

CONSTRUCTION QUALITY ASSURANCE PLAN FOR ASH POND E

PLANT BRANCH
PUTNAM COUNTY, GEORGIA

FOR



Georgia
Power

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REV. 0



Geosyntec 
consultants

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TABLE OF CONTENTS

	INTRODUCTION	1
	1.1 OVERVIEW.....	1
	1.2 SCOPE OF PLAN	1
1.	PERSONNEL	1
	2.1 CQA CONSULTANT.....	1
	2.1.1 Definition	1
2.	2.1.2 Responsibilities.....	2
	2.2 EARTHWORK LABORATORY	2
	2.3 DESIGN ENGINEER.....	3
	2.4 SURVEYOR.....	3
	2.5 CONSTRUCTION MANAGER	3
	2.6 CONTRACTOR.....	3
	2.7 PERMITTING AUTHORITY	4
3.	DOCUMENTATION	4
	3.1 OVERVIEW.....	4
	3.2 DAILY RECORD KEEPING	4
	3.2.1 Daily Field Reports	4
	3.2.2 Monitoring Logs and/or Test Data Sheets	5
	3.2.3 Non-conformance and Corrective Measures Reporting.....	6
4.	3.3 CQA CERTIFICATION REPORTS	7
	CCR REMOVAL	8
5.	4.1 INTRODUCTION	8
	4.2 CCR REMOVAL AND VERIFICATION PROTOCOL	8
	EARTHWORK.....	9
	5.1 INTRODUCTION	9
	5.2 RECORD DRAWINGS AND AS-BUILT SURVEYS.....	9

LIST OF ACRONYMS

ASTM	American Society for Testing and Materials
CCR	Coal Combustion Residuals
CQA	Construction Quality Assurance
CQC	Construction Quality Control
GA EPD	Georgia Environmental Protection Division
GPC	Georgia Power Company
MQC	Manufacturer Quality Control
QA	Quality Assurance

INTRODUCTION

1.1 OVERVIEW

1. Georgia Power Company's (GPC's) Plant Branch (Site) formerly operated as a coal-fired power plant that commenced power generation in 1965. The plant, located in Putnam County, Georgia, has been decommissioned. Over the course of power generation at the Site, five Coal Combustion Residuals (CCR) Surface Impoundments (Ash Ponds), identified as Ash Ponds A, B, C, D, and E, were utilized. This Construction Quality Assurance (CQA) Plan covers the closure by removal of the Plant Branch CCR surface impoundment known as Ash Pond E (hereinafter referred to as the "Project"). The project consists of removing CCR from Ash Pond E (to be placed in an on-site landfill or sold for beneficial reuse by others), breaching the Category I Dam, backfilling and regrading the former ash pond footprint to promote positive drainage with the soil from the Category I Dam, finger dams, or other approved borrow areas, and establishing permanent vegetative stabilization. The objective of this CQA Plan is to outline the CQA activities that will be performed to document that the ash pond closure was implemented in general accordance with the approved CCR Permit and Closure Plan.

1.2 SCOPE OF PLAN

CQA services will be provided by a consulting engineering firm, reporting to the Owner, specializing in the inspection and testing of soils. The scope of the CQA Plan includes:

- defining the qualifications and responsibilities of the CQA Consultant;
 - establishing procedures for construction documentation; and
 - establishing procedures for providing final documentation verifying that the project conforms to the Construction Drawings, CQA Plan, approved design changes, and other relevant design documents (collectively referred to as "Construction Documents" in the remainder of this document).
- 2.

PERSONNEL

2.1 CQA CONSULTANT

2.1.1 Definition

The CQA Consultant is the party, retained by the Owner but independent from Owner or the Contractor, responsible for observing and documenting CQA activities related to the Project and reviewing CQC submittals prepared by the Contractor/Manufacturer related to the Project, as described in this CQA Plan. The responsibilities of the CQA Consultant are described below. Resumes and qualifications including experience with projects of similar type, size, and complexity will be provided to the Owner for their review and approval.

2.1.2 Responsibilities

The CQA Consultant organization will be led by the CQA Certifying Engineer, who will be a Professional Engineer registered to practice in the State of Georgia. The CQA Site Manager will be the on-site representative of the CQA Consultant, which will have experience in construction activities required for the Project and will be supported by CQA Field Technicians, as needed. The CQA Consultant will be responsible for:

- reviewing the Construction Documents prior to the start of the construction;
- monitoring the compliance of construction materials delivered to the site, if any, with the Manufacturer Quality Control (MQC)/Construction Quality Control (CQC) submittals and, conformance requirements and/or shop drawings previously reviewed and approved by the Design Engineer;
- monitoring and documenting that the Contractor's construction methods and workmanship are performed in accordance with the Construction Documents;
- reviewing field and laboratory CQC test results, if any, required by the CQA plan and ensuring they are posted to the project database within a time frame that does not impede or delay construction activities; and
- promptly notifying the Owner of any nonconformances of the Contractor's work with any CQA requirements of the Project, including those requirements related to the prompt delivery of CQC results required by the CQA Plan to the CQA consultant.

2.2 EARTHWORK LABORATORY

The Earthwork Testing Laboratory (Earthwork Laboratory) is a party of the CQA Consultant and will be responsible for conducting CQA geotechnical laboratory testing, if any, in accordance with standards referenced in the Construction Documents. The testing results generated by the CQA Earthwork Laboratory will be used by the CQA Consultant to verify compliance of the earthwork with the Construction Documents.

The Earthwork Laboratory will be experienced in testing of soils and CCR using methods in accordance with American Society of Testing and Materials (ASTM) and other applicable soil test standards and holding appropriate and current industry certification(s)/accreditation(s).

Prior to construction, the Earthwork Laboratory will be required to submit their qualifications and QA/QC procedures to the CQA Consultant and the Owner for review and comment.

2.3 DESIGN ENGINEER

The Design Engineer is the engineer-of-record under whose direction the design of the Project was prepared. The Design Engineer will be a Professional Engineer registered in the State of Georgia. The Design Engineer will be responsible for:

- approving all design and specification changes and making design clarifications that may be required during construction;
- assisting the Construction Manager in reviewing and approving the Contractor's shop drawings and submittals, as necessary;
- periodically visiting the site during construction and attending the project coordination meetings, as required, to verify conformance with the Construction Documents; and
- discussing and interpreting all elements of the design and having the authority to recommend changes or modifications to the Construction Documents for approval by the Owner and GA EPD, as required.

The CQA Certifying Engineer and Design Engineer may be from the same organization.

2.4 SURVEYOR

The Surveyor is the party acceptable to the Owner and retained by the Contractor who will be responsible for performing surveying activities and issuing survey products in accordance with the Construction Documents and for signing and sealing the construction survey record drawings. The Surveyor will be a State of Georgia licensed Professional Land Surveyor, with personnel experienced in the provision of surveying services and their detailed documentation. The Owner may also retain a third-party surveyor, having similar qualifications, to perform verification surveys.

2.5 CONSTRUCTION MANAGER

The Construction Manager, is an individual, appointed by the Owner, who will serve as the Owner's representative and be responsible for overall management of the Project. The Construction Manager will give direction to the Contractor. The CQA Consultant will provide the Construction Manager with notifications, reports, and monitoring logs, as requested and as described further throughout this CQA Plan.

2.6 CONTRACTOR

The term "Contractor" refers to the General Contractor (i.e., the Prime Contractor) who is retained by the Owner to perform closure construction. In general, the Contractor will be responsible for furnishing and installing materials in accordance with the Construction

Documents (unless certain items may be procured and/or installed under separate contracts with or on behalf of the Owner). In this role, the Contractor will be responsible for earthwork activities, CCR excavation activities, and other related site work. The Contractor may subcontract with various parties to conduct certain portions of the Project. The Owner will select a Contractor qualified for this Project through experience constructing projects involving similar work elements and with personnel and equipment availability as needed to execute a project of this magnitude.

As set forth in the Construction Documents, the Contractor will prepare various Work Plans for approval by the Owner. During construction, the Contractor will work with the Owner/Construction Manager to develop an approved schedule, execute the work according to that schedule, and communicate the timing of key milestones/activities with appropriate project parties (e.g., CQA Consultant). Note that the preceding description of the Contractor's roles and responsibilities is only a general summary and does not represent the comprehensive scope of work required by the Construction Documents. In the event of any discrepancies, the Construction Documents will govern.

2.7 PERMITTING AUTHORITY

GA EPD is the permitting authority who will be responsible for final approval of the CQA Certification Report(s).

3. DOCUMENTATION

3.1 OVERVIEW

The CQA Consultant will prepare and retain necessary documentation related to the CQA monitoring activities performed, including review and evaluation of CQC submittals required by the CQA Plan and provided by the CQC Consultant. The CQA Site Manager will provide these records to the Construction Manager, as requested. The CQA Site Manager will also maintain a complete file of the Construction Documents, CQA Plan, Contractor's QC Plan(s), checklists, test procedures, daily field reports, QA data sheets, and logs required by the CQA Plan, and other pertinent design, construction, and CQA documentation at the site.

3.2 DAILY RECORD KEEPING

The CQA Consultant's daily reporting procedures will include: (i) daily field report; (ii) monitoring logs and/or test data sheets; (iii) photographs; and (iv) when appropriate, non-conformance and corrective measures reports.

3.2.1 Daily Field Reports

The CQA Consultant's daily field reports will include the following information as applicable:

- date, project name, location, and other pertinent project identifiers;

- weather conditions including temperature, wind direction and speed, cloud cover, and any precipitation events;
- equipment and personnel on site (including the CQA personnel);
- summary of meetings and/or communications held and their results;
- a list of off-site materials received;
- process description(s) and location(s) of construction activities underway during the time frame of the report;
- an accurate record of calibrations or standardizations performed on field-testing equipment, including actions taken because of recalibrations;
- descriptions and specific locations of areas of work being tested and/or observed and documented;
- descriptions, maps, or sketches of locations where samples, if any, were taken;
- a narrative summary of field test results, if any;
- decisions made regarding acceptance of work and/or corrective actions to be taken in instances of substandard testing results; and
- reference to data sheets and non-conformance reports used to substantiate the non-conformances described above.

3.2.2 Monitoring Logs and/or Test Data Sheets

The CQA Consultant will record monitoring observations and test results on appropriate monitoring logs and test data sheets, respectively. The CQA Consultant will use the monitoring logs to track completeness of the required CQA activities.

The CQA Consultant's monitoring logs will include the following information as applicable:

- project specific information such as project name, location, and other pertinent project identifiers;
- the date the CQA activity was performed;
- a unique identifying sheet number for cross-referencing and document control;

- description or title of the CQA activity, along with the location and type of activity;
- recorded observation;
- results of the CQA activity and comparison with specification requirements (pass/fail); and
- the initials or signature of personnel involved in CQA inspection activity.

The CQA Consultant will maintain a separate monitoring logs to track and catalog all QC information required by the CQA Plan and received from the CQC Consultant and to document conformance or non-conformance of the information with the requirements of the Construction Documents. The CQA Consultant may also maintain a log of periodic photographic documentation obtained as a pictorial record of construction.

3.2.3 Non-conformance and Corrective Measures Reporting

A non-conformance is defined herein as material or workmanship that does not meet the specified requirement(s) contained in the Construction Documents. The CQA Consultant will prepare non-conformance and corrective measures reports as needed and will cross-reference the reports to specific daily field reports or monitoring logs where the non-conformance was identified. The reports will include the following information, as applicable:

- a unique identifying sheet number for cross-referencing and document control;
- detailed description of the problem;
- location of the problem;
- probable cause;
- how and when the problem was located;
- estimation of how long problem has existed;
- suggested corrective measures;
- documentation of corrections (referenced to test data sheets);
- suggested methods to prevent similar problems; and

- signature of the appropriate CQA field technicians and the CQA Site Manager.

The CQA Consultant will inform the Construction Manager in writing of any significant recurring non-conformance with the Construction Documents or CQA Plan. It will be the responsibility of the Construction Manager to direct the Contractor to make appropriate changes in materials or procedures to correct the non-conformance. The CQA Consultant will document the corrective actions taken to mitigate non-conformances.

3.3 CQA CERTIFICATION REPORTS

At the completion of major construction phases or on a more frequent basis, the CQA Consultant will provide the Owner with CQA Certification Reports pertaining to a particular construction phase, for submittal to GA EPD. These reports will acknowledge that: (i) the work has been performed in compliance with the Construction Documents and the CQA Plan; (ii) physical sampling and testing has been conducted with appropriate standards and at pre-defined frequencies; (iii) the Contractor's and MQC and CQC documentation, if required by the CQA Plan, is in conformance with the submittal requirements and technical specification; and (iv) the test results met the minimum requirements defined in the Construction Documents, the permit, and this CQA Plan..

At a minimum, the CQA Certification Reports will include:

- summary of CQA activities;
- daily field reports;
- monitoring logs;
- QC (if required by the CQA Plan) and QA test data sheets including sample locations, if any;
- QC (if required by the CQA Plan) and QA certifications and laboratory test results, if any;
- non-conformance and corrective measures reports;
- written correspondence with GA EPD
- documentation of changes, deviations from the design or permit documents, modifications that were implemented during construction that were needed due to un-anticipated field conditions, clarifications, or revisions; and
- a summary statement indicating compliance with the Construction Documents and any approved changes, signed and sealed by the CQA Certifying Engineer.

The record drawings produced by the Surveyor will also be included as part of the CQA Certification Report. Required record drawings and their contents are set forth in the Technical Specifications, along with related Surveyor qualification requirements. In general, the record drawings will include scaled drawings depicting the locations and details pertaining to the extent of construction (e.g., depths, plan dimensions, elevations, soil component thicknesses, etc.).

CCR REMOVAL

4.1 INTRODUCTION

4.

This section describes the construction oversight activities that will be performed by the CQA Consultant to verify the removal of CCR to the extents and grades shown on the Construction Documents.

In addition to the activities listed in the subsections below, the CQA Consultant will photograph the work being conducted and will document monitoring observations on forms specifically designed for this purpose.

4.2 CCR REMOVAL AND VERIFICATION PROTOCOL

Dewatered CCR will be excavated and transported to be disposed of at an on-site landfill or sold to an ash marketer for beneficial reuse. CCR removal activities will be observed and documented by the CQA Consultant. The CCR will be excavated to remove visible CCR plus a minimum 6-inches of additional soil. Observations will be made with reference to a 100-foot by 100-foot alphanumeric grid system established for Ash Pond E so that each grid location is assigned a unique label for reference and documentation purposes. When the interface between the CCR and the underlying residuum soil layer is located during excavation, the following CCR removal verification protocol will be conducted:

- The excavated surface will be jointly observed and documented to confirm removal of visible CCR by a representative of the Owner and CQA Consultant. Visual observations and the Munsell Soil Color Chart will be used as the basis to confirm that visible CCR has been excavated from the former CCR unit footprint. At a minimum frequency of one per 100-foot grid, using the approximate centers of the 100-foot by 100-foot project grid system. Observations will include, but are not limited to, taking photographs and describing soil color per the Munsell Soil Color Charts and will be documented by the CQA Consultant, and the area will be surveyed to develop a topographic map denoting the **bottom of CCR**. Visual classification of the underlying soils will be performed in general accordance with ASTM D2488 Standard Practice for the Description and Identification of Soils (Visual-Manual Procedures).
- Following the CQA Consultant's approval, concurrence by the Owner's representative, and completion of the **bottom of CCR** survey, excavation will continue by removing at least six inches of additional soil (residuum) underlying the **bottom of CCR**. Verification of removal thicknesses will be performed by the Surveyor by surveying the excavated area using the project grid system and

comparing the elevations of the **bottom of excavation** to the elevations of the surveyed **bottom of CCR**. If the **bottom of excavation** is found to be at least six inches (provided that competent bedrock has not been encountered) below the surveyed **bottom of CCR**, the excavated surface will be jointly observed and documented consistent with the procedures in the first bullet point above. The CQA Consultant will confirm that the area has been re-excavated and re-surveyed and that the work conforms with the Construction Documents.

- If CCR is observed below the initially established CCR/soil interface during the 6-inch over-excavation, the CQA Consultant will notify the Construction Manager who will direct the Contractor to continue excavation of CCR until verification indicates that visible CCR has been removed. The protocol described in the bullet item above to establish the **bottom of CCR** will be followed.

EARTHWORK

5. 5.1 INTRODUCTION

CQA monitoring will be performed during earthwork construction. The earthwork will include construction of finger dams and stormwater diversion berms and excavation and installation of soil components for the restoration grading.

Soils used to construct the finger dams and stormwater diversion berms will be obtained from closure earthwork activities, borrow areas within the Plant Branch property limit and/or appropriately permitted off-site sources.

Soils utilized to achieve final restoration grades will originate from the partial and full removal of finger dams and the Category I Dam that were not in contact with the CCR and, if necessary, from borrow areas within the Plant Branch property limit and/or appropriately permitted off-site sources. No new borrow areas within the permit boundary are planned to be established as part of this closure project.

5.2 RECORD DRAWINGS AND AS-BUILT SURVEYS

During construction of the earthwork components, the CQA Consultant will routinely review record drawings submitted by the Contractor. Prior to the placement of successive soil, the CQA Consultant will review as-built surveys that indicate compliance of the preceding layer thickness, limits, and grades with the Construction Documents.