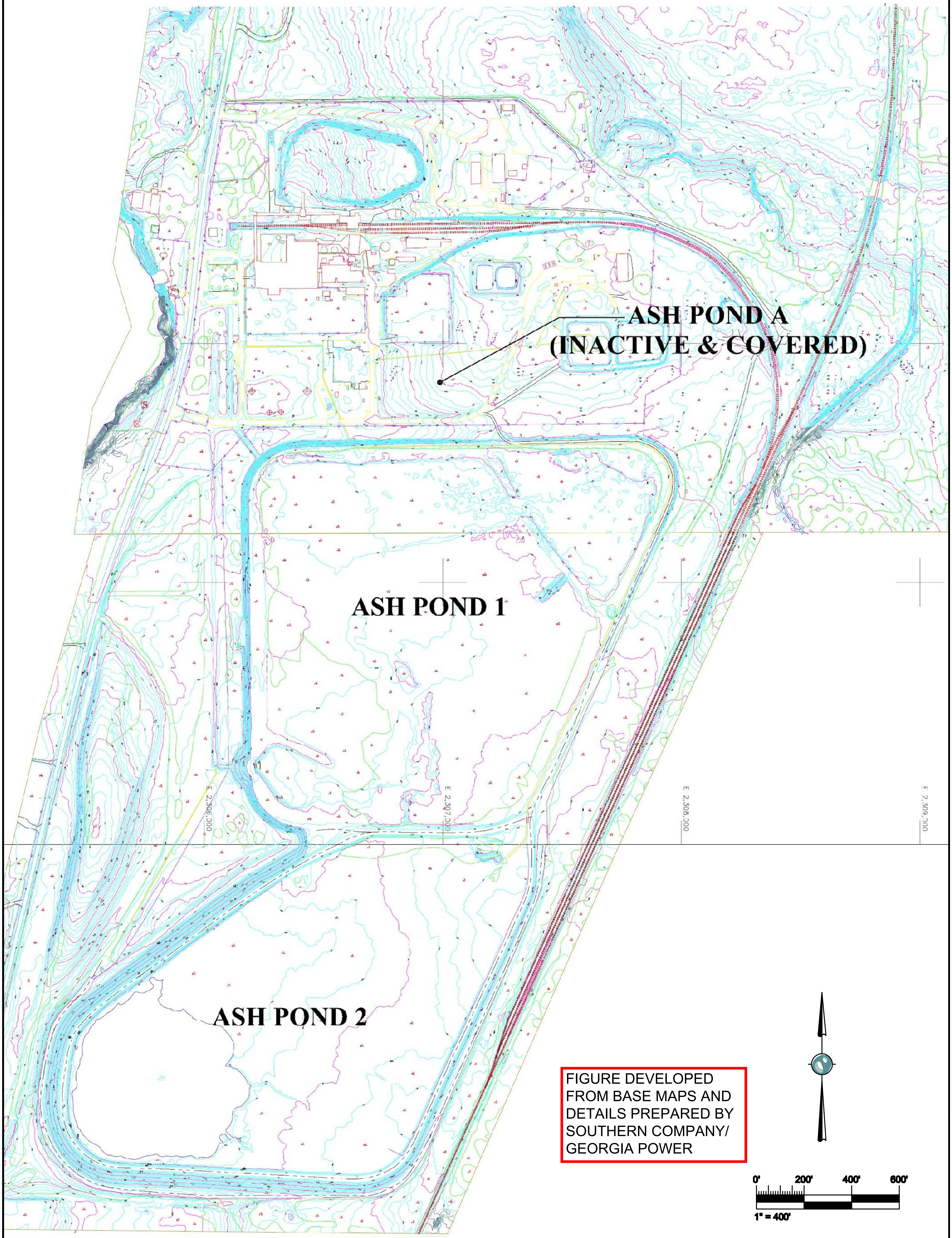

FIGURE DEVELOPED
FROM BASE MAPS AND
DETAILS PREPARED BY
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PROJECTION:	
SCALE:	1"=400'

PROJECT
ASSESSMENT OF DAM SAFETY OF COAL
COMBUSTION SURFACE IMPOUNDMENTS

TITLE
GEORGIA POWER
PLANT MITCHELL, ALBANY, GA
TOPOGRAPHIC MAP

REV. NO.:	
DATE:	6/24/10
PROJECT NO:	3-2106-0174.0600
FIGURE No.	4

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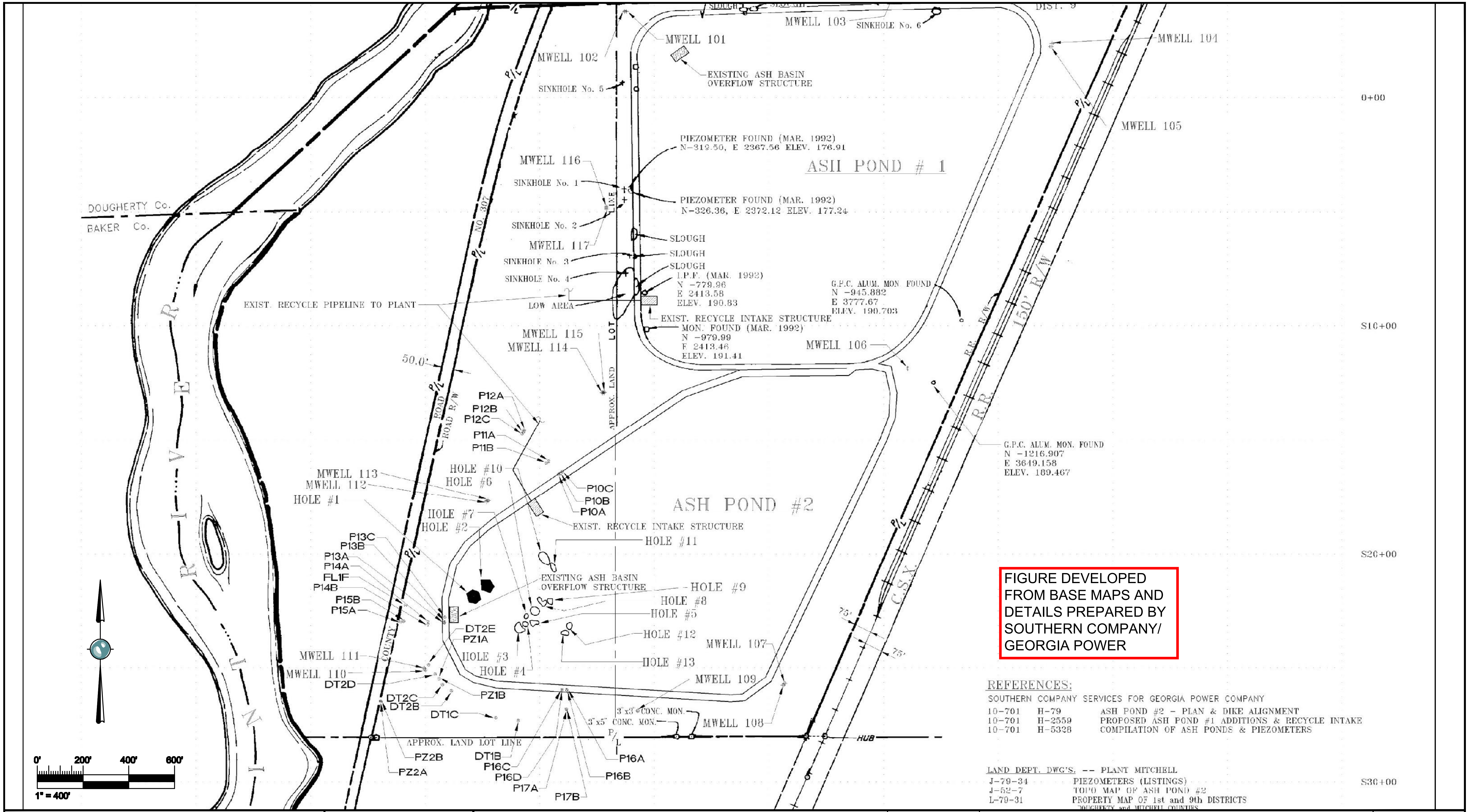

FIGURE DEVELOPED FROM BASE MAPS AND DETAILS PREPARED BY SOUTHERN COMPANY/ GEORGIA POWER

REFERENCES:

SOUTHERN COMPANY SERVICES FOR GEORGIA POWER COMPANY

10-701	H-79	ASH POND #2 - PLAN & DIKE ALIGNMENT
10-701	H-2559	PROPOSED ASH POND #1 ADDITIONS & RECYCLE INTAKE
10-701	H-5328	COMPILATION OF ASH PONDS & PIEZOMETERS

LAND DEPT. DWG'S. -- PLANT MITCHELL

J-79-34	PIEZOMETERS (LISTINGS)
J-52-7	TOPO MAP OF ASH POND #2
L-79-31	PROPERTY MAP OF 1st and 9th DISTRICTS DOUGHERTY and MITCHELL COUNTIES

NOTE: THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE AMEC EARTH & ENVIRONMENTAL REPORT

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PROJECTION:
SCALE: 1"=400'

PROJECT
ASSESSMENT OF DAM SAFETY OF COAL COMBUSTION SURFACE IMPOUNDMENTS

TITLE
GEORGIA POWER
PLANT MITCHELL, ALBANY, GA
ASH POND 1 AND 2 MONITORING WELL AND PIEZOMETER LOCATION

DATE: 6/24/10
PROJECT NO: 3-2106-0174.0600
REV. NO.:
FIGURE No. 5

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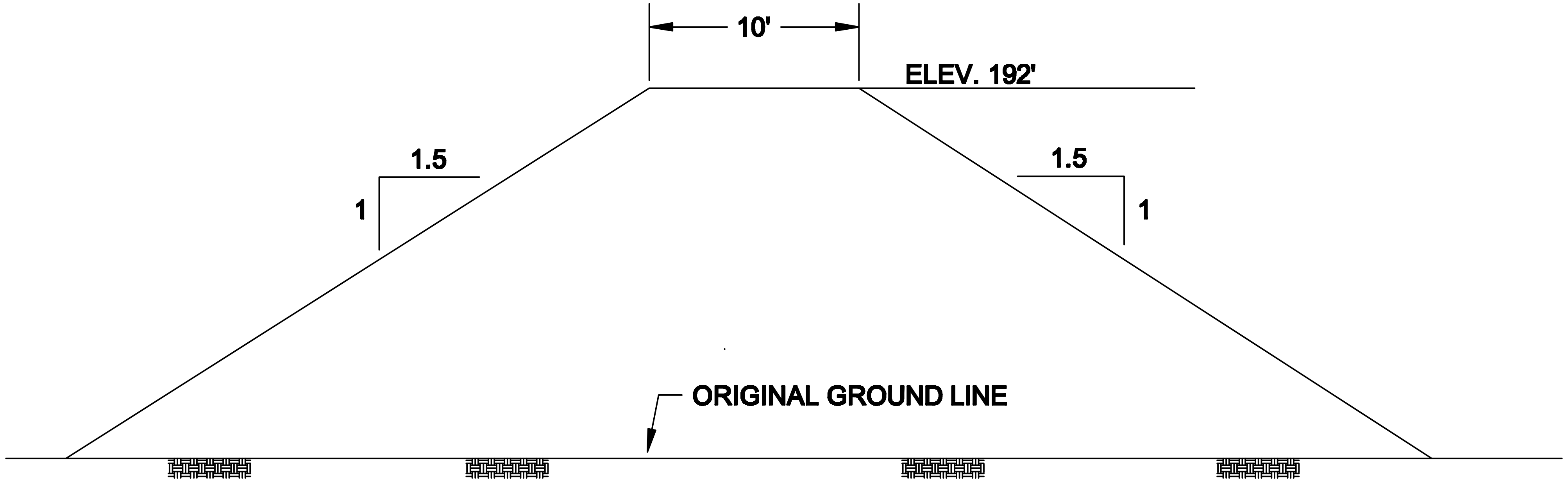

TYPICAL WESTERN CROSS-SECTION

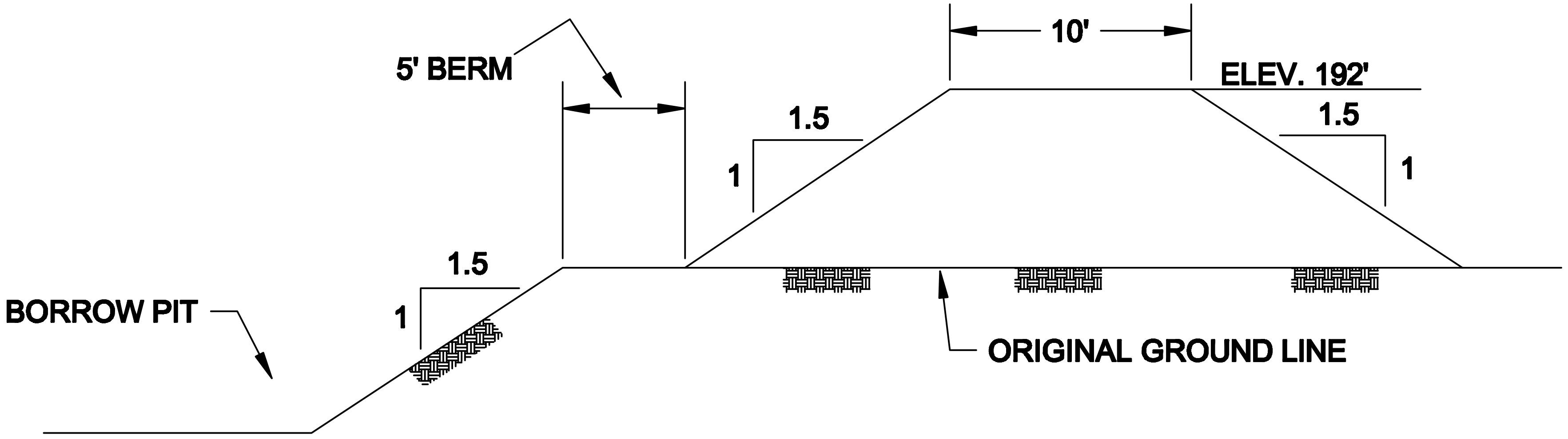

FIGURE DEVELOPED
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TYPICAL EASTERN CROSS-SECTION

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DATUM:
PROJECTION:
SCALE: NOT TO SCALE

PROJECT
ASSESSMENT OF DAM SAFETY OF COAL
COMBUSTION SURFACE IMPOUNDMENTS

TITLE
GEORGIA POWER
PLANT MITCHELL, ALBANY, GA
ASH POND 1 TYPICAL EASTERN AND WESTERN
CROSS-SECTION

DATE: 6/24/10
PROJECT NO: 3-2106-0174.0600
REV. NO.:
FIGURE No. 6

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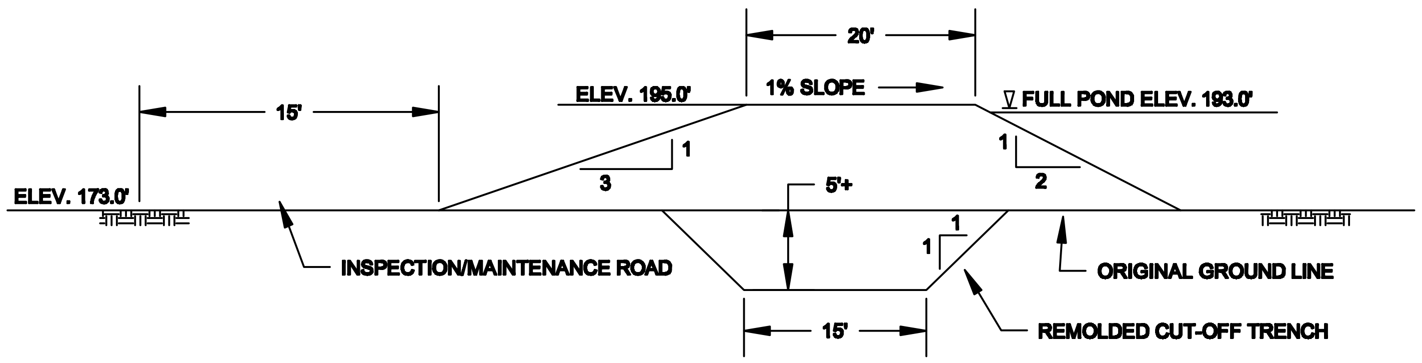
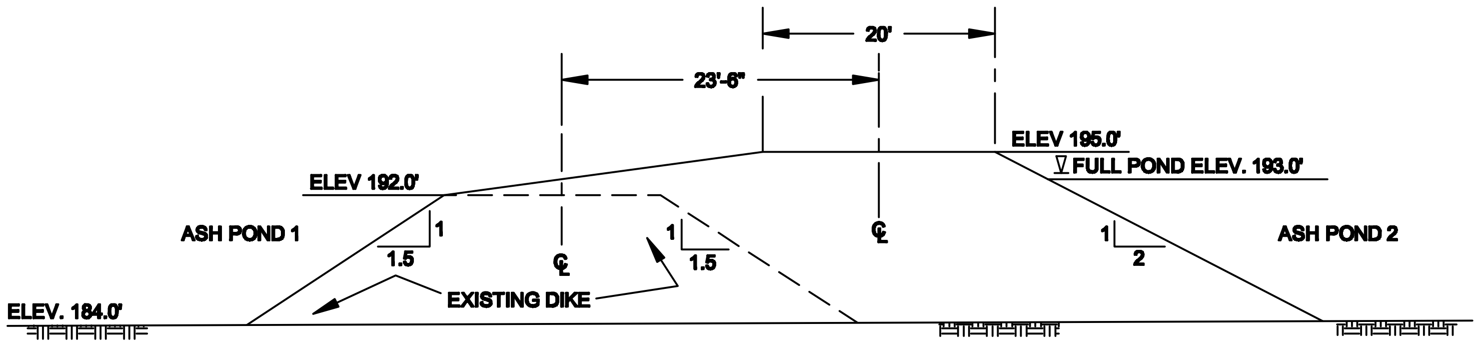


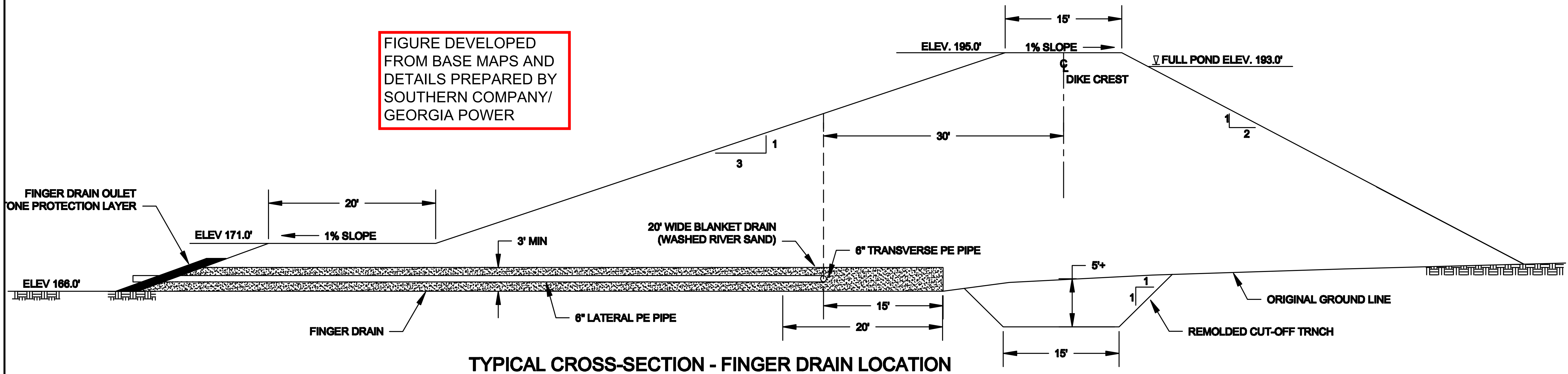
TYPICAL CROSS-SECTION - EAST



NOTE: NO CUT-OFF TRENCH REQUIRED ALONG SECTION CONTAINING INTERSECTION OF OLD DIKE AND NEW DIKE

TYPICAL CROSS-SECTION - COMMON DIKE

FIGURE DEVELOPED FROM BASE MAPS AND DETAILS PREPARED BY SOUTHERN COMPANY/ GEORGIA POWER



TYPICAL CROSS-SECTION - FINGER DRAIN LOCATION

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CHK'D BY: MGS
DATUM:
PROJECTION:
SCALE: NOT TO SCALE

PROJECT
ASSESSMENT OF DAM SAFETY OF COAL
COMBUSTION SURFACE IMPOUNDMENTS

TITLE
GEORGIA POWER
PLANT MITCHELL, ALBANY, GA
ASH POND 2 TYPICAL CROSS-SECTION - FINGER
DRAIN LOCATION, EASTERN AND COMMON DIKE

DATE: 6/24/10
PROJECT NO: 3-2106-0174.0600
REV. NO.:
FIGURE No. 7

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DRAIN NO.	STATION
D·1	3·50
D·2	5·50
D 3	7·50
D-4	9·50
D 5	14·50
D·6	16·50
D-7	18·00
D 8	22·50
D-9	24·00

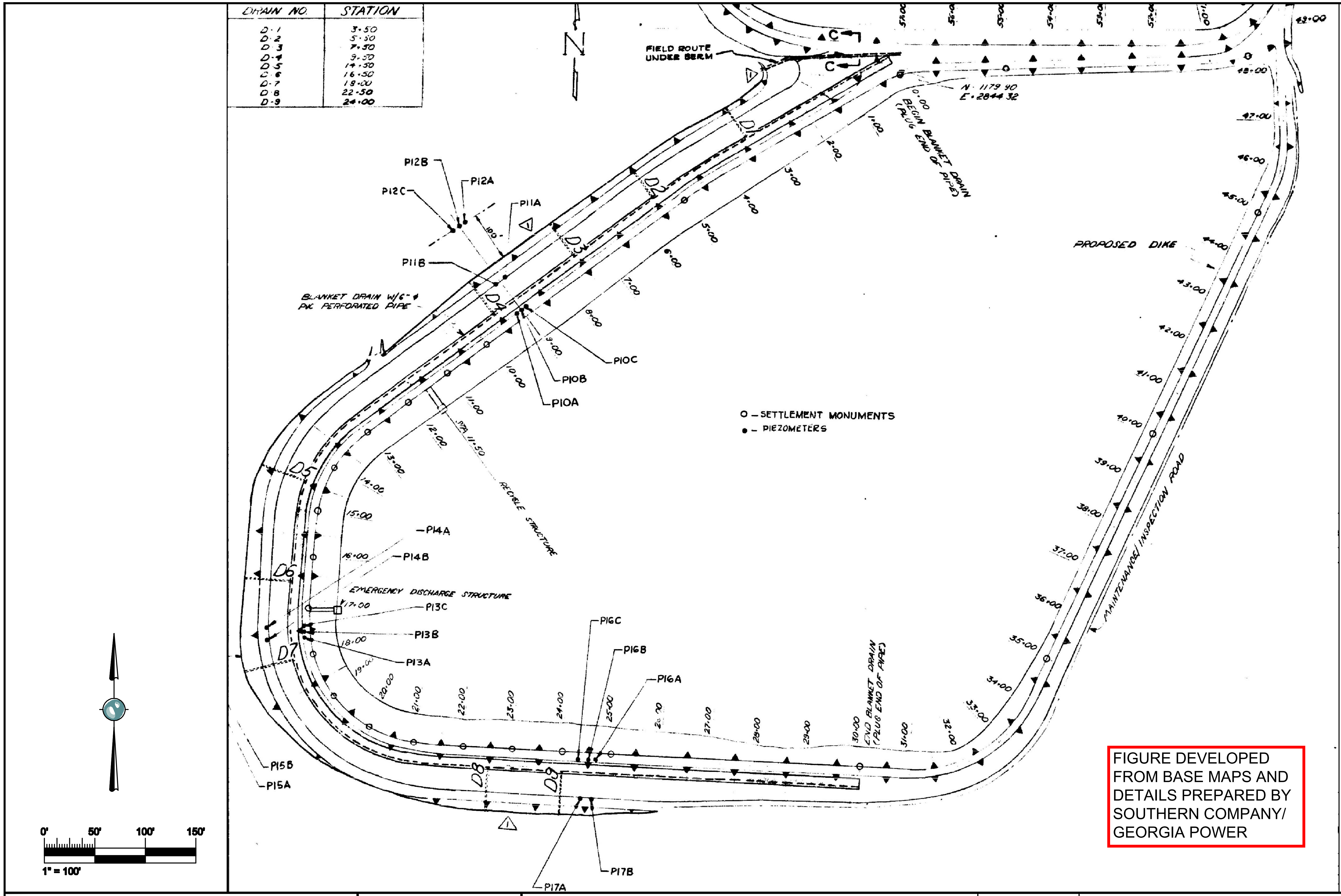

FIGURE DEVELOPED FROM BASE MAPS AND DETAILS PREPARED BY SOUTHERN COMPANY/ GEORGIA POWER

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DATUM:	
PROJECTION:	
SCALE:	1"=100'

PROJECT
ASSESSMENT OF DAM SAFETY OF COAL COMBUSTION SURFACE IMPOUNDMENTS

TITLE
GEORGIA POWER
PLANT MITCHELL, ALBANY, GA
ASH POND 2 INTERNAL DRAINAGE AND SETTLEMENT MONUMENT LOCATIONS

DATE:	6/24/10
PROJECT NO:	3-2106-0174.0600
REV. NO.:	
FIGURE No.	8

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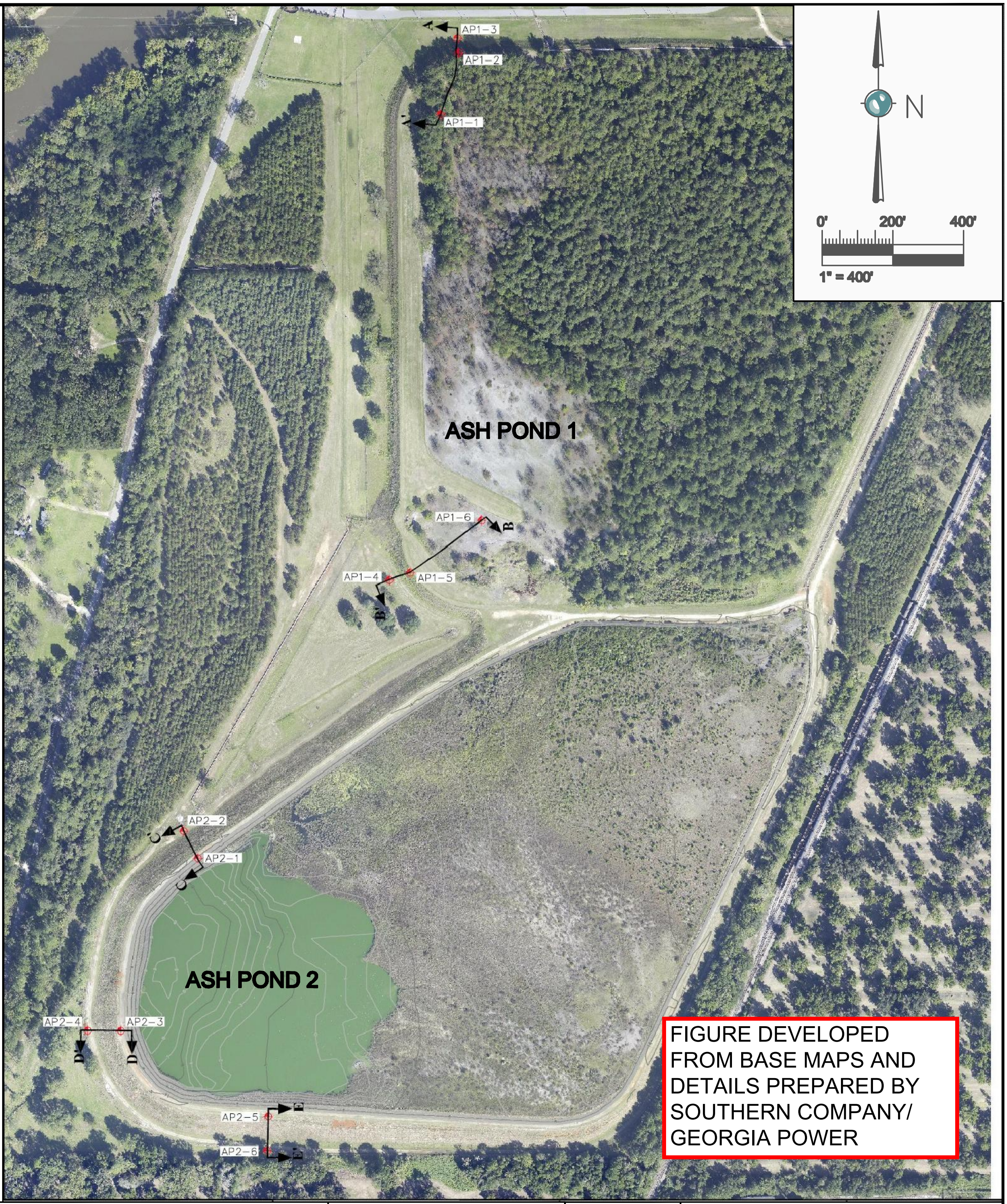

FIGURE DEVELOPED FROM BASE MAPS AND DETAILS PREPARED BY SOUTHERN COMPANY/ GEORGIA POWER

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PROJECT
ASSESSMENT OF DAM SAFETY OF COAL COMBUSTION SURFACE IMPOUNDMENTS

TITLE
GEORGIA POWER
PLANT MITCHELL, ALBANY, GA
ASH POND 1 AND 2 2010 SLOBE STABILITY BORING AND PIEZOMETER LOCATIONS

DWN BY: CAE	DATUM:	DATE: 6/24/10
CHK'D BY: MGS	REV. NO.:	PROJECT NO: project number
PROJECTION:	SCALE: 1"=400'	FIGURE No. 9

APPENDIX A
Waste Impoundment Inspection Forms

Coal Combustion Dam Inspection Checklist Form

US Environmental Protection Agency

Site Name: Georgia Power Plant Mitchell

Date: 13 MAY 2010

Unit Name: ASH Pond A

Operator's Name: Georgia Power

Unit I.D.:

Hazard Potential Classification: High Significant [✓ Low]

Inspector's Name: D. TATE, J. BLACK

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No
1. Frequency of Company's Dam Inspections?	N/A	
2. Pool elevation (operator records)?	N/A	
3. Decant inlet elevation (operator records)?	N/A	
4. Open channel spillway elevation (operator records)?	N/A	
5. Lowest dam crest elevation (operator records)?	N/A	
6. If instrumentation is present, are readings recorded (operator records)?		X
7. Is the embankment currently under construction?		X
8. Foundation preparation (remove vegetation,stumps, topsoil in area where embankment fill will be placed)?	X	
9. Trees growing on embankment? (If so, indicate largest diameter below)		
10. Cracks or scarps on crest?		N/A
11. Is there significant settlement along the crest?		X
12. Are decant trashracks clear and in place?		
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area?		
14. Clogged spillways, groin or diversion ditches?		
15. Are spillway or ditch linings deteriorated?		
16. Are outlets of decant or underdrains blocked?		
17. Cracks or scarps on slopes?		✓

	Yes	No
18. Sloughing or bulging on slopes?		N/A
19. Major erosion or slope deterioration?		
20. Decant Pipes:	▨	▨
Is water entering inlet, but not exiting outlet?		
Is water exiting outlet, but not entering inlet?		
Is water exiting outlet flowing clear?		
21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):	▨	▨
From underdrain?		
At isolated points on embankment slopes?		
At natural hillside in the embankment area?		
Over widespread areas?		
From downstream foundation area?		
"Boils" beneath stream or ponded water?		
Around the outside of the decant pipe?		
22. Surface movements in valley bottom or on hillside?		
23. Water against downstream toe?		
24. Were Photos taken during the dam inspection?	X	✓

Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.

Inspection Issue # — Comments

1-24 ASH Pond A is ~~closed~~ INACTIVE, covered, & Dikes are cut Down, cannot impound water

U. S. Environmental Protection Agency

Coal Combustion Waste (CCW)
Impoundment Inspection

Impoundment NPDES Permit # GA0001465 INSPECTOR D. TATE, J. BLACK
Date 13 MAY 2010

Impoundment Name ASH POND A
Impoundment Company Georgia Power PLANT MITCHELL
EPA Region 4
State Agency (Field Office) Addresss 2 MLK JR DR, Suite 1152 EAST Tower
ATLANTA GA 30334-9000
Name of Impoundment ASH Pond A
(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New X Update ____

	Yes	No
Is impoundment currently under construction?		X
Is water or ccw currently being pumped into the impoundment?		X

IMPOUNDMENT FUNCTION: INACTIVE ~~Closed~~ & Covered INACTIVE
DIKES CUT DOWN

Nearest Downstream Town : Name BACONTON, GA.
Distance from the impoundment 4.9 mi
Impoundment Location:
Longitude 84,1371 Degrees ____ Minutes ____ Seconds
Latitude 31,4452 Degrees ____ Minutes ____ Seconds
State GA County MITCHELL

Does a state agency regulate this impoundment? YES ____ NO X

If So Which State Agency? ____

HAZARD POTENTIAL (In the event the impoundment should fail, the following would occur):

X **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

______ **LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

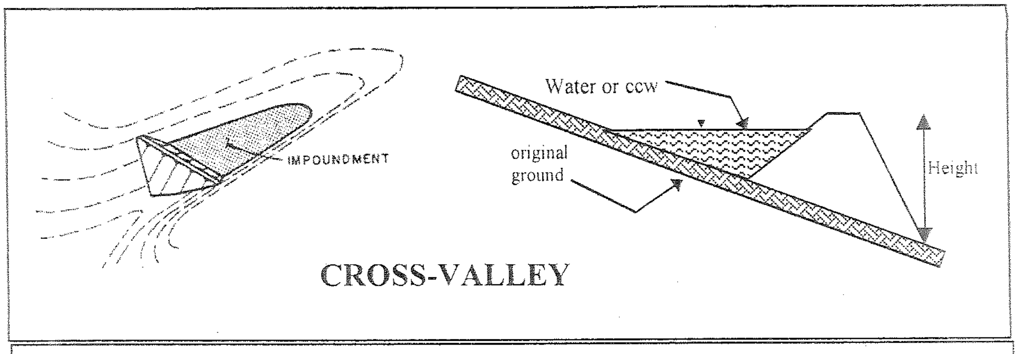
______ **SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

______ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

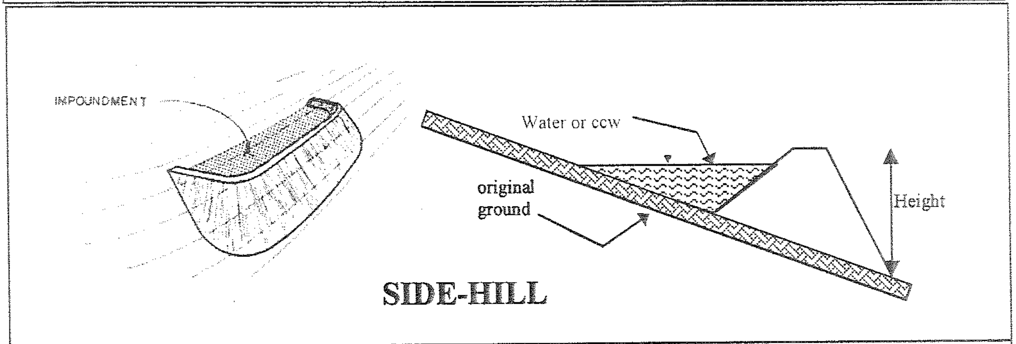
DESCRIBE REASONING FOR HAZARD RATING CHOSEN:

ASH Pond A is ~~Closed~~, INACTIVE, COVERED, & DIKES cut DOWN. ASH Pond A CANNOT impound WATER. Failure is unlikely TO CAUSE ECONOMICAL LOSS or LOSS of HUMAN Life.

CONFIGURATION:

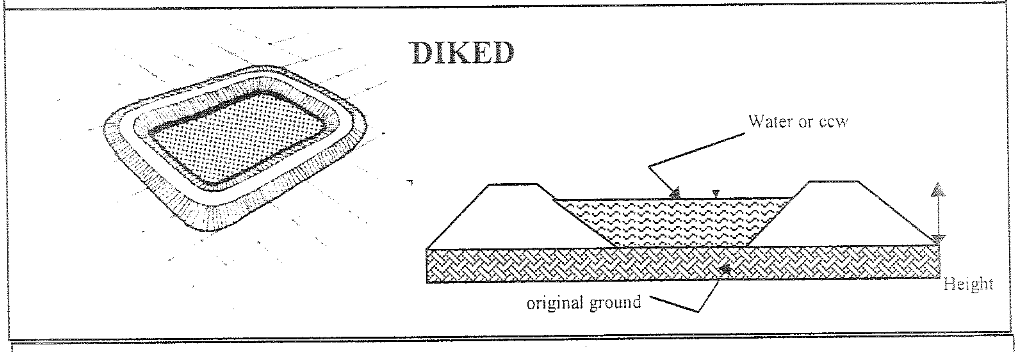


CROSS-VALLEY

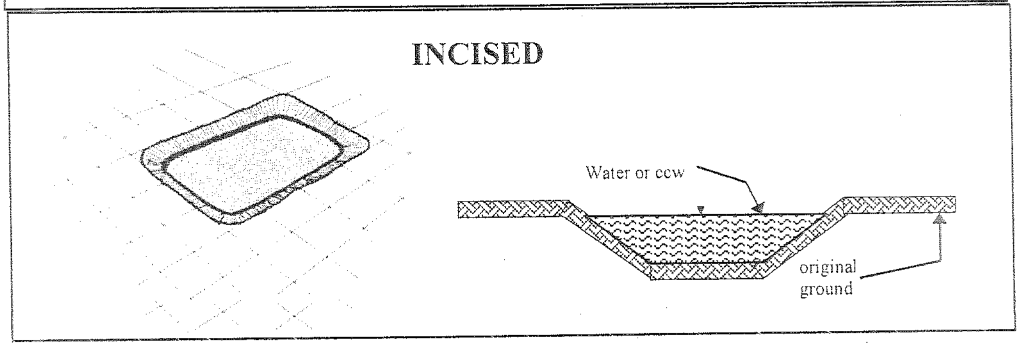


SIDE-HILL

DIKED



INCISED



______ Cross-Valley
__X__ Side-Hill
______ Diked
______ Incised (form completion optional)
______ Combination Incised/Diked

Embankment Height ~~N/A~~ xx feet Embankment Material EARTH fill
Former Pool Area xx 4.1 acres Liner NONE
Current Freeboard NONE xx feet Liner Permeability —

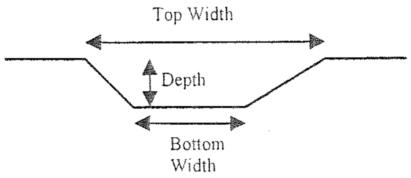
xx Pond A is inactive, covered and dikes cut down, cannot impound water.

TYPE OF OUTLET (Mark all that apply)

_____ **Open Channel Spillway**
_____ Trapezoidal
_____ Triangular
_____ Rectangular
_____ Irregular

_____ depth
_____ bottom (or average) width
_____ top width
_____

TRAPEZOIDAL



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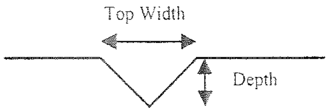

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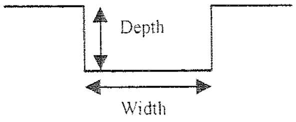
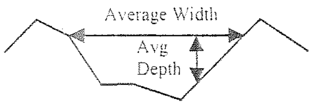


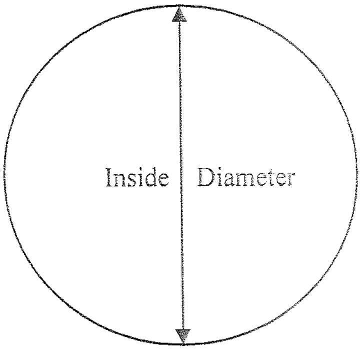
IRREGULAR



_____ **Outlet**

_____ inside diameter

Material
_____ corrugated metal
_____ welded steel
_____ concrete
_____ plastic (hdpe, pvc, etc.)
_____ other (specify) _____________________



_____

Is water flowing through the outlet? YES _______ NO _______

X **No Outlet**

Pond INACTIVE ~~closed~~, covered & Dikes cut Down.

_____ **Other Type of Outlet** (specify) _____________________

The Impoundment was Designed By _____________________

____

Has there ever been a failure at this site? YES ________ NO __X__

If So When? ____________

If So Please Describe : UNKNOWN

Has there ever been significant seepages at this site? YES _______ NO X

If So When? ____________________________

IF So Please Describe: ____

Has there ever been any measures undertaken to monitor/lower Phreatic water table levels based on past seepages or breaches at this site? YES ________ NO X

If so, which method (e.g., piezometers, gw pumping,...)? ____________________

If so Please Describe : ______________________________

Coal Combustion Dam Inspection Checklist Form

US Environmental
Protection Agency

Site Name: Georgia Power PLANT Mitchell
Date: 13-MAY 2010
Unit Name: ASH Pond #1
Operator's Name: Georgia Power
Unit I.D.:
Hazard Potential Classification: High Significant [✓ Low]
Inspector's Name: D.TATE, J.BLACK

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?	2/YR		18. Sloughing or bulging on slopes?	X	
2. Pool elevation (operator records)?	NONE		19. Major erosion or slope deterioration?		X
3. Decant inlet elevation (operator records)?	190.0		20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?	NONE		Is water entering inlet, but not exiting outlet?		X
5. Lowest dam crest elevation (operator records)?	192.0		Is water exiting outlet, but not entering inlet?		X
6. If instrumentation is present, are readings recorded (operator records)?	X		Is water exiting outlet flowing clear?		N/A
7. Is the embankment currently under construction?		X	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation,stumps, topsoil in area where embankment fill will be placed)?	X		From underdrain?		X
9. Trees growing on embankment? (If so, indicate largest diameter below)		X	At isolated points on embankment slopes?		X
10. Cracks or scarps on crest?		X	At natural hillside in the embankment area?		X
11. Is there significant settlement along the crest?		X	Over widespread areas?		X
12. Are decant trashracks clear and in place?		X	From downstream foundation area?		X
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area?		X	"Boils" beneath stream or ponded water?		X
14. Clogged spillways, groin or diversion ditches?		X	Around the outside of the decant pipe?		X
15. Are spillway or ditch linings deteriorated?		X	22. Surface movements in valley bottom or on hillside?		X
16. Are outlets of decant or underdrains blocked?		X	23. Water against downstream toe?		X
17. Cracks or scarps on slopes?		X	24. Were Photos taken during the dam inspection?	X	

Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.

Inspection Issue #	Comments
2, 4	No open channel spillway
12	No Trash rack
17, 18	Some minor sloughs have been repaired
19	mowers have scalped gross in some places

U. S. Environmental Protection Agency

Coal Combustion Waste (CCW)
Impoundment Inspection

Impoundment NPDES Permit # GA 0001465 INSPECTOR D. TATE, James Black

Date 13 MAY 2010

Impoundment Name ASH POND #1

Impoundment Company GEORGIA POWER PLANT MITCHELL

EPA Region 4

State Agency (Field Office) Addresss 2 MLK JR Dr, SUITE 1152 EAST Tower
ATLANTA GA 30334-9000

Name of Impoundment ASH POND #1

(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New X Update ______

	Yes	No
Is impoundment currently under construction?		X
Is water or ccw currently being pumped into the impoundment?		X

IMPOUNDMENT FUNCTION: INACTIVE, ~~NOT CLOSED~~ ~~NO WATER OR CCW~~ Full

Nearest Downstream Town : Name BACONTON, GA

Distance from the impoundment 4.9 mi

Impoundment Location:
Longitude ~~31~~ 84.1371 Degrees ______ Minutes ______ Seconds
Latitude 31.4452 Degrees ______ Minutes ______ Seconds
State GA County MITCHELL

Does a state agency regulate this impoundment? YES ______ NO X

If So Which State Agency? ______

EPA Form XXXX-XXX, Jan 09

HAZARD POTENTIAL (In the event the impoundment should fail, the following would occur):

______ **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

___X___ **LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

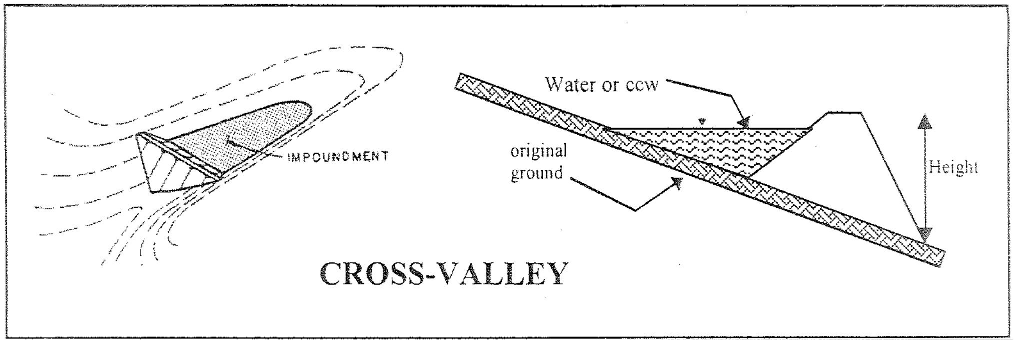
______ **SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

______ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

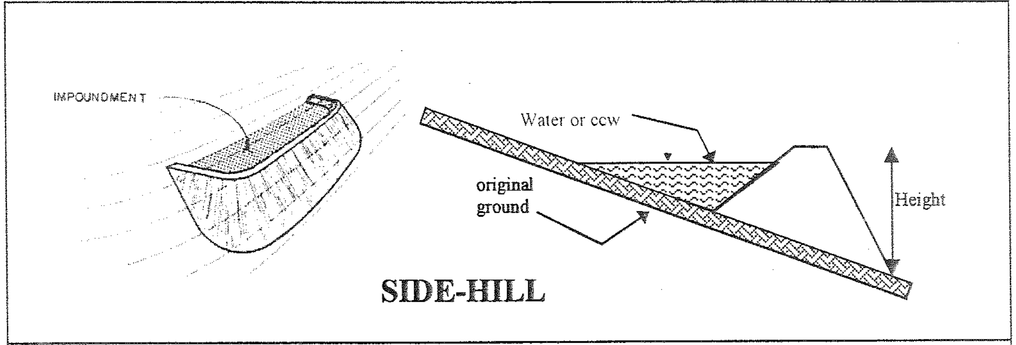
DESCRIBE REASONING FOR HAZARD RATING CHOSEN:

Failure is unlikely to Result in loss of Human Life and Damage is Likely To be Limited To owners ProperTy.

CONFIGURATION:

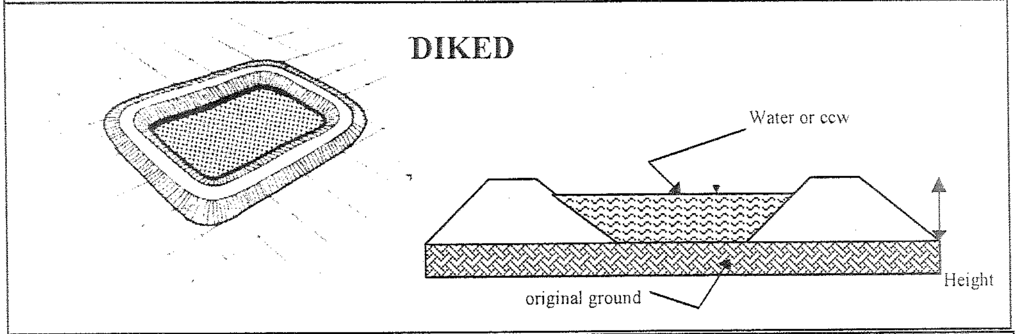


CROSS-VALLEY

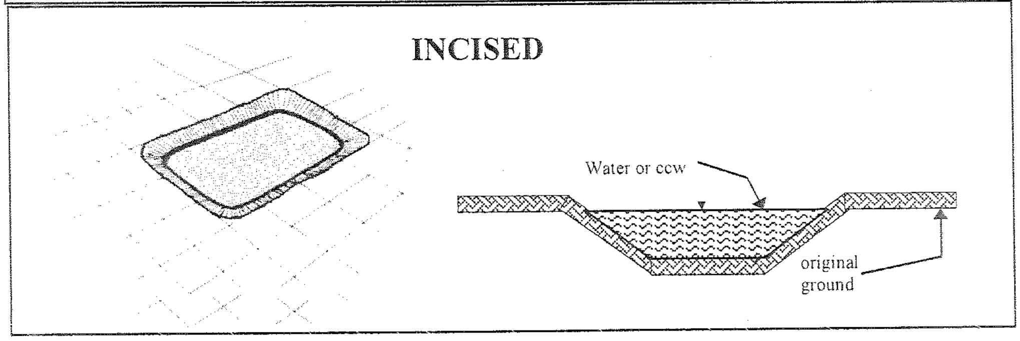


SIDE-HILL

DIKED



INCISED



_____ Cross-Valley
X Side-Hill
X Diked
_____ Incised (form completion optional)
_____ Combination Incised/Diked

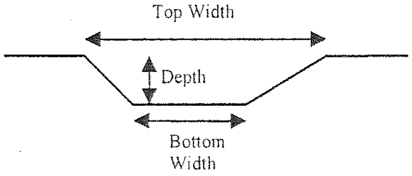
Embankment Height 23 feet
Embankment Material EARTH FILL
Pool Area 44 acres
Liner NONE
Current Freeboard 3 feet
Liner Permeability —

TYPE OF OUTLET (Mark all that apply)

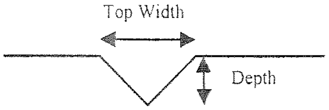
_____ **Open Channel Spillway**
_____ Trapezoidal
_____ Triangular
_____ Rectangular
_____ Irregular

_____ depth
_____ bottom (or average) width
_____ top width
_____

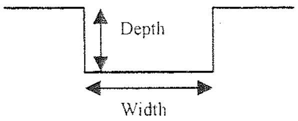
TRAPEZOIDAL



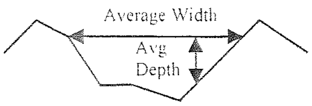
TRIANGULAR



RECTANGULAR

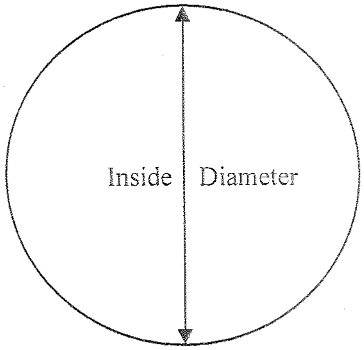


IRREGULAR



__X__ **Outlet**

__30"__ inside diameter



Material
__X__ corrugated metal
_____ welded steel
_____ concrete
_____ plastic (hdpe, pvc, etc.)
_____ other (specify) ____________________

_____

Is water flowing through the outlet? YES _______ NO _______

_____ **No Outlet**

_____

__X__ **Other Type of Outlet** (specify) 30" Fiberglass Recycle Structure

The Impoundment was Designed By Georgia Power Chief Engineer

Has there ever been a failure at this site? YES ________ NO X

If So When? Various

If So Please Describe : A Few minor Sloughs on Face of Dam Have been repaired

Has there ever been significant seepages at this site? YES ______ NO X

If So When? ______

IF So Please Describe: ______

Has there ever been any measures undertaken to monitor/lower Phreatic water table levels based on past seepages or breaches at this site? YES ________ NO X

If so, which method (e.g., piezometers, gw pumping,...)? ________

If so Please Describe : IN 1972 Seepage within interior of Pond resulted in Pumping During repairs. AFTER Repairs completed, ASH Pond Returned To Service. IT is Now Full, inactive and No Longer Receives WATER or CCW.

Coal Combustion Dam Inspection Checklist Form

US Environmental
Protection Agency

Site Name: Georgia Power Plant Mitchell
Date: 13 May 2010
Unit Name: ASH Pond # 2
Operator's Name: Georgia Power
Unit I.D.:
Hazard Potential Classification: High [✓ Significant] Low
Inspector's Name: D. TATE, J. BLACK

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?	2 / year		18. Sloughing or bulging on slopes?		X
2. Pool elevation (operator records)?	183.6		19. Major erosion or slope deterioration?		X
3. Decant inlet elevation (operator records)?	186.6		20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?	NONE		Is water entering inlet, but not exiting outlet?		X
5. Lowest dam crest elevation (operator records)?	195.0		Is water exiting outlet, but not entering inlet?		X
6. If instrumentation is present, are readings recorded (operator records)?	X		Is water exiting outlet flowing clear?	X	
7. Is the embankment currently under construction?		X	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation,stumps, topsoil in area where embankment fill will be placed)?	X		From underdrain?	X	
9. Trees growing on embankment? (If so, indicate largest diameter below)		X	At isolated points on embankment slopes?	X	
10. Cracks or scarps on crest?		X	At natural hillside in the embankment area?		X
11. Is there significant settlement along the crest?		X	Over widespread areas?		X
12. Are decant trashracks clear and in place?		N/A	From downstream foundation area?		X
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area?		X	"Boils" beneath stream or ponded water?		X
14. Clogged spillways, groin or diversion ditches?		X	Around the outside of the decant pipe?		X
15. Are spillway or ditch linings deteriorated?		X	22. Surface movements in valley bottom or on hillside?		X
16. Are outlets of decant or underdrains blocked?			23. Water against downstream toe?		X
17. Cracks or scarps on slopes?		X	24. Were Photos taken during the dam inspection?	X	

Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.

Inspection Issue #	Comments
4	No open channel spillway
12	No trash racks ~~is~~
20	Pumped decant

U. S. Environmental Protection Agency

Coal Combustion Waste (CCW)
Impoundment Inspection

Impoundment NPDES Permit # GA0001465 INSPECTOR D. TATE, J. BLACK
Date 13 MAY 2010

Impoundment Name ASH POND #2
Impoundment Company Georgia Power Plant Mitchell
EPA Region 4
State Agency (Field Office) Addresss 2 MLK JR DR, SUITE 1152 EAST TOWER
ATLANTA GA 30334-9000
Name of Impoundment ASH Pond #2
(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New X Update ____

	Yes	No
Is impoundment currently under construction?		X
Is water or ccw currently being pumped into the impoundment?	X	

IMPOUNDMENT FUNCTION: CCW Pond

Nearest Downstream Town : Name BACONTON, GA
Distance from the impoundment 4.9 mi
Impoundment
Location: Longitude 84.1371 Degrees ____ Minutes ____ Seconds
Latitude 31.4452 Degrees ____ Minutes ____ Seconds
State GA County MITCHELL

Does a state agency regulate this impoundment? YES ____ NO X

If So Which State Agency? ____

EPA Form XXXX-XXX, Jan 09

HAZARD POTENTIAL (In the event the impoundment should fail, the following would occur):

______ **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

______ **LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

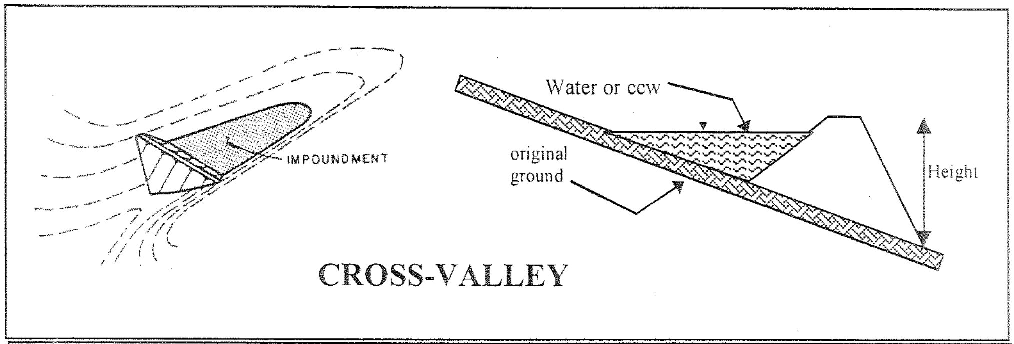
__X__ **SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

______ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

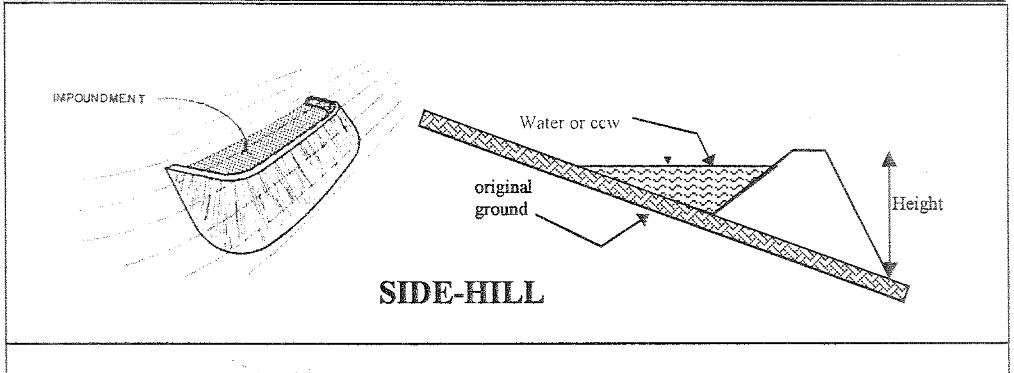
DESCRIBE REASONING FOR HAZARD RATING CHOSEN:

Failure is unlikely To result in Loss of Human Life. However, Pollution of Flint River or Damage To Neighbors orchard or Public Roads could occur.

CONFIGURATION:

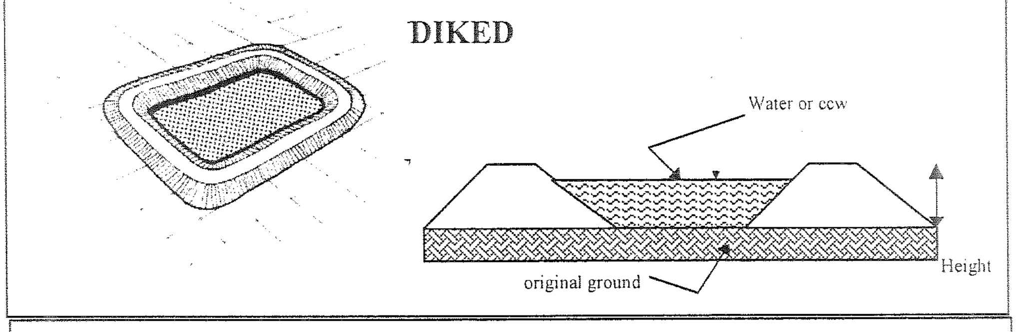


CROSS-VALLEY

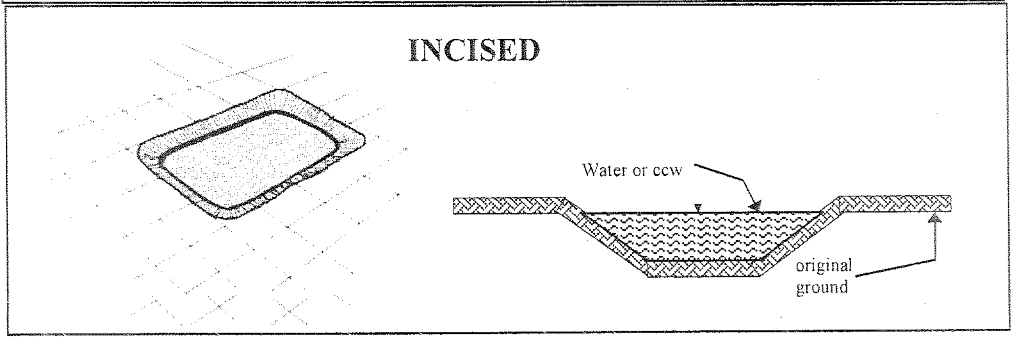


SIDE-HILL

DIKED



INCISED



_____ Cross-Valley
_____ Side-Hill
__X__ Diked
_____ Incised (form completion optional)
_____ Combination Incised/Diked

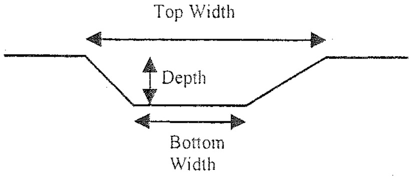
Embankment Height 33 feet
Embankment Material EARTH FILL
Pool Area 43 acres
Liner NONE
Current Freeboard 11.4 feet
Liner Permeability —

TYPE OF OUTLET (Mark all that apply)

_____ **Open Channel Spillway** NONE
_____ Trapezoidal
_____ Triangular
_____ Rectangular
_____ Irregular

_____ depth
_____ bottom (or average) width
_____ top width
_____

TRAPEZOIDAL



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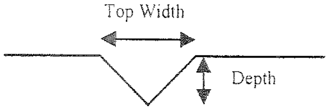
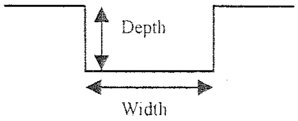
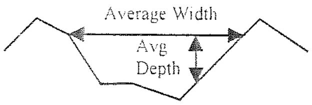


RECTANGULAR

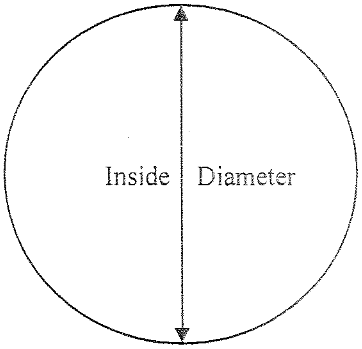


IRREGULAR



X **Outlet**

30" inside diameter



Material
_____ corrugated metal
X welded steel
_____ concrete
_____ plastic (hdpe, pvc, etc.)
_____ other (specify) _____

_____

Is water flowing through the outlet? YES _____ NO X
Pumped As Needed

_____ **No Outlet**

_____

X **Other Type of Outlet** (specify) EMERGENCY DECANT Drop inlet 30" BCCMP

The Impoundment was Designed By Georgia Power Chief engineer

Has there ever been a significant failure at this site? YES ______ NO X

If So When? Various

If So Please Describe : Minor surface sloughs have been repaired.

Has there ever been significant seepages at this site? YES ~~X~~ NO X

If So When? ~~198~~ 1979

IF So Please Describe: During initial filling several Sinkholes Developed in The Bottom of The impoundment (They Did not Affect The Dike). The ~~Re~~ Sinkholes were Repaired at That time and have not recurred. See Report MIT API 042. Drawing 10-701 E-4.

Has there ever been any measures undertaken to monitor/lower Phreatic water table levels based on past seepages or breaches at this site? YES ~~[illegible]~~ NO X

If so, which method (e.g., piezometers, gw pumping,...)? Piezometers

If so Please Describe : Piezometers installed to monitor water levels. Pond maintained at minimum head subject to cotreatment requirements.

APPENDIX B
Site Photo Log Map and Site Photos

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY

AMEC Earth & Environmental
690 Commonwealth Business Center
11003 Bluegrass Parkway
Louisville, KY 40299

amec

DWN BY: ATJ

DWN BY: MS

Datum: NAD 83

Projection: Albers

Scale: As Shown

ASSESSMENT OF DAM SAFETY OF
COAL COMBUSTION SURFACE IMPOUNDMENTS

GEORGIA POWER
PLANT MITCHELL ALBANY, GA
PHOTO LOCATION MAP

REV. No.: A

Date: 6-23-2010

Project No: 3-2106-0174-0100

Figure No: B-1

ASH POND A
SITE PHOTOS

A-1

FROM ROAD NORTH OF ASH POND 1, LOOKING NORTHEAST TOWARD POND A

A-2

LOOKING SOUTHWEST FROM APPROXIMATELY NORTH END OF ASH POND A TOWARD WEST END OF ASH POND 1

AMEC Earth & Environmental
690 Commonwealth Center
11003 Bluegrass Parkway
Louisville, Ky 40299
(502) 267-0700

	CLIENT LOGO	CLIENT UNITED STATES ENVIRONMENTAL PROTECTION AGENCY	
PROJECT ASSESSMENT OF DAM SAFETY OF COAL COMBUSTION SURFACE IMPOUNDMENTS	DWN BY: CAE	DATUM:	DATE: 6/22/10
TITLE **GEORGIA POWER** **PLANT MITCHELL, ALBANY, GA** **ASH POND A SITE PHOTOS**	CHK'D BY: MS	REV. NO.:	PROJECT NO: 3-2106-0174.0600
	PROJECTION:	SCALE:	PAGE NO. B-2

ASH POND 1
SITE PHOTOS

1-1

AT EAST CORNER LOOKING WEST AT DIVIDING/COMMON EMBANKMENT FOR ASH PONDS 1 AND 2.

1-2

AT EAST CORNER LOOKING WEST AT DIVIDING/COMMON EMBANKMENT FOR ASH PONDS 1 AND 2.

AMEC Earth & Environmental
690 Commonwealth Center
11003 Bluegrass Parkway
Louisville, Ky 40299
(502) 267-0700

amec

CLIENT LOGO

CLIENT
UNITED STATES
ENVIRONMENTAL
PROTECTION AGENCY

PROJECT
ASSESSMENT OF DAM SAFETY OF COAL COMBUSTION SURFACE IMPOUNDMENTS

TITLE
GEORGIA POWER
PLANT MITCHELL, ALBANY, GA
ASH POND 1 SITE PHOTOS

DWN BY: CAE	DATUM:	DATE: 6/22/10
CHK'D BY: MS	REV. NO.:	PROJECT NO: 3-2106-0174.0600
PROJECTION:	SCALE:	PAGE NO. B-3

1-3

NORTHWEST CORNER OF ASH POND 2 AND WEST END OF COMMON DIKE

1-4

REPAIRED (RIP-RAP) EROSION RILLS AT WEST END COMMON DIKE (DRAIN OUTLET D1 TO LEFT)

AMEC Earth & Environmental
690 Commonwealth Center
11003 Bluegrass Parkway
Louisville, Ky 40299
(502) 267-0700

CLIENT LOGO

CLIENT
UNITED STATES
ENVIRONMENTAL
PROTECTION AGENCY

PROJECT
ASSESSMENT OF DAM SAFETY OF COAL COMBUSTION SURFACE IMPOUNDMENTS

DWN BY: CAE
DATUM:
DATE: 6/22/10

TITLE
GEORGIA POWER
PLANT MITCHELL, ALBANY, GA
ASH POND 1 SITE PHOTOS

CHK'D BY: MS
REV. NO.:
PROJECT NO: 3-2106-0174.0600
PROJECTION:
SCALE:
PAGE NO. B-4

1-5

WEST END OF COMMON DIKE, LOOKING NORTHEAST AT BLANKET DRAIN OUTLET #1 AND RIP-RAP EMBANKMENT

1-6

TIE-IN OF RECYCLE LINES FROM ASH POND 1 AND 2

AMEC Earth & Environmental
690 Commonwealth Center
11003 Bluegrass Parkway
Louisville, Ky 40299
(502) 267-0700

amec

CLIENT LOGO

CLIENT
UNITED STATES
ENVIRONMENTAL
PROTECTION AGENCY

PROJECT
ASSESSMENT OF DAM SAFETY OF COAL COMBUSTION SURFACE IMPOUNDMENTS

DWN BY: CAE
DATUM:
DATE: 6/22/10

TITLE
GEORGIA POWER
PLANT MITCHELL, ALBANY, GA
ASH POND 1 SITE PHOTOS

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1-7

SOUTHWEST END OF ASH POND 1, LOOKING NORTH AT TOE AND DOWNSTREAM SLOPES, ASH POND 1 RECYCLE LINE (HUMP), DEPRESSION IN DOWNSTREAM SLOPE ON RIGHT

1-8

SOUTHWEST END OF ASH POND 1, LOOKING EAST AT DOWNSTREAM SLOPE REPAIR

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SOUTHWEST SIDE OF ASH POND 1, DOWNSTREAM SLOPE REPAIR 200 FEET NORTH OF PHOTO 1-7

1-10

WEST SIDE OF ASH POND 1, LOOKING NORTH AT DOWNSTREAM SLOPE AND 1973 REPAIR,
LARGE ROCK/IRREGULAR SURFACE/DUMP AT SOUTH END OF REPAIR

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1-11

WEST SIDE OF ASH POND 1, LOOKING SOUTHEAST AT DOWNSTREAM SLOPE AND 1973 REPAIR, PZ IN REPAIR AREA

1-12

NORTHWEST CORNER OF ASH POND 1, LOOKING WEST, BACKGROUND: LEVEE BERM INITIATED FROM 1998 FLOOD (UNNAMED), PIPE AND CATCH BASIN: EMERGENCY OUTLET ASH POND 1 AND SURFACE WATER CATCH BASIN (FLOWS TO PERMIT OUTFALL 01E)

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1-13

NORTHWEST END OF ASH POND 1, LOOKING EAST AT ASH SLUICE DISCHARGE LINES FOR UNITS 1, 2 AND 3

1-14

NORTHWEST END OF ASH POND 1, LOOKING SOUTH AT ASH SLUICE DISCHARGE LINES FOR UNITS 1, 2 AND 3 AND DOWNSTREAM SLOPE REPAIR

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1-15

NORTHWEST END OF ASH POND 1, LOOKING SOUTH AT INTERIOR, SMALL PINETREES

1-16

NORTHEAST END OF ASH POND 1, LOOKING EAST ALONG CREST, PIPE THROUGH EMBANKMENT IS OLD LOW VOLUME SUMP DISCHARGE LINE

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1-17

EAST SIDE OF ASH POND 1, LOOKING SOUTH AT CREST AND DOWNSTREAM SLOPE

1-18

NORTHWEST CORNER OF ASH POND 1, LOOKING NORTHEAST TOWARD ASH POND A, NEW PZ AP1-2

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1-19

NORTHWEST CORNER OF ASH POND 1, INTERIOR: EMERGENCY OVERFLOW INLET, TOP IS 12 TO 14-INCHES ABOVE GROUND

1-20

SOUTHWEST CORNER OF ASH POND 1, CLOSE UP OF PHOTO 1-21, RECYCLE STRUCTURE INLET

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1-21

SOUTHWEST CORNER OF ASH POND 1, LOOKING NORTH AT RECYCLE STRUCTURE INLET AND WEST SIDE CREST

1-22

SOUTHWEST CORNER OF ASH POND 1, CLOSE UP OF PHOTO 1-21, RECYCLE STRUCTURE OUTLET PIPE

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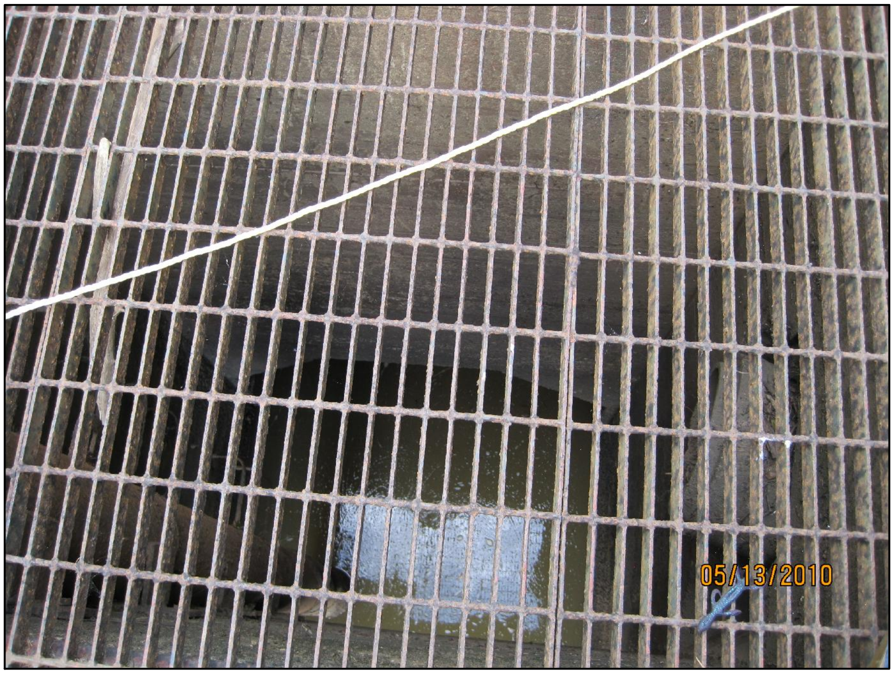
1-23

LOOKING SOUTHWEST FROM APPROXIMATELY NORTH END OF ASH POND A TOWARD WEST END OF ASH POND 1



1-24

FINAL NPDES OUTLET #1 AT RIVER

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1-25

FINAL NPDES OUTLET #1 AT RIVER

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ASH POND 2
SITE PHOTOS

2-1

AT EAST CORNER LOOKING WEST AT DIVIDING/COMMON EMBANKMENT FOR ASH PONDS 1 AND 2.

2-2

AT EAST CORNER LOOKING WEST AT DIVIDING/COMMON EMBANKMENT FOR ASH PONDS 1 AND 2.

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2-3

NORTHWEST CORNER OF ASH POND 2 AND WEST END OF COMMON DIKE


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2-4

REPAIRED (RIP-RAP) EROSION RILLS AT WEST END COMMON DIKE (DRAIN OUTLET D1 TO LEFT)

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2-5

LOW VOLUME SUMP OUTLET TO ASH POND #2 (+/- STATION 2+50)

2-6

NORTHWEST SIDE, DOWNSTREAM SLOPE OF ASH POND 2, DRAIN #2 AND #3, PIPE IN BACKGROUND IS ASH RECYCLE TO PLANT

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2-7

FROM PZ-10B, UPSTREAM INLET OF SURFACE DRAIN CULVERT OFF SOUTHWEST SIDE OF ASH POND 2

2-8

FROM PZ-10B, EMERGENCY MATERIALS OFF SOUTHWEST SIDE OF ASH POND 2

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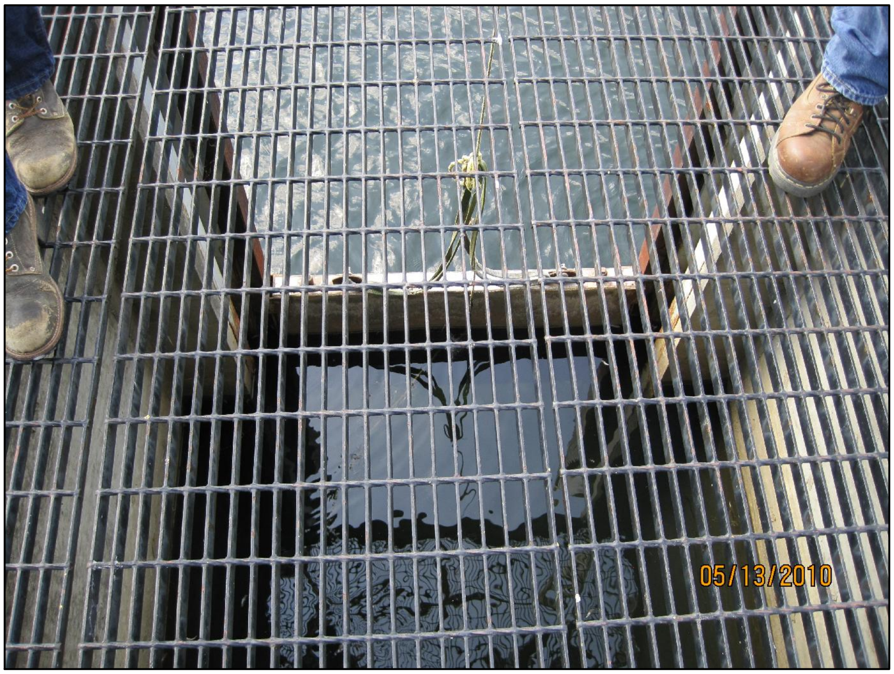
2-9

NEAR SOUTHWEST END OF ASH POND 2, UPSTREAM SLOPE AND RECYCLE INTAKE



2-10

STOP LOG IN RECYCLE INTAKE

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2-11

RECYCLE INTAKE STRUCTURE, STOP LOGS ON CATWALK AND INTERIOR OF ASH POND 2

2-12

NEAR SOUTHWEST END OF ASH POND 2, LOOKING NORTH AT RECYCLE LINE TO PLANT

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2-13

SOUTHWEST END OF ASH POND 2, EMERGENCY OVERFLOW STRUCTURE, POND AND UPSTREAM SLOPES

2-14

SOUTHWEST END OF ASH POND 2, EMERGENCY OVERFLOW STRUCTURE, POND AND UPSTREAM SLOPES

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SOUTHWEST END OF ASH POND 2 FROM PZ-16B CREST AND DOWNSTREAM SLOPES, ANTHILL IN FRONT OF PIEZOMETER, LACK OF VEGETATION ON DOWNSTREAM SLOPE

2-16

SOUTHEAST END OF ASH POND 2 FROM PZ-16B CREST AND DOWNSTREAM SLOPES, WOODY VEGETATION IN INTERIOR, PZ AT TOE OF SLOPE .

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2-17

SMALL ALLIGATOR IN POND

2-18

SOUTHEAST CORNER OF ASH POND 2

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EAST SIDE OF ASH POND 2 CREST AND UPSTREAM SLOPE, UNIT 3 ASH SLUICE PIPE TO POND

2-20

EAST SIDE OF ASH POND 2 CREST AND DOWNSTREAM SLOPE

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2-21

EAST SIDE OF ASH POND 2 LOOKING SOUTH AT DOWNSTREAM SLOPE AND TOE

2-22

SOUTH SIDE OF ASH POND 2, LOOKING SOUTH AT WET AREA AT FENCE BEYOND TOE OF SLOPE

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2-23

SOUTH SIDE OF ASH POND 2, SOUTH OF FENCE BEYOND TOE OF SLOPE, LAST (EAST) TOE BLANKET DRAIN OUTLET (NOT FLOWING)

2-24

SOUTH SIDE OF ASH POND 2, SOUTH OF FENCE BEYOND TOE OF SLOPE, TOE BLANKET DRAIN OUTLET D9 (GENERALLY FLOWS YEAR-ROUND)

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2-25

JUNCTION OF EMERGENCY SPILLWAY #2 AND BLANKET DRAIN DITCH THROUGH CULVERTS UNDER RADIUM SPRINGS ROAD (GA HWY 3)

2-26

OUTLET OF EMERGENCY SPILLWAY OUTLET PIPE (AP2), NOTED TRICKLE OUTFLOW

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CENTRAL WEST SIDE OF ASH POND 2, LOOKING NORTHEAST AT BLANKET DRAIN OUTLET #4, TOE AND DOWNSTREAM SLOPES

2-28

NORTHWEST SIDE OF ASH POND 2, LOOKING WEST AT BLANKET DRAIN OUTLET #2, SLIGHT FLOW

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2-29

WEST END OF COMMON DIKE, LOOKING NORTHEAST AT BLANKET DRAIN OUTLET #1 AND RIP-RAP EMBANKMENT

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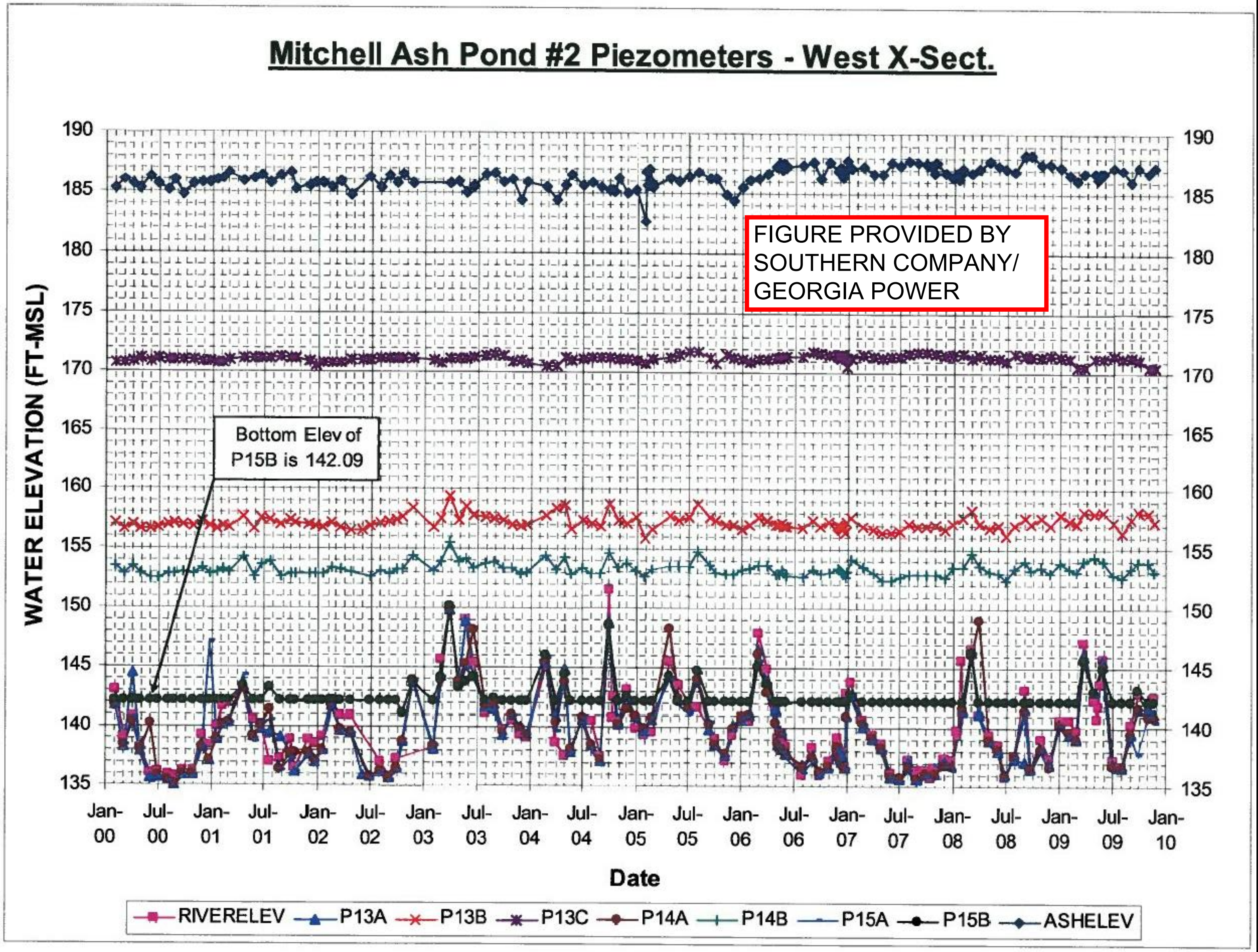
APPENDIX C
Ash Pond 2 Piezometer Data Graphs



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WEST CROSS-SECTION

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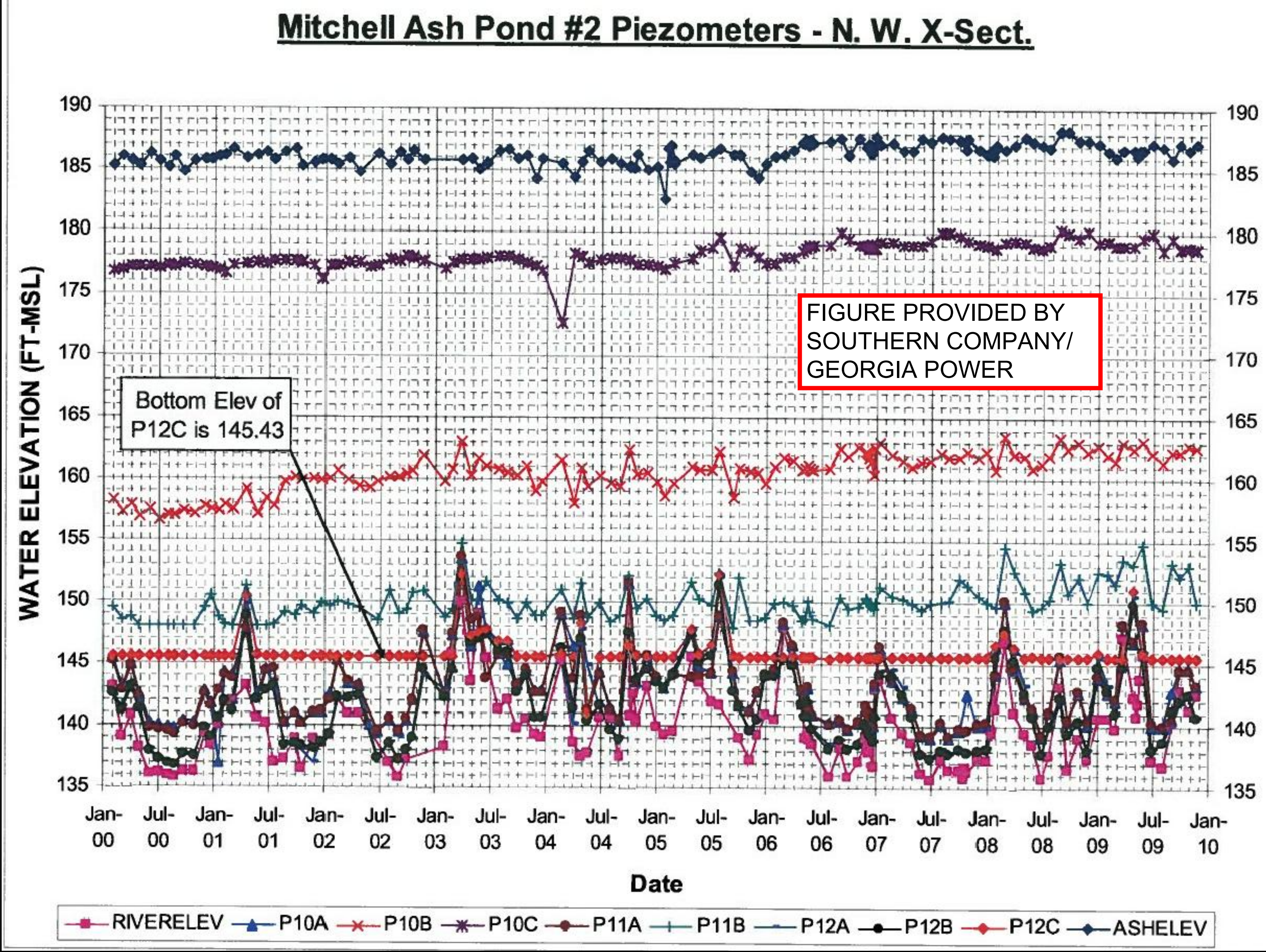

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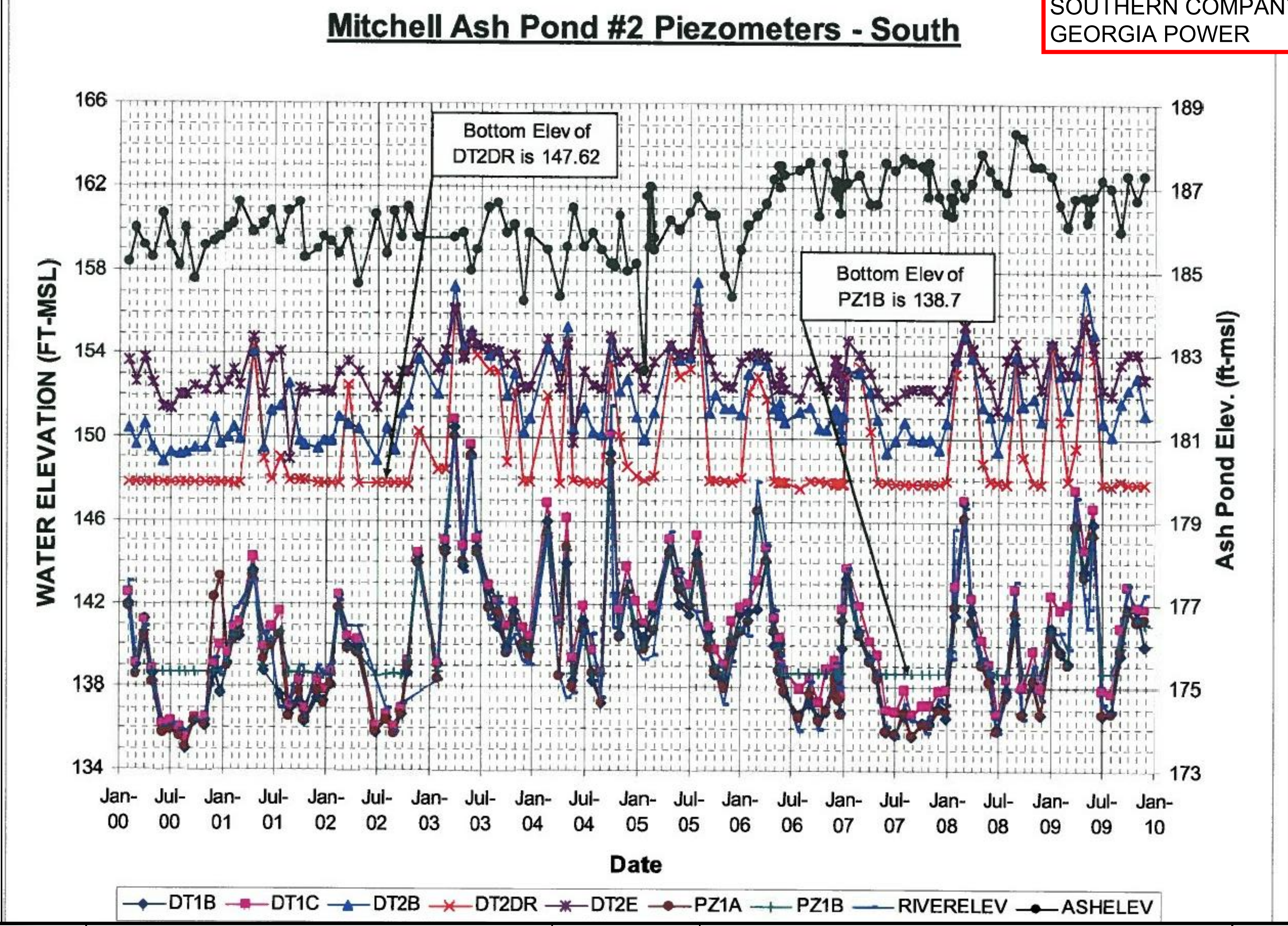

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(502) 267-0700

amec

DWN BY: CAE

CHK'D BY: MGS

DATUM:

PROJECTION:

SCALE: NTS

PROJECT
ASSESSMENT OF DAM SAFETY OF COAL COMBUSTION SURFACE IMPOUNDMENTS

TITLE
GEORGIA POWER
PLANT MITCHELL, ALBANY, GA
ASH POND 2 PIEZOMETER DATA GRAPH
SOUTHERN PIEZOMETERS

REV. NO.: A

DATE: 6/24/10

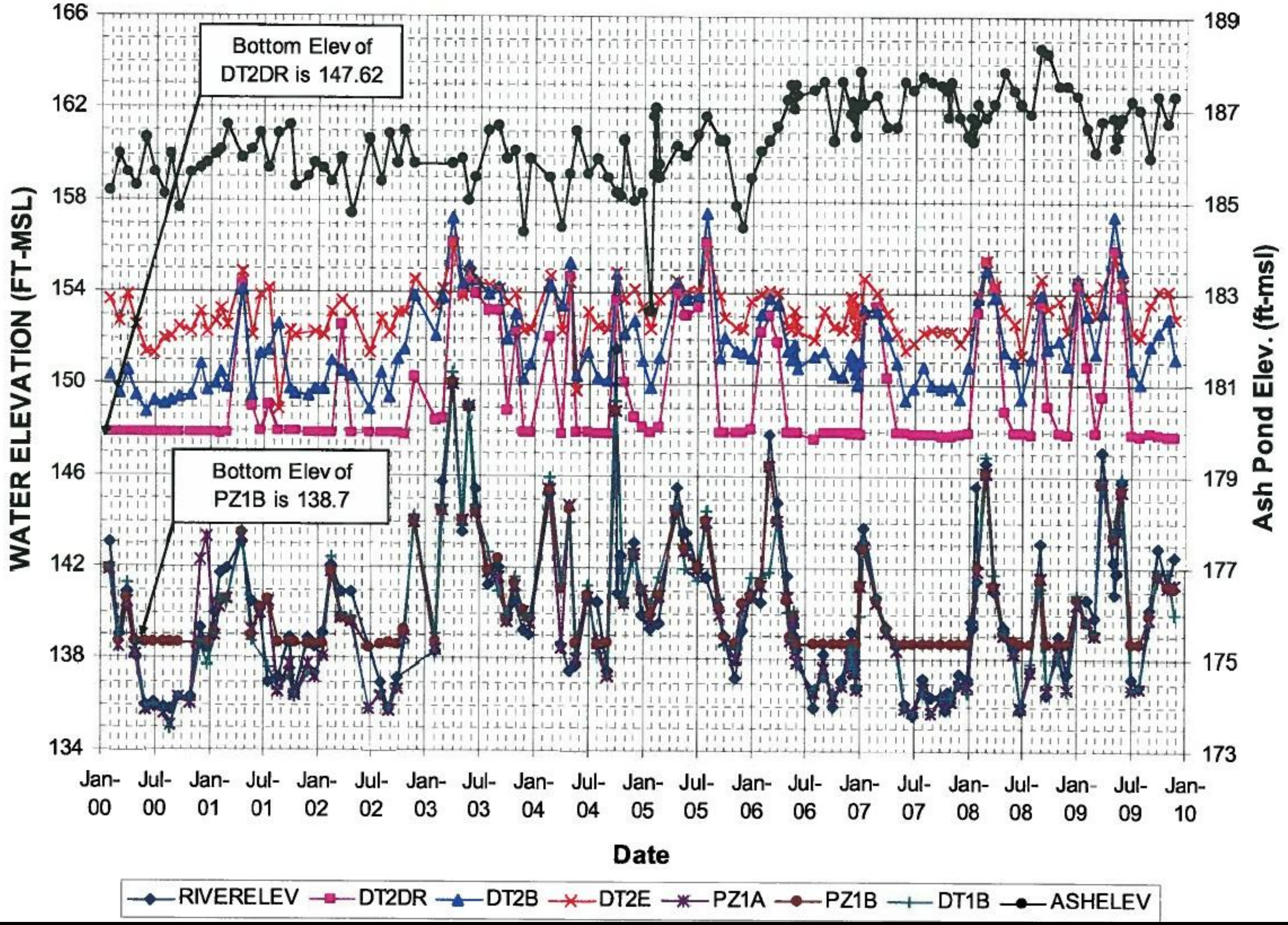
PROJECT NO: 3-2106-0174.0600

PAGE NO. C-3

S:\Geosciences\Proposals\EPA Coal Impoundment Inspection\March 2010 RFP Pro\Georgia Power\Plant Mitchell\Figures\Cad and GIS Files\appendc-piezloc.dwg – C-3 – Jun. 24, 2010 11:00am – chris.eger

FIGURE PROVIDED BY
SOUTHERN COMPANY/
GEORGIA POWER

Mitchell Ash Pond #2 Piezometers - South Toe



CLIENT LOGO	CLIENT ENVIRONMENTAL PROTECTION AGENCY	DWN BY: CAE	PROJECT ASSESSMENT OF DAM SAFETY OF COAL COMBUSTION SURFACE IMPOUNDMENTS		REV. NO.: A
		CHK'D BY: MGS			DATE: 6/24/10
AMEC Earth & Environmental 690 Commonwealth Center 11003 Bluegrass Parkway Louisville, Ky 40299 (502) 267-0700	amec	DATUM:	TITLE GEORGIA POWER PLANT MITCHELL, ALBANY, GA ASH POND 2 PIEZOMETER DATA GRAPH SOUTHERN PIEZOMETERS ALONG DOWNSTREAM TOE		PROJECT NO: 3-2106-0174.0600
		PROJECTION:			PAGE NO. C-4
		SCALE: NTS			

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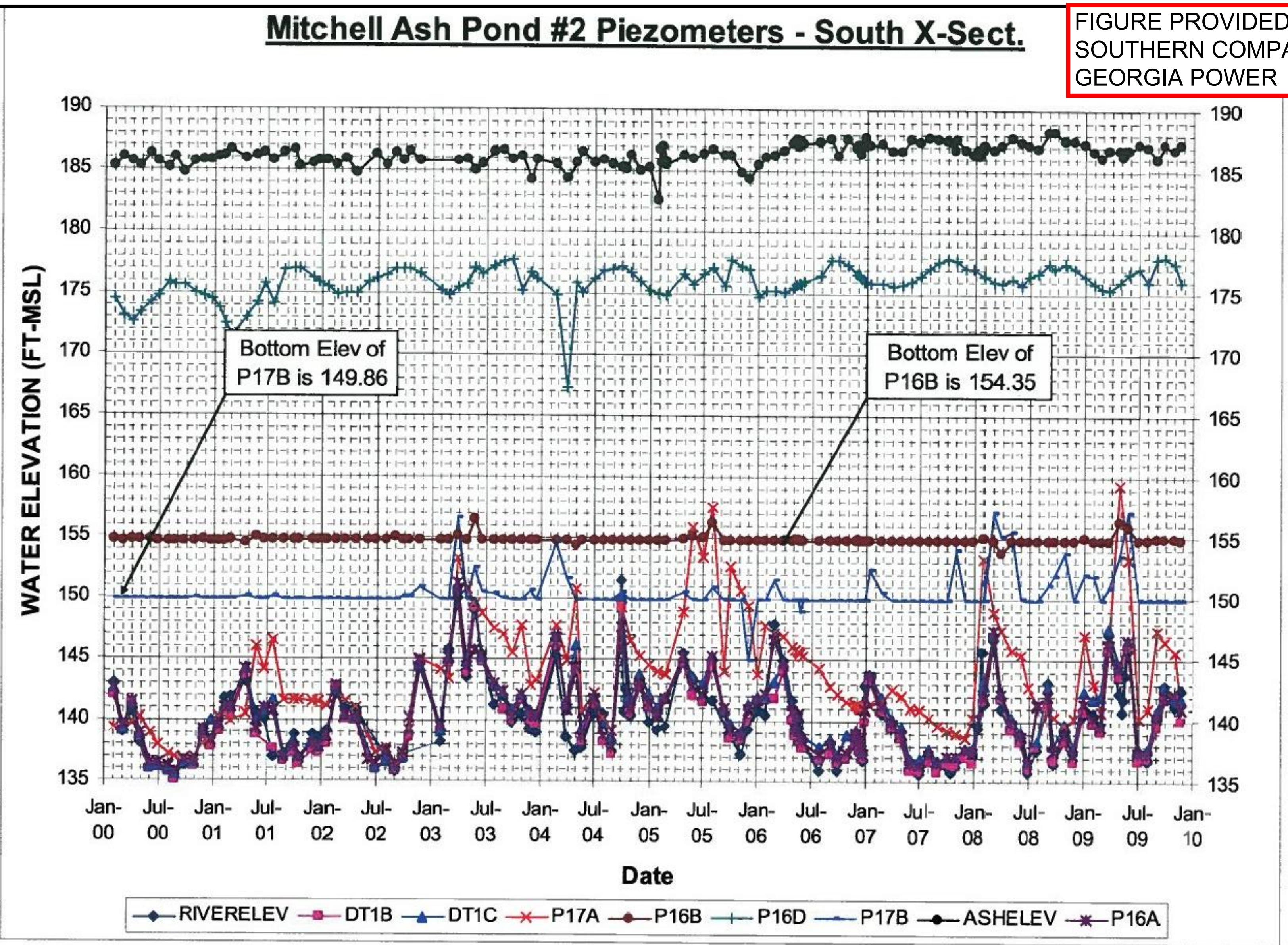
FIGURE PROVIDED BY
SOUTHERN COMPANY/
GEORGIA POWER



CLIENT LOGO	CLIENT ENVIRONMENTAL PROTECTION AGENCY	DWN BY: CAE CHK'D BY: MGS	PROJECT ASSESSMENT OF DAM SAFETY OF COAL COMBUSTION SURFACE IMPOUNDMENTS
REV. NO.: A	DATE: 6/24/10		
AMEC Earth & Environmental 690 Commonwealth Center 11003 Bluegrass Parkway Louisville, Ky 40299 (502) 267-0700	amec	DATUM: PROJECTION: SCALE: NTS	TITLE GEORGIA POWER PLANT MITCHELL, ALBANY, GA ASH POND 2 PIEZOMETER DATA GRAPH SOUTHERN CROSS-SECTION
PROJECT NO: 3-2106-0174.0600	PAGE NO. C-5		

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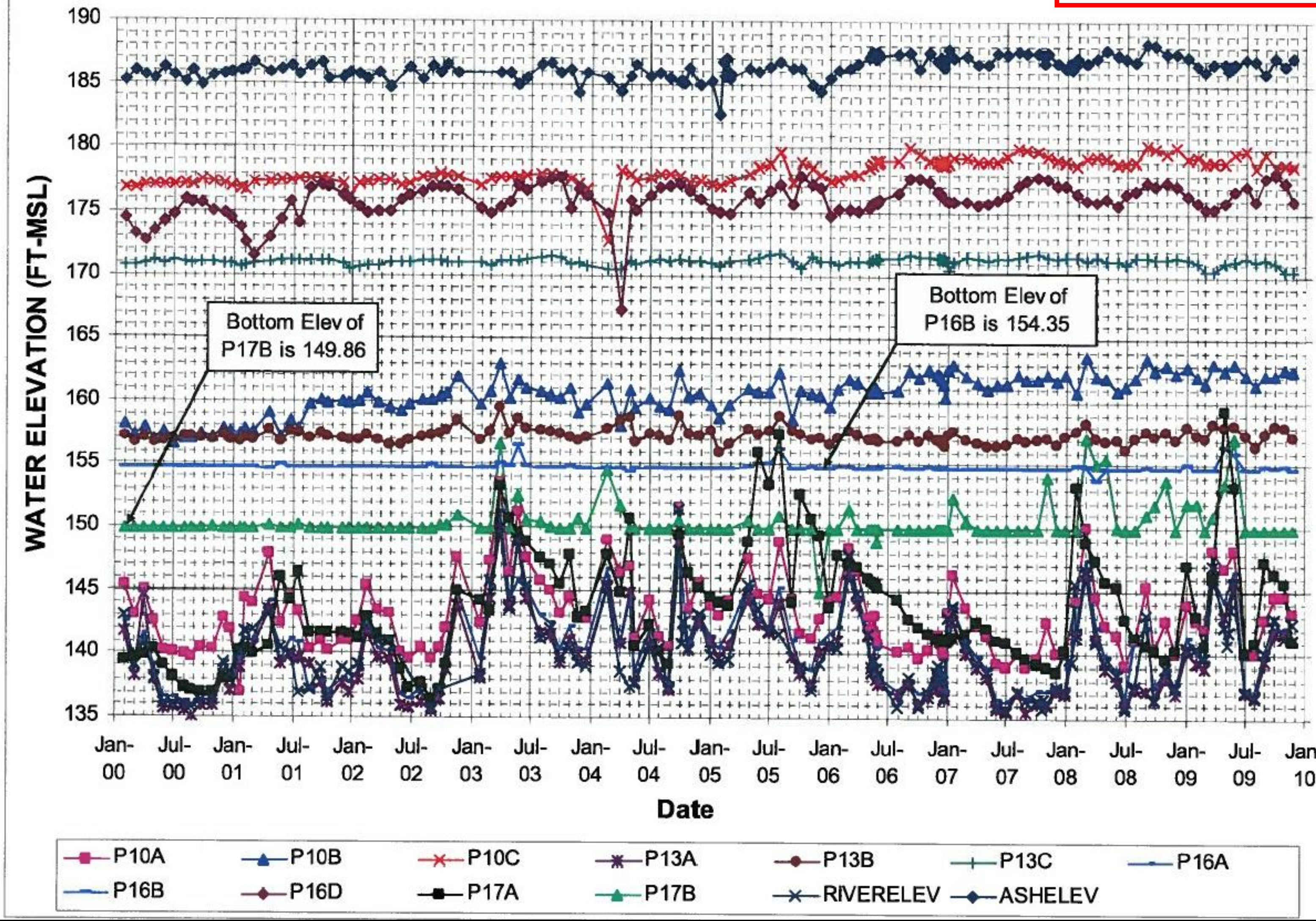
FIGURE PROVIDED BY
SOUTHERN COMPANY/
GEORGIA POWER

Mitchell Ash Pond #2 Piezometers - Top



CLIENT LOGO

CLIENT
ENVIRONMENTAL PROTECTION
AGENCY

AMEC Earth & Environmental
690 Commonwealth Center
11003 Bluegrass Parkway
Louisville, Ky 40299
(502) 267-0700

amec

DWN BY: CAE
CHK'D BY: MGS
DATUM:
PROJECTION:
SCALE: NTS

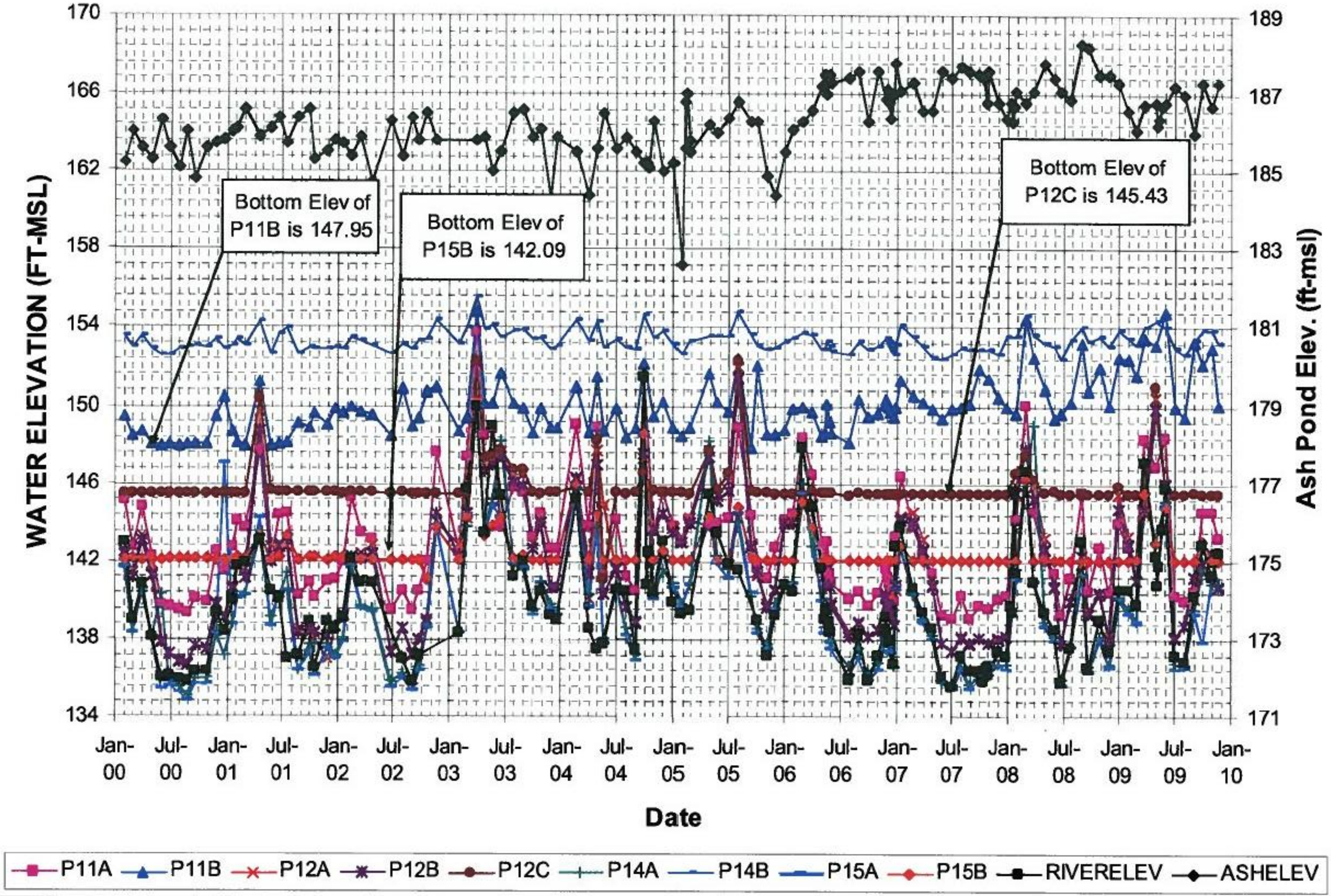
PROJECT
ASSESSMENT OF DAM SAFETY OF COAL
COMBUSTION SURFACE IMPOUNDMENTS

TITLE
GEORGIA POWER
PLANT MITCHELL, ALBANY, GA
ASH POND 2 PIEZOMETER DATA GRAPH
TOP PIEZOMETERS

REV. NO.: A
DATE: 6/24/10
PROJECT NO: 3-2106-0174.0600
PAGE NO. C-6

FIGURE PROVIDED BY
SOUTHERN COMPANY/
GEORGIA POWER

Mitchell Ash Pond #2 Piezometers - West



CLIENT LOGO	CLIENT ENVIRONMENTAL PROTECTION AGENCY	DWN BY: CAE CHK'D BY: MGS	PROJECT ASSESSMENT OF DAM SAFETY OF COAL COMBUSTION SURFACE IMPOUNDMENTS	REV. NO.: A DATE: 6/24/10
AMEC Earth & Environmental 690 Commonwealth Center 11003 Bluegrass Parkway Louisville, Ky 40299 (502) 267-0700	amec	DATUM: PROJECTION: SCALE: NTS	TITLE GEORGIA POWER PLANT MITCHELL, ALBANY, GA ASH POND 2 PIEZOMETER DATA GRAPH WEST PIEZOMETERS	PROJECT NO: 3-2106-0174.0600 PAGE NO. C-7

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APPENDIX D
Inventory of Provided Materials

Plant Mitchell
5200 Radium Springs Road
Albany, Georgia 31705

GEORGIA POWER
A SOUTHERN COMPANY

Confidential Business Information – Do Not Disclose

May 13, 2010

Stephen Hoffman
Office of Resource Conservation and Recovery
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue NW
Washington, D.C. 20460

Re: Documents Provided to EPA and Claims of Confidentiality

Dear Mr. Hoffman:

This letter confirms the documents provided by Georgia Power to the Environmental Protection Agency (EPA) during EPA's inspection of Plant Mitchell Ash Ponds on May 13, 2010. The following table lists the documents provided to EPA during the inspection. Georgia Power has provided some of the documents under a claim of confidentiality for purposes of Part 2, Subpart B of EPA's regulations. The documents claimed as confidential have been marked as such, and are noted as "Yes" under the column for CBI, which stands for Confidential Business Information. Georgia Power also claims this letter as confidential due to the information it conveys with respect to Georgia Power's facilities and management practices.

Bates	Date	Document Description	CBI
MIT-API 0001	5/23/55	Plant Mitchell Ash Pond Drawing No. 10-701-C-26	Yes
MIT-API 0002	1/9/47	Plant Mitchell Excavation and Grading Drawing No. M-103	Yes
MIT-API 0003	2/25/80	Plant Mitchell Drawing No. E-3	Yes
MIT-API 0004	2/25/80	Plant Mitchell Drawing No. E-4	Yes
MIT-API 0005	6/27/95	Plant Mitchell Drawing No. H5329	Yes
MIT-API 006	2004	Plant Mitchell Topographical Drawing	Yes
MIT-API 0007	2010	Plant Mitchell Ash Pond Drawing No. H-2503	Yes
MIT-API 0008	N/A	Plant Mitchell Drawing No. H2505	Yes
MIT-API 009	N/A	Plant Mitchell Aerial Photograph	Yes

Bates	Date	Document Description	CBI
MIT-API 0010	9/16/76	Plant Mitchell Ash Pond Drawing No. 2579	Yes
MIT-API 0011	6/10/77	Plant Mitchell Ash Pond Drawing No. D-2513	Yes
MIT-API 0012	12/27/95	Plant Mitchell Ash Pond #2 Drawing No. E5330	Yes
MIT-API 0013	12/5/78	Plant Mitchell Ash Pond Drawing No. H-55	Yes
MIT-API 0014	12/27/78	Plant Mitchell Ash Pond Drawing No.H-67	Yes
MIT-API 015	3/5/10	NPDES Permit	No
MIT-API 016	2/2010	NPDES Flow Chart	No
MIT-API 017	2/2/10	Georgia Power's Responses to Section 104(e)	Partial
MIT-API 0018	1/5/79	Plant Mitchell Ash Pond Drawing No. H-75	Yes
MIT-API 0019	2/16/79	Plant Mitchell Drawing No. H-76	Yes
MIT-API 0020	2/16/79	Plant Mitchell Ash Pond Drawing No. H-77	Yes
MIT-API 0021	2/16/79	Plant Mitchell Ash Pond Drawing H-78	Yes
MIT-API 0022	12/18/78	Plant Mitchell Ash Pond Drawing No. H-79	Yes
MIT-API 0023	1/2/79	Plant Mitchell Ash PondDrawing No. H-80	Yes
MIT-API 0024	2/1/79	Plant Mitchell Ash Pond Drawing No. H-81	Yes
MIT-API 0025	8/1/80	Plant Mitchell Ash Pond Drawing No. H-02602	Yes
MIT-API 0026	7/20/05	Plant Mitchell Dam Safety Surveillance Quarterly Report; 2nd Quarter 2005 Report	Yes
MIT-API 0027	1/9/06	Plant Mitchell Dam Safety Surveillance Quarterly Report; 4th Quarter 2005	Yes
MIT-API 0028	8/18/06	Plant Mitchell Dam Safety Surveillance Quarterly Report; 2nd Quarter 2006	Yes
MIT-API 0029	8/19/07	Plant Mitchell Dam Safety Surveillance REA No. MT-07900 performed by SCG Hydro Services Group	Yes
MIT-API 0030	8/22/08	Plant Mitchell Dam Safety Surveillance REA No. MT-08900 performed by SCG Hydro Services Group	Yes
MIT-API 0031	11/11/08	Plant Mitchell Dam Safety Surveillance REA No. MT-08900 performed by SCG Hydro Services Group	Yes
MIT-API 0032	9/3/09	Plant Mitchell Dam Safety Surveillance REA No. MT-0990 perform by the SCG Hydro Services Group	Yes
MIT-API 0033	12/8/09	Mitchell Plant Dam Safety Surveillance REA No. MT-09900 performed by SCG Hydro Services Group	Yes

Bates	Date	Document Description	CBI
MIT-API 0034	3/2010	SCG Aerial Photo with Bore Hole Locations ES1830S1	Yes
MIT-API 0035	2004	Plant Mitchell Aerial Topographical	Yes
MIT-API 036	2004	Plant Mitchell Aerial photograph	Yes
MIT-API 037	3/24/10	Log of Test Borings	Yes
MIT-API 038	3/24/10	Well Construction Log	Yes
MIT-API 039	1973	1973 Repair Documents	Yes
MIT-API 040	1973	Plant Mitchell Repairs Report	Yes
MIT-API 041	10/9/79	Plant Mitchell New Ash Pond Instrumentation, E. S. Job No. MT-8201	Yes
MIT-API 042	8/1980	Plant Mitchell New Ash Pond Geotechnical and Geophysical Investigations	Yes
MIT-API 043	9/25/78	Plant Mitchell Ash Pond No. 2; Georgia Soil and Water Conservation Committee Classification	Yes
MIT-API 044	11/2/79	Plant Mitchell, Law Engineering Record Laboratory Testing of In-Place Fill Material Ash Pond Dike	Yes
MIT-API 045	5/30/80	Plant Mitchell Ash Pond Construction Design Memorandum	Yes
MIT-API 046	9/29/61	Law Engineering Testing Company Report of Subsurface Investigation Unit 3 and Ash Pond Dike at Mitchell Steam Plant	Yes
MIT-API 047	1980	Plant Mitchell Ash Pond 2 Stability Analysis Section at 19+50	Yes
MIT-API 048	8/8/80	Plant Mitchell Ash Pond 2 Seismic Refraction Profiles Drawing H90 Sheet 1	Yes
MIT-API 049	8/8/80	Plant Mitchell Ash Pond 2 Seismic Refraction Profiles Drawing H90 Sheet 5	Yes
MIT-API 050	8/8/80	Plant Mitchell Ash Pond 2 Seismic Refraction Profiles Drawing H90 Sheet 4	Yes

I trust this list is consistent with your understanding of the documents we have provided to you today and is clear with respect to Georgia Power's claims of confidentiality. Please advise me immediately if you should become aware of any discrepancy with respect to the documents Georgia Power has provided, or if there is any question as to which documents are claimed as confidential.

Sincerely,

Ronnie Walston

Ronnie Walston
Plant Manager
Plant Mitchell

cc: Douglas E. Tate, P.E.
James Black, P.E.
Charles H. Huling

GEORGIA
POWER
A SOUTHERN COMPANY

Confidential Business Information – Do Not Disclose

June 7, 2010

VIA E-MAIL

Stephen Hoffman
Office of Resource Conservation and Recovery
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue NW
Washington, D.C. 20460

Re: Documents Provided to EPA and Claims of Confidentiality

Dear Mr. Hoffman:

Dear Mr. Hoffman:

This letter confirms that additional documents were provided by Georgia Power to the consultants of the Environmental Protection Agency (EPA) in response to EPA's inspection of Plants McDonough, Mitchell and Yates which have been designated as Confidential Business Information. We have affixed a unique identifying number to the document. The table below identifies the documents provided to EPA in this supplemental production. Georgia Power has designated those documents provided to EPA as confidential with a Confidential Business Information stamp. The confidential documents have been identified below and marked as such.

Doc. Control No.	CBI
MCD-API 077	No
MCD-API 078	No
MCD-API 079	No
MIT-API 051	Yes
YAT-API 069	Yes

I trust this letter is consistent with your understanding of the documents Georgia Power has provided, including which documents are subject to a claim of confidentiality. Please advise me immediately if you should have any question about which documents have been provided and which are confidential.

Sincerely

Tanya Blalock

Tanya Blalock
Environmental Affairs Manager

cc: Douglas E. Tate, P .E.
James Black, P.E.
Mary Swiderski
Charles H. Huling

Post Draft- Summary of Documents Provided on September 21, 2010 By Georgia Power

Document File Title	Description
GPC Mitchell Transmittal Letter and Comments 092110	
MIT-API 054 & 055	Plant Mitchell Additional Photos
Mitchell Slope Stability Rev. 1	Revised Slope Stability Analysis
SH-Mt10911-02 Mitchell ash pond 1 MIT-API 053	Ash Pond 1 Flood Evaluation
GPC Plant Mitchell CBI Designations AMEC Draft Report	
SH-MT10911-01 Mitchell ash pond 2 MIT-API 052	Ash Pond 2 Flood Evaluation