PowerSouth®
ENERGY COOPERATIVE
A Touchstone Energy® Cooperative

Keith Stephens, Ph.D.
MANAGER, ENVIRONMENTAL SERVICES DEPARTMENT

March 23, 2021

Received: 3/23/2021

S. Scott Story, Chief
Solid Waste Branch
Alabama Department of Environmental Management
1400 Coliseum Boulevard
Montgomery, AL 36110-2400

Re: Revised Information in Support of Coal Combustion Residual (CCR) Permit Application
PowerSouth Energy Cooperative Charles R. Lowman Power Plant

Dear Mr. Story:

Please find enclosed revised information in support of the application previously submitted by PowerSouth Energy Cooperative to the Alabama Department of Environmental Management (ADEM) for a permit under ADEM Admin. Code Chapter 335-13-15 to close the CCR management unit at the Charles R. Lowman Power Plant in Leroy, Washington County, Alabama. This revised information is being provided in response to comments PowerSouth received from ADEM on February 11, 2021. Included among the enclosed is information regarding:

- Project design overview
- Liner design
- Grading and drainage plans
- A construction quality assurance plan
- A construction schedule
- The post-closure plan
- Technical calculations

As noted in our letter of August 18, 2020, PowerSouth would reiterate our request that the permit reflect all previously granted and outstanding variances. We believe the variances comply with state and federal requirements because they are no less stringent than comparable federal regulations and they are protective of human health and the environment. Specifically, we request that the permit allow for:

- Reliance on maximum contaminant levels as set forth at 40 C.F.R. § 257.95(h)(2) rather than those found at 335-13-15-.06(6)(h)2., which are 6 micrograms per liter (µg/L) for cobalt; 15 µg/L for lead; 40 µg/L for lithium; and 100 µg/L for molybdenum (as

previously requested and explained in our letters of August 18, 2020, and February 21, 2019).

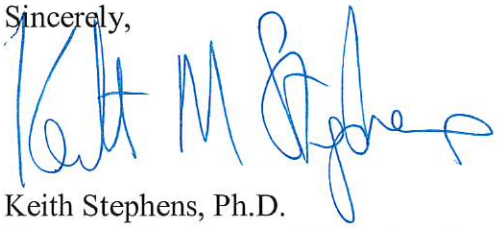
- The ceasing of placement of CCR and non-CCR wastestreams in CCR units by April 11, 2021, consistent with 40 C.F.R. § 251.101(a) & (b) (as previously requested and explained in our letter of August 18, 2020).

- A final grade of the cover system to be lower than 5% or greater than 25% (as previously requested and explained in our letter of August 18, 2020).

- Reliance on the constituents found at 40 C.F.R. Part 257, Appendix IV, rather than Appendix IV of ADEM Admin. Code Ch. 335-13-15, for purposes of assessment monitoring (as previously requested and explained in our letters of August 18, 2020, and February 21, 2019, and as previously granted by ADEM on April 15, 2019).

Thank you for your consideration of this letter and the enclosed information. Please feel free to contact me if we can provide any additional information or assistance.

Sincerely,



Keith Stephens, Ph.D.
Manager, Environmental Services Department

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1.0 Statement of Purpose

The following information is presented to satisfy the requirements of ADEM Admin. Code r. 335-13-15 for the Surface Impoundments at the Charles R. Lowman Power Plant.

2.0 Application Package

1- Form 439
2- Boundary Survey and Disposal Area Description
3- Emergency Action Plan
4- Hazardous Potential Classification and Emergency Action Plan (EAP)
5- History of Construction
6- Structural Stability Assessment
7- Safety Factor Assessment
8- Control Points On-Site
9- Topographical Maps/ Map Showing Buffer Zone
10- Construction Quality Assurance Plan (CQAP)
11- CCR Fugitive Dust Control Plan
12- Inflow Design Flood Control Plan
13- Groundwater Monitoring and Analysis Program (Including Statistical Analysis Plan)
14- Procedures for Compliance with Recordkeeping and Notification
15- Procedures for Updating Plans and Assessments Periodically
16- CCR Impoundment Closure and Post Closure Plan
17- Name and Mailing Address of Adjacent Property Owners
18- Certifying Statement

SOLID WASTE DISPOSAL FACILITY

MSWLF/ILF/CCR UNIT PERMIT APPLICATION PACKAGE

January 16, 2018

MEMORANDUM

TO: Applicants Seeking a Permit for Solid Waste Facilities

FROM: Stephen A. Cobb, Chief
Land Division
Alabama Department of Environmental Management

RE: Processing Solid Waste Permits by ADEM

Any permit issued by ADEM must be in accordance with §22-27-48 and §22-27-48.1 Code of Alabama. This section indicates that ADEM may not consider an application for a new or modified permit unless such application has received approval by the affected unit of local government having an approved plan. ADEM, therefore, will require the following before it can process a new or modified permit application:

1. The local government having jurisdiction must approve the permit application in accordance with §22-27-48 and §22-27-48.1 Code of Alabama.

2. Local governments should follow the procedures outlined in §22-27-48 and §22-27-48.1 Code of Alabama and the siting standards included in the local approved plan in considering approval of a facility.

This procedure applies to applications for new or modified permits. ADEM cannot review an application unless it includes approval from the affected local government. This procedure shall not apply to exempted industrial landfills receiving waste generated on site only by the permittee.

Please contact the Solid Waste Branch of ADEM at (334) 274-4201 if there are any questions.

SAC/sss/abj

PERMIT APPLICATION
SOLID WASTE DISPOSAL FACILITY
ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
(Submit in Triplicate)

1. **Facility type:**
   - _____ **Municipal Solid Waste Landfill (MSWLF)**
   - _____ **Industrial Landfill (ILF)**
   - _____ **CCR Landfill (CCRLF)**
   - _X_ **CCR Surface Impoundment (CCRSI)**
   - _____ **Other (explain)**_____

2. **Facility Name** Charles R. Lowman Power Plant (Lowman Plant)

3. **Applicant:**

   Name: PowerSouth Energy Cooperative

   Address: P.O. Box 550 (36420)
   2027 East Three Notch Street (36421)
   Andalusia, Alabama

   Telephone: 334-427-3000

4. **Location: (include county highway map or USGS map)**

   Township 6N **Range** 2E
   Section 21 **County** Washington

5. **Land Owner:**

   Name: PowerSouth Energy Cooperative

   Address: P.O. Box 550 (36420)
   2027 East Three Notch Street (36421)
   Andalusia, Alabama

   Telephone: 334-427-3000

   (Attach copy of agreement from landowner if applicable.)

6. **Contact Person:**

Name Dustin Kilcrease

Position or Affiliation Environmental Engineer

Address: 2027 East Three Notch Street
Andalusia, Alabama (36421)

Telephone: 334-427-3368

7. **Size of Facility:** 317.31 **Acres**

Size of Disposal Area(s): +/- 66.68 **Acres**

8. **Identify proposed service area or specific industry that waste will be received from:**

Electric Generation Facility

9. **Proposed maximum average daily volume to be received at landfill (choose one):**

1214 **Tons/Day** _____ **Cubic Yards/Day**

10. **List all waste streams to be accepted at the facility (i.e., household solid waste, wood boiler ash, tires, trees, limbs, stumps, etc.):**

Sluiced Fly Ash, Sluiced Bottom Ash, FGD Waste, Cooling Tower Blowdown, Storm Water Runoff,
Low Volume Waste Water

SIGNATURE 12/1/20 **DATE**

ADDITIONAL REQUIRED INFORMATION

Applicants seeking to obtain a permit to construct and/or continue to operate a municipal solid waste (MSW) landfill, industrial landfill, coal combustion residuals (CCR) landfill, or CCR surface impoundment are required to submit additional information as part of the Solid Waste Disposal Facility Permit Application. These additional information requirements vary depending on the facility type.

For new and existing landfill units, refer to ADEM Admin Code 335-13-5-.02 for a list of additional information to be submitted in the permit application. Some requirements apply only to MSW landfills and CCR landfills, while other requirements apply to industrial landfills. You need only to address the requirements that pertain to your type landfill. For new and existing CCR surface impoundments, refer to ADEM Admin Code 335-13-15-.09 for additional information to be submitted in the permit application.

Each rule that is applicable to your type landfill or surface impoundment must be addressed in detail in the operational narrative and/or engineering drawings before the review process can be completed. All operational narratives, engineering drawings, survey maps and legal descriptions are to be prepared by licensed engineers or surveyors registered in the State of Alabama and with their stamp or seal on each drawing/map and cover of the narrative.

Act No. 89-824 Section 9(a) states "The department may not consider an application for a new or modified permit for a facility unless such application has received approval by the affected unit of local government having an approved plan." This document must be received by the Department prior to processing the application.

The referenced rules are covered in greater detail in ADEM's Administrative Code, Division 13. Clarification can be obtained by reviewing the regulations. Copies of the ADEM Administrative Code, Division 13 regulations, can be obtained for a fee by contacting ADEM's Permits and Services Division. If the Department can answer any questions, please contact the Solid Waste Branch at (334) 274-4201.

DATA TO BE SUBMITTED ON ALL LANDFILLS REQUIRING A GEOLOGICAL EVALUATION

The following items must be submitted along with the permit application. This data is necessary for ADEM to determine if the proposed landfill site is suitable from a geological standpoint.

a. Conduct a water well survey to a minimum of 1 mile from the perimeter of the proposed landfill or expansion.

   1. Locate water wells on a USGS 7.5 minute topographic map.

   2. Provide corresponding names and addresses of well owners.

   3. Determine the depth of the well and the static water level. Specify whether these data were determined by measurement or interview.

b. Conduct borings and/or pit excavations to establish site geology and hydrology at least to the mean annual water table or bedrock.

   1. Locate soil borings or excavation pits on a USGS 7.5 minute topographic map.

   2. Provide a log of excavation which includes the following:

      Foot by foot soil classification by the Unified Soil Classification System (USCS).

      Elevation at which groundwater or bedrock was observed.

      Elevation of groundwater after 24 hours.

c. Sample soil material from test borings or pit excavations for the following tests:

   1. Proctor density 90%-95% for liner material, 85%-90% for cover material.

   2. Permeability in cm/sec at the item (1) densities.

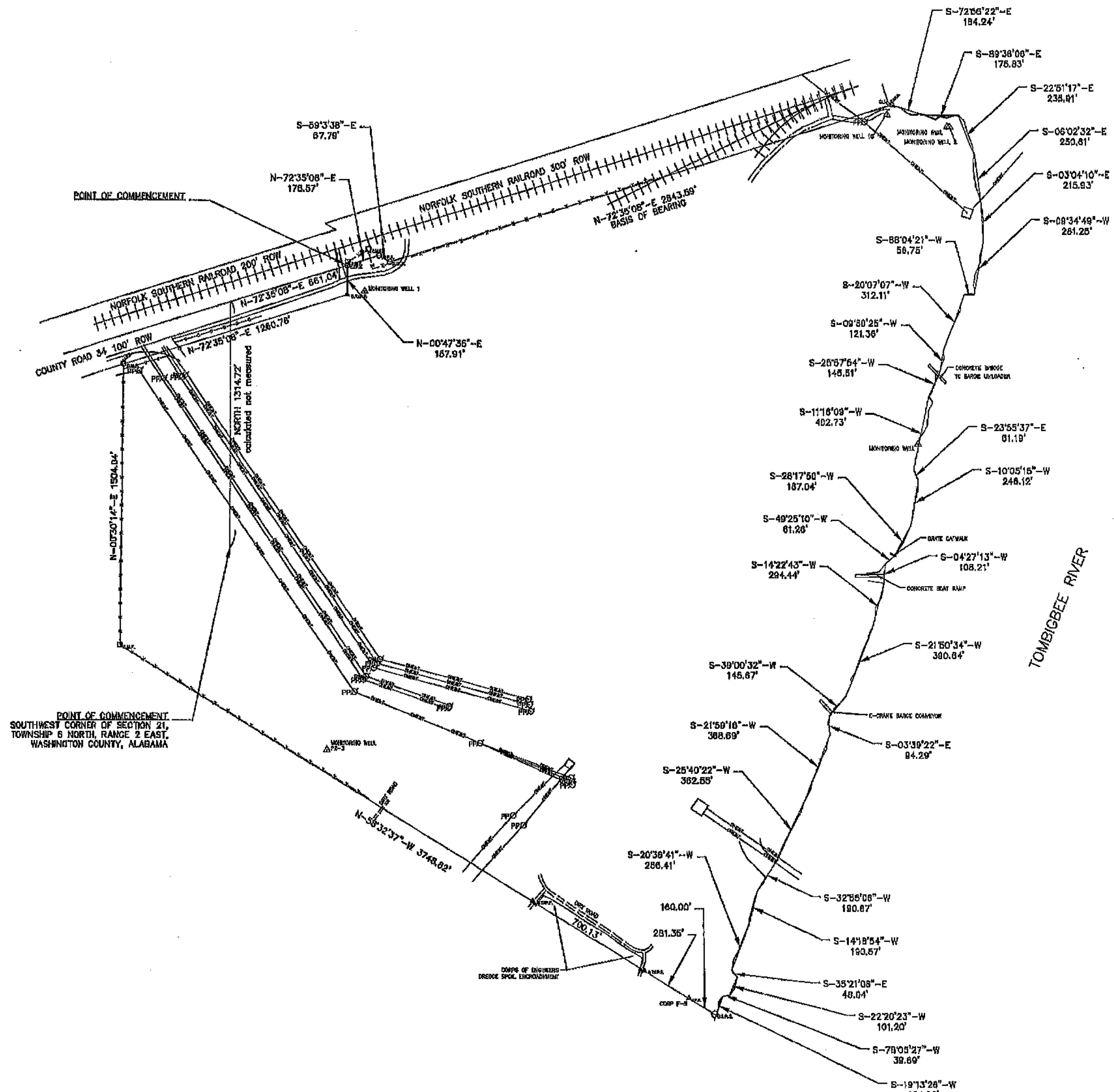
d. Construct the following maps:

   1. Potentiometric map using general elevations established after 24 hours.

   2. Regional map to a minimum of 1 mile from the perimeter indicating geology, structural features such as faults, etc.

   3. Cross sections using borings and/or excavation pits of site.

e. Any additional information deemed necessary to properly evaluate the site.



LEGEND

- INDICATES 5/8" CAPPED IRON PIN FOUND
- INDICATES 5/8" CAPPED IRON PIN SET
- INDICATES CRIMPED TOP IRON PIN FOUND
- INDICATES OPEN TOP IRON PIN FOUND
- INDICATES REBAR FOUND
- INDICATES CONCRETE MONUMENT FOUND
- INDICATES AXLE FOUND
- INDICATES CHAIN LINK FENCE
- INDICATES WOOD FENCE
- INDICATES WIRE FENCE
- OHE — INDICATES OVERHEAD ELECTRIC LINES
- PP — INDICATES POWER POLE
- (ACT.) INDICATES ACTUAL MEASURE
- (REC.) INDICATES RECORD MEASURE

GRAPHIC SCALE
(IN FEET)
1 inch = 300 ft.

NOTES:

1.) Type of Survey: Boundary. No improvements were located except those shown hereon. Information used to prepare this survey is as follows: Book 201, Page 108; Book 144, Page 419; Book 146, Page 369; Book 140, Page 330; Book 132, Page 260; Book 195, Page 124; Book 129, Page 289; Book 208, Page 144; Book 201, Page 114; Book 332, Page 326; Previous surveys that were provided by client.
2.) Bearing Basis: All bearing are referenced to Alabama State Plane Coordinates West Zone established by using RTK GPS tied to Trimble Continuous Operating Reference Station Network scale factor = 0.999933333.
3.) Field Dates: September 20, 2018; October 31, 2018; November 5, 2018.
4.) Street Address: N/A
5.) No attempt was made by the Surveyor to locate underground improvements or environmentally sensitive conditions.
6.) This survey done without the benefit of a Title Search.

Description of Survey:

Commencing at the Southwest corner of Section 21, Township 6 North, Range 2 East, Washington County, Alabama; thence run North, 1314.72 feet to a point on the South right-of-way of Norfolk Southern Railroad; thence run N-72°35'08"-E along said South right-of-way of Norfolk Southern Railroad, 661.04 feet to a 5/8" capped rebar (Thompson Engineering), the Point of Beginning; thence continue N-72°35'08"-E along said South right-of-way of Norfolk Southern Railroad, 170.67 feet to a 5/8" capped rebar (Thompson Engineering); thence run S-59°53'38"-E along said South right-of-way of Norfolk Southern Railroad, 67.79 feet to a 5/8" capped rebar (Thompson Engineering); thence run N-72°35'08"-E along said South right-of-way of Norfolk Southern Railroad, 2843.69 feet to a 5/8" capped rebar (Thompson Engineering) being a point on the meanders of the Tombigbee River; thence run Southerly and Westerly along said meanders of the Tombigbee River the following courses:
S-72°56'22"-E, 184.24 feet; S-89°36'06"-E, 175.83 feet; S-22°51'17"-E, 235.91 feet;
S-06°52'32"-E, 250.81 feet; S-03°04'10"-E, 215.93 feet; S-09°34'49"-W, 281.25 feet;
S-68°04'21"-W, 56.75 feet; S-20°07'07"-W, 312.11 feet; S-09°50'25"-W, 121.36 feet;
S-25°57'54"-W, 145.51 feet; S-11°16'09"-W, 402.73 feet; S-23°55'37"-E, 61.18 feet;
S-10°05'15"-W, 248.12 feet; S-28°17'50"-W, 187.04 feet; S-49°25'10"-W, 61.26 feet;
S-04°27'13"-W, 108.21 feet; S-14°22'43"-W, 244.94 feet; S-21°50'34"-W, 390.64 feet;
S-39°00'32"-W, 145.67 feet; S-03°39'22"-E, 94.29 feet; S-21°59'16"-W, 388.69 feet;
S-25°40'22"-W, 362.55 feet; S-32°55'06"-W, 190.67 feet; S-14°18'54"-W, 190.57 feet;
S-20°36'41"-W, 256.41 feet; S-35°21'06"-E, 48.04 feet; S-22°20'23"-W, 101.20 feet;
S-78°05'27"-W, 39.69 feet; S-19°13'26"-W, 104.92 feet to a 5/8" capped rebar (Thompson engineering); thence run N-58°32'37"-W leaving said meanders of the Tombigbee River, 3748.82 feet to a concrete monument; thence run N-00°30'14"-E, 1504.04 feet to a point on the South right-of-way of County Road 34 (Carson Road) marked by a 5/8" capped rebar (Thompson Engineering); thence run N-72°35'08"-E along said South right-of-way of County Road 34 (Carson Road), 1260.76 feet to a 1" open top iron pipe; thence run N-00°47'36"-E, 157.91 feet to the Point of Beginning, containing 317.31 acres, more or less.

I state that all parts of this survey and drawing have been completed in accordance with the requirements of the Standards of Practice for Land Surveying in the State of Alabama to the best of my knowledge, information and belief.

Johnny E. Holley, PLS
Alabama License Number 23660

November 14, 2018
Date

REVISION NO.	DESCRIPTION	DATE	BY

ALABAMA LICENSED No. 23660 PROFESSIONAL LAND SURVEYOR JOHNNY E. HOLLEY

POWERSOUTH ENERGY COOPERATIVE
2027 EAST THREE NOTCH STREET ANDALUSIA, ALABAMA

thompson ENGINEERING
2370 COTTAGE HILL RD., STE. 100 MOBILE, ALABAMA 36606
TEL: (251) 666-2443 FAX: (251) 666-6422

LOWMAN POWER PLANT
LEROY, ALABAMA

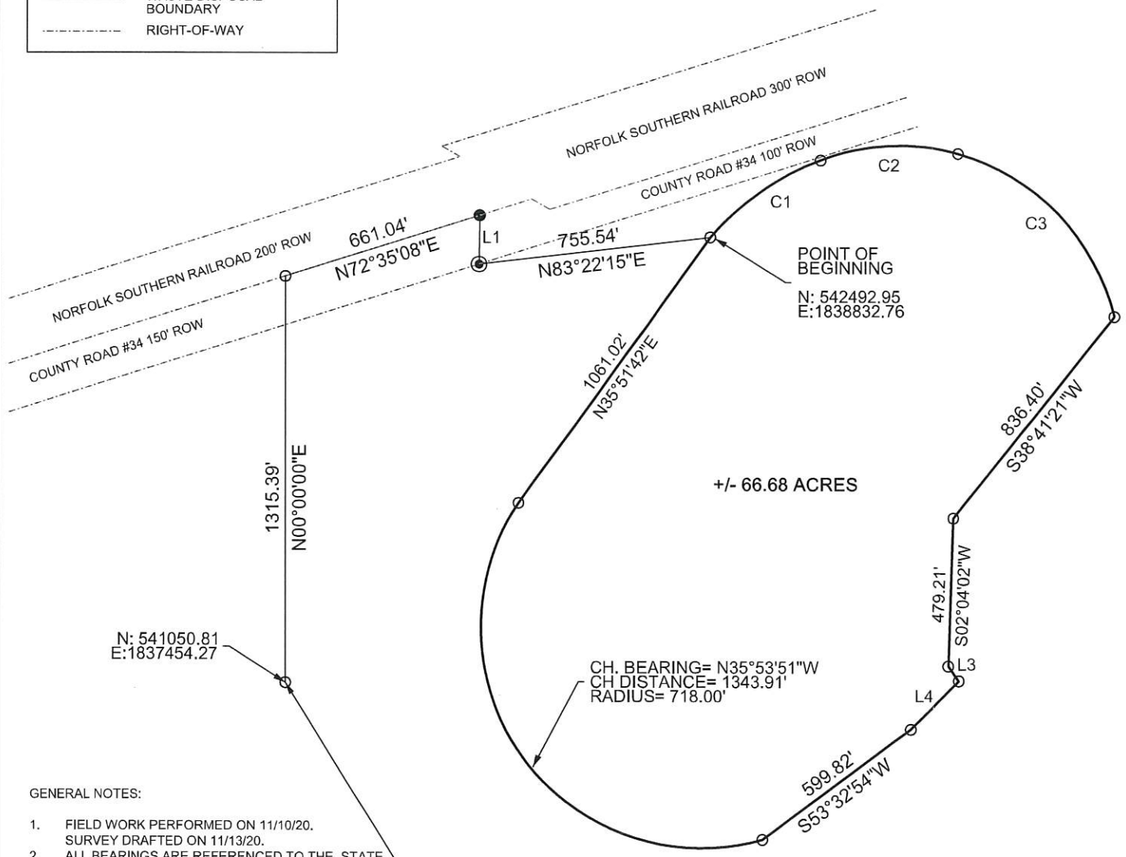
BOUNDARY SURVEY

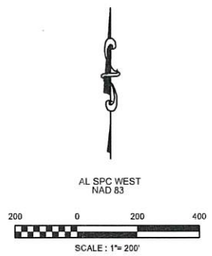
SCALE	DRAWN BY	APPROVED BY	DATE	JOB NO.	DRAWING NO.	FILE
1" = 300'	JEH	G.A.S.	NOVEMBER 2018	18-1102-0086	PLANT LOWMAN BOUNDARY LINE.DWG	

LEGEND	
◉	FOUND 1" OPEN TOP IRON PIPE
●	FOUND 5/8" REBAR (THOMPSON ENGINEERING)
○	CALCULATED POINT
———	WASTE DISPOSAL BOUNDARY
-·-·-·-	RIGHT-OF-WAY

CURVE DATA TABLE			
CURVE (C#)	RADIUS	CHORD BEARING	CHORD DISTANCE
C1	860.00'	N55°09'28"E	436.78'
C2	712.00'	N87°15'36"E	449.61'
C3	725.00'	S43°49'55"E	730.36'

LINE DATA TABLE		
LINE (L#)	BEARING	DISTANCE
L1	S00°46'38"W	157.91'
L2	S36°07'12"E	59.01'
L3	S45°24'35"W	223.51'





GENERAL NOTES:

1. FIELD WORK PERFORMED ON 11/10/20. SURVEY DRAFTED ON 11/13/20.
2. ALL BEARINGS ARE REFERENCED TO THE STATE PLANE COORDINATE SYSTEM, NAD 83 ALABAMA WEST ZONE OBTAINED USING THE ALDOT CORS NETWORK.
2. THIS BOUNDARY WAS CREATED USING A SURVEY PLAT PREVIOUSLY PREPARED BY THOMPSON ENGINEERING ON 11/14/18 AS A POINT OF REFERENCE.
3. ADDITIONAL IMPROVEMENTS, UTILITIES, EASEMENTS, AND RESTRICTIONS MAY EXIST THAT HAVE NOT BEEN SHOWN HEREON.
4. A TITLE SEARCH AND TITLE OPINION WAS NOT PERFORMED BY THIS COMPANY.
5. ADDITIONS OR DELETIONS TO SURVEY MAPS OR REPORTS BY ANYONE OTHER THAN THE SIGNING PARTY OR PARTIES IS PROHIBITED WITHOUT WRITTEN CONSENT OF THE SIGNING PARTY OR PARTIES.

WASTE DISPOSAL LIMITS DESCRIPTION:

COMMENCING AT THE SOUTHWEST CORNER OF SECTION 21, TOWNSHIP 6 NORTH, RANGE 2 EAST, WASHINGTON COUNTY, ALABAMA; THENCE NORTH 1315.39 FEET TO A POINT ON THE SOUTH RIGHT-OF-WAY OF NORFOLK SOUTHERN RAILROAD; THENCE N72°35'08"E ALONG THE SAID SOUTH RIGHT-OF-WAY OF NORFOLK SOUTHERN RAILROAD A DISTANCE OF 661.04 FEET TO A 5/8" CAPPED REBAR (THOMPSON ENGINEERING); THENCE LEAVING SAID RIGHT-OF-WAY S00°46'38"W A DISTANCE OF 157.91 FEET 1" OPEN TOP IRON PIPE; THENCE N83°22'15"E A DISTANCE OF 755.54 FEET TO THE POINT OF BEGINNING; THENCE ALONG A CURVE TO THE RIGHT HAVING A RADIUS OF 860.00 FEET FOR A CHORD BEARING OF N55°09'28"E AND A CHORD DISTANCE OF 436.78 FEET; THENCE ALONG A CURVE TO THE RIGHT HAVING A RADIUS OF 712.00 FEET FOR A CHORD BEARING OF N87°15'36"E AND A CHORD DISTANCE OF 449.61 FEET; THENCE ALONG A CURVE TO THE RIGHT HAVING A RADIUS OF 725.00 FEET FOR A CHORD BEARING OF S43°49'55"E AND A CHORD DISTANCE OF 730.36 FEET; THENCE S38°41'21"W A DISTANCE OF 836.40 FEET; THENCE S02°04'02"W A DISTANCE OF 479.21 FEET; THENCE S36°07'12"E A DISTANCE OF 59.01 FEET; THENCE S45°24'35"W A DISTANCE OF 223.51 FEET; THENCE S53°32'54"E A DISTANCE OF 599.82 FEET; THENCE ALONG A CURVE TO THE RIGHT HAVING A RADIUS OF 718.00 FEET FOR A CHORD BEARING OF N35°53'51"W AND A CHORD DISTANCE OF 1343.91 FEET; THENCE N35°51'42"E A DISTANCE OF 1061.02 FEET TO THE POINT OF BEGINNING. SAID AREA CONTAINING 66.68 ACRES, MORE OR LESS.

I HEREBY CERTIFY THAT ALL PARTS OF THIS SURVEY AND DRAWING HAVE BEEN COMPLETED IN ACCORDANCE WITH THE CURRENT REQUIREMENTS OF THE STANDARDS OF SRACTICE FOR SURVEYING IN THE STATE OF ALABAMA TO THE BEST OF MY KNOWLEDGE, INFORMATION, AND BELIEF.

JOSHUA SCOTT O'FERRELL — 11/16/20 DATE
PLS #38612

CDG
Engineering, Environmental, Answers.
GADSDEN, AL
ANDALUSIA, AL
DOTHAN, AL
ABERDEEN, AL
HOOVER, AL
AUBURN, AL
HUNTSVILLE, AL
1840 E. THREE NOTCH ST.
ANDALUSIA, AL 36421
PH: (334) 222-9431
FX: (334) 222-4018

BOUNDARY SURVEY
IMPOUNDMENT WASTE DISPOSAL LIMITS
LOWMAN POWER PLANT
LEROY, WASHINGTON COUNTY, ALABAMA

ALABAMA LICENSED No. 38612 PROFESSIONAL LAND SURVEYOR JOSHUA S. O'FERRELL

SCALE:	1"=200'
DATE:	NOVEMBER 2020
DESIGNED BY:	JRA
DRAWN BY:	JSO
REVIEWED BY:	RDW
QC REVIEWER:	JSO
REVISED	
DGN:	Point_Waste Disposal.dgn
PROJECT NO:	RG1220027J
SHEET NO.	01

PowerSouth Energy Cooperative

Charles R. Lowman Power Plant Leroy, AL

Emergency Action Plan-CCR Impoundments

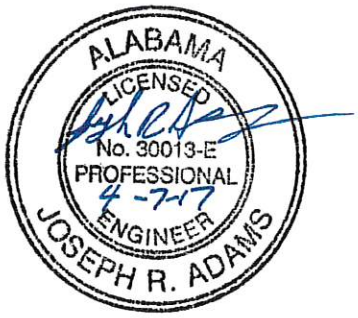
Issued April 2017

CDG Engineers and Associates, Inc.
1840 East Three Notch St.
Andalusia, AL 36421
| cdge.com

PowerSouth
ENERGY COOPERATIVE

REPORT
Emergency Action Plan-
CCR Impoundments
Charles R. Lowman Power Plant

April 2017



CDG
Engineering. Environmental. Answers.

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1.0 EAP INFORMATION

1.1 Summary of EAP Responsibilities

The following table outlines the critical responsibilities for responding to an incident and implementing this plan.

Table 1 – General Responsibilities

Entity	Responsibilities
Owner/Operator	1. Verify and assess emergency conditions 2. Notify other participating emergency management agencies 3. Take corrective action at facility 4. Declare termination of emergency at facility 5. Update EAP on at least an annual basis 6. Respond to emergencies at the facility 7. Receive condition status reports from the operator
Affected Towns in Washington/Clarke Counties. Fire and Rescue and Emergency Services	1. Receive condition status reports from owner 2. Notify Public within affected limits 3. Conduct evacuation from inundation areas within town limits, if required 4. Render assistance to County, as necessary 5. Render assistance to Owner, as necessary
Washington/Clarke County Police, Fire and Rescue, and Emergency Services	1. Receive condition status reports from owner 2. Notify public within County. 3. Conduct evacuation from inundation areas in County, if required 4. Provide mutual aid to County, if requested and able

1.2 Statement of Purpose

The purpose of this EAP is to meet the requirements of the CCR Rule as specified in 40 CFR 257.73 for the Emergency Action Plan of the CCR impoundments.

1.3 Project Description

The Charles R. Lowman Power Plant has three CCR impoundments. Each impoundment is created by use of an elevated earthen berm. The facility is located in Leroy, AL along the western shore of the Tombigbee river. The figure below indicates the relationship of the facility to other communities in the vicinity.

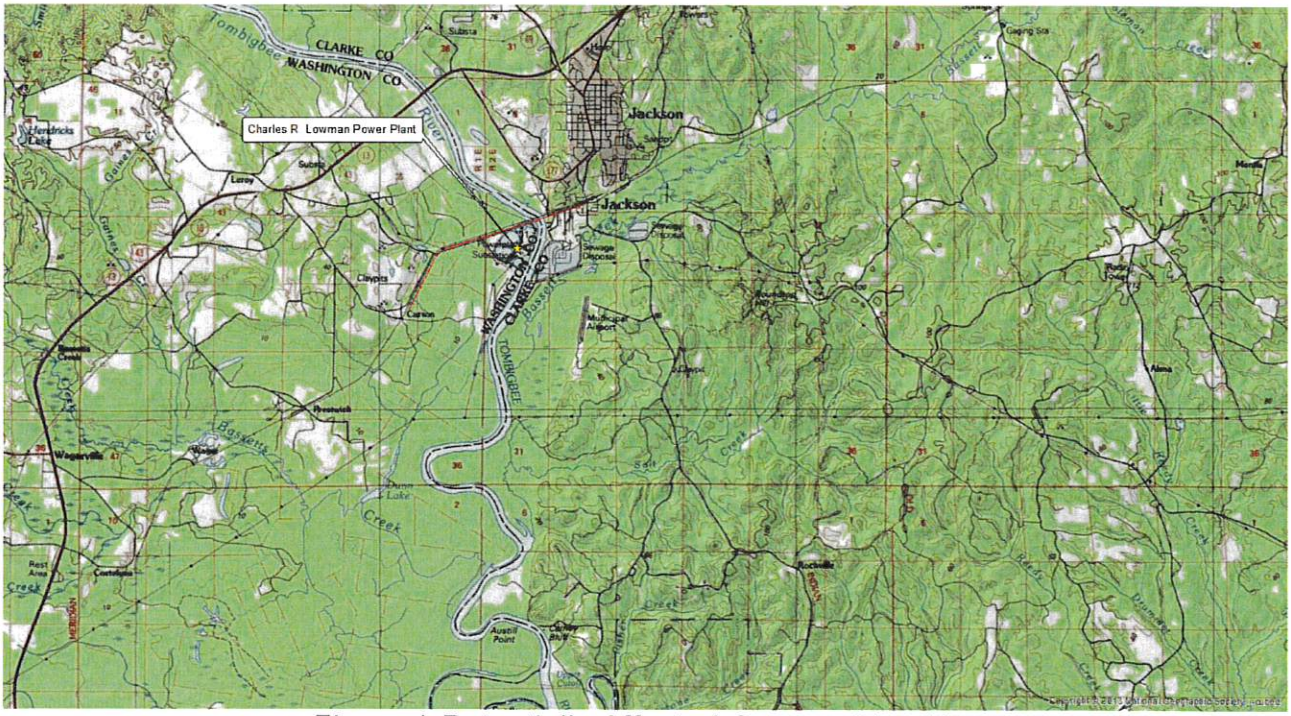


Figure 1-Potentially Affected Communities Map

As can be seen in Figure 2 the Tombigbee River (which flows south) is the county boundary shared by Washington and Clarke counties. Figure 2 also indicates that there are no communities downstream for at least 5 miles that will be affected by an emergency. Also, review of available aerial photography indicates that at the time of this report there are no areas of substantial residential development within 5 miles downstream of the facility.

1.4 EAP Response Process

It is important that the following procedures are used to ensure reliable and timely determination of an emergency event. When an unusual or emergency incident is identified at the CCR impoundments the following steps shall be followed:

1.4.1 Step 1: Incident Detection, Evaluation, and Emergency Level Determination

All unusual conditions or incidents that are detected shall be categorized into 4 Emergency Level categories. These categories are based on the severity of the condition or triggering event. These categories are High Flow, Non-Failure, Potential failure, and Imminent failure and are described in more detail below. Table 2 below outlines some events that may occur at the impoundments and their respective categories. These are only some of the events and other triggers that may occur that must be interpreted by the reviewing personnel.

Table 2-Determining Emergency Level Guidance

Emergency Level	Situation
Potential Failure	Storm water runoff with active gully erosion.
Potential Failure	Reservoir drainage equipment has failed and/or water levels are within 6 inches of overtopping the embankments.
Potential Failure	New seepage areas with cloudy discharge or increasing flow.
Potential Failure	Observation of sinkhole development on or near embankments.
Potential Failure	New cracks in the embankments with seepage.
Potential Failure	Earthquake results in damage to impoundments.
Potential Failure	Damage from outside sources that has resulted in seepage flow.
Imminent Failure	Reservoir water levels have risen to the point that overtopping is occurring.
Imminent Failure	Rapidly enlarging sinkhole.
Imminent Failure	Sudden or rapidly developing sliding of embankments.
Imminent Failure	Damage to embankment tops to is causing uncontrolled water release.

High-Flow (Non-Emergency)

This category indicates that flooding is occurring on the Tombigbee river but there is no threat to the impoundments. This category may not have a direct threat to the impoundments but the effects of flooding could rapidly develop into an overtopping condition that could wash material downstream or cause a failure. During High-flow levels the river stage should be monitored to ensure no damage is occurring to the impoundments. This category is used to convey to emergency agencies the potential for downstream effects should the situation escalate.

Non-Failure (Non-Emergency)

This category is for events that will not, by themselves, lead to a failure. These include items such as new embankment seepage, erosion, or equipment malfunction that could result in impoundment overtopping.

Potential Failure (Emergency)

This category indicates that conditions are developing that could lead to failure. This could include conditions where water levels are approaching overtopping, significant cracking in the structures, new and substantial leaking, or horizontal movement of the embankments. This category conveys that there is time to analyze the situation before the impoundment fails and steps can be made to moderate or alleviate the failure.

Imminent Failure (Emergency)

This category indicates the failure is about to occur, occurring, or has already occurred. For the purpose of emergency response, authorities may assume the worst-case condition for this category.

1.4.2 Step 2: Notification and Communication

When an emergency level has been determined, notification should be made per the Notifications Flowchart. It is important that information is conveyed efficiently, correctly, and the emphasis on the appropriate severity of the emergency to all involved parties. The below table lists notification information by category. This information at a minimum should be conveyed by each person to their responsible contact as communication progresses through the Notification Flowchart.

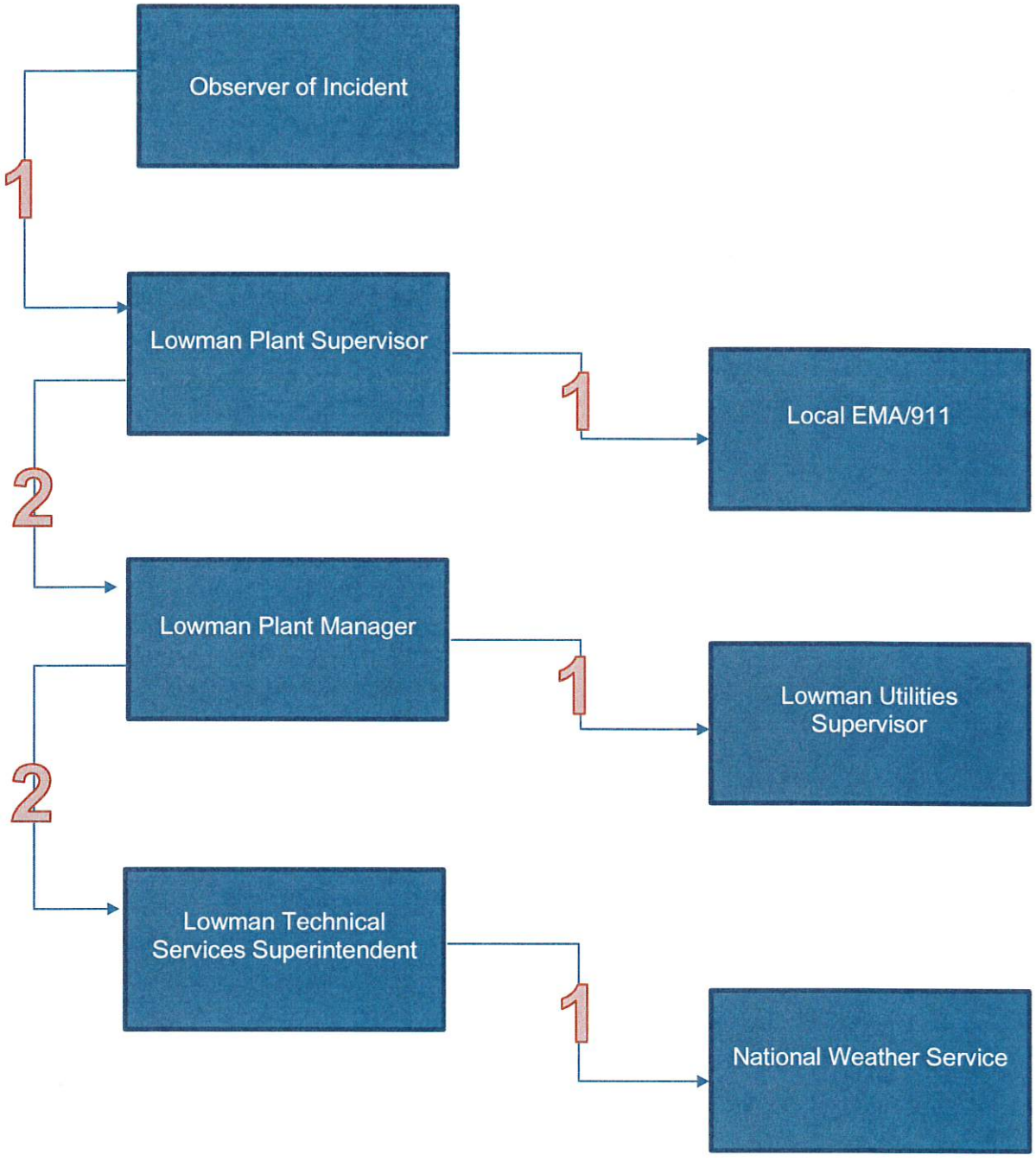
Table 3-Initial Notification Information by Emergency Level

Emergency Level	Information to External Organizations
Potential Failure	1. Explain what is happening at the impoundments. 2. State you are determining this to be a POTENTIAL FAILURE. 3. Describes what actions are being taken to prevent failure. 4. Provide an estimate of how long the impoundment could be at risk of failure. 5. Explain what areas are at risk from failure. 6. Indicate when you will give the next status report. Subsequent reports should occur no more than 24 hours apart. Indicate who can be called for any follow-up questions.
Imminent Failure	1. Explain that the impoundment is failing, is about to fail, or has failed. 2. State you are determining this to be an IMMINENT FAILURE. 3. Explain what areas are at risk of failure. 4. Indicate when you will give the next status report. Subsequent reports should occur no more than 24 hours apart. 1. Indicate who can be called for any follow-up questions.

The EAP may go through several Emergency Levels during an event as conditions improve or deteriorate. If the Emergency Level does change the notification procedure begins anew and should follow the corresponding level guidance. Actions shall be determined at the time of incident and by those officials involved.

1.4.3 Notification Flow Charts

*Numbers indicate the order in which each person issues notifications to the respective person or agency.



1.4.4 Step 3: Termination and Follow-up

The termination of an emergency is dependent on the Emergency category of the triggering event. In general, an EAP cannot be terminated until assurances are met that the triggering event will not worsen or produce the potential for damage to the public, property, or environment. It is the Owner's responsibility to notify authorities that the condition has been stabilized. It shall be the responsibility of the government officials to disseminate the termination to all involved agencies.

Following the termination of an incident, the owner and all involved parties should perform an evaluation of the incident called an After Action Review. This review should include at a minimum the following discussing topics:

- The events or conditions leading up to the incident.
- Significant actions performed by each party and improvements for future emergencies.
- Any and all strengths and deficiencies found during the process. These could include communications, logistics, staffing, leadership, etc.
- Corrective actions identified and a planned course to address recommendations.

The After Action Review should be documented in an After Action Report (AAR) and used for revisions to the EAP.

1.5 General Responsibilities

The determination of responsibility for EAP tasks is very important to clearly specify the responsibilities of all involved. The following sections clarify the individuals responsible for actions and the actions expected of them.

1.5.1 Owner Responsibilities

The Owner's responsibilities include but are not limited to:

1. Assignment and education of operating/inspecting personnel
2. Detection and evaluation of incidents.
3. Classification of incidents.
4. Establishment and enforcement of organizational emergency chain of command.
5. Notification of emergency personnel.
6. Performing appropriate response to limit the deterioration of a situation and to help prevent the loss of life, property, or damaging affects to the environment.

1.5.2 Notification and Communication Responsibilities

The Owner shall clearly identify in the EAP the individuals authorized to notify emergency authorities. In the event of an imminent failure this responsibility may be delegated to the Operator. If at any time the authorized personnel changes the EAP should be updated.

1.5.3 Evacuation Responsibilities

All evacuation planning and implementation is the responsibility of local emergency authorities with that legal authority.

1.5.4 Monitoring, Security, Termination, and Follow-up Responsibilities

In the event of an incident, a single person should be assigned by the owner to be onsite and monitor the situation from the beginning to the termination. This person is responsible for status updates through the owner's chain of command.

1.5.5 EAP Coordinator Responsibilities

The owner shall specify an EAP Coordinator to be responsible for overall EAP related activities. This person shall establish training, coordinate EAP exercises, answering EAP questions, etc.

1.6 Preparedness

Preparedness are those activities that take place before an incident develops. These activities help to facilitate response to an incident and help prevent or alleviate the effects of one.

1.6.1 Surveillance and Monitoring

Systematic and regular surveillance and monitoring of the embankments will allow for detection or prevention of emergency incidents. Prompt detection and evaluation of incidents is critical to ensuring a timely and effective response. The impoundments shall be inspected at least weekly to detect any abnormalities. An inspection log should be maintained and held for record purposes. Items to be monitored should include at a minimum the condition of slopes and vegetation, the status of impoundment water levels, and if applicable the river stage adjacent to the impoundments.

1.6.2 Evaluation of Detection and Response Timing

The total time taken for the EAP is of critical importance. Measures should be taken to create an efficient way to implement an EAP. Should the onsite inspection personnel detect a situation of concern he/she shall report the concern within 24 hours to determine if an emergency exists. If an emergency is determined EAP procedures should be initiated promptly. Timely implementation of the EAP and communication will directly impact the effectiveness of efforts.

1.6.3 Response during Periods of Darkness

The facility is manned 24 hours a day 365 days a year. Therefore, response during a period of darkness will not change from the primary response. The Owner may provide additional lighting to the facility if available.

1.6.4 Response during Weekends and Holidays

The facility is manned 24 hours a day 365 days a year. Therefore, response during weekends and holidays will not change from the primary response.

1.6.5 Response during Adverse Weather

Primary access to the site shall be by ground based vehicles from Carson Road by way of Highway 43. If for some reason access to Carson Road is not available secondary road access can be obtained by Batley Road.

In the event that all roadway access is unavailable the site may be accessed by boat from the Tombigbee River. No immediate moorings are provided and this should be used only if necessary.

1.6.6 Alternative Sources of Power

In the event of a power loss and the need for electrical equipment is present, gas driven emergency generators shall be utilized to operate equipment.

1.6.7 Training and Exercise

Training in the determination of incidents and their respective emergency categories is recommended for all personnel that will be involved in the EAP. Exercise of the notification flowchart will also help to ensure a timely response of personnel and to determine if for some reason the flowchart in no longer current. On an annual basis members of the notifications flowchart, to include representatives for emergency agencies, shall meet to discuss any changes to the EAP or any improvements that can be made to enhance readiness or the dissemination of information.

PowerSouth Energy Cooperative

Charles R. Lowman Power Plant
Leroy, AL

Hazard Potential Classification

Issued October 2016

CDG Engineers and Associates, Inc.
1840 East Three Notch St.
Andalusia, AL 36421
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PowerSouth Energy Cooperative

REPORT

Hazard Potential Classification
Charles R. Lowman Power Plant

October 2016

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APPENDIXES

1.0 SCOPE OF SERVICES

PowerSouth Energy Cooperative (PowerSouth) requested CDG Engineers and Associates, Inc. (CDG) to perform a site evaluation and assign a hazard potential classification for the Unit #1 Bottom Ash Pond, Unit 2/3 Bottom Ash Pond, and Scrubber Waste Pond at the Charles R. Lowman Power Plant as required in section 257.73 (a) (2) of EPA's Disposal of Coal Combustion Residuals from Electric Utilities (CCR rule). In association with this scope of services, CDG conducted site investigations of the impoundments as well as the upstream and downstream areas which may be affected in the event of a failure of the impoundment berms.

The hazard potential classification assessment has been prepared in accordance with guidance provided in FEMA's *Federal Guidelines for Dam Safety: Hazard Potential Classification System for Dams.*

2.0 PROJECT DESCRIPTION

The Charles R. Lowman Power Plant in Leroy, AL has three impoundments that were investigated and assigned a hazard potential classification: Unit #1 Bottom Ash Pond, Unit #2/#3 Bottom Ash Pond, and the Scrubber Waste Pond. In evaluating the hazard potential for each impoundment CDG performed site investigations through visual observation of the upstream and downstream inundation zones to identify and document areas which, if the dam should fail or be misoperated for any reason, may result in probable loss of human life and/or impact on economic, environmental, and lifeline interests. The investigation was conducted in accordance with guidance provided by the Association of State Dam Safety Officials (ASDSO) "Guideline for Assigning Hazard Potential Classification to Dams", FEMA Publication No. 333 **"**Federal Guidelines for Dam Safety: Hazard Potential Classification System**"** and the US Army Corps of Engineers "Safety of Dams – Policy and Procedures" (ER 1110-2-1156). The basis for classification is determined using the presumptive method based on site investigations and readily available information to evaluate the potential for the probable loss of human life and impacts on economic, environmental, and lifeline interests. A summary of the considerations which led to each pond's assigned hazard potential classification is provided in Section 3. A further discussion on the basis for determination of each is provided below.

2.1 Criteria used in evaluating Loss of Life Potential

FEMA Publication No. 333 – "Federal Guidelines for Dam Safety: Hazard Potential Classification System *for Dams"* states that the difference between Significant and High Hazard Potential rating include the probable loss of human life, regardless of the magnitude of other losses. If no loss of life is probable as the result of dam failure or misoperation, the dam should be classified as Low or Significant Hazard Potential. The term "probable" indicates that the scenario used to predict the loss of human life must be reasonable and realistic. In the definition of High Hazard Potential FEMA-333 does not contemplate the possible loss of life of the occasional user of the downstream or upstream area such as an occasional recreational user of the river and downstream lands, passer-by, persons working on the dam, or non-overnight outdoor user of downstream lands.

CDG maintained these definitions during its evaluation of the potential for probable loss of human life.

2.2 Criteria used in evaluating Economic Impact

USACE Publication ER 1110-2-1156 (Oct 2011) states that economic losses can be classified as either direct or indirect. Direct losses are generally defined as economic losses due to flood damage of homes, businesses, and infrastructure while indirect losses are those due to the interruption of services provided by either the failed facility or by damaged infrastructure in the downstream inundation area.

Direct losses evaluated in CDG's assessment include property losses due to the immediate deposition of sediments and CCR waste. Indirect losses evaluated in CDG's assessment include the loss of power generation capability at the Plant, and loss of navigation of the Tombigbee River.

2.3 Criteria used in evaluating Environmental Impact

USACE Publication ER 1110-2-1156 (Oct 2011) states that environmental losses are those where project failure or misoperation can result in the need for mitigative measures, or can cause irreparable damage to the environment.

In considering the environmental losses which may occur in the event of a failure due to flooding or misoperation, CDG considered the potential impact of sediment and CCR waste deposition in areas of inundation, and water impacts associated with the release of process water used in Plant operations.

2.4 Criteria used in evaluating Lifeline Disruption

The American Society of Civil Engineers defines lifeline systems to include transportation systems (including highways, airports, rail lines, waterways, ports and harbor facilities) and utility systems (electric power plants, electrical transmission lines, gas and liquid fuel pipelines, telecommunication systems, water supply, and wastewater treatment facilities).

In considering the lifeline disruptions which may occur in the event of a failure due to flooding or misoperation, CDG considered the potential impacts which may occur in the event of a dam failure. The corresponding flood wave would contain process water, sediments and CCR waste which may impact lifeline facilities foundation systems, and other service related structures.

3.0 UNIT #1 BOTTOM ASH POND

Assigned Hazard Potential Rating: SIGNIFICANT

Basis for Classification

Potential for Probable Loss of Human Life:

- None.

Potential for Economic Loss:

- Direct:
  - A breach could result in damage/washout to electrical transmission towers.
- Indirect:
  - A breach could result in material deposited into navigable portions of the Tombigbee River.
  - A breach could result in material being deposited to the Plant's discharge canal.

Potential for Environmental Damage:

- A breach could result in the deposition of materials in the Tombigbee River.

- A breach could result in the release of CCR wastewater in the Tombigbee River.

Potential for Lifeline Disruption:
- A breach could result in damage to electrical transmission towers.

4.0 UNIT #2/#3 BOTTOM ASH POND

Assigned Hazard Potential Rating: SIGNIFICANT

Basis for Classification

Potential for Probable Loss of Human Life:
- None.

Potential for Economic Loss:
- Direct:
    - A breach could result in damage/washout to electrical transmission towers.
    - A breach could result in damage/washout to the entrance roadway and bridge system.
    - A breach could result in damage to the Plant's primary recycle-water pumping station.
    - A breach could result in damage/washout to the Norfolk Southern railroad line serving the Plant.

- Indirect:
    - A breach could result in the disruption of water supply to the Power Plant

Potential for Environmental Damage:
- A breach could result in the deposition of materials containing sediments and CCR waste into floodways of the Tombigbee River, including wetlands.
- A breach could result in the release of CCR wastewater into floodways of the Tombigbee River.
- A breach could result in damage/washout of the dam for the Scrubber Waste Pond causing additional environmental damage to floodways of the Tombigbee River and wetlands.

Potential for Lifeline Disruption:
- A breach could result in damage/washout to electrical transmission towers.
- A breach could result in damage/washout to the Plant's entrance roadway and bridge system.

5.0 SCRUBBER WASTE POND

Assigned Hazard Potential Rating: SIGNIFICANT

Basis for Classification

Potential for Probable Loss of Human Life:
- None.

Potential for Economic Loss:

- Direct:
    - A breach could result in damage/washout to the entrance roadway and bridge system.
    - A breach could result in damage to the Plant's primary recycle-water pumping station.
    - A breach could result in damage/washout to the Norfolk Southern railroad line serving the Plant.

- Indirect:
    - A breach could result in the disruption of water supply to the Plant.

Potential for Environmental Damage:

- A breach could result in the deposition of materials containing sediments and CCR waste into floodways of the Tombigbee River, including wetlands.
- A breach could result in the release of CCR wastewater into floodways of the Tombigbee River.
- A breach could result in damage/washout of the dam for the Unit #2/#3 Bottom Ash Pond causing additional environmental damage to floodways of the Tombigbee River and wetlands.

Potential for Lifeline Disruption:

- A breach could result in damage/washout to electrical transmission towers.
- A breach could result in damage/washout of the dam for the Unit #2/#3 Bottom Ash Pond causing damage/washout to the Plant's entrance roadway and bridge system.

6.0 GENERAL REMARKS AND CLOSING

The conclusions presented in this report are based upon currently accepted engineering principles, practices, and standards in the area where the services were provided. No other warranty, expressed or implied, is made.

The findings in this report were developed from visual observations made by CDG personnel during the site investigation phase, documents provided by the client and from the industry guidance available. If significant changes are made to the use of the upstream and downstream areas or capacity of the impoundments, CDG should be allowed to review our findings in light of the changes to determine if an alternate hazard potential classification is warranted.

7.0 REFERENCES

- Federal Guidelines for Dam Safety (2004): "Hazard Potential Classification System for Dams," Federal Emergency Management Agency, Interagency Committee on Dam Safety, April.

- Safety of Dams – Policy and Procedures (ER 1110-2-1156): Department of the Army, US Army Corps of Engineers, October.

- "Guideline for Assigning Hazard Potential Classification to Dams", Association of State Dam Safety Officials (ASDSO), September 2010.

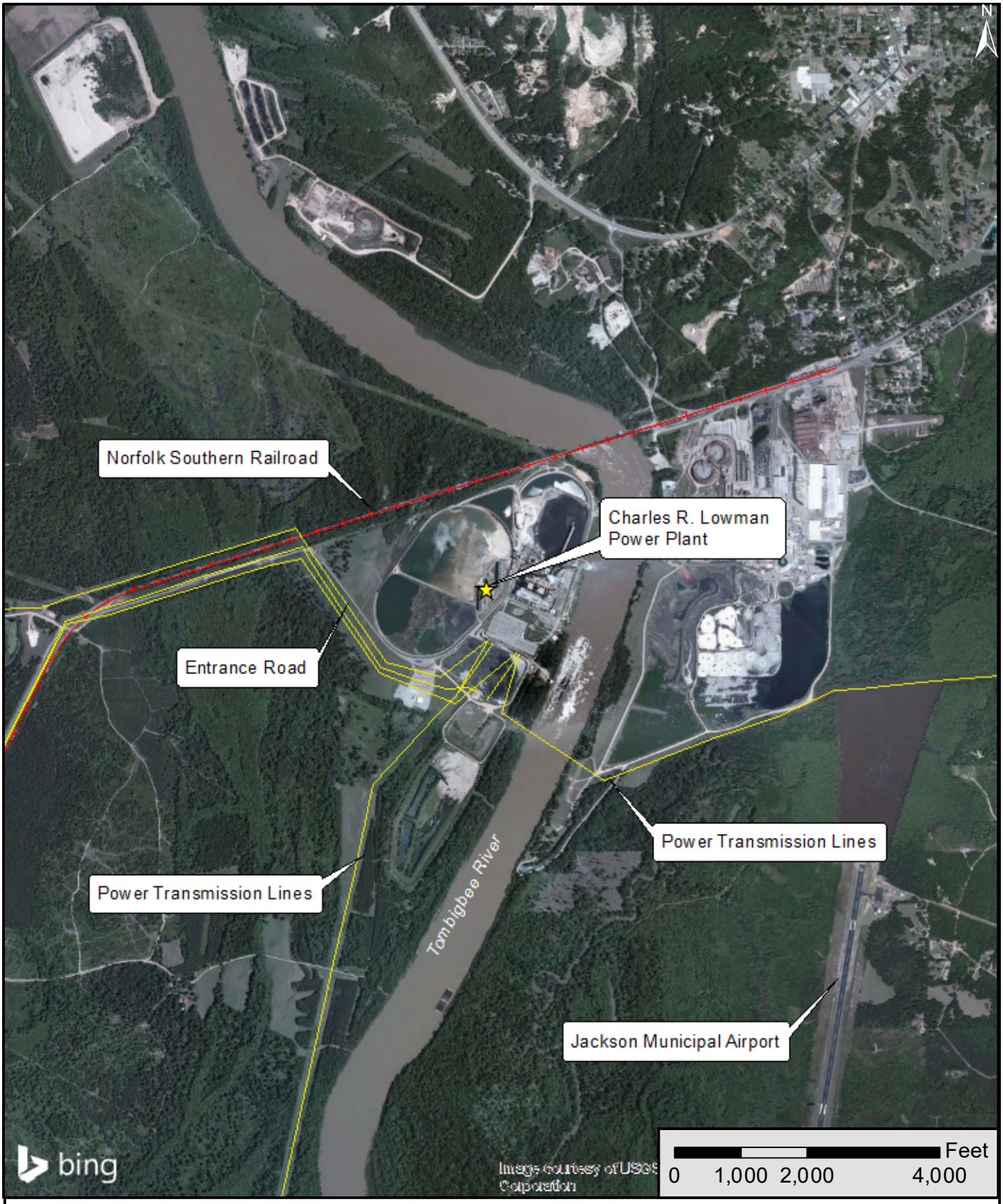

Figure 1 - Critical Infrastructure Map

Charles R. Lowman Power Plant
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Figure 2 - Aerial Map of Impoundments

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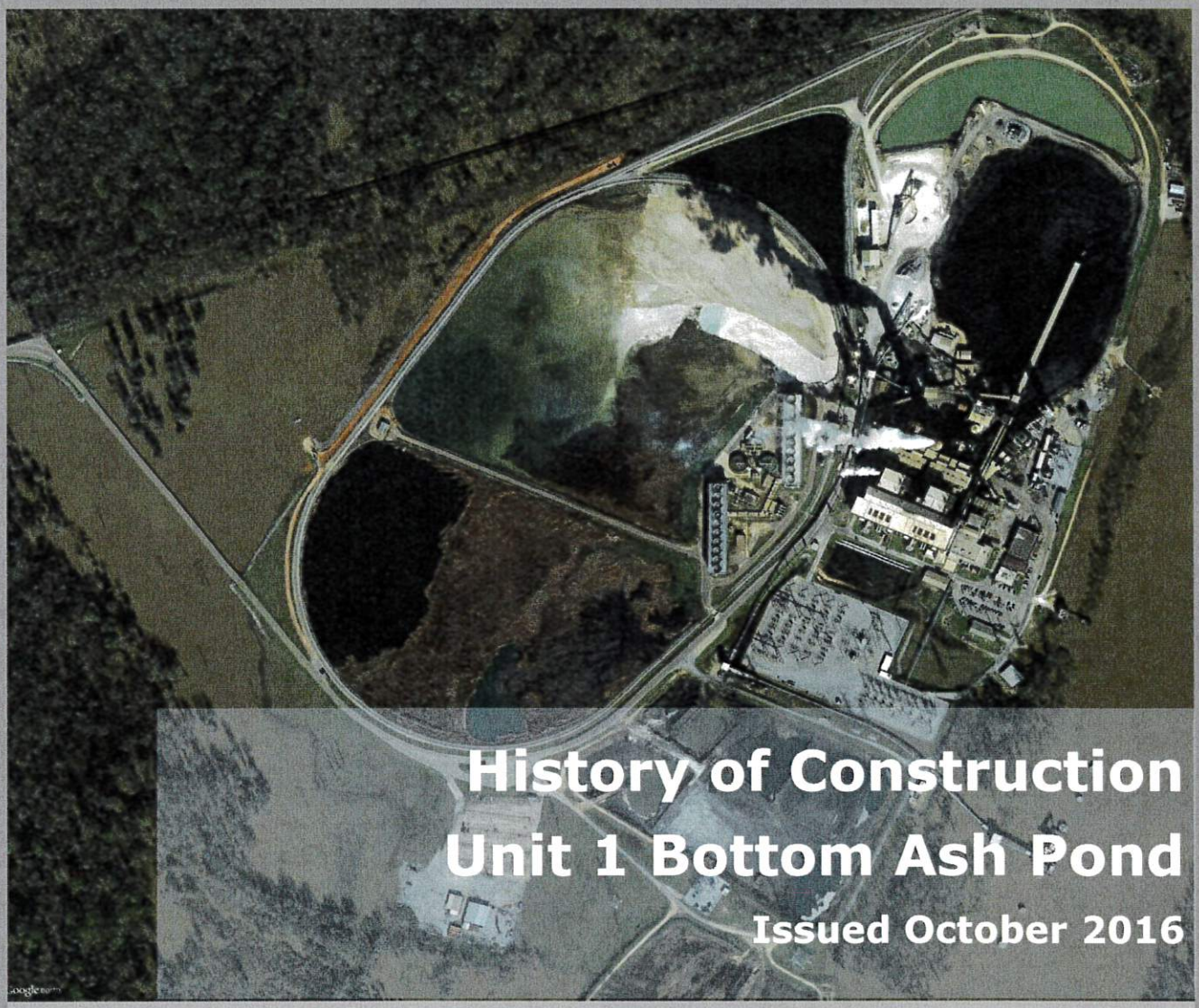
Charles R. Lowman Power Plant Leroy, AL



History of Construction Unit 1 Bottom Ash Pond

Issued October 2016

CDG Engineers and Associates, Inc.
1840 East Three Notch St.
Andalusia, AL 36421
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PowerSouth
ENERGY COOPERATIVE

REPORT
Structural Stability Summary Report
Unit 1 Bottom Ash Pond
Charles R. Lowman Power Plant

October 2016

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Appendix A

Appendix B

Appendix C

1.0 UNIT 1 BOTTOM ASH POND

1.1 Operator Information

Name: Unit 1 Bottom Ash Pond

Owner/Operator: PowerSouth Energy Cooperative, Inc.
Charles R. Lowman Power Plant
Leroy, AL 36458

State ID: None Assigned

1.2 Location

The Unit 1 Bottom Ash Pond is located in Section 18, Township 6N, Range 2 East in Washington, County Alabama and more specifically on the Western bank of the Tombigbee River. Figures 1 and 2 of this report show the location of the Pond.

1.3 Statement of Purpose

The Unit 1 Bottom Ash Pond is currently used as a settling pond for CCR wastes containing bottom ash, fly ash, and other plant wastes. Bottom ash from Unit 1 is transported to the impoundment via wet sluicing. In addition to the bottom ash sluicing operation, the Plant periodically disposes of fly ash and scrubber waste within the impoundment through similar methods.

1.4 Watershed Identification

The CCR unit lies within the Stave Creek watershed (HUC12 031602030901) as delineated by the U.S. Geologic Survey in the State of Alabama Hydrologic Unit Maps, {published 2013}. The Stave Creek watershed is approximately 23,449 acres.

1.5 Foundation and Embankment Description

The Unit 1 Bottom Ash Pond was constructed from 1965-1970 in conjunction with Unit 1 of the Charles R. Lowman Power Plant. Based on a review of the available documentation, the Unit 1 Bottom Ash Pond was constructed by excavating below the original ground surface to a depth of ±EL 10' to EL 13'. The excavated soils were used as fill to construct the impoundment embankments. Per the available information shown on the Site Grading – Sheet 2 of the Alabama Electric Cooperative, Inc. First Unit – Jackson Station construction plans created by Stanley Engineering Company circa 1965, the pre-construction ground surface elevation within the pond area ranged from ±EL 17' to EL 29'. A copy of this plan sheet can be seen in Appendix C.

The Unit 1 Bottom Ash Pond contains exterior embankments located on its northern, southern and eastern sides. The impoundment is bordered to the west by the Plant's entrance road and rail system which serves as an interior separation embankment between the Unit 1 Bottom Ash Pond and the Unit 2/3 Bottom Ash Pond. The northern embankment of the Unit 1 Bottom Ash Pond is formed by broad fill placement extending in excess of 200' from the impoundment which contains various Plant infrastructure and systems. The eastern and southern embankments of the Unit 1 Bottom Ash Pond are formed by fill placement to create an elevated containment embankment for the pond. Design details of the embankment geometries can be seen in Appendix C.

The crest of the embankments range from approximately EL 35.5' to EL 38'. Based on a review of the impoundment plans and recent topographic survey the embankment's slopes were constructed at an inclination of 2(H):1(V) and flatter. The maximum height of exterior embankments is approximately 13 feet, which is located along the eastern embankment.

Based on previously collected soil boring information (Appendix B), the Unit 1 Bottom Ash Pond embankments and underlying foundation soils consist of Fill, Low Terrace Deposits and Coastal Plain Deposits. Fill thicknesses ranged from approximately 7' to 18'. The fill soils are comprised of silty and clayey, fine to medium-grained sand and fine sandy clay. Standard Penetration Tests (SPT) in the fill indicated a variable consistency with N-values typically ranging from 4 to 23 blows per foot (bpf).

The foundation soils underlying the embankments consist of Low Terrace Deposits and Coastal Plain Deposits. Low Terrace Deposits are water-deposited soils typically resulting from meanderings of rivers and streams. The Charles R. Lowman Power Plant is located along the western bank of the Tombigbee River. Therefore, the Terrace Deposits at this site appear to have resulted from meanderings and flooding of the Tombigbee River.

Coastal Plain Deposits are naturally occurring soils that appear to have formed by the gradual deposition of sediment in an ancient marine environment. The Low Terrace and Coastal Plain Deposits consist of silty sand, sandy clay and highly plastic clay and extend to the boring termination depths ranging from approximately 40 to 60 feet below the existing ground surface. The deposits exhibited a variable consistency with SPT N-values typically ranging from 2 to greater than 22 bpf.

Additional information and analyses associated with the foundation and embankment systems is addressed in the Report of Safety Factor Assessment – Coal Combustion Residuals Impoundment Embankments, by CDG Engineers & Associates, Inc. dated October 2016.

1.6 Description of Construction Zones

Based on a review of the available documentation, the Unit 1 Bottom Ash Pond was constructed by excavating soils from below the original ground surface within the impoundment and placing these soils as fill to form the surrounding embankments. The original ground surface within the pond area ranged from ±EL 17' to EL 29'. Plans indicate that the pond was excavated to EL 10' to EL 13'.

Based on a review of the Alabama Electric Cooperative, Inc. First Unit – Jackson Station plans created by Stanley Engineering Company circa 1965, the Unit 1 Bottom Ash Pond floor and embankment appear to be constructed with native soils which are generally described in Section 1.5 and indicated in Appendix B. There have been no additional studies conducted within the impoundment to determine whether the pond was constructed with a lining system that meets the permeability performance criteria specified in the CCR rule.

Based on our review of the Alabama Electric Cooperative, Inc. First Unit – Jackson Station plans created by Stanley Engineering Company circa 1965, knowledge of the local geology, and the subsurface information obtained and presented in Appendix B of this report, CDG recommends that the Unit #1 Bottom Ash Pond be classified as an unlined impoundment and treated as such in administering the requirements of the CCR Rule.

1.7 Detailed Dimensional Drawings

Appendix C - Alabama Electric Cooperative, Inc. First Unit – Jackson Station; Stanley Engineering Company, contains detailed construction drawings for the Unit 1 Bottom Ash Pond. Additionally, Appendix A - Figures 3 through 5 contain summary dimensional drawings of the pond including cross-sectional representations of the pond which were developed through the review of the available information, previously completed topographic surveys, and the subsurface information obtained and presented in Appendix B of this report.

1.8 Existing Instrumentation

The Plant maintains normal pool information by means of site observations. The intake structure is discussed in greater detail in Section 1.10 of this report.

1.9 CCR Unit Area Capacity Curves

Below is the Stage-Storage Curve for the Unit 1 Bottom Ash Pond.

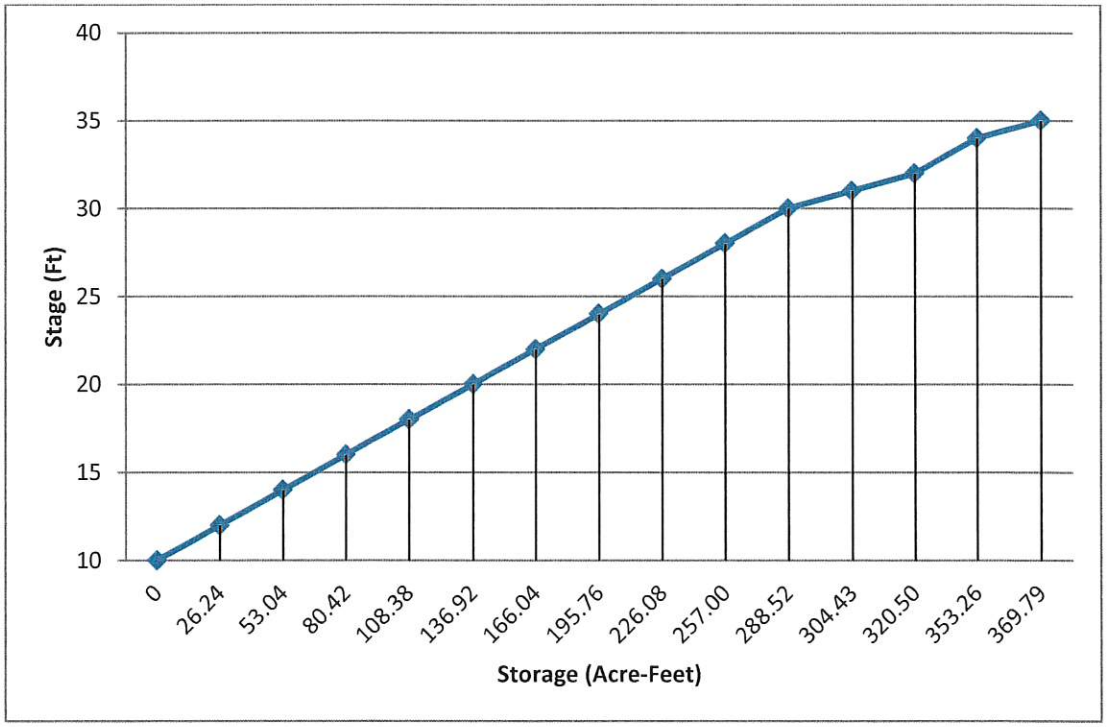

Figure 1 – Unit 1 Bottom Ash Stage-Storage Curve

1.10 Spillways and Diversion Systems

The Unit 1 Bottom Ash Decant structure is known as the Unit 1 Intake. The Unit 1 Intake consists of two suction lift pumps with a normal operating flow of 800 gpm (1.78 cfs). The pumps are fed by two floating intake hoses that allow for the removal of liquids from the laminar portion of the impounded waters. During high rainfall events, mobile suction lift pumps are utilized at the pond to supplement permanent intake structures to control the flood event and to maintain pool operating levels.

Additional information and analyses associated with the spillway and diversion systems is addressed in the Unit 1 Inflow Design Control Plan, by CDG Engineers & Associates, Inc. dated October 2016.

1.11 Surveillance, Maintenance, and Repair

Plant personnel conduct surveillance, maintenance, and repair items which are identified through the inspection on set intervals.

1.12 Prior Structural Instability

-None Noted.

2.0 GENERAL REMARKS AND CLOSING

The findings in this report were developed based on documents provided by the Owner and from the limited information obtained through field and laboratory testing programs. If significant changes are made to the use, capacity or geometry of the embankments and/or impoundments, CDG should be allowed to review our findings in light of the changes to determine if additional testing and revised conclusions are needed.

This report is intended to meet the requirements of the CFR 40.257.73 (4) for the History of Construction report for the Unit 1 Bottom Ash Pond.

The conclusions, analyses, and recommendations presented in this report are based upon information provided, currently accepted engineering principles, practices, and existing testing standards in the area where the services were provided. No other warranty, expressed or implied, is made.

Appendix A

Figure 1- Unit 1 Bottom Ash Pond Location Map

Figure 2 – Unit 1 Aerial Map of Impoundments

Figure 3 – Unit 1 Bottom Ash Pond Impoundment Overview

Figure 4 – Unit 1 Bottom Ash Pond Section W-W'

Figure 5 – Unit 1 Bottom Ash Pond Section X-X'

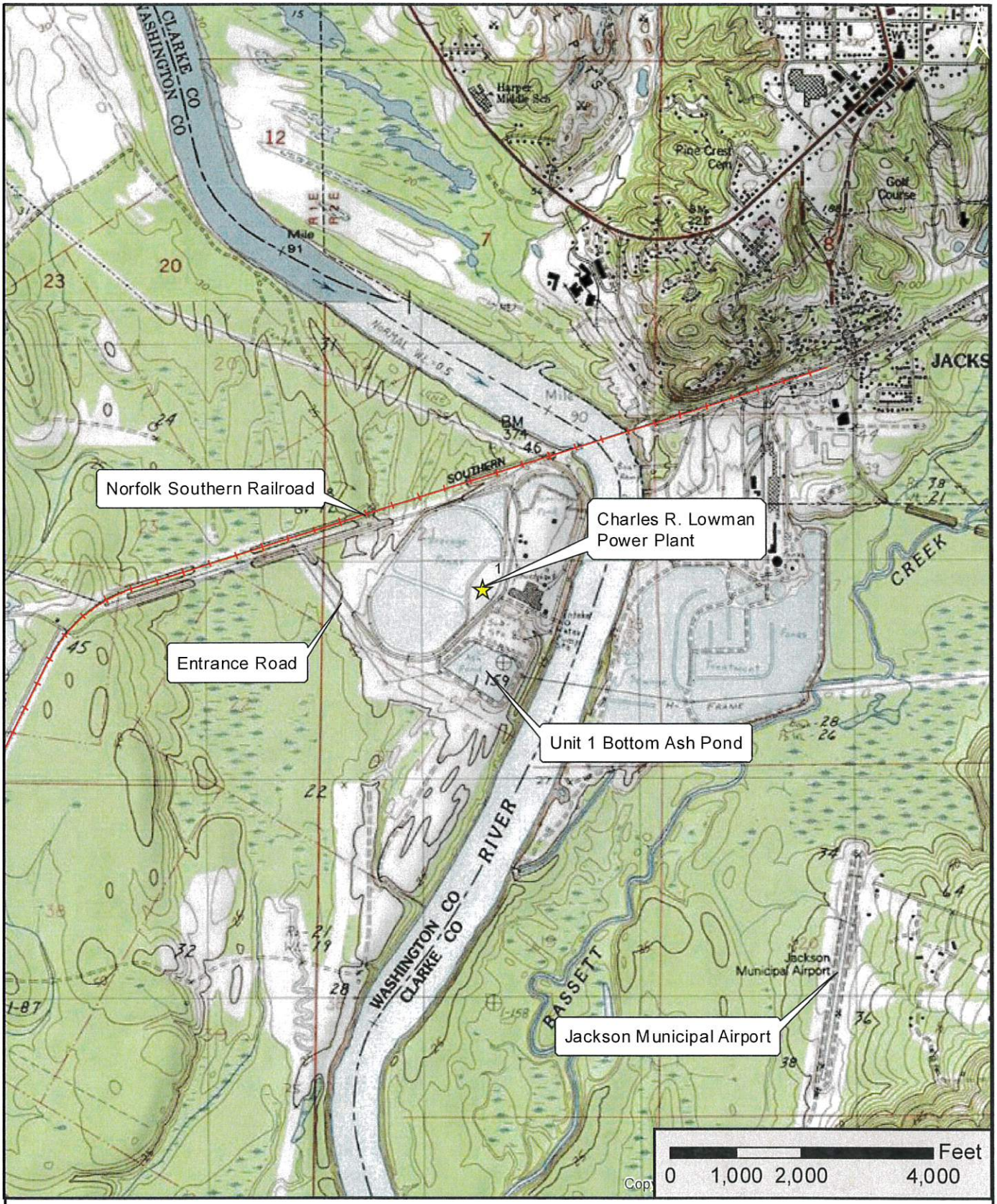

Figure 1 - Unit 1 Bottom Ash Pond Location Map

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PowerSouth Energy Cooperative
Leroy, AL

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Figure 2 - Unit 1 Aerial Map of Impoundments

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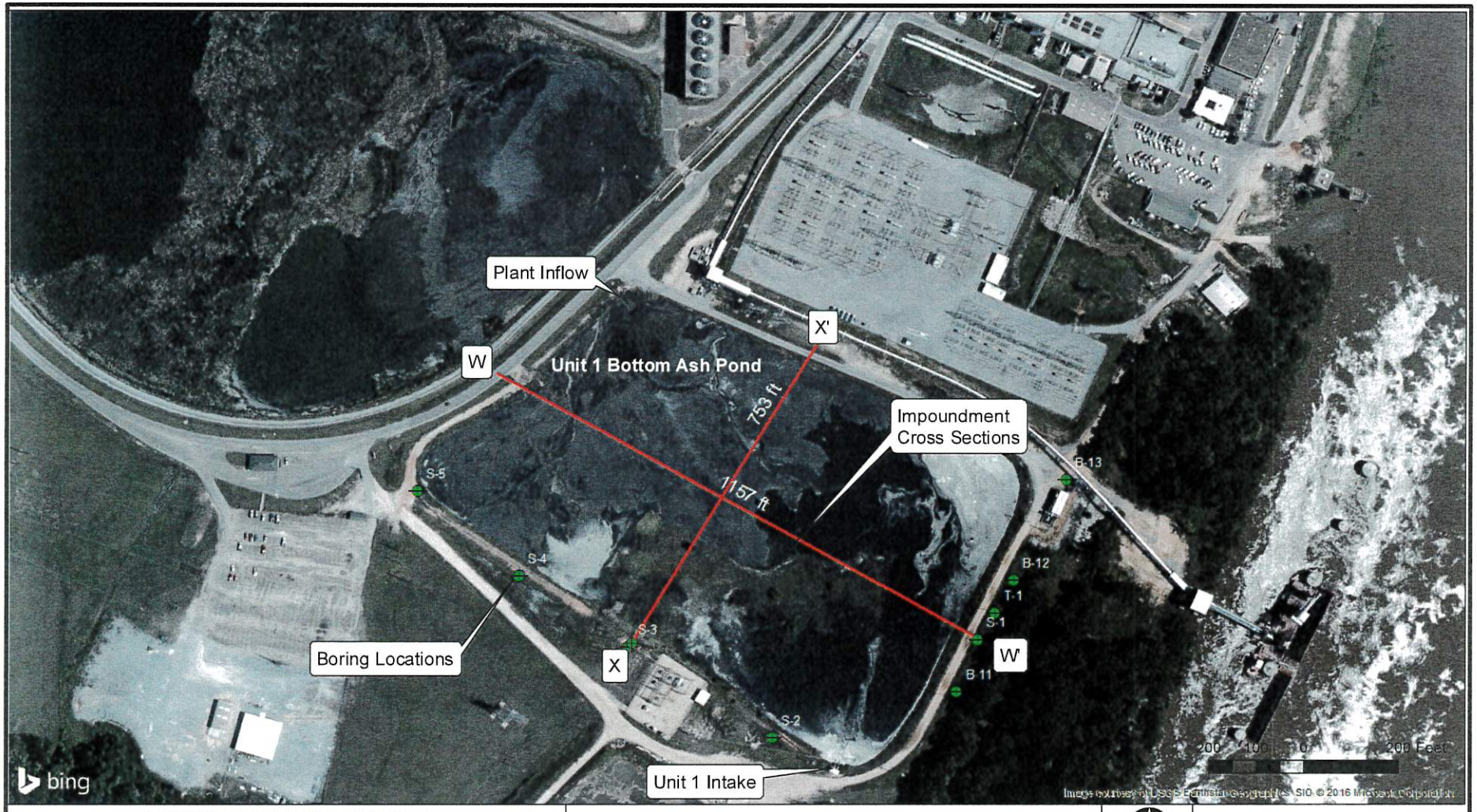

Figure 3 - Unit 1 Bottom Ash Pond
Impoundment Overview

Charles R. Lowman Power Plant

Leroy, AL

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Sheet No.	Fig. 3
Drawn By:	JRA
Checked by:	RDW
Date:	October 2016

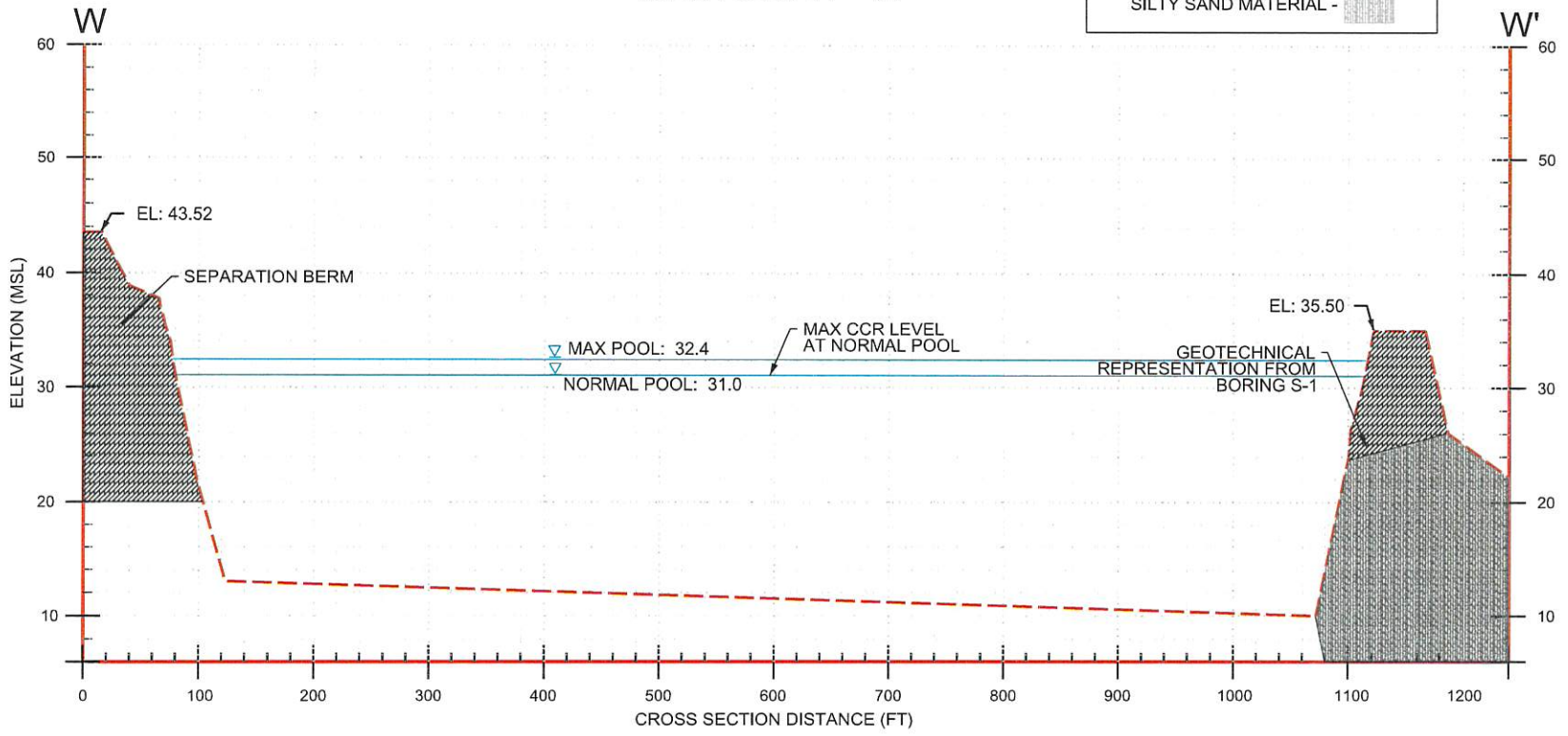

Figure 4 - Unit 1 Bottom Ash Pond Section W-W'
Charles R. Lowman Power Plant
Leroy, AL

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Fig.4

Scale: H:1"=100'; V:1"=10'
Drawn By: JRA
Checked by: RDW
Date: October 2016

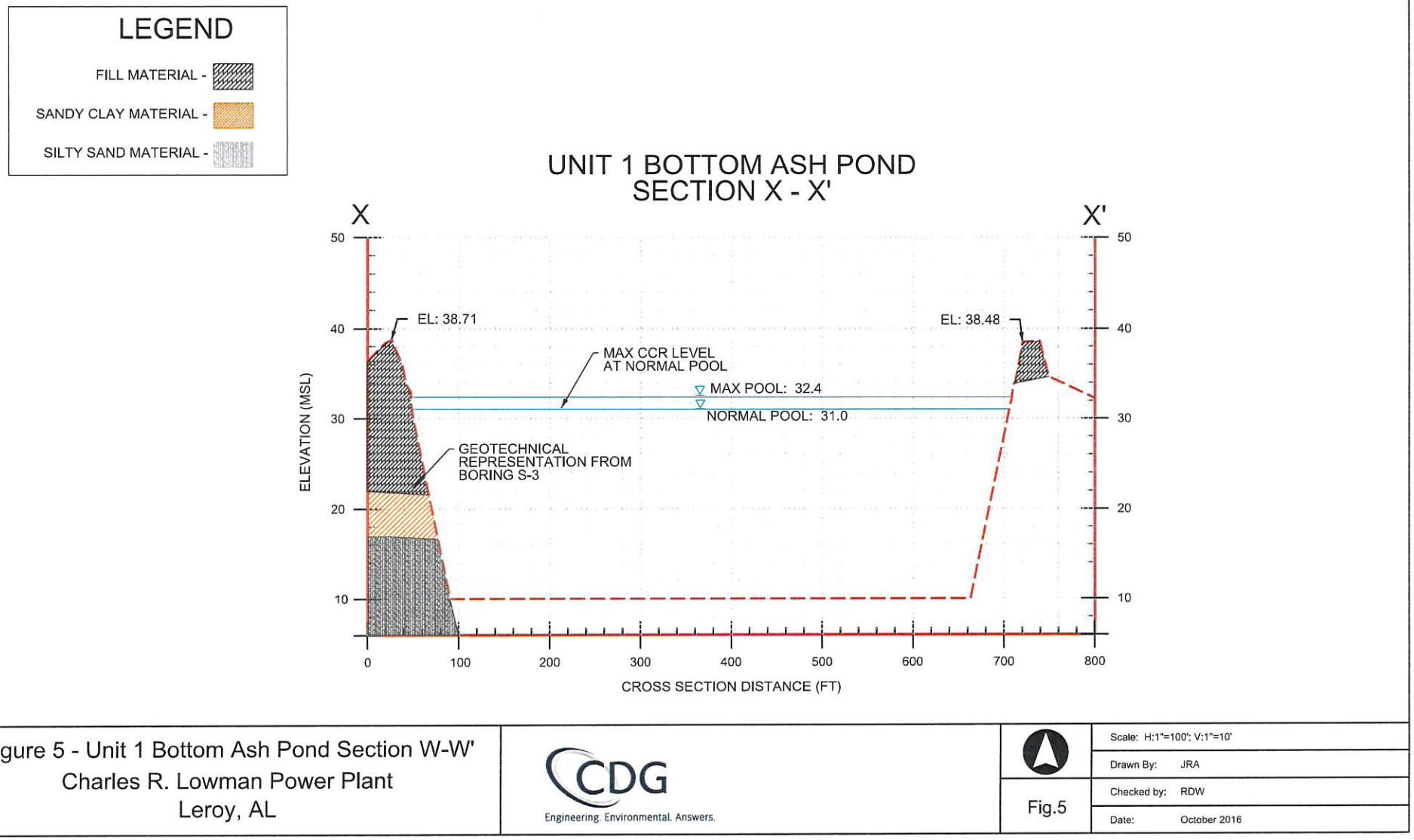

Figure 5 - Unit 1 Bottom Ash Pond Section W-W'
Charles R. Lowman Power Plant
Leroy, AL

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Fig.5

Scale: H:1"=100'; V:1"=10'
Drawn By: JRA
Checked by: RDW
Date: October 2016

Appendix B

Boring Logs

CDG Engineers & associates

Albertville, AL
Tel:(256) 891-3458

Andalusia, AL
Tel:(334) 222-9431

Birmingham, AL
Tel:(205) 733-9431

Hoover, AL
Tel:(205) 463-2600

Defuniak Springs, FL
Tel:(850) 892-0225

Dothan, AL
Tel:(334) 677-9431

BORING LOG

Project Name:	Berm Stability Evaluation - Lowman Power Plant
Project Number:	060921201
Boring Number:	B-11
Date Drilled:	July 13, 2009

Notes: SS = Split Spoon

PPqu = Pocket Penetrometer Unconfined Compressive Strength

Depth (feet)	Approx. Elev. (feet)	Graphic Scale	MATERIAL DESCRIPTION	TYPE	BLOWS/ 6 INCHES	N	CORE REC. (%)	RQD (%)	REMARKS
0	39		Very stiff, orange and tan, fine sandy CLAY	SS	4-7-10	17			LL=39, PL=18, PI=21 Fines Content = 55.4% USCS = CL
5	34		... stiff	SS	3-4-4	9			LL=36, PL=20, PI=16 Fines Content = 56.5% USCS = CL
			Medium dense, brown, clayey fine to medium SAND with gravel	SS	6-9-14	23			
10	29		...with clay (Fill)	SS	8-8-9	17			▽ Groundwater encountered at +/-13 feet on 8/4/2009.
15	24		Soft, grey, silty CLAY with fine sand	SS	2-2-3	5			LL=40, PL=17, PI=23 Fines Content = 91.6% USCS = CL PPqu < 0.25 tsf
20	19		...medium	SS	2-3-3	6			
25	14		Soft, grey, fine sandy CLAY	SS	2-2-3	5			LL=28, PL=20, PI=8 Fines Content = 67.2% USCS = CL MC = 35.3% PPqu < 0.25 tsf

CDG Engineers & associates

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Andalusia, AL
Tel:(334) 222-9431

Birmingham, AL
Tel:(205) 733-9431

Hoover, AL
Tel:(205) 463-2600

Defuniak Springs, FL
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BORING LOG

Project Name:	Berm Stability Evaluation - Lowman Power Plant
Project Number:	060921201
Boring Number:	B-11
Date Drilled:	July 13, 2009 Page 2 of 2

Notes: SS = Split Spoon

Depth (feet)	Approx. Elev. (feet)	Graphic Scale	MATERIAL DESCRIPTION	TYPE	BLOWS/ 6 INCHES	N	CORE REC. (%)	RQD (%)	REMARKS
25	14		Soft, grey, fine sandy CLAY						
			Loose, brown, silty fine SAND	SS	3-3-3	6			MC = 26.2%
30	9								
			...very loose	SS	1-1-1	2			LL=21, PL=20, PI=1 Fines Content = 19.6% USCS = SM MC = 36.9%
35	4								
			...loose (Low Terrace Deposits)	SS	7-5-4	9			MC = 27.1%
40	-1		Boring Terminated at 40 feet						
45	-6								
50	-11								Piezometer installed at the time of boring.

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BORING LOG

Project Name:	Berm Stability Evaluation - Lowman Power Plant
Project Number:	060921201
Boring Number:	B-12
Date Drilled:	July 16, 2009

Notes: SS = Split Spoon
PPqu = Pocket Penetrometer Unconfined Compressive Strength

Depth (feet)	Approx. Elev. (feet)	Graphic Scale	MATERIAL DESCRIPTION	TYPE	BLOWS/ 6 INCHES	N	CORE REC. (%)	RQD (%)	REMARKS
0	39		Crushed aggregate with silty SAND						
			Medium dense, orange and tan, silty fine to medium SAND	SS	4-5-6	11			
5	34			SS	7-11-11	22			
			(Fill)						
			Medium dense, brown, silty fine to medium SAND	SS	5-8-9	17			▽ Groundwater encountered at 10 feet at time of boring
10	29								
			...grey	SS	7-7-10	17			
15	24								
			Medium, grey, fine sandy CLAY	SS	4-4-4	8			PPqu = 0.75 tsf
20	19								
			...same	SS	3-4-3	7			
25	14								

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BORING LOG

Project Name:	Berm Stability Evaluation - Lowman Power Plant
Project Number:	060921201
Boring Number:	B-12
Date Drilled:	July 16, 2009

Notes: SS = Split Spoon
PPqu = Pocket Penetrometer Unconfined Compressive Strength

Depth (feet)	Approx. Elev. (feet)	Graphic Scale	MATERIAL DESCRIPTION	TYPE	BLOWS/ 6 INCHES	N	CORE REC. (%)	RQD (%)	REMARKS
25	14								
			...very soft	SS	2-1-2	3			PPqu < 0.25 tsf
30	9								
			...soft	SS	2-2-3	5			PPqu < 0.25 tsf
35	4								
			Medium dense, grey, clayey fine to medium SAND (Low Terrace Deposits)	SS	7-9-13	22			
40	-1		Boring Terminated at 40 feet						
45	-6								
50	-11								Boring backfilled with grout upon completion.

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BORING LOG

Project Name:	Berm Stability Evaluation - Lowman Power Plant
Project Number:	060921201
Boring Number:	B-13
Date Drilled:	July 16, 2009

Notes: SS = Split Spoon
PPqu = Pocket Penetrometer Unconfined Compressive Strength
UD = Undisturbed Sample

Depth (feet)	Approx. Elev. (feet)	Graphic Scale	MATERIAL DESCRIPTION	TYPE	BLOWS/ 6 INCHES	N	CORE REC. (%)	RQD (%)	REMARKS
0	39		Crushed aggregate with silty SAND						
			Stiff, red, fine sandy CLAY	SS	5-7-8	15			LL=42, PL=19, PI=23 Fines Content = 51.6% USCS = CL MC = 13.6%
5	34		...hard, with gravel	SS	26-28-30	50+			MC = 11.0%
			(Fill)						
			Medium dense, tan, silty fine to medium SAND		10-10-10	20			MC = 20.2% ▽ Groundwater encountered at 10 feet at time of boring
10	29			UD					
				SS	3-3-3	6			No Recovery
15	24								
			Very soft, grey, fine sandy CLAY	SS	1-1-2	3			▽ Groundwater encountered at +/-19 feet on 8/4/2009. MC = 34.0% PPqu < .025 tsf
20	19								
			Very loose, grey, silty fine to medium SAND	SS	2-1-2	3			MC = 31.5%
25	14								

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BORING LOG

Project Name:	Berm Stability Evaluation - Lowman Power Plant
Project Number:	060921201 Phase 3
Boring Number:	B-13
Date Drilled:	July 16, 2009 Page 2 of 2

Notes: SS = Split Spoon

Depth (feet)	Approx. Elev. (feet)	Graphic Scale	MATERIAL DESCRIPTION	TYPE	BLOWS/ 6 INCHES	N	CORE REC. (%)	RQD (%)	REMARKS
25	14								
			Very loose, grey, silty fine to medium SAND	SS	2-2-2	4			MC = 34.9%
30	9								
			Loose, brown, fine SAND with silt	SS	3-5-5	10			LL=NP, PL=NP, PI=NP Fines Content = 10.8% USCS = SM MC = 26.0%
35	4								
			...grey (Low Terrace Deposits)	SS	4-4-4	8			MC = 33.4%
40	-1		Boring Terminated at 40 feet						
45	-6								
50	-11								Piezometer installed at the time of boring.

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Huntsville, AL

Boring S-1

Project Name: Lowman Berm Stability Analysis
Project Location: Leroy, Alabama Hammer Type: Automatic
CDG Project Number: 221141100 Method: 3.25"-ID HSA
Date Drilled: 12/1/2011 Approx. Ground Elevation: +/-39 feet

Notes:
+/- 6" of sand/clay at ground surface.

☒ - Split Spoon Sample ■ - Undisturbed Sample

Depth (ft.)	Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
			Loose, reddish brown, silty fine to medium SAND with rock fragments	☒	4-4-3 (7)								
	35.0												
5			Very soft, tan and red, fine SAND and CLAY	☒	0-1-1 (2)		42	17	25		49.4		USCS = SC
			... brown	☒	1-1-2 (3)								
	30.0			☒	2-3-4 (7)								
10			... medium	■									
	25.0		brown and grey (Fill)	☒	2-3-3 (6)								▽ Groundwater at +/-EL25 ft. on 12/1/2011.
15													
	20.0		Very loose, grey, silty fine SAND	☒	0-2-2 (4)								
20													
	15.0		... loose, grey and brown	☒	0-2-3 (5)		NP	NP	NP		42.3		USCS = SM
25													
	10.0		... very loose	☒	1-1-1 (2)								

(Continued Next Page)

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Boring S-1

Project Name: Lowman Berm Stability Analysis
Project Location: Leroy, Alabama Hammer Type: Automatic
CDG Project Number: 221141100 Method: 3.25"-ID HSA
Date Drilled: 12/1/2011 Approx. Ground Elevation: +/-39 feet

Notes:
+/- 6" of sand/clay at ground surface.

☒ - Split Spoon Sample ■ - Undisturbed Sample

Depth (ft.)	Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
			Very loose, grey and brown, silty fine SAND	■									(No Recovery)
35	5.0		...same	☒	0-3-1 (4)								
40	0.0		...loose, grey and tan	☒	1-3-4 (7)								
45	-5.0		... very loose	☒	1-1-3 (4)								
50	-10.0		... loose	☒	1-3-4 (7)								
55	-15.0		... medium dense	☒	4-7-6 (13)		NP	NP	NP		21.4		USCS = SM
													Piezometer Installed.
	-20.0		...tan and light grey (Coastal Plain Deposits)	☒	6-10-8 (18)								

Boring terminated at 60.0 feet.

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Boring S-2

Project Name: Lowman Berm Stability Analysis
Project Location: Leroy, Alabama Hammer Type: Automatic
CDG Project Number: 221141100 Method: 3.25"-ID HSA
Date Drilled: 11/30/2011 Approx. Ground Elevation: +/-38 feet

Notes:
+/- 3" of topsoil at ground surface.

PPqu = Unconfined Compressive Strength.

☒ - Split Spoon Sample ■ - Undisturbed Sample

Depth (ft.)	Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
	35.0		Medium dense, brown and tan, silty fine to medium SAND	X	6-6-6 (12)								
5			... loose	X	3-4-4 (8)								
			Stiff, brown CLAY with fine sand	X	4-4-10 (14)							1.0	
	30.0												
10			... same	X	3-4-6 (10)							1.0	
			(Fill)										
	25.0		Medium, grey CLAY with fine sand	X	3-2-5 (7)								
15													
	20.0												
20			...very soft	X	0-0-3 (3)							<0.25	
	15.0		Very loose, brown, silty fine to medium SAND	X	2-1-2 (3)								▽ Groundwater at +/-EL14 ft. on 11/30/2011.
25													
	10.0		... loose	X	2-3-5 (8)						15.4		USCS=SM

(Continued Next Page)

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Boring S-2

Project Name: Lowman Berm Stability Analysis
Project Location: Leroy, Alabama Hammer Type: Automatic
CDG Project Number: 221141100 Method: 3.25"-ID HSA
Date Drilled: 11/30/2011 Approx. Ground Elevation: +/-38 feet

Notes:
+/- 3" of topsoil at ground surface.

PPqu = Unconfined Compressive Strength.

☒ - Split Spoon Sample ■ - Undisturbed Sample

Depth (ft.)	Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
			Loose, light brown, silty fine to medium SAND										
	5.0												
35			...same	☒	2-4-2 (6)								
	0.0												
40			... medium dense, light brown and grey	☒	2-5-9 (14)								
	-5.0												
45			... light grey and tan	☒	4-8-10 (18)								
	-10.0												Borehole backfilled with grout upon completion.
50			... tan (Coastal Plain Deposits)	☒	5-7-15 (22)								
			Boring terminated at 50.0 feet.										
	-15.0												
55													
	-20.0												

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Boring S-3

Project Name: Lowman Berm Stability Analysis
Project Location: Leroy, Alabama Hammer Type: Automatic
CDG Project Number: 221141100 Method: 3.25"-ID HSA
Date Drilled: 11/30/2011 Approx. Ground Elevation: +/-38 feet

Notes:
+/- 4" of topsoil at ground surface.

PPqu = Unconfined Compressive Strength.

☒ - Split Spoon Sample ■ - Undisturbed Sample

Depth (ft.)	Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
	35.0		Medium dense, red and tan, silty fine to medium SAND with numerous organics		6-5-8 (13)					14			
5			Medium, brown and tan, fine sandy CLAY		4-6-6 (12)					27		0.75	
	30.0		...light brown and light grey		1-3-3 (6)		41	17	24		83.0	0.75	USCS = CL
10			...brown and grey		2-2-3 (5)					24			
	25.0		... grey		0-2-3 (5)								
15			(Fill)										(No Recovery) ▽ Groundwater at +/-EL21 ft. on 11/30/2011.
	20.0		Very soft, grey, fine sandy CLAY		0-0-2 (2)					33		<0.25	
20													
	15.0		Loose, brown and grey, fine to medium SAND with trace silt		2-3-3 (6)					25			▽ Groundwater at +/-EL14 ft. on 5/1/2012.
25													
	10.0		...very loose, light brown and light grey		2-2-2 (4)					25			

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Boring S-3

Project Name: Lowman Berm Stability Analysis
Project Location: Leroy, Alabama Hammer Type: Automatic
CDG Project Number: 221141100 Method: 3.25"-ID HSA
Date Drilled: 11/30/2011 Approx. Ground Elevation: +/-38 feet

Notes:
+/- 4" of topsoil at ground surface.
PPqu = Unconfined Compressive Strength.
☒ - Split Spoon Sample ■ - Undisturbed Sample

Depth (ft.)	Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
			Very loose, tan, fine to medium SAND with trace silt										
	5.0												
35			...loose	X	3-4-3 (7)		NP	NP	NP	28	4.1		USCS = SM
	0.0												
40			...very loose	X	1-1-4 (5)					27			
	-5.0												
45			...same	X	1-1-2 (3)								
	-10.0												
50			...loose, light grey and tan (Coastal Plain Deposits)	X	3-4-4 (8)		NP	NP	NP	16	4.5		USCS = SM Piezometer Installed.
			Boring terminated at 50.0 feet.										
	-15.0												
55													
	-20.0												

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Boring S-4

Project Name: Lowman Berm Stability Analysis
Project Location: Leroy, Alabama Hammer Type: Automatic
CDG Project Number: 221141100 Method: 3.25"-ID HSA
Date Drilled: 11/30/2011 Approx. Ground Elevation: +/-38 feet

Notes:
+/- 4" of topsoil at ground surface.

PPqu = Unconfined Compressive Strength.

☒ - Split Spoon Sample ■ - Undisturbed Sample

Depth (ft.)	Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
	35.0		Medium dense, red and tan, silty fine to medium SAND	☒	5-5-8 (13)								
5			...loose, brown and grey	☒	3-3-4 (7)								
	30.0		... same	☒	2-2-4 (6)								
10			Medium, grey and brown, fine sandy CLAY	☒	2-3-5 (8)							1.25	
	25.0		... same	☒	2-4-5 (9)							1.0	
15			(Fill)										
	20.0		Medium, grey and brown CLAY with fine sand	☒	2-2-3 (5)								
20													
	15.0		...soft	☒	0-1-2 (3)								▽ Groundwater at +/-EL12 ft. on 11/30/2011.
25													
	10.0		Loose, brown and grey, clayey fine to medium SAND with trace rock fragments	☒	1-3-2 (5)								

(Continued Next Page)

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Boring S-4

Project Name: Lowman Berm Stability Analysis
Project Location: Leroy, Alabama Hammer Type: Automatic
CDG Project Number: 221141100 Method: 3.25"-ID HSA
Date Drilled: 11/30/2011 Approx. Ground Elevation: +/-38 feet

Notes:
+/- 4" of topsoil at ground surface.

PPqu = Unconfined Compressive Strength.

☒ - Split Spoon Sample ■ - Undisturbed Sample

Depth (ft.)	Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
			Loose, brown and grey, clayey fine to medium SAND with trace rock fragments										
	5.0												
35			... tan	☒	2-4-4 (8)								
	0.0												
40			Very loose, brown and grey, fine to medium SAND with trace silt	☒	3-2-2 (4)						4.1		
	-5.0												
45			...medium dense	☒	12-8-10 (18)								
	-10.0												Borehole backfilled with grout upon completion.
50			... loose, light grey and tan (Coastal Plain Deposits)	☒	7-6-4 (10)								
			Boring terminated at 50.0 feet.										
	-15.0												
55													
	-20.0												

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Boring S-5

Project Name: Lowman Berm Stability Analysis
Project Location: Leroy, Alabama Hammer Type: Automatic
CDG Project Number: 221141100 Method: 3.25"-ID HSA
Date Drilled: 11/29/2011 Approx. Ground Elevation: +/-40 feet

Notes:
+/- 4" of topsoil at ground surface.

☒ - Split Spoon Sample ■ - Undisturbed Sample

Depth (ft.)	Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
			Medium dense, red, brown and tan, silty fine to medium SAND with trace organics		7-8-11 (19)								
5	35.0		... dark grey and light brown		6-5-6 (11)								
			...very loose, brown and grey		1-2-2 (4)								
10	30.0		...grey		1-2-2 (4)								
			... loose, grey and brown		4-3-3 (6)								
15	25.0		(Fill)										
			Medium, grey and brown CLAY with fine sand		0-3-2 (5)								
20	20.0												
			Loose, light grey and tan, silty fine SAND		2-2-5 (7)								
25	15.0												
			... very loose, grey and tan		1-2-2 (4)								

(Continued Next Page)

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Boring S-5

Project Name: Lowman Berm Stability Analysis
Project Location: Leroy, Alabama Hammer Type: Automatic
CDG Project Number: 221141100 Method: 3.25"-ID HSA
Date Drilled: 11/29/2011 Approx. Ground Elevation: +/-40 feet

Notes:
+/- 4" of topsoil at ground surface.

☒ - Split Spoon Sample ■ - Undisturbed Sample

Depth (ft.)	Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
			Very loose, grey and tan, silty fine SAND										
35	5.0		... loose, tan	☒	3-4-6 (10)								
40	0.0		... medium dense	☒	5-6-9 (15)								
45	-5.0		...same	☒	5-6-13 (19)								
50	-10.0		... same (Coastal Plain Deposits)	☒	13-12-13 (25)								Borehole caved prior to groundwater measurement.Borehole backfilled with grout upon completion.
			Boring terminated at 50.0 feet.										
55	-15.0												

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Boring T-1

Project Name: Lowman CCR Rule Phase I
Project Location: Leroy,AL Hammer Type: Automatic
CDG Project Number: 061521207 Method: Diedrich D-50 Mud Rotary
Date Drilled: 8/3/2016 Approx. Ground Elevation: +/-39.0 feet

Notes:
No topsoil present at ground surface

☒ - Split Spoon Sample

Depth (ft.)	Approx. Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
5	35.0		Loose, reddish brown, silty fine to medium SAND with rock fragment	X	3-3-2 (5)								
10	30.0		Very soft, brown, fine sandy CLAY with rock fragment	X	2-2-2 (4)							<0.25	
15	25.0		...soft	X	2-2-2 (4)		29	18	11		72.3	0.5	USCS=CL
			(Fill)										
20	20.0		Soft, brown, sandy CLAY with trace organics	X	2-3-4 (7)							0.5	
25	15.0		...very soft	X	1-0-0 (WOH)		42	21	21		77.8	0.25	USCS=CL

(Continued Next Page)

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Boring T-1

Project Name: Lowman CCR Rule Phase I
Project Location: Leroy,AL Hammer Type: Automatic
CDG Project Number: 061521207 Method: Diedrich D-50 Mud Rotary
Date Drilled: 8/3/2016 Approx. Ground Elevation: +/-39.0 feet

Notes:
No topsoil present at ground surface

☒ - Split Spoon Sample

Depth (ft.)	Approx. Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
			...very soft *(Continued from previous page)*										
	10.0												
30			...with fine sand	X	0-0-0 (WOH)							0.25	
	5.0												
35			Very loose, gray and tan, fine sandy SILT	X	1-1-1 (2)		NP	NP	NP		54.9		USCS=ML
	0.0												
40			Very soft, gray and brown, fine sandy CLAY	X	0-0-0 (WOH)		30	21	9		66.8	0.25	USCS=CL
	-5.0												
45			Loose, gray, silty fine SAND	X	4-4-4 (8)								
	-10.0												
50			...medium dense	X	5-7-11 (18)								

(Continued Next Page)

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Boring T-1

Project Name: Lowman CCR Rule Phase I
Project Location: Leroy,AL Hammer Type: Automatic
CDG Project Number: 061521207 Method: Diedrich D-50 Mud Rotary
Date Drilled: 8/3/2016 Approx. Ground Elevation: +/-39.0 feet

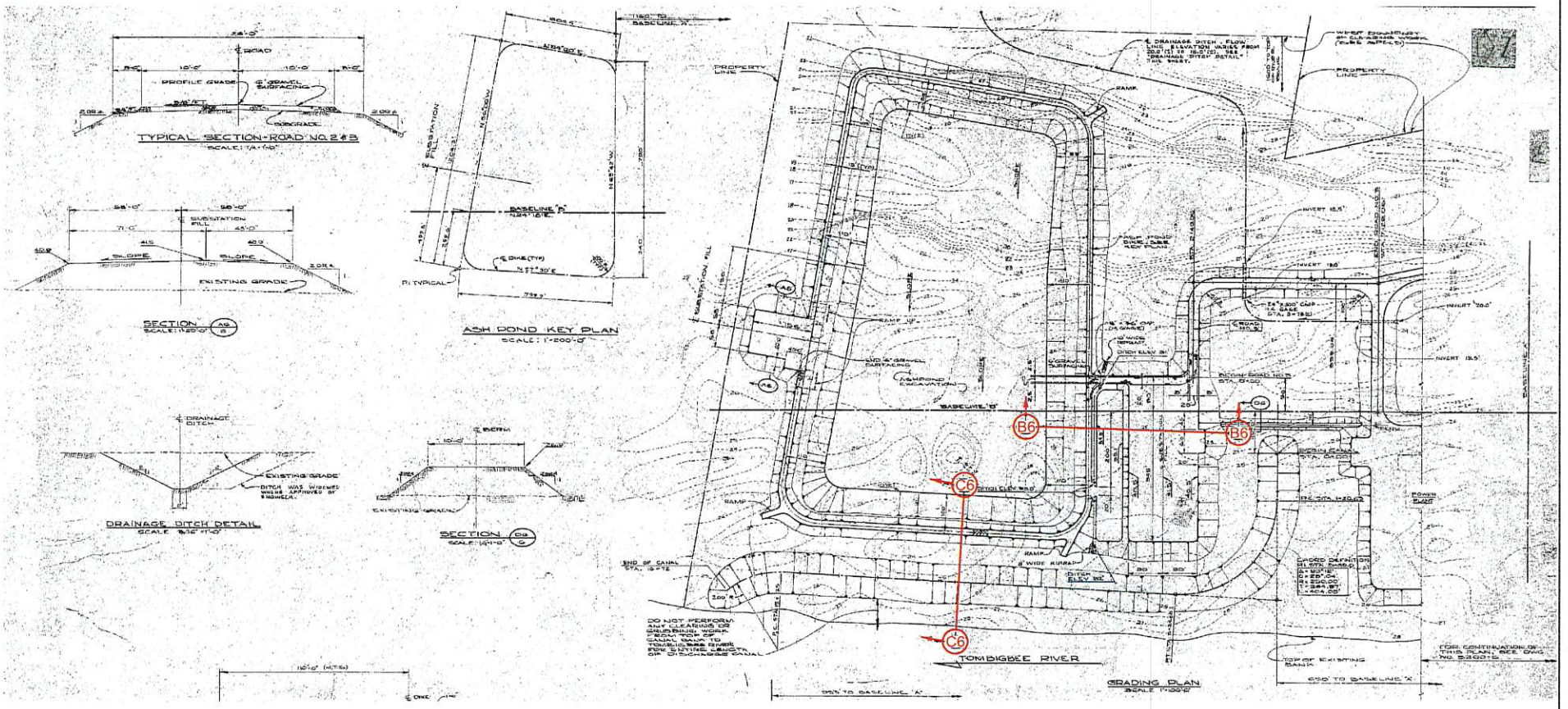
Notes:
No topsoil present at ground surface

☒ - Split Spoon Sample

Depth (ft.)	Approx. Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
			...medium dense *(Continued from previous page)*										
	-15.0												
55			...same	X	5-3-8 (11)								
	-20.0		...loose, with few pebbles (Coastal Plain Deposits)	X	3-2-7 (9)								Borehole backfilled with grout upon completion.
60			Boring terminated at 60.0 feet.										
	-25.0												
65													
	-30.0												
70													
	-35.0												
75													

Appendix C

SHEET SHOWN IS EXCERPT FROM THE ALABAMA ELECTRIC COOPERATIVE, INC. FIRST UNIT, JACKSON STATION PLAN ASSEMBLY PREPARED BY STANLEY ENGINEERING COMPANY CIRCA 1965. FROM THE SITE GRADING-SHEET 2 PLAN SHEET.



Appendix C - Plan Copy of
Alabama Electric Cooperative, Inc.
First Unit -Jackson Station
(Stanley Engineering Company, 1965)

CDG
Engineering. Environmental. Answers.

1840 E. Three Notch St.
Andalusia, AL 36420
(334) 222-9431
(334) 222-4018 FAX
www.cdge.com

C

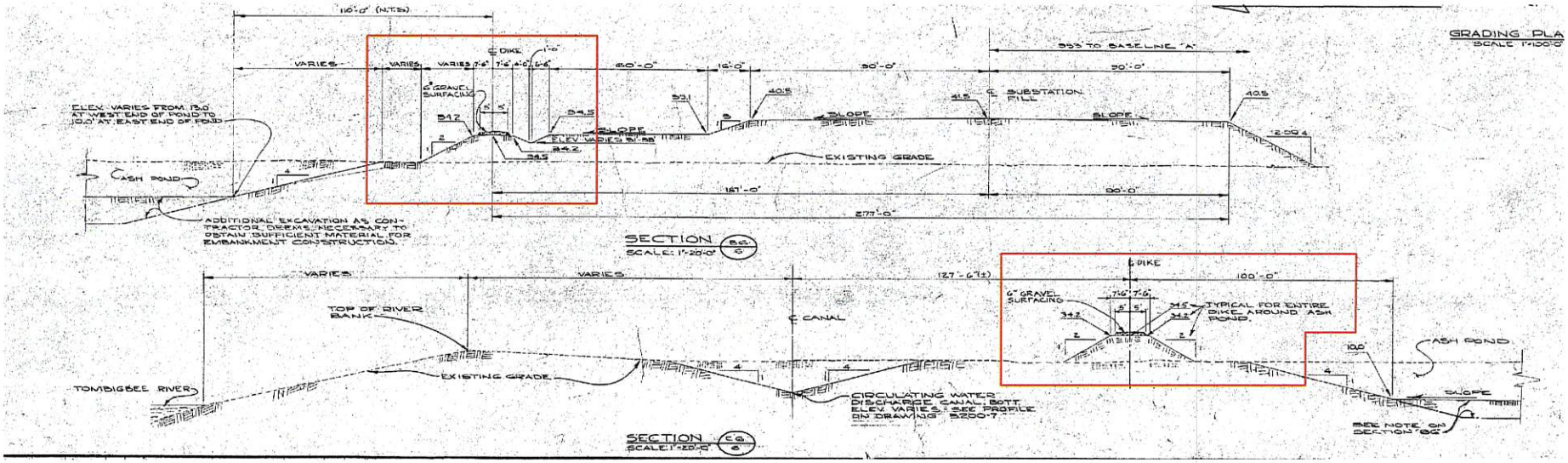
NOT TO SCALE

Drawn By: JRA

Checked by: RDW

Date: OCTOBER 2016

SHEET SHOWN IS EXCERPT FROM THE ALABAMA ELECTRIC COOPERATIVE, INC. FIRST UNIT, JACKSON STATION PLAN ASSEMBLY PREPARED BY STANLEY ENGINEERING COMPANY CIRCA 1965. FROM THE SITE GRADING-SHEET 2 PLAN SHEET.



Appendix C - Plan Copy of Alabama Electric Cooperative, Inc. First Unit -Jackson Station (Stanley Engineering Company, 1965)	CDG Engineering. Environmental. Answers.	1840 E. Three Notch St. Andalusia, AL 36420 (334) 222-9431 (334) 222-4018 FAX www.cdge.com	C	NOT TO SCALE Drawn By: JRA Checked by: RDW Date: OCTOBER 2016

PowerSouth Energy Cooperative

Charles R. Lowman Power Plant Leroy, AL

History of Construction Unit 2/3 Bottom Ash Pond

Issued October 2016

CDG Engineers and Associates, Inc.
1840 East Three Notch St.
Andalusia, AL 36421
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PowerSouth
Energy Cooperative

REPORT
History of Construction
Unit 2/3 Bottom Ash Pond
Charles R. Lowman Power Plant

October 2016

CDG
Engineering. Environmental. Answers.

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Appendix A

Appendix B

Appendix C

1.0 UNIT 2/3 BOTTOM ASH POND

1.1 Operator Information

Name: Unit 2/3 Bottom Ash Pond

Owner/Operator: PowerSouth Energy Cooperative, Inc.
Charles R. Lowman Power Plant
Leroy, AL 36458

State ID: None Assigned

1.2 Location

The Unit 2/3 Bottom Ash Pond is located in Section 18, Township 6N, Range 2E in Washington, County Alabama and more specifically on the Western bank of the Tombigbee River. Figures 1 and 2 of this report show the location of the Pond.

1.3 Statement of Purpose

The Unit 2/3 Bottom Ash Pond is currently used as a settling pond for CCR wastes containing bottom ash, fly ash, and other plant wastes. Bottom ash from Unit 2 and Unit 3 is transported to the impoundment via wet sluicing. In addition to the bottom ash sluicing operation, the Plant periodically disposes of fly ash and scrubber waste within the impoundment through similar methods.

1.4 Watershed Identification

The CCR unit lies within the Stave Creek watershed (HUC12 031602030901) as delineated by the U.S. Geologic Survey in the State of Alabama Hydrologic Unit Maps, {published 2013}. The Stave Creek watershed is approximately 23,449 acres.

1.5 Foundation and Embankment Description

The Unit 2/3 Bottom Ash Pond was constructed in 1975-1979 in conjunction with Units 2 and 3 of the Charles R. Lowman Power Plant. Based on a review of the available documentation, the Unit 2/3 Bottom Ash Pond was constructed by excavating below the original ground surface and placing the excavated soils as fill to form the pond floor and surrounding embankments. The original ground surface within the pond area ranged from ±EL 12' to EL 30'. Plans indicate that the pond was excavated to EL 13' and returned to EL 15' with a soil fill described as Type "A" embankment material. Two feet of Type "A" embankment material was also placed on the interior slopes of the embankment.

The Unit 2/3 Bottom Ash Impoundment contains exterior embankments located on its southern and western sides. A shared, interior embankment is located to the north adjacent to the Scrubber Waste Pond. A shared, interior embankment is located to the east adjacent to the Unit 1 Bottom Ash Pond which serves as the Plant's entrance road. The plans indicated that the embankments were constructed with Type "B" embankment material.

In reviewing previously conducted topographic surveys of the impoundment the crest of the embankments range from approximately EL 39' to EL 43'. Per the available information shown on the Sheets Y32 and Y33 of the Tombigbee Generating Plant Unit 2 & 3 (Burns and McDonnel, circa 1975)

the embankments were constructed at an inclination of 2(H):1(V) and flatter. The height of exterior embankments is a maximum of approximately 11 feet.

A toe embankment was constructed along the exterior face of the western embankment in 2015. The toe embankment is approximately 13 feet wide and a maximum of 16 feet in height extending to ±EL 38'. The embankment face was constructed on a ±2.5(H):1(V) inclination or flatter with select, structural fill. The structural fill was placed in thin lifts with individual lifts being moisture conditioned, compacted and tested to ensure a high consistency. The exterior slope of the toe embankment was lined with rip-rap to minimize the potential for erosion and sloughing during flood events of the Tombigbee River.

Based on soil boring information, the Unit 2/3 Bottom Ash Pond embankments and underlying foundation soils consist of fill, Low Terrace Deposits and Coastal Plain Deposits. Fill thicknesses ranged from approximately 17' to 28'. The fill soils are comprised of silty and clayey, fine to medium-grained sand with rock fragments. Standard Penetration Tests (SPT) in the fill generally indicated a high consistency with N-values typically ranging from 15 to greater than 50 blows per foot (bpf).

The foundation soils underlying the embankments consist of Low Terrace Deposits and Coastal Plain Deposits. Low Terrace Deposits are water-deposited soils typically resulting from meanderings of rivers and streams. The Charles R. Lowman Power Plant is located along the western bank of the Tombigbee River. Therefore, the Terrace Deposits at this site appear to have resulted from meanderings and flooding of the Tombigbee River.

Coastal Plain Deposits are naturally occurring soils that appear to have formed by the gradual deposition of sediment in an ancient marine environment. The Low Terrace and Coastal Plain Deposits consisted of silty and clayey sand, sandy clay and highly plastic clay and extended to the boring termination depths ranging from approximately 40 to 60 feet below the existing ground surface. The deposits exhibited a variable consistency with SPT N-values ranging from 4 to greater than 50 bpf.

Additional information and analyses associated with the foundation and embankments is addressed in the Report of Safety Factor Assessment – Coal Combustion Residuals Impoundment Embankments, by CDG Engineers & Associates, Inc. dated October 2016.

1.6 Description of Construction Zones

Based on a review of the available documentation, the Unit 2/3 Bottom Ash Pond was constructed by excavating soils from below the original ground surface and placing these soils as fill to form the surrounding embankments. The original ground surface within the pond area ranged from ±EL 13' to EL 30'. Plans indicate that the pond was excavated to EL 13' and backfilled to EL 15' with Type "A" Embankment material. Cross sectional representations of the pond can be found in Figures 4 and 5.

Based on a review of the Tombigbee Generating Plant Unit 2 & 3 plans created by Burns & McDonnel circa 1975, the Unit 2/3 Bottom Ash Pond floor and embankment was constructed with native soils which are generally described in Section 1.5 and indicated in Appendix B. There have been no additional studies conducted within the impoundment to determine whether the pond was constructed with a lining system that meets the permeability performance criteria specified in the CCR rule.

Based on our review of the Tombigbee Generating Plant Unit 2 & 3 plans created by Burns & McDonnel circa 1975, knowledge of the local geology, and the subsurface information obtained and presented in Appendix B of this report, CDG recommends that the Unit 2/3 Bottom Ash Pond be classified as an unlined impoundment and treated as such in administering the requirements of the CCR Rule.

1.7 Detailed Dimensional Drawings

Appendix C - Tombigbee Generating Plant Unit 2 & 3 plans created by Burns & McDonnel circa 1975, contains detailed construction drawings for the Unit 2/3 Bottom Ash Pond. Additionally, Appendix A - Figures 3 through 5 contain summary dimensional drawings of the pond including cross-sectional representations of the pond which were developed through a review of the available information, previously completed topographic surveys, and the subsurface information obtained and presented in Appendix B of this report.

1.8 Existing Instrumentation

The Plant maintains normal pool information using stage boards located adjacent to the Unit 2/3 intake structure. The intake structure is discussed in greater detail in Section 1.10 of this report. The stage board is manually read and recorded.

1.9 CCR Unit Area Capacity Curves

Below is the Stage-Storage Curve for the Unit 2/3 Bottom Ash Pond.

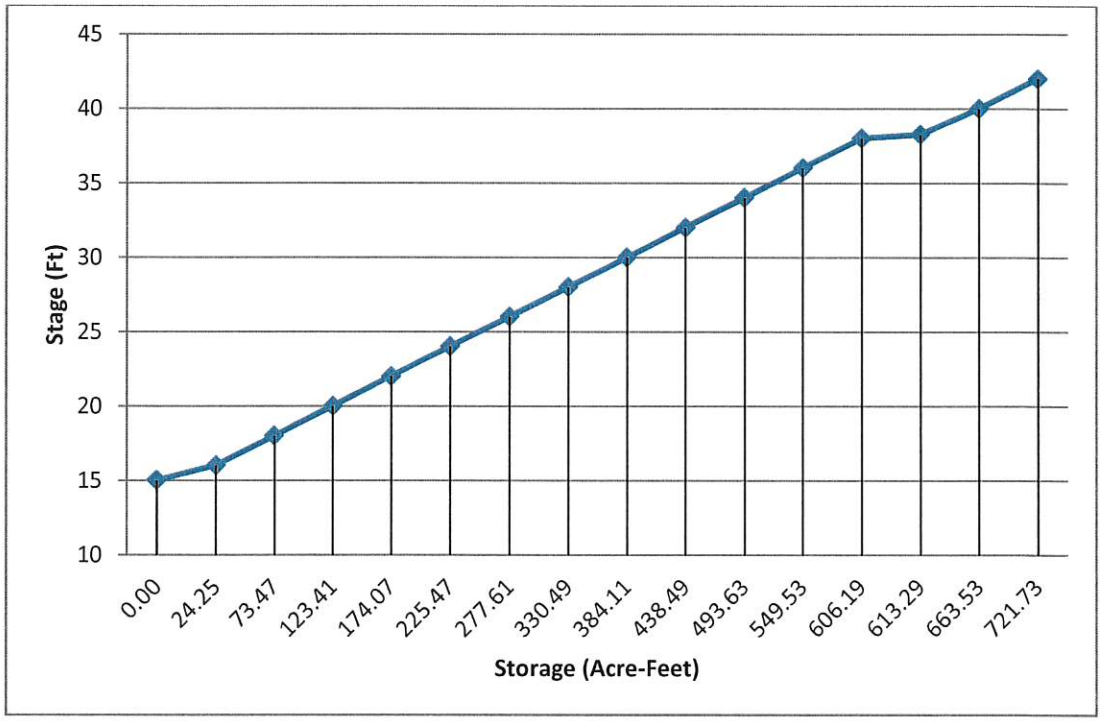

Figure 1 – Unit 2/3 Bottom Ash Stage-Storage Curve

1.10 Spillways and Diversion Systems

The Unit 2/3 Bottom Ash Intake structure is an enclosed pumping facility. The water from the pond passes over a weir structure and into a concrete sump structure. The water is then pumped out of the sump and into the Scrubber Waste Pond. The Unit 2/3 Intake consists of two suction lift pumps with a normal operating flow of 825 gpm (1.84 cfs). Ponds are drained by pumping systems and do not have identified gravity spillways. During high rainfall events, mobile suction lift pumps are utilized at the pond to supplement permanent intake structures to control the flood event and to maintain pool operating levels.

Additional information and analyses associated with the spillway and diversion systems' is addressed in the Unit 2/3 Inflow Design Control Plan, by CDG Engineers & Associates, Inc. dated October 2016.

1.11 Surveillance, Maintenance, and Repair

Plant personnel conduct surveillance and inspections on set intervals. Maintenance and repair items that are identified during the inspections are addressed at that time.

1.12 Prior Structural Instability

-None Noted.

2.0 GENERAL REMARKS AND CLOSING

The findings in this report were developed based on documents provided by the Owner and from the limited information obtained through field and laboratory testing programs. If significant changes are made to the use, capacity or geometry of the embankments and/or impoundments, CDG should be allowed to review our findings in light of the changes to determine if additional testing and revised conclusions are needed.

This report is intended to meet the requirements of the CFR 40.257.73 (4) for the History of Construction report for the Unit 2/3 Bottom Ash Pond.

The conclusions, analyses, and recommendations presented in this report are based upon information provided, currently accepted engineering principles, practices, and existing testing standards in the area where the services were provided. No other warranty, expressed or implied, is made.

Appendix A

Figure 1- Unit 2/3 Bottom Ash Pond Location Map

Figure 2 –Aerial Map of Impoundments

Figure 3 – Unit 2/3 Bottom Ash Pond Impoundment Overview

Figure 4 – Unit 2/3 Bottom Ash Pond Section S-S'

Figure 5 – Unit 2/3 Bottom Ash Pond Section T-T'

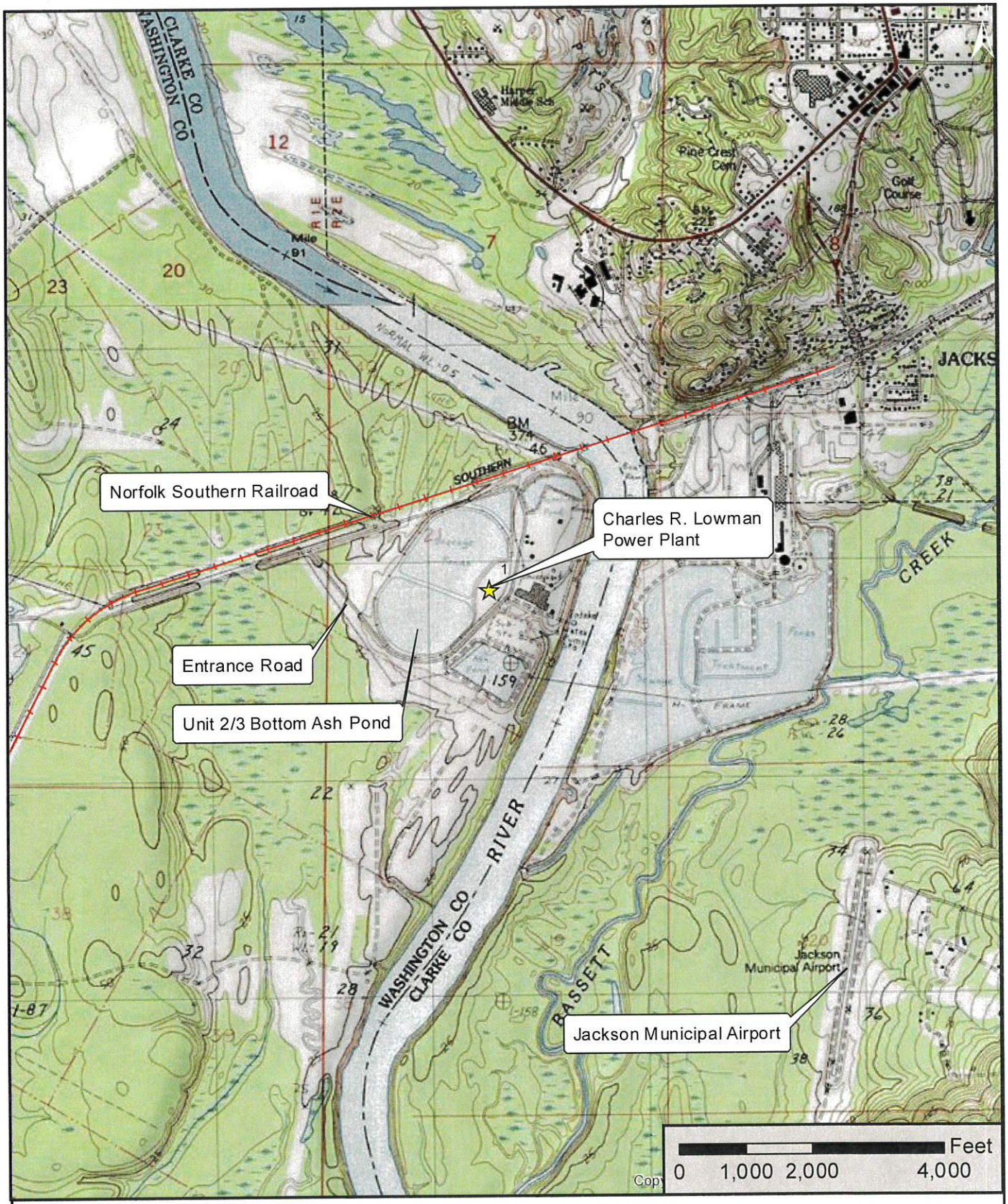

Figure 1 - Unit 2/3 Bottom Ash Pond Location Map

Charles R. Lowman Power Plant
PowerSouth Energy Cooperative
Leroy, AL

CDG
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October 2016

Figure 2 - Aerial Map of Impoundments

Charles R. Lowman Power Plant
PowerSouth Energy Cooperative
Leroy, AL

CDG
Engineering. Environmental. Answers.

October 2016

Figure 3 - Unit 2/3 Bottom Ash Pond
Impoundment Overview
Charles R. Lowman Power Plant
Leroy, AL

CDG
Engineering. Environmental. Answers.

Sheet No.	Fig. 3
Drawn By:	JRA
Checked by:	RDW
Date:	October 2016

UNIT 2/3 BOTTOM ASH POND
SECTION S - S'

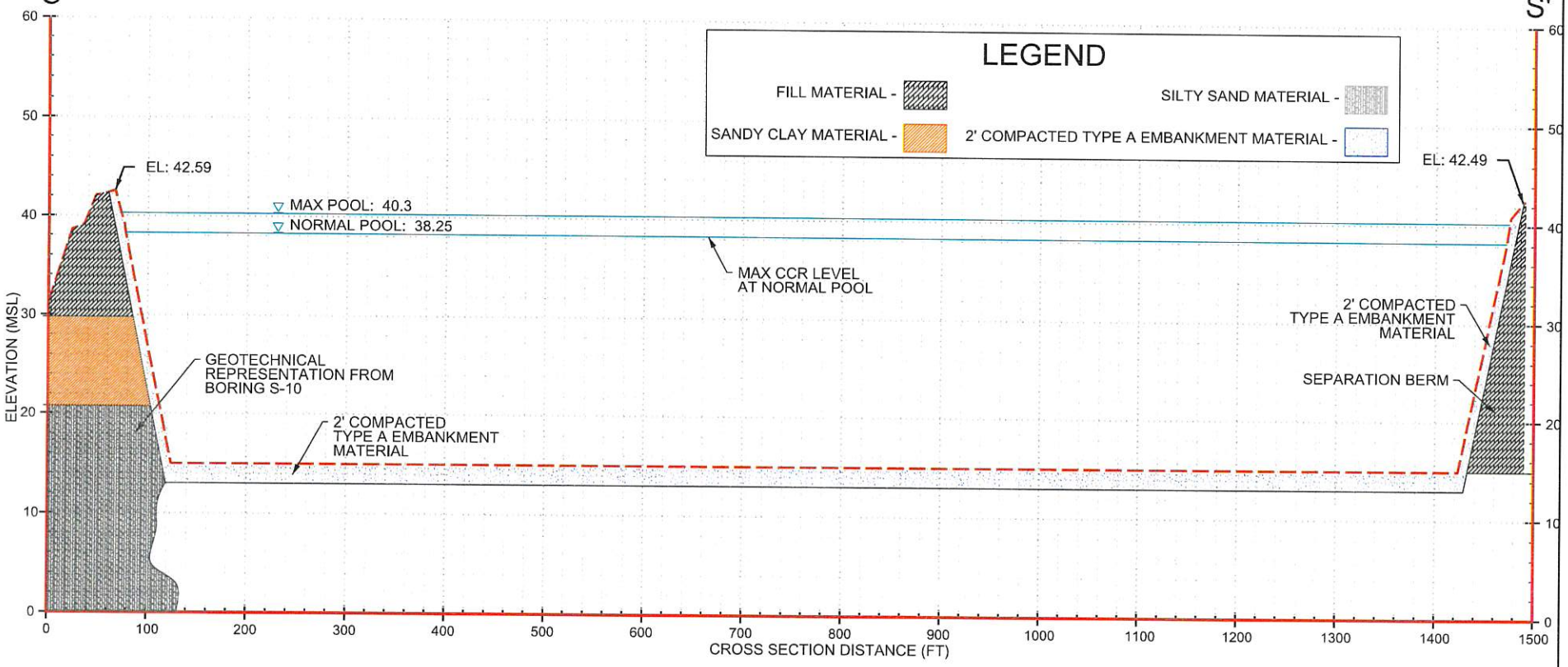

Figure 4 - Unit 2/3 Bottom Ash Pond Section S-S'
Charles R. Lowman Power Plant
Leroy, AL

CDG
Engineering. Environmental. Answers.

Fig.4

Scale:	H:1"=100'; V:1"=10'
Drawn By:	JRA
Checked by:	RDW
Date:	October 2016

UNIT 2/3 BOTTOM ASH POND
SECTION T - T'

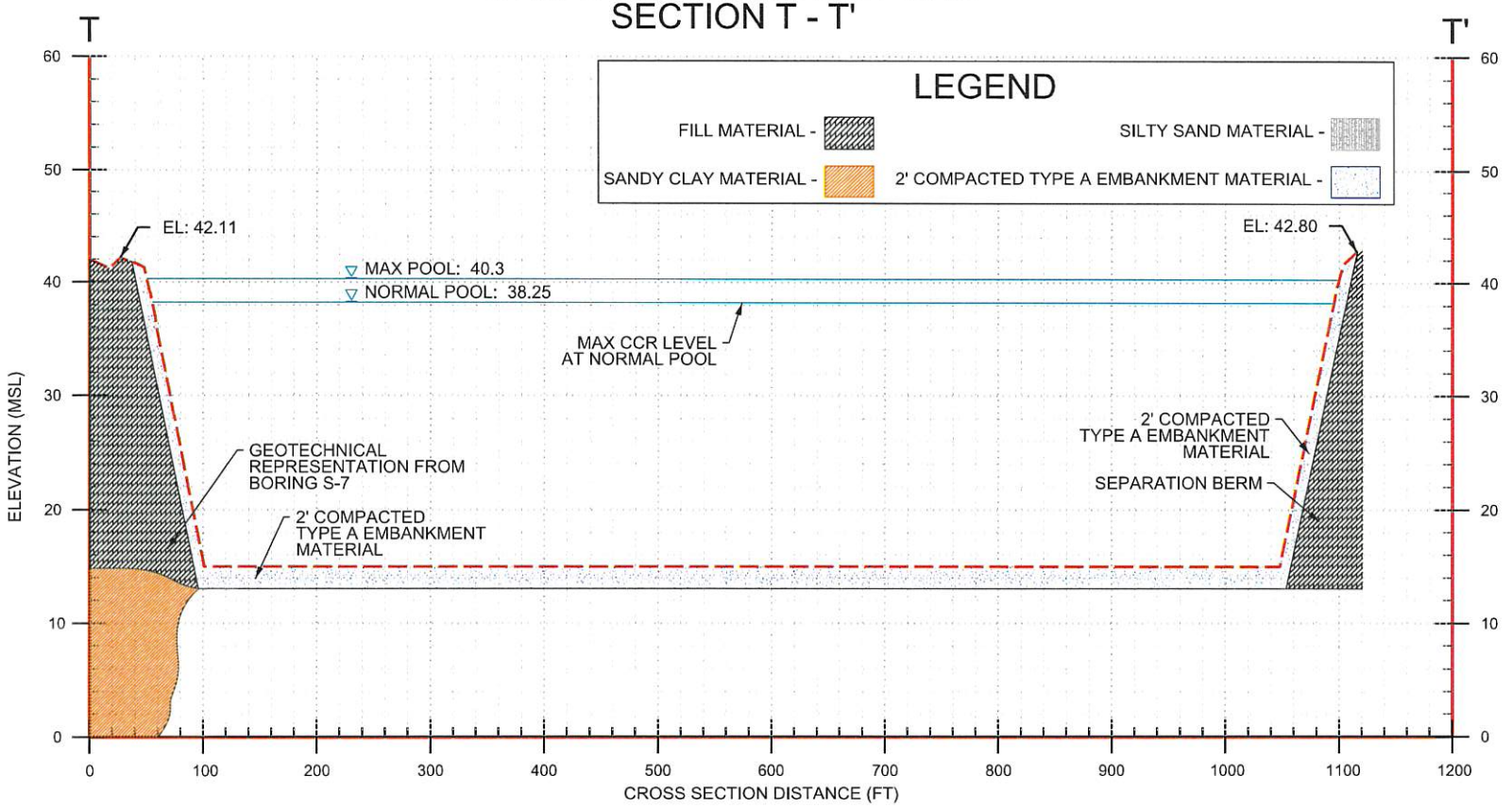

Figure 5 - Unit 2/3 Bottom Ash Pond Section T-T'
Charles R. Lowman Power Plant
Leroy, AL

CDG
Engineering. Environmental. Answers.

Fig.5

Scale:	H:1"=100'; V:1"=10'
Drawn By:	JRA
Checked by:	RDW
Date:	October 2016

Appendix B

Boring Logs

CDG Engineers & associates

Albertville, AL
Tel:(256) 891-3458

Andalusia, AL
Tel:(334) 222-9431

Birmingham, AL
Tel:(205) 733-9431

Hoover, AL
Tel:(205) 463-2600

Defuniak Springs, FL
Tel:(850) 892-0225

Dothan, AL
Tel:(334) 677-9431

BORING LOG

Project Name:	Berm Stability Evaluation - Lowman Power Plant
Project Number:	060921201
Boring Number:	B-1
Date Drilled:	July 15, 2009 Page 1 of 2

Notes: SS = Split Spoon

PPqu = Pocket Penetrometer Unconfined Compressive Strength

Depth (feet)	Approx. Elev. (feet)	Graphic Scale	MATERIAL DESCRIPTION	TYPE	BLOWS/ 6 INCHES	N	CORE REC. (%)	RQD (%)	REMARKS
0	44		Crushed aggregate						
			Very dense, red, silty fine to medium SAND, with numerous rock fragments	SS	26-27-28	50+			
5	39			SS	20-22-23	45			
			...same	SS	24-24-26	50			
10	34								
			... with numerous rock fragments	SS	29-37-40	50+			
15	29								
			Very dense, silty, coarse-grained SAND, with trace rock fragments	SS	26-38-43	50+			▽ Groundwater encountered at 20 feet at time of boring
20	24								
			Stiff, brown, fine sandy CLAY with gravel	SS	6-6-7	13			
25	19								

CDG Engineers & associates

Albertville, AL
Tel:(256) 891-3458

Andalusia, AL
Tel:(334) 222-9431

Birmingham, AL
Tel:(205) 733-9431

Hoover, AL
Tel:(205) 463-2600

Defuniak Springs, FL
Tel:(850) 892-0225

Dothan, AL
Tel:(334) 677-9431

BORING LOG

Project Name:	Berm Stability Evaluation - Lowman Power Plant
Project Number:	060921201 Phase 3
Boring Number:	B-1
Date Drilled:	July 15, 2009 Page 2 of 2

Notes: SS = Split Spoon
PPqu = Pocket Penetrometer Unconfined Compressive Strength

Depth (feet)	Approx. Elev. (feet)	Graphic Scale	MATERIAL DESCRIPTION	TYPE	BLOWS/ 6 INCHES	N	CORE REC. (%)	RQD (%)	REMARKS
25	19		Stiff, brown, fine sandy CLAY with gravel (Fill)						
			Medium, grey and tan, fine sandy CLAY	SS	2-3-4	7			
30	14								
			... stiff, grey	SS	3-5-5	10			PPqu = 1.25 tsf
35	9								
			(Low Terrace Deposits)	SS	4-4-7	11			PPqu = 1.25 tsf
40	4		Boring Terminated at 40 feet						
45	-1								
50	-6								Boring backfilled with grout upon completion.

CDG Engineers & associates

Albertville, AL
Andalusia, AL
Birmingham, AL
Dothan, AL
Huntsville, AL

Boring S-6

Project Name: Lowman Berm Stability Analysis
Project Location: Leroy, Alabama Hammer Type: Automatic
CDG Project Number: 221141100 Method: Mud-Rotary
Date Drilled: 12/13/2011 Approx. Ground Elevation: +/-42 feet

Notes:
+/- 18" of railroad ballast at ground surface.

PPqu = Unconfined Compressive Strength.

☒ - Split Spoon Sample ■ - Undisturbed Sample

Depth (ft.)	Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
	40.0		Loose, red, silty fine to medium SAND		0-4-5 (9)								
5			...medium dense		10-9-10 (19)								
	35.0		...very dense		26-29-30 (59)								
10			... red and tan, with trace rock		24-26-28 (54)								
	30.0												
15			... dense, tan and grey with rock fragments		12-20-28 (48)								▼ Groundwater at +/-EL28 ft. on 12/13/2011.
	25.0												
20			...very dense, tan		14-34-36 (70)								
	20.0												
25			... red		15-31-35 (66)								
	15.0		(Fill)										
			Stiff, red and grey CLAY with fine sand and rock fragments		6-7-7 (14)							1.25	

(Continued Next Page)

CDG Engineers & associates

Albertville, AL
Andalusia, AL
Birmingham, AL
Dothan, AL
Huntsville, AL

Boring S-6

Project Name: Lowman Berm Stability Analysis
Project Location: Leroy, Alabama Hammer Type: Automatic
CDG Project Number: 221141100 Method: Mud-Rotary
Date Drilled: 12/13/2011 Approx. Ground Elevation: +/-42 feet

Notes:
+/- 18" of railroad ballast at ground surface.
PPqu = Unconfined Compressive Strength.
☒ - Split Spoon Sample ■ - Undisturbed Sample

Depth (ft.)	Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
			Stiff, red and grey CLAY with fine sand and rock fragments										
	10.0												
35			... same	X	5-7-6 (13)							2.0	
	5.0												
40			... soft, light grey and tan	X	3-3-3 (6)		41	17	24			0.5	USCS=CL
	0.0												
45			... medium, light grey and brown	X	3-4-4 (8)							0.5	
	-5.0												
50			Medium dense, grey, silty fine SAND	X	9-14-13 (27)								
	-10.0												
55			... grey and tan	X	9-10-12 (22)								
	-15.0												Borehole backfilled with grout upon completion.
			...same (Coastal Plain Deposits)	X	12-14-14 (28)								

Boring terminated at 60.0 feet.

CDG Engineers & associates

Albertville, AL
Andalusia, AL
Birmingham, AL
Dothan, AL
Huntsville, AL

Boring S-7

Project Name: Lowman Berm Stability Analysis
Project Location: Leroy, Alabama Hammer Type: Automatic
CDG Project Number: 221141100 Method: Mud-Rotary
Date Drilled: 11/30/2011 Approx. Ground Elevation: +/-42 feet

Notes:
+/- 18" of railroad ballast at ground surface.
PPqu = Unconfined Compressive Strength.
☒ - Split Spoon Sample ■ - Undisturbed Sample

Depth (ft.)	Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
	40.0		Medium dense, silty fine to medium SAND with rock fragments	SS	0-7-10 (17)		NP	NP	NP		27.7		USCS = SM
5			... red, brown and tan, with trace rock fragments	SS	10-13-14 (27)								
	35.0		... very dense, reddish tan with numerous rock fragments	SS	18-27-30 (57)								
10			... dense, reddish brown and tan with trace rock fragments	SS	11-15-16 (31)		NP	NP	NP		24.9		USCS = SM
	30.0												
15			... medium dense, reddish tan with rounded rock fragments	SS	5-6-11 (17)								▽ Groundwater at +/-EL27.5 ft. on 11/30/2011.
	25.0												▽ Groundwater at +/-EL25.5 ft. on 5/1/2012.
20			Medium dense, grey, clayey SAND with trace rock fragments	SS	7-9-12 (21)		30	20	10		28.4		USCS = SC
	20.0			■									(No Recovery)
25			...very loose, grey and tan (Fill)	SS	2-2-2 (4)								
	15.0			■									
			Stiff, red and grey CLAY with fine sand	SS	3-6-7 (13)							1.5	

(Continued Next Page)

CDG Engineers & associates

Albertville, AL
Andalusia, AL
Birmingham, AL
Dothan, AL
Huntsville, AL

Boring S-7

Project Name: Lowman Berm Stability Analysis
Project Location: Leroy, Alabama Hammer Type: Automatic
CDG Project Number: 221141100 Method: Mud-Rotary
Date Drilled: 11/30/2011 Approx. Ground Elevation: +/-42 feet

Notes:
+/- 18" of railroad ballast at ground surface.
PPqu = Unconfined Compressive Strength.
☒ - Split Spoon Sample ■ - Undisturbed Sample

Depth (ft.)	Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
			Stiff, red and grey CLAY with fine sand										
	10.0			■									
35			...same	☒	8-11-13 (24)							2.0	
	5.0												
			... light grey and brown	☒	3-5-7 (12)							1.5	
40	0.0												
			...grey and tan	☒	4-6-8 (14)							1.25	
45	-5.0												
			...same	☒	2-2-3 (5)								
50	-10.0												
			Very dense, silty fine to medium SAND with numerous rock fragments	☒	28-38-40 (78)								
55	-15.0												Piezometer Installed.
			... with rounded rock fragments (Coastal Plain Deposits)	☒	30-30-28 (58)								

Boring terminated at 60.0 feet.

CDG Engineers & associates

Albertville, AL
Andalusia, AL
Birmingham, AL
Dothan, AL
Huntsville, AL

Boring S-8

Project Name: Lowman Berm Stability Analysis
Project Location: Leroy, Alabama Hammer Type: Automatic
CDG Project Number: 221141100 Method: Mud-Rotary
Date Drilled: 12/12/2011 Approx. Ground Elevation: +/-42 feet

Notes:
+/- 18" of railroad ballast at ground surface.
PPqu = Unconfined Compressive Strength.
☒ - Split Spoon Sample ■ - Undisturbed Sample

Depth (ft.)	Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
	40.0		Dense, red and brown, silty fine to medium SAND with trace organics	SS	11-20-21 (41)								
5			...red	SS	17-15-17 (32)								
	35.0		... with trace rock fragments	SS	17-20-20 (40)								
10			...very dense, reddish tan with numerous rock fragments	SS	28-30-50 (80)								▽ Groundwater at +/-EL32 ft. on 12/12/2011.
	30.0												▽ Groundwater at +/-EL30 ft. on 12/14/2011.
15			... red and grey	SS	50/5"								
	25.0		(Fill)										
20			Loose gravel fragments	SS	5-4-3 (7)						2.3		
	20.0												
25			... with clay	SS	3-4-3 (7)								
	15.0		Stiff, red and grey CLAY with fine sand	SS	3-6-8 (14)							1.25	

(Continued Next Page)

CDG Engineers & associates

Albertville, AL
Andalusia, AL
Birmingham, AL
Dothan, AL
Huntsville, AL

Boring S-8

Project Name: Lowman Berm Stability Analysis
Project Location: Leroy, Alabama Hammer Type: Automatic
CDG Project Number: 221141100 Method: Mud-Rotary
Date Drilled: 12/12/2011 Approx. Ground Elevation: +/-42 feet

Notes:
+/- 18" of railroad ballast at ground surface.
PPqu = Unconfined Compressive Strength.
☒ - Split Spoon Sample ■ - Undisturbed Sample

Depth (ft.)	Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
			Stiff, red and grey CLAY with fine sand										
	10.0												
35			...same	X	3-4-5 (9)		71	21	50			1.0	USCS=CH
	5.0												
40			...same	X	5-6-7 (13)							1.25	
	0.0												
45			Very dense, tan, silty fine SAND	X	14-22-28 (50)								
	-5.0												
50			Dense, tan, clayey fine SAND	X	12-20-20 (40)								
	-10.0												
55			Dense gravel fragments	X	14-16-18 (34)								
	-15.0												Borehole backfilled with grout upon completion.
			...very dense, with fine sand (Coastal Plain Deposits)	X	18-24-28 (52)								

Boring terminated at 60.0 feet.

CDG Engineers & associates

Albertville, AL
Andalusia, AL
Birmingham, AL
Dothan, AL
Huntsville, AL

Boring S-9

Project Name: Lowman Berm Stability Analysis
Project Location: Leroy, Alabama Hammer Type: Automatic
CDG Project Number: 221141100 Method: Mud-Rotary
Date Drilled: 12/6/2011 Approx. Ground Elevation: +/-42 feet

Notes:
+/- 18" of railroad ballast at ground surface.
PPqu = Unconfined Compressive Strength.
☒ - Split Spoon Sample ■ - Undisturbed Sample

Depth (ft.)	Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
	40.0		Medium dense, red and brown, silty fine to medium SAND with trace organics										
5			... red	X	19-14-14 (28)								
	35.0		... dense	X	10-14-17 (31)								
10			... medium dense, red and tan with trace rock fragments	X	11-12-13 (25)								▽ Groundwater at +/-EL32.5 ft. on 12/6/2011.
	30.0												
15			... very dense, red	X	14-40-50 (90)								
	25.0		(Fill)										
20			Very stiff, brown and grey, fine sandy CLAY	X	9-13-20 (33)								
	20.0												
25			Loose, grey, silty fine SAND	X	2-2-3 (5)								
	15.0												
			Medium, grey CLAY with fine sand	X	2-3-4 (7)								

(Continued Next Page)

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Huntsville, AL

Boring S-9

Project Name: Lowman Berm Stability Analysis
Project Location: Leroy, Alabama Hammer Type: Automatic
CDG Project Number: 221141100 Method: Mud-Rotary
Date Drilled: 12/6/2011 Approx. Ground Elevation: +/-42 feet

Notes:
+/- 18" of railroad ballast at ground surface.
PPqu = Unconfined Compressive Strength.
☒ - Split Spoon Sample ■ - Undisturbed Sample

Depth (ft.)	Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
			Medium, grey CLAY with fine sand										
	10.0												(No Recovery)
35			... red and grey	☒	2-3-3 (6)								
	5.0												(No Recovery)
40			... stiff	☒	2-5-6 (11)							1.5	
	0.0												
45			...soft, grey	☒	2-2-2 (4)							<0.25	
	-5.0												
50			... same	☒	2-4-5 (9)							0.25	
	-10.0												
55			...hard, grey and tan	☒	40-50-6 (56)								
	-15.0												Borehole backfilled with grout upon completion.
			Very dense, tan, clayey fine to medium SAND with rock fragments (Coastal Plain Deposits)	☒	30-36-40 (76)								

Boring terminated at 60.0 feet.

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Birmingham, AL
Dothan, AL
Huntsville, AL

Boring S-10

Project Name: Lowman Berm Stability Analysis
Project Location: Leroy, Alabama Hammer Type: Automatic
CDG Project Number: 221141100 Method: Mud-Rotary
Date Drilled: 12/6/2011 Approx. Ground Elevation: +/-42 feet

Notes:
+/- 18" of railroad ballast at ground surface.
PPqu = Unconfined Compressive Strength.
☒ - Split Spoon Sample ■ - Undisturbed Sample

Depth (ft.)	Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
	40.0		Dense, red and black, silty fine to medium SAND	SS	0-17-23 (40)								
5			... same	SS	13-23-24 (47)								
	35.0		... red	SS	18-19-20 (39)								
10			...very dense	SS	26-25-30 (55)								▽ Groundwater at +/-EL32.5 ft. on 12/6/2011.
	30.0												
15			... with rock fragments	SS	11-24-28 (52)								
	25.0												
20			... same	SS	18-23-29 (52)								
	20.0		(Fill)										
25			Medium dense, brown, silty fine to medium SAND	SS	9-9-8 (17)								
	15.0												(No Recovery)
			Stiff, grey and red CLAY with fine sand	SS	3-4-5 (9)							1.0	

(Continued Next Page)

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Albertville, AL
Andalusia, AL
Birmingham, AL
Dothan, AL
Huntsville, AL

Boring S-10

Project Name: Lowman Berm Stability Analysis
Project Location: Leroy, Alabama Hammer Type: Automatic
CDG Project Number: 221141100 Method: Mud-Rotary
Date Drilled: 12/6/2011 Approx. Ground Elevation: +/-42 feet

Notes:
+/- 18" of railroad ballast at ground surface.
PPqu = Unconfined Compressive Strength.
☒ - Split Spoon Sample ■ - Undisturbed Sample

Depth (ft.)	Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
			Stiff, grey and red CLAY with fine sand										
	10.0			■									(No Recovery)
35			... grey	☒	2-4-5 (9)		74	22	52			1.5	USCS=CH
	5.0			■									(No Recovery)
40			... same	☒	4-5-7 (12)							1.0	
	0.0												
45			... same	☒	5-6-7 (13)							1.5	
	-5.0												
50			... same	☒	4-5-5 (10)							1.75	
	-10.0												
55			... soft	☒	2-2-3 (5)							0.5	
	-15.0												Borehole backfilled with grout upon completion.
			Dense, light brown and tan, silty fine to medium SAND (Coastal Plain Deposits)	☒	15-18-31 (49)								

Boring terminated at 60.0 feet.

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Albertville, AL
Andalusia, AL
Birmingham, AL
Dothan, AL
Huntsville, AL

Boring T-2

Project Name: Lowman CCR Rule Phase I
Project Location: Leroy,AL Hammer Type: Automatic
CDG Project Number: 061521207 Method: Diedrich D-50 Mud Rotary
Date Drilled: 8/9/2016 Approx. Ground Elevation: +/-42.0 feet

Notes:
+/- 18" of railroad ballast at ground surface

☒ - Split Spoon Sample

Depth (ft.)	Approx. Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
	40.0												
5			Dense, red and tan, silty fine to medium SAND with rock fragments		11-27-23 (50)								
	35.0												
10			...medium dense		7-7-8 (15)								
	30.0												
15			...same (Fill)		1-12-14 (26)		NP	NP	NP		20.1		USCS=SM Small amount of Costal Plain Deposits observed in sample
	25.0												
20			Dense, gray, silty fine to medium SAND		8-17-18 (35)								
	20.0												
25			...loose		3-4-6 (10)		NP	NP	NP		14.7		USCS=SM

(Continued Next Page)

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Albertville, AL
Andalusia, AL
Birmingham, AL
Dothan, AL
Huntsville, AL

Boring T-2

Project Name: Lowman CCR Rule Phase I
Project Location: Leroy,AL Hammer Type: Automatic
CDG Project Number: 061521207 Method: Diedrich D-50 Mud Rotary
Date Drilled: 8/9/2016 Approx. Ground Elevation: +/-42.0 feet

Notes:
+/- 18" of railroad ballast at ground surface

☒ - Split Spoon Sample

Depth (ft.)	Approx. Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
			...loose *(Continued from previous page)*										
	15.0												
30			Stiff, light gray and brown, plastic CLAY with fine sand	X	3-3-4 (7)							1.25	
	10.0												
35			...same	X	4-4-6 (10)							1.25	
	5.0												
40			...trace sand	X	4-5-5 (10)		70	25	45		97.6	1.0	USCS=CH
	0.0												
45			...same	X	5-4-5 (9)							1.25	
	-5.0												
50			...medium, with trace organics	X	3-3-3 (6)							0.75	

(Continued Next Page)

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Albertville, AL
Andalusia, AL
Birmingham, AL
Dothan, AL
Huntsville, AL

Boring T-2

Project Name: Lowman CCR Rule Phase I
Project Location: Leroy,AL Hammer Type: Automatic
CDG Project Number: 061521207 Method: Diedrich D-50 Mud Rotary
Date Drilled: 8/9/2016 Approx. Ground Elevation: +/-42.0 feet

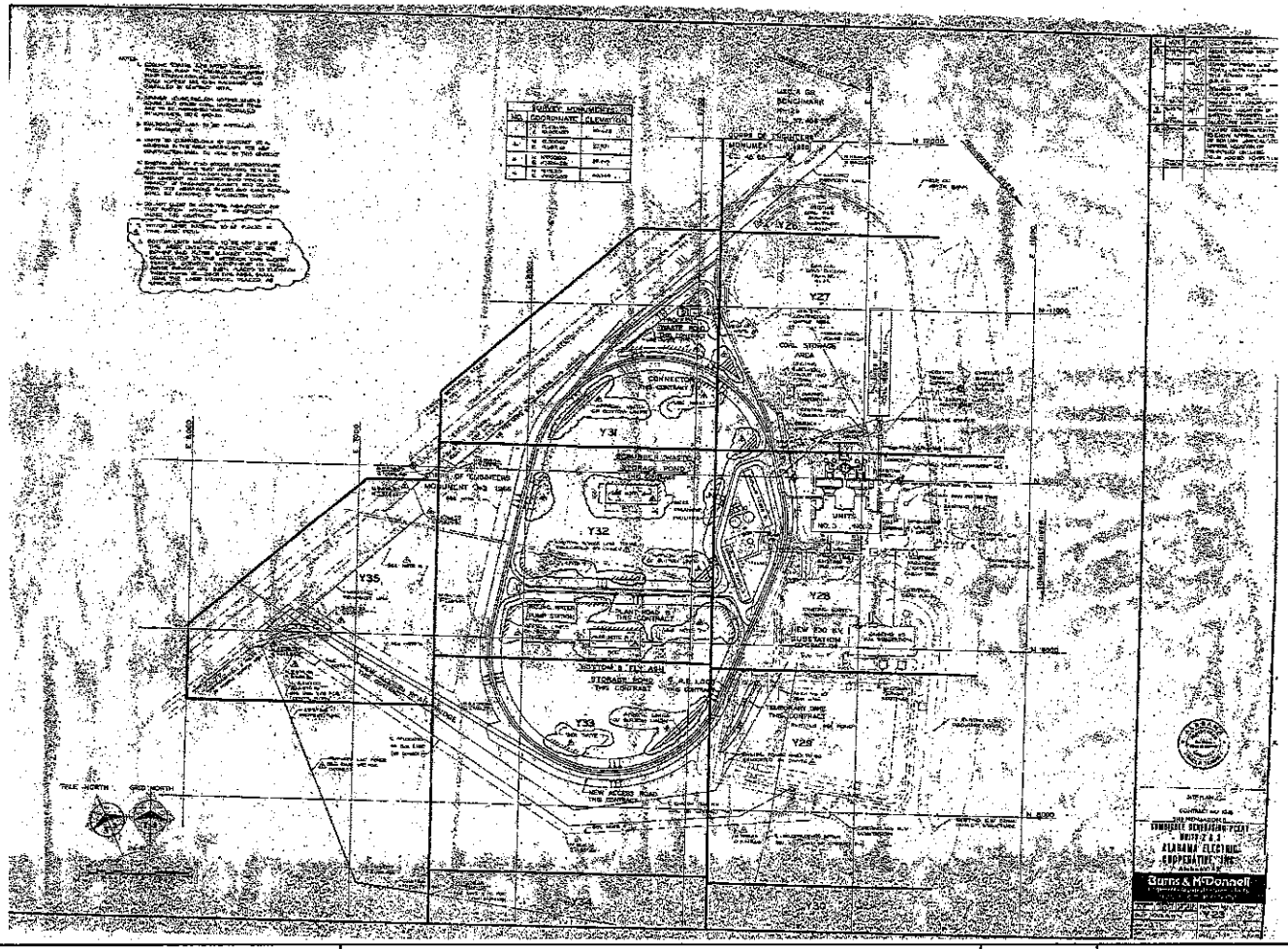
Notes:
+/- 18" of railroad ballast at ground surface

☒ - Split Spoon Sample

Depth (ft.)	Approx. Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
			...medium, with trace organics *(Continued from previous page)*										
55			...light gray, with trace organics		4-2-3 (5)							0.5	
	-15.0												
60			Dense, tan, silty fine to medium SAND with few rock fragments (Coastal Plain Deposits)		16-20-18 (38)								Borehole backfilled with grout upon completion.
			Boring terminated at 60.0 feet.										
	-20.0												
65													
	-25.0												
70													
	-30.0												
75													
	-35.0												

Appendix C

SHEET SHOWN IS EXCERPT FROM THE TOMBIGBEE GENERATING PLANT UNIT 2&3 PLANS CREATED BY BURNS & MCDONNEL CIRCA 1975.



Appendix C - Plan Copy of
TOMBIGBEE GENERATING PLANT UNIT
2&3 PLANS CREATED BY BURNS &
MCDONNEL CIRCA 1975.

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1840 E. Three Notch St.
Andalusia, AL 36420
(334) 222-9431
(334) 222-4018 FAX
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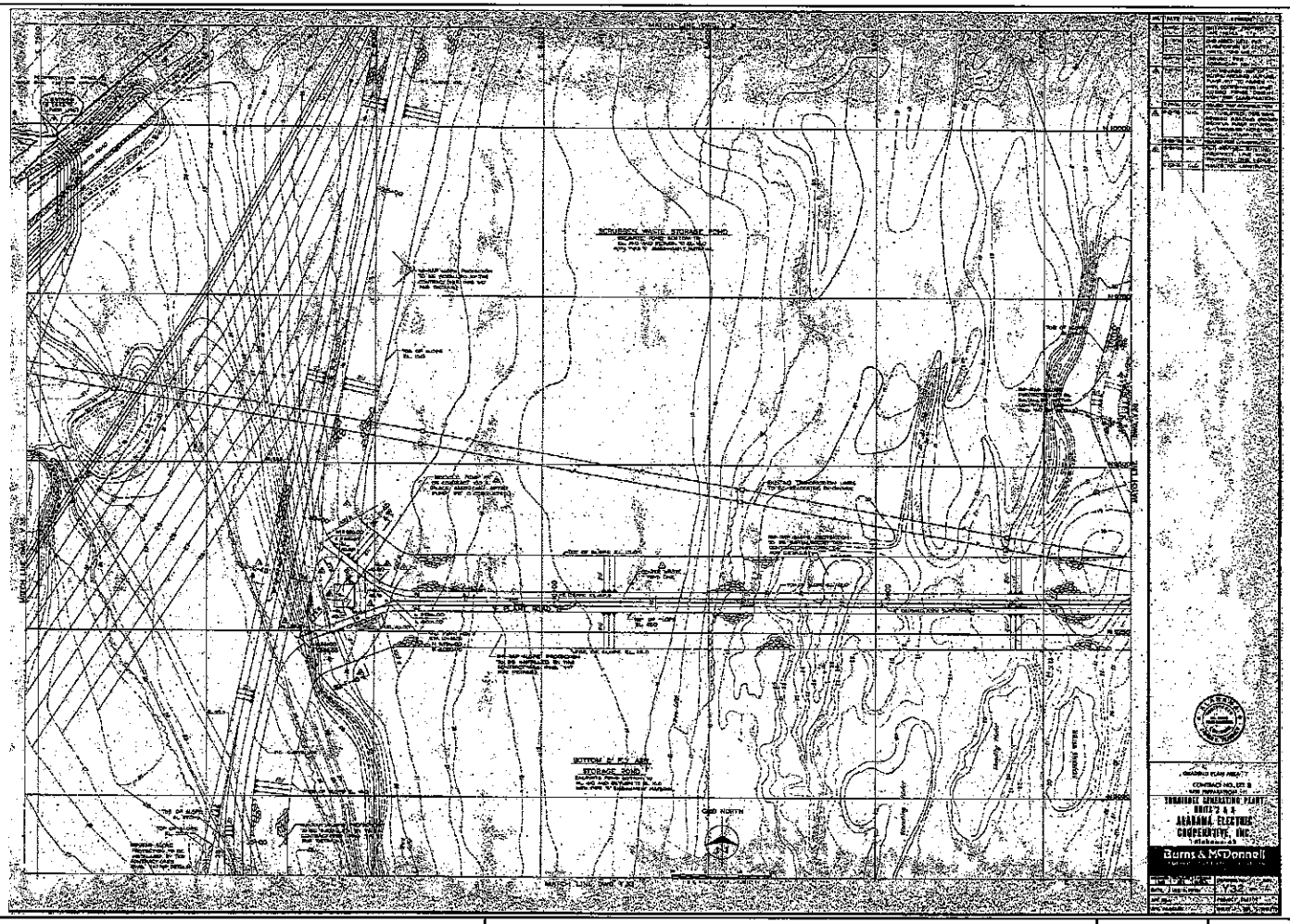
C

NOT TO SCALE

Drawn By: JRA

Checked by: RDW

Date: OCTOBER 2016



SHEET SHOWN IS EXCERPT FROM THE TOMBIGBEE GENERATING PLANT UNIT 2&3 PLANS CREATED BY BURNS & MCDONNEL CIRCA 1975.

Appendix C - Plan Copy of
TOMBIGBEE GENERATING PLANT UNIT
2&3 PLANS CREATED BY BURNS &
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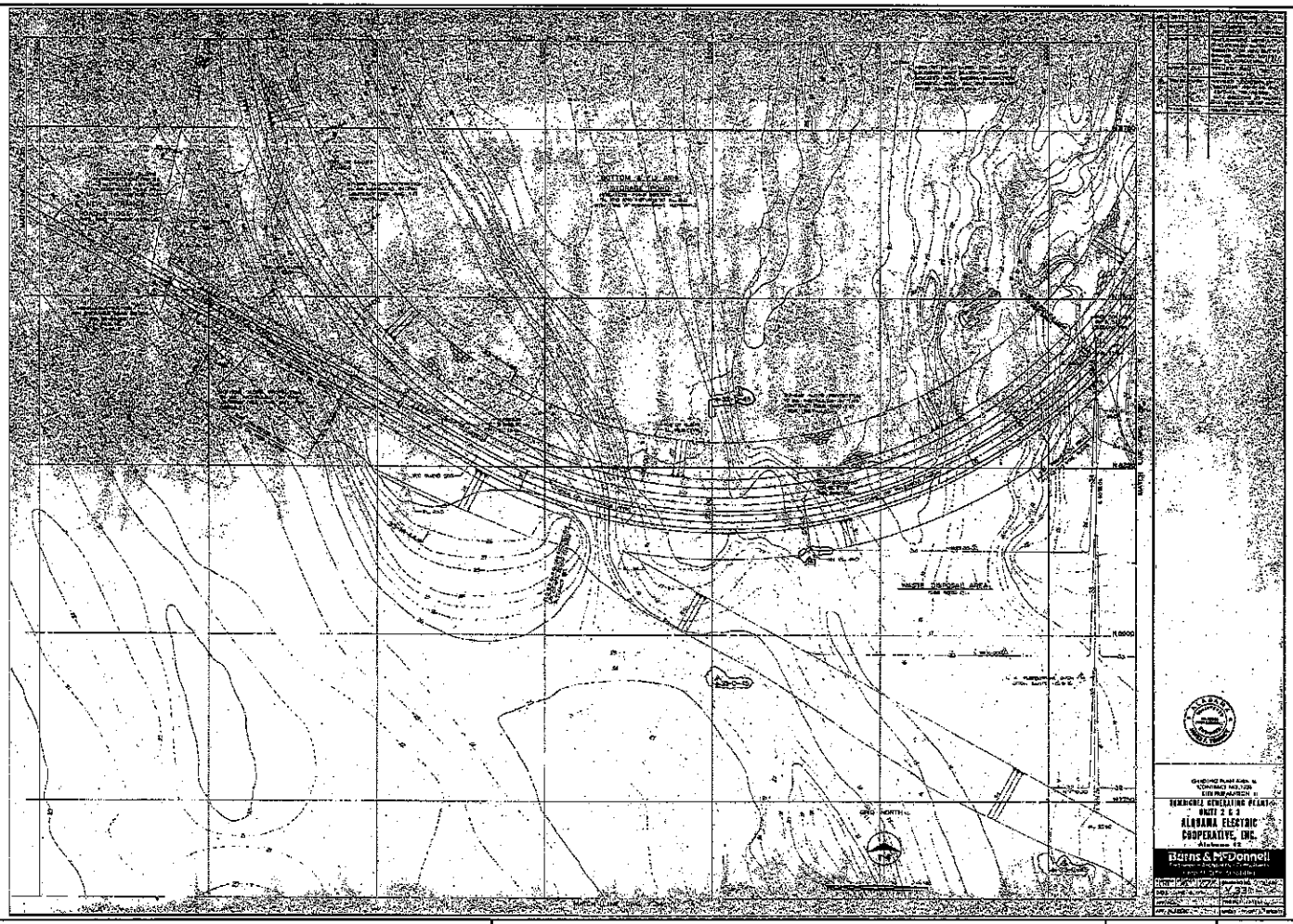
C

NOT TO SCALE

Drawn By: JRA

Checked by: RDW

Date: OCTOBER 2016



Appendix C - Plan Copy of
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Drawn By: JRA

Checked by: RDW

Date: OCTOBER 2016

PowerSouth Energy Cooperative

Charles R. Lowman Power Plant Leroy, AL

History of Construction Scrubber Waste Pond

Issued October 2016

CDG Engineers and Associates, Inc.
1840 East Three Notch St.
Andalusia, AL 36421
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PowerSouth
Energy Cooperative

REPORT
History of Construction
Scrubber Waste Pond
Charles R. Lowman Power Plant

October 2016

10/15/16

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TABLE OF CONTENTS

Appendix A

Appendix B

Appendix C

1.0 SCRUBBER WASTE POND

1.1 Operator Information

Name: Scrubber Waste Pond

Owner/Operator: PowerSouth Energy Cooperative, Inc.
Charles R. Lowman Power Plant
Leroy, AL 36458

State ID: None Assigned

1.2 Location

The Scrubber Waste Pond is located in Section 18, Township 6N, Range 2E in Washington, County Alabama and more specifically on the Western bank of the Tombigbee River. Figures 1 and 2 of this report show the location of the Pond.

1.3 Statement of Purpose

The Scrubber Waste Pond is currently used as a settling pond for CCR wastes containing flue gas desulfurization, and other plant wastes.

1.4 Watershed Identification

The CCR unit lies within the Stave Creek watershed (HUC12 031602030901) as delineated by the U.S. Geologic Survey in the State of Alabama Hydrologic Unit Maps, {published 2013}. The Stave Creek watershed is approximately 23,449 acres.

1.5 Foundation and Embankment Description

The Scrubber Waste Pond was constructed between 1975-1979 in conjunction with Units 2 and 3 of the Charles R. Lowman Power Plant. Based on a review of the available documentation, the Scrubber Waste Impoundment was constructed by excavating below the original ground surface and placing these soils as fill to form the impoundment floor and surrounding embankments. The original ground surface within the impoundment area ranged from ±EL 12' to EL 27'. Plans indicate that the impoundment was excavated to EL 13' and returned to EL 15' with a soil fill described as Type "A" embankment material. Two feet of Type "A" embankment material was also placed on the interior slopes of the embankment.

The Scrubber Waste Pond contains a single exterior embankment located on its western side. Shared, interior embankments are located to the north adjacent to the Process Waste Pond and to the south adjacent to the Unit 2/3 Bottom Ash Pond. The eastern side of the Scrubber Waste Pond does not contain an embankment with an exposed slope; rather it is formed by an excavation below the existing ground surface.

In reviewing previously conducted topographic surveys of the impoundment the crest of the exterior embankments range from approximately EL 43' to EL 44'. Per the available information shown on the Sheets Y31 and 32 of the Tombigbee Generating Plant Unit 2 & 3 (Burns and McDonnel, circa 1975) the embankments were constructed at an inclination of 2(H):1(V) and flatter. The embankments were

constructed at an inclination of 2(H):1(V) and flatter. The height of exterior embankments ranges from approximately 13 to 21 feet. Rip-rap was placed on the face of the embankments.

A toe embankment was constructed along the exterior face of the western embankment in 2015. The toe embankment is approximately 13 feet wide and a maximum of 16 feet in height extending to ±EL 35'. The embankment face was constructed on a ±2.5(H):1(V) inclination or flatter with select, structural fill. The structural fill was placed in thin lifts with individual lifts being moisture conditioned, compacted and tested to ensure a high consistency.

Based on soil boring information, the Scrubber Waste Pond embankments and underlying foundation soils consist of fill, Low Terrace Deposits and Coastal Plain Deposits. Fill thicknesses ranged from approximately 26' to 33'. The fill soils are comprised of silty and clayey, fine to coarse-grained sand with rock fragments. Standard Penetration Tests (SPT) in the fill indicated a high consistency with N-values ranging from 16 to greater than 50 blows per foot (bpf).

The foundation soils underlying the embankments consist of Low Terrace Deposits and Coastal Plain Deposits. Low Terrace Deposits are water-deposited soils typically resulting from meanderings of rivers and streams. The Charles R. Lowman Power Plant is located along the western bank of the Tombigbee River. Therefore, the Terrace Deposits at this site appear to have resulted from meanderings and flooding of the Tombigbee River.

Coastal Plain Deposits are naturally occurring soils that appear to have formed by the gradual deposition of sediment in an ancient marine environment. The Low Terrace and Coastal Plain deposits consisted of silty sand and sandy clay and extended to the boring termination depths ranging from approximately 40 to 60 feet below the existing ground surface. The deposits exhibited a variable consistency with SPT N-values ranging from 2 to 29 bpf.

Additional information and analyses associated with the foundation and embankments is addressed in the Report of Safety Factor Assessment – Coal Combustion Residuals Impoundment Embankments, by CDG Engineers & Associates, Inc. dated October 2016.

1.6 Description of Construction Zones

Based on a review of the available documentation, the Scrubber Waste Pond was constructed by excavating soils from below the original ground surface and placing these soils as fill to form the surrounding embankments. The original ground surface within the pond area ranged from ±EL 12' to EL 27'. Plans indicate that the pond was excavated to EL 13' and backfilled to EL 15' with Type "A" Embankment material. Cross sectional representations of the pond can be found in Figures 4 and 5.

Based on a review of the Tombigbee Generating Plant Unit 2 & 3 plans created by Burns & McDonnel circa 1975, the Scrubber Waste Pond floor and embankment was constructed with native soils which are generally described in Section 1.5 and indicated in Appendix B. There have been no additional studies conducted within the impoundment to determine whether the pond was constructed with a lining system that meets the permeability performance criteria specified in the CCR rule.

Based on our review of the Tombigbee Generating Plant Unit 2 & 3 plans created by Burns & McDonnel circa 1975, knowledge of the local geology, and the subsurface information obtained and presented in Appendix B of this report, CDG recommends that the Scrubber Waste Pond be classified as an unlined impoundment and treated as such in administering the requirements of the CCR Rule.

1.7 Detailed Dimensional Drawings

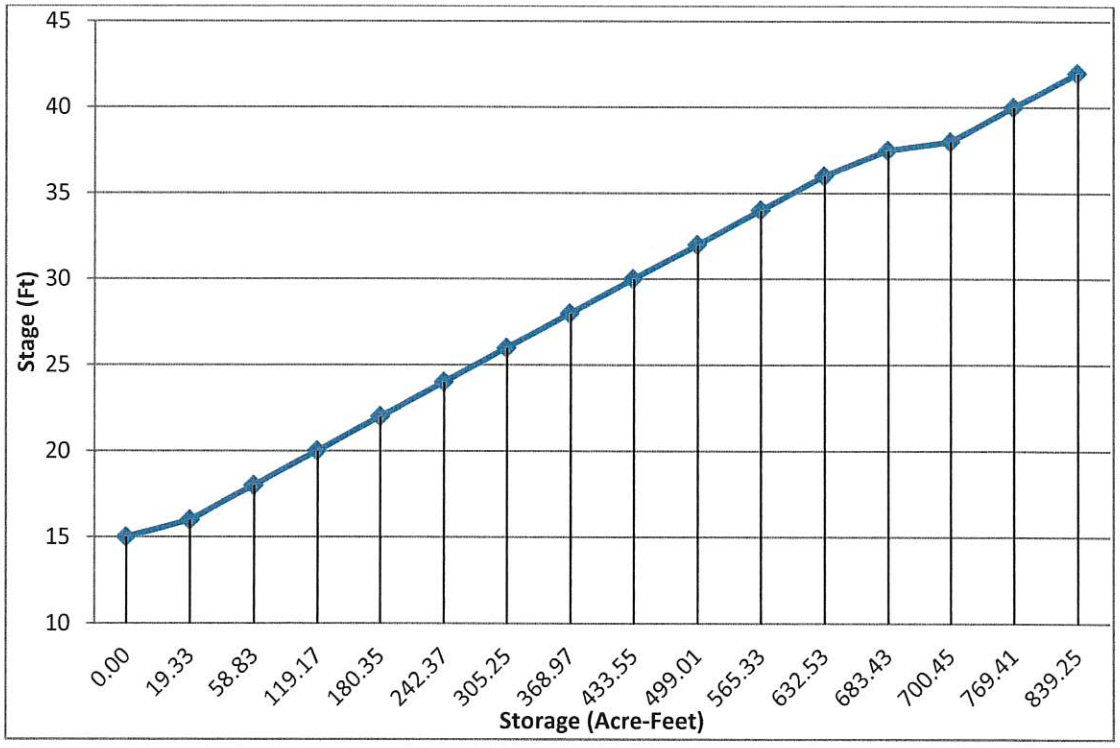
Appendix C - Tombigbee Generating Plant Unit 2 & 3 plans created by Burns & McDonnel circa 1975, contains detailed construction drawings for the Scrubber Waste Pond. Additionally, Appendix A - Figures 3 through 5 contain summary dimensional drawings of the pond including cross-sectional representations of the pond which were developed through the review of the available information, and the subsurface information obtained and presented in Appendix B of this report.

1.8 Existing Instrumentation

The Plant maintains normal pool information using stage boards located adjacent to the Scrubber Waste Pond intake structure. The intake structure is discussed in greater detail in Section 1.10 of this report. The stage board is manually read and.

1.9 CCR Unit Area Capacity Curves

Below is the Stage-Storage Curve for the Scrubber Waste Pond.



1.10 Spillways and Diversion Systems

The Scrubber Waste Intake consists of two suction lift pumps with a normal operating flow of 1395 gpm (3.11 cfs). The pumps are fed by two floating intake hoses that allow for the removal of liquids from the laminar portion of the impounded waters. Ponds are drained by pumping systems and do not have identified gravity spillways.

During high rainfall events, mobile suction lift pumps are utilized at the pond to supplement permanent intake structures to control the flood event and to maintain pool operating levels.

Additional information and analyses associated with the spillway and diversion systems' is addressed in the Scrubber Waste Inflow Design Control Plan, by CDG Engineers & Associates, Inc. dated October 2016.

1.11 Surveillance, Maintenance, and Repair

Plant personnel conduct surveillance, maintenance, and repair items which are identified through the inspection on set intervals.

1.12 Prior Structural Instability

-None noted

2.0 GENERAL REMARKS AND CLOSING

The findings in this report were developed based on documents provided by the Owner and from the limited information obtained through field and laboratory testing programs. If significant changes are made to the use, capacity or geometry of the berms and/or impoundments, CDG should be allowed to review our findings in light of the changes to determine if additional testing and revised conclusions are needed.

This report is intended to meet the requirements of the CFR 40.257.73 (4) for the History of Construction report for the Scrubber Waste Pond.

The conclusions, analyses, and recommendations presented in this report are based upon information provided, currently accepted engineering principles, practices, and existing testing standards in the area where the services were provided. No other warranty, expressed or implied, is made.

Appendix A

Figure 1- Scrubber Waste Pond Location Map

Figure 2 – Scrubber Waste Aerial Map of Impoundments

Figure 3 – Scrubber Waste Pond Impoundment Overview

Figure 4 – Scrubber Waste Pond Section U-U'

Figure 5 – Scrubber Waste Pond Section V-V'

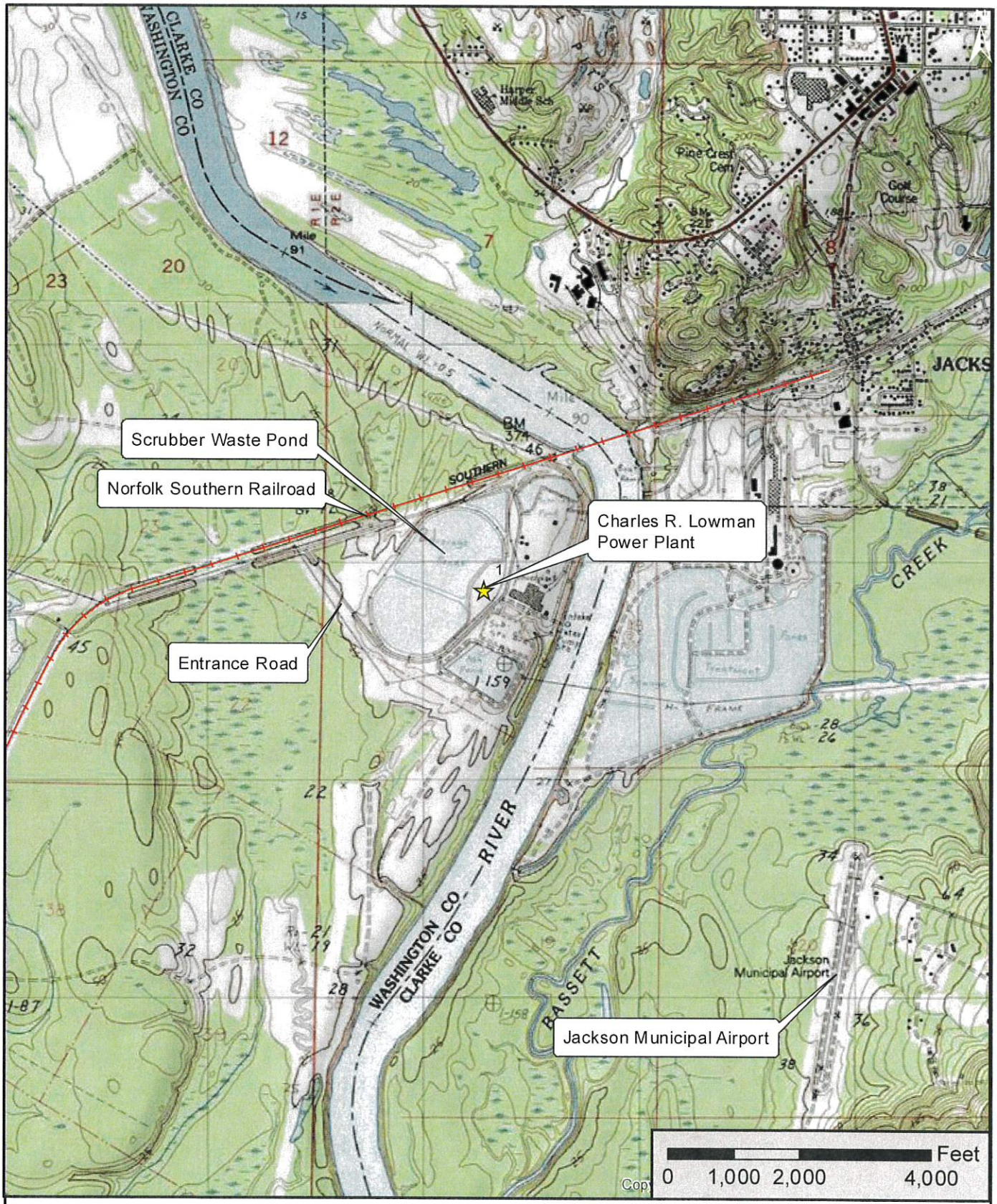


Figure 1 - Scrubber Waste Pond Location Map

Charles R. Lowman Power Plant
PowerSouth Energy Cooperative
Leroy, AL

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Figure 2 - Aerial Map of Impoundments

Charles R. Lowman Power Plant
PowerSouth Energy Cooperative
Leroy, AL

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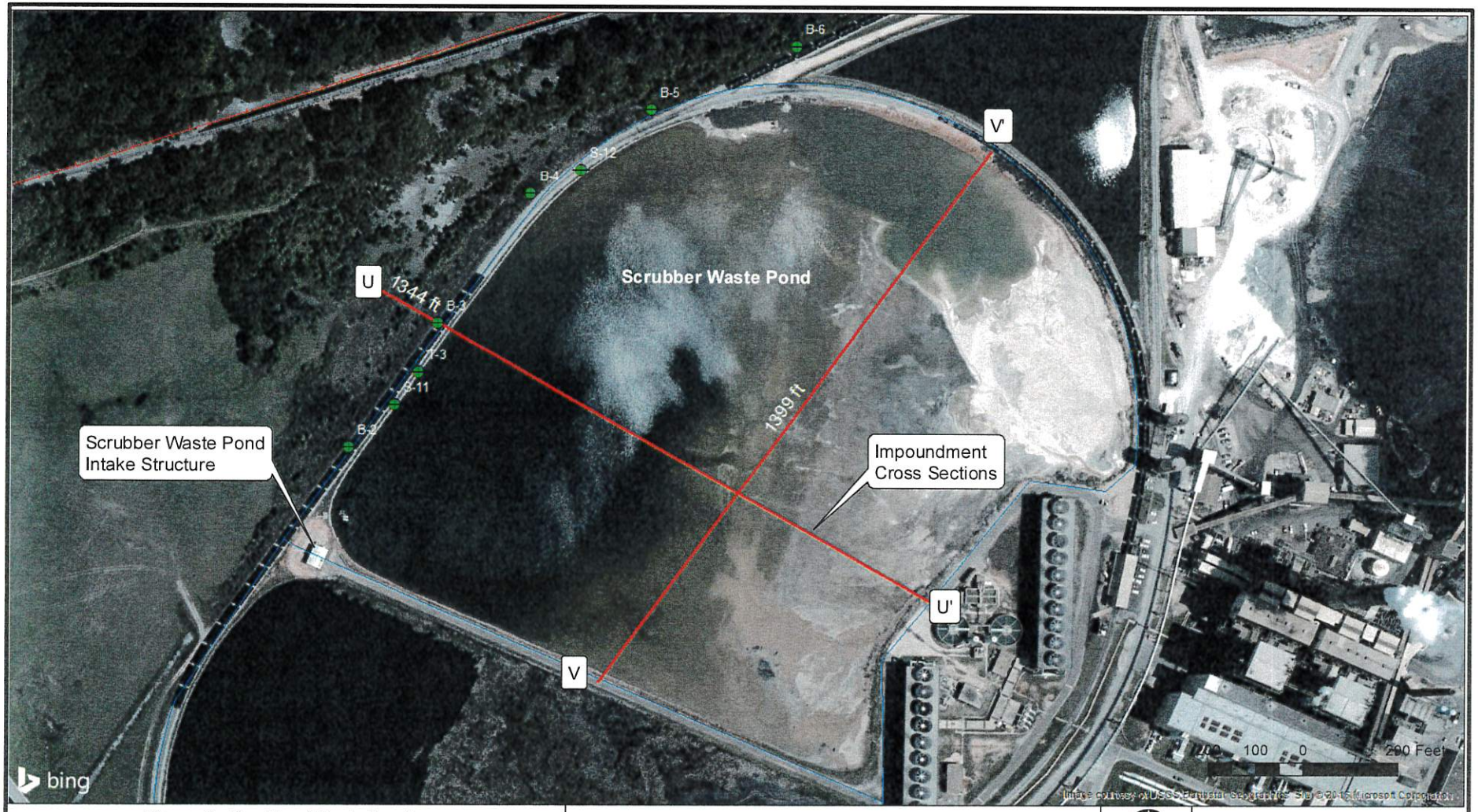

Figure 3 - Scrubber Waste Pond
Impoundment Overview

Charles R. Lowman Power Plant

Leroy, AL

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Sheet No.
Fig.3

Drawn By: JRA
Checked by: RDW
Date: October 2016

SCRUBBER WASTE POND
SECTION U - U'

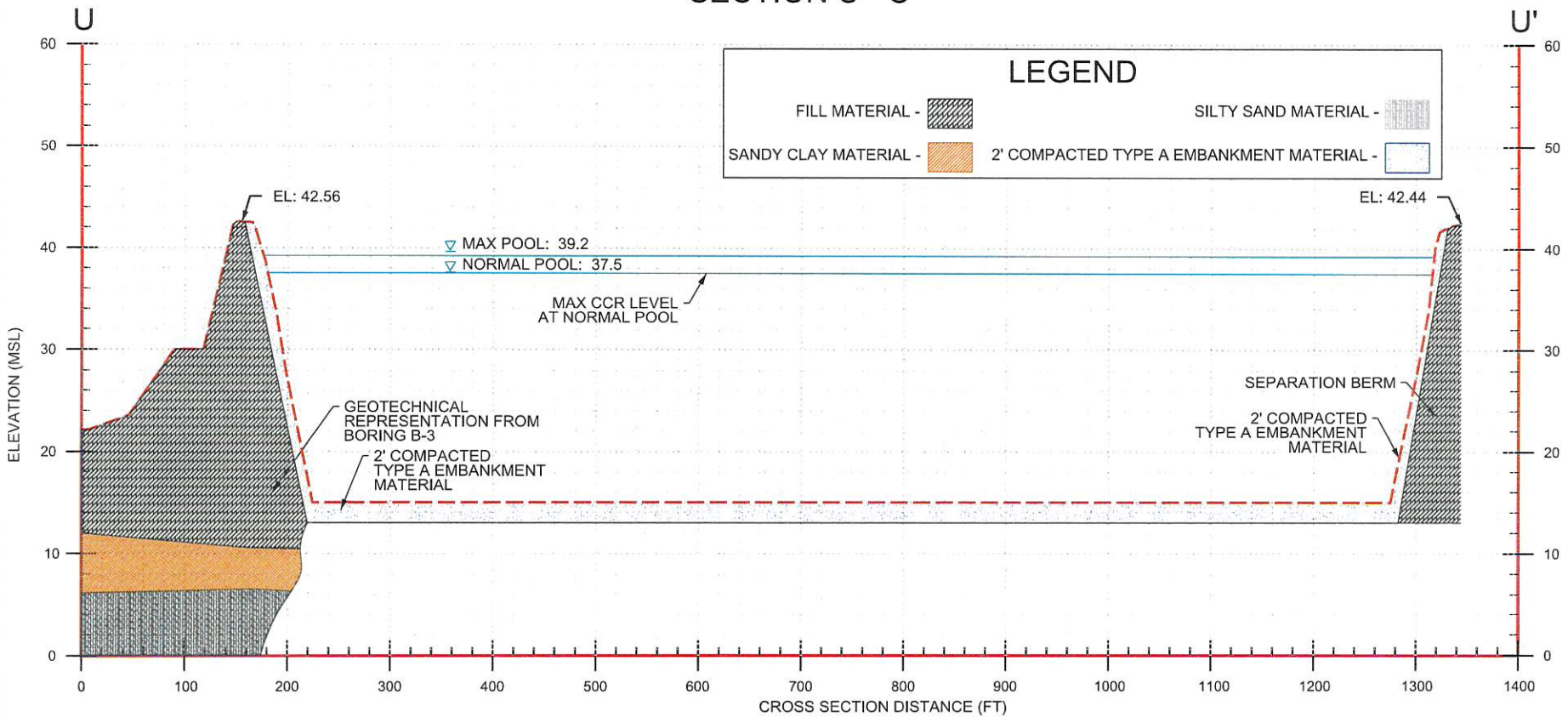

Figure 4 - Scrubber Waste Pond Section U-U'
Charles R. Lowman Power Plant
Leroy, AL

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Fig.4

Scale:	H:1"=100'; V:1"=10'
Drawn By:	JRA
Checked by:	RDW
Date:	October 2016

SCRUBBER WASTE POND
SECTION V - V'

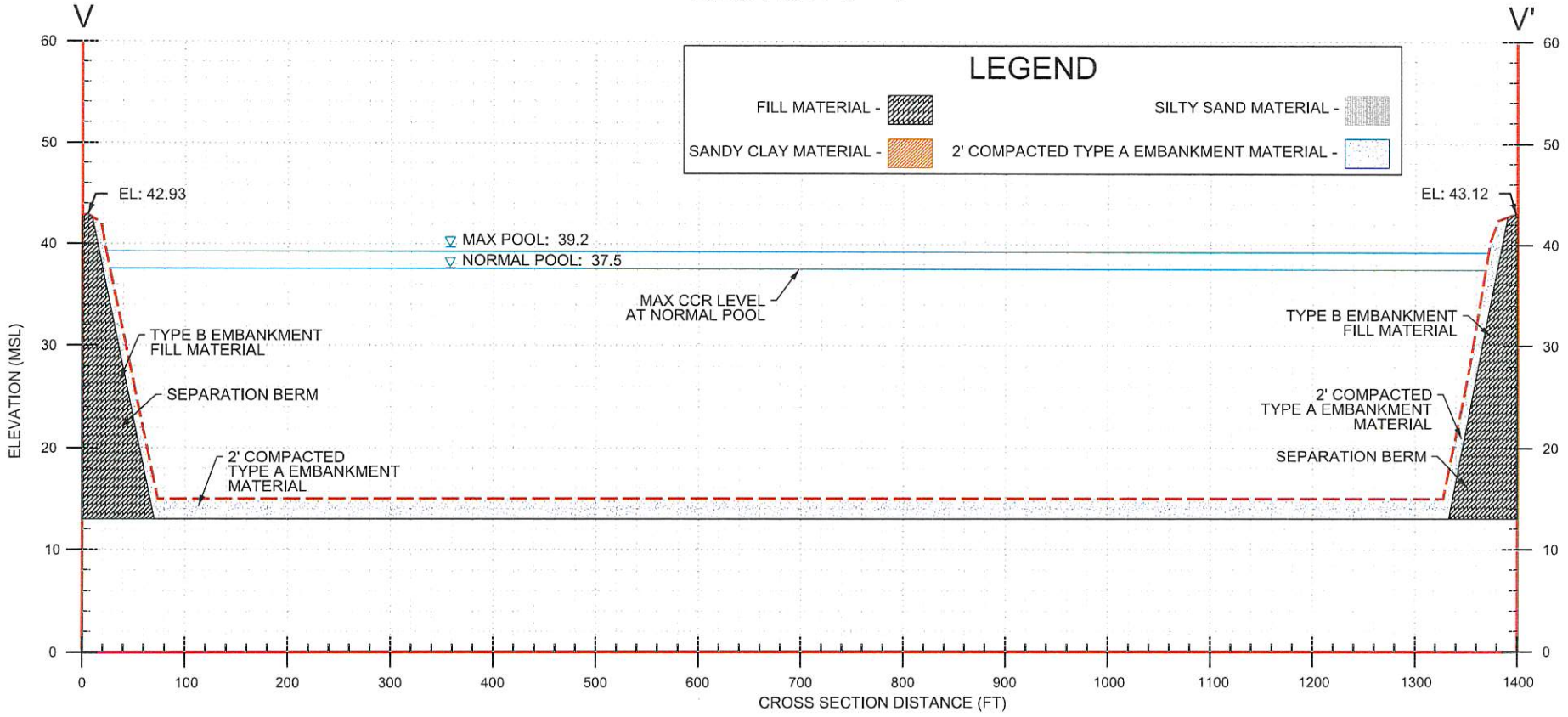

Figure 5 - Scrubber Waste Pond Section V-V'

Charles R. Lowman Power Plant

Leroy, AL

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Fig.5

Scale:	H:1"=100'; V:1"=10'
Drawn By:	JRA
Checked by:	RDW
Date:	October 2016

Appendix B

Boring Logs

CDG Engineers & associates

Albertville, AL
Tel:(256) 891-3458

Andalusia, AL
Tel:(334) 222-9431

Birmingham, AL
Tel:(205) 733-9431

Hoover, AL
Tel:(205) 463-2600

Defuniak Springs, FL
Tel:(850) 892-0225

Dothan, AL
Tel:(334) 677-9431

BORING LOG

Project Name:	Berm Stability Evaluation - Lowman Power Plant
Project Number:	060921201
Boring Number:	B-2
Date Drilled:	July 14, 2009

Page 1 of 2

Notes: SS = Split Spoon

Depth (feet)	Approx. Elev. (feet)	Graphic Scale	MATERIAL DESCRIPTION	TYPE	BLOWS/ 6 INCHES	N	CORE REC. (%)	RQD (%)	REMARKS
0	44		Crushed aggregate						
			Dense, red, silty fine to medium SAND	SS	19-20-20	40			LL=18, PL=14, PI=4 Fines Content = 33.5% USCS = SC-SM MC = 8.8%
5	39			SS	20-21-22	43			MC = 8.4%
			...very dense, with numerous rock fragments	SS	14-23-30	50+			MC = 10.2%
10	34								▽ Groundwater encountered at +/-11 feet on 8/4/2009.
			Dense, tan, silty coarse SAND with numerous rock fragments	SS	21-18-20	38			▽ Groundwater encountered at 13.5 feet at time of boring MC = 13.3%
15	29								
			Medium dense, reddish tan, silty fine SAND with trace rock fragments	SS	7-10-14	24			LL=23, PL=20, PI=3 Fines Content = 25.5% USCS = SM MC = 14.9%
20	24								
			...dense, with gravel	SS	8-13-20	33			MC = 11.3%
25	19								

CDG Engineers & associates

Albertville, AL
Tel:(256) 891-3458

Andalusia, AL
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Birmingham, AL
Tel:(205) 733-9431

Hoover, AL
Tel:(205) 463-2600

Defuniak Springs, FL
Tel:(850) 892-0225

Dothan, AL
Tel:(334) 677-9431

BORING LOG

Project Name:	Berm Stability Evaluation - Lowman Power Plant
Project Number:	060921201
Boring Number:	B-2
Date Drilled:	July 14, 2009 Page 2 of 2

Notes: SS = Split Spoon

Depth (feet)	Approx. Elev. (feet)	Graphic Scale	MATERIAL DESCRIPTION	TYPE	BLOWS/ 6 INCHES	N	CORE REC. (%)	RQD (%)	REMARKS
25	19		Dense, reddish tan, silty fine SAND, with gravel (Fill)						
30	14		Medium dense, reddish tan, silty fine to coarse-grained SAND	SS	6-12-8	20			MC = 14.2%
35	9		Loose, grey, silty fine SAND	SS	2-3-4	7			LL=NP, PL=NP, PI=NP Fines Content = 20.0% USCS = SM MC = 28.3%
40	4		... medium dense, with gravel (Low Terrace Deposits)	SS	6-8-8	16			MC = 23.9%
			Boring Terminated at 40 feet						
45	-1								
50	-6								Piezometer installed at the time of boring.

CDG Engineers & associates

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Tel:(256) 891-3458

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Birmingham, AL
Tel:(205) 733-9431

Hoover, AL
Tel:(205) 463-2600

Defuniak Springs, FL
Tel:(850) 892-0225

Dothan, AL
Tel:(334) 677-9431

BORING LOG

Project Name:	Berm Stability Evaluation - Lowman Power Plant
Project Number:	060921201
Boring Number:	B-3
Date Drilled:	July 15, 2009 Page 1 of 2

Notes: SS = Split Spoon

Depth (feet)	Approx. Elev. (feet)	Graphic Scale	MATERIAL DESCRIPTION	TYPE	BLOWS/ 6 INCHES	N	CORE REC. (%)	RQD (%)	REMARKS
0	44		Crushed aggregate						
			Medium dense, red, silty fine to medium SAND, with numerous rock fragments	SS	7-10-15	25			
5	39		... dense	SS	10-18-16	34			
			...reddish tan, with gravel	SS	16-18-18	36			
10	34								
			... very dense, tan, with gravel	SS	24-28-34	50+			
15	29								
			... dense, reddish tan, with trace rock fragments	SS	18-20-29	49			▽ Groundwater encountered at 20 feet at time of boring
20	24								
			...red, with gravel	SS	10-16-22	38			
25	19								

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BORING LOG

Project Name:	Berm Stability Evaluation - Lowman Power Plant
Project Number:	060921201
Boring Number:	B-3
Date Drilled:	July 15, 2009

Notes: SS = Split Spoon

Depth (feet)	Approx. Elev. (feet)	Graphic Scale	MATERIAL DESCRIPTION	TYPE	BLOWS/ 6 INCHES	N	CORE REC. (%)	RQD (%)	REMARKS
25	19								
			Dense, red, silty fine to medium SAND, with gravel	SS	11-14-11	25			
30	14		(Fill)						
			Stiff, grey and tan, fine sandy CLAY, with gravel	SS	5-6-6	12			
35	9								
			Medium dense, grey and tan, silty fine SAND	SS	5-6-7	13			
40	4		(Low Terrace Deposits)						
			Boring Terminated at 40 feet						
45	-1								
50	-6								Boring backfilled with grout upon completion.

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BORING LOG

Project Name:	Berm Stability Evaluation - Lowman Power Plant
Project Number:	060921201
Boring Number:	B-4
Date Drilled:	July 13, 2009 Page 1 of 2

Notes: SS = Split Spoon

Depth (feet)	Approx. Elev. (feet)	Graphic Scale	MATERIAL DESCRIPTION	TYPE	BLOWS/ 6 INCHES	N	CORE REC. (%)	RQD (%)	REMARKS
0	44		Crushed aggregate						
			Dense, red, silty fine to medium SAND	SS	21-24-26	50			MC = 8.4%
5	39		...very dense, with gravel	SS	15-25-27	50+			MC = 8.5%
			...medium dense	SS	9-12-15	27			MC = 14.2%
10	34								
			...very dense, reddish brown	SS	30-35-40	50+			MC = 7.3%
15	29								
			...dense, orange and tan	SS	12-14-19	33			MC = 14.7% ▽ Groundwater encountered at 20 feet at time of boring
20	24								
			...medium dense, red	SS	10-12-15	27			MC = 21.4%
25	+/-19								

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BORING LOG

Project Name:	Berm Stability Evaluation - Lowman Power Plant
Project Number:	060921201
Boring Number:	B-4
Date Drilled:	July 13, 2009 Page 2 of 2

Notes: SS = Split Spoon

Depth (feet)	Approx. Elev. (feet)	Graphic Scale	MATERIAL DESCRIPTION	TYPE	BLOWS/ 6 INCHES	N	CORE REC. (%)	RQD (%)	REMARKS
25	19		Medium dense, red, silty fine to medium SAND, with gravel						
			Medium dense, tan, silty fine SAND, with gravel (Fill)	SS	5-7-7	14			MC = 15.3%
30	14								
				SS	2-3-4	7			No recovery
35	9								
			Loose, brown, silty fine SAND (Low Terrace Deposits)	SS	4-3-4	7			MC = 38.2%
40	4		Boring Terminated at 40 feet						
45	-1								
50	-6								Boring backfilled with grout upon completion.

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BORING LOG

Project Name:	Berm Stability Evaluation - Lowman Power Plant
Project Number:	060921201
Boring Number:	B-5
Date Drilled:	July 15, 2009

Notes: SS = Split Spoon

Depth (feet)	Approx. Elev. (feet)	Graphic Scale	MATERIAL DESCRIPTION	TYPE	BLOWS/ 6 INCHES	N	CORE REC. (%)	RQD (%)	REMARKS
0	43		Crushed aggregate						
			Dense, red, silty fine to coarse SAND, with gravel	SS	10-18-20	38			LL=17, PL=16, PI=1 Fines Content = 21.1% USCS = SM MC = 7.2%
5	38		...medium dense	SS	8-12-16	28			MC = 8.3%
			...reddish orange	SS	10-11-12	23			LL=NP, PL=NP, PI=NP Fines Content = 15.3% USCS = SM MC = 8.6%
10	33								
			...same	SS	10-12-16	28			
15	28								
									▽ Groundwater encountered at +/-19 feet on 8/4/2009.
			...same	SS	8-10-14	24			MC = 13.6%
20	23								
			...dense	SS	15-18-23	41			MC = 15.2%
25	18								

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BORING LOG

Project Name:	Berm Stability Evaluation - Lowman Power Plant
Project Number:	060921201
Boring Number:	B-5
Date Drilled:	July 15, 2009 Page 2 of 2

Notes: SS = Split Spoon
PPqu = Pocket Penetrometer Unconfined Compressive Strength

Depth (feet)	Approx. Elev. (feet)	Graphic Scale	MATERIAL DESCRIPTION	TYPE	BLOWS/ 6 INCHES	N	CORE REC. (%)	RQD (%)	REMARKS
25	18		Reddish orange, silty fine to medium SAND, with gravel (Fill)						
				SS	6-8-8	16			▽ Groundwater encountered at 30 feet at time of boring
30	13		Stiff, grey, fine sandy CLAY						PPqu = 1.0 tsf
			Medium dense, grey and tan, silty fine SAND	SS	4-6-6	12			LL=23, PL=21, PI=2 USCS = SM MC = 29.7%
35	8								
			...same (Low Terrace Deposits)	SS	4-4-7	11			MC = 28.5%
40	3		Boring Terminated at 40 feet						
45	-2								
50	-7								Piezometer installed at the time of boring.

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BORING LOG

Project Name:	Berm Stability Evaluation - Lowman Power Plant
Project Number:	060921201
Boring Number:	B-6
Date Drilled:	July 15, 2009

Notes: SS = Split Spoon

Depth (feet)	Approx. Elev. (feet)	Graphic Scale	MATERIAL DESCRIPTION	TYPE	BLOWS/ 6 INCHES	N	CORE REC. (%)	RQD (%)	REMARKS
0	43		Crushed aggregate						
			Medium dense, red, silty fine to medium SAND, with trace gravel	SS	10-11-12	23			
5	38			SS	11-14-14	28			
			...red and orange	SS	16-16-14	30			
10	33								▽ Groundwater encountered at 10 feet at time of boring
			... dense, orange with gravel	SS	19-24-26	40			
15	28								
			...medium dense	SS	8-9-10	19			
20	23								
			...same	SS	10-10-12	22			
25	18								

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BORING LOG

Project Name:	Berm Stability Evaluation - Lowman Power Plant
Project Number:	060921201
Boring Number:	B-6
Date Drilled:	July 15, 2009 Page 2 of 2

Notes: SS = Split Spoon
PPqu = Pocket Penetrometer Unconfined Compressive Strength

Depth (feet)	Approx. Elev. (feet)	Graphic Scale	MATERIAL DESCRIPTION	TYPE	BLOWS/ 6 INCHES	N	CORE REC. (%)	RQD (%)	REMARKS
25	18		Medium dense, orange, silty fine to medium SAND, with gravel (Fill)						
			Stiff, grey, fine sandy CLAY	SS	5-5-7	12			PPqu = 1.25 tsf
30	13								
			Medium dense, brown, silty fine SAND	SS	6-6-10	16			
35	8								
			...tan and brown (Low Terrace Deposits)	SS	6-8-10	18			
40	3		Boring Terminated at 40 feet						
45	-2								
50	-7								Boring backfilled with grout upon completion.

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Boring S-11

Project Name: Lowman Berm Stability Analysis
Project Location: Leroy, Alabama Hammer Type: Automatic
CDG Project Number: 221141100 Method: Mud-Rotary
Date Drilled: 12/8/2011 Approx. Ground Elevation: +/-42 feet

Notes:
+/- 18" of railroad ballast at ground surface.

☒ - Split Spoon Sample ■ - Undisturbed Sample

Depth (ft.)	Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
	40.0		Medium dense, red and black, silty fine to medium SAND with rock fragments	☒	0-0-18 (18)								
5			...dense, red	☒	29-21-24 (45)								
	35.0		...medium dense	☒	18-15-13 (28)								
10			...very dense, red and tan, with numerous rock fragments	☒	28-30-31 (61)								▽ Groundwater at +/-EL32.5 ft. on 12/8/2011.
	30.0												
15			...dense	☒	10-23-23 (46)								
	25.0												
20			... very dense, reddish tan	☒	14-28-30 (58)								
	20.0												
25			... dense, red and tan with numerous rock fragments	☒	14-17-18 (35)								▽ Groundwater at +/-EL17 ft. on 5/1/2012.
	15.0												
			... medium dense, red	☒	8-16-14 (30)								

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Boring S-11

Project Name: Lowman Berm Stability Analysis
Project Location: Leroy, Alabama Hammer Type: Automatic
CDG Project Number: 221141100 Method: Mud-Rotary
Date Drilled: 12/8/2011 Approx. Ground Elevation: +/-42 feet

Notes:
+/- 18" of railroad ballast at ground surface.

☒ - Split Spoon Sample ■ - Undisturbed Sample

Depth (ft.)	Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
			Medium dense, red, silty fine to medium SAND with numerous rock fragments (Fill)										
	10.0			☒	6-9-9 (18)		68	22	46				USCS=CH
35			Stiff, red and grey CLAY with fine sand	■									
	5.0												
			...grey and tan	☒	6-8-9 (17)								
40				■									
	0.0												
			Medium dense, grey and tan, silty fine SAND	☒	10-14-15 (29)								
45													
	-5.0												
			... same	☒	6-6-12 (18)						24.7		USCS=SM
50													
	-10.0												
			... tan with rock fragmnets	☒	5-9-10 (19)								
55													
	-15.0												Piezometer Installed.
			... grey and tan (Coastal Plain Deposits)	☒	10-10-11 (21)								

Boring terminated at 60.0 feet.

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Boring S-12

Project Name: Lowman Berm Stability Analysis
Project Location: Leroy, Alabama Hammer Type: Automatic
CDG Project Number: 221141100 Method: Mud-Rotary
Date Drilled: 12/5/2011 Approx. Ground Elevation: +/-42.5 feet

Notes:
+/- 18" of railroad ballast at ground surface.
PPqu = Unconfined Compressive Strength.
☒ - Split Spoon Sample ■ - Undisturbed Sample

Depth (ft.)	Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
	40.0		Very dense, red and black, silty fine to medium SAND with rock fragments	SS	34-40-50 (90)		NP	NP	NP		30.2		USCS = SM
5			... red	SS	23-35-35 (70)								
	35.0		... with trace rock fragments	SS	20-31-25 (56)								
													USCS = SP-SM
10			Very dense, red and tan, fine to medium SAND with trace silt	SS	20-27-30 (57)		NP	NP	NP		8.4		▽ Groundwater at +/-EL33 ft. on 12/6/2011.
	30.0												
15			...medium dense, reddish tan with trace rock fragments	SS	10-16-20 (36)								
	25.0												
20			Dense, red and grey, clayey fine to medium SAND	SS	11-21-22 (43)								▽ Groundwater at +/-EL23 ft. on 12/13/2011.
	20.0												
25			...medium dense, red	SS	5-11-16 (27)								
			(Fill)										
	15.0		Stiff, grey CLAY with trace fine sand	SS	4-5-6 (11)		67	24	43		97.7	1.25	USCS = CH

(Continued Next Page)

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Boring S-12

Project Name: Lowman Berm Stability Analysis
Project Location: Leroy, Alabama Hammer Type: Automatic
CDG Project Number: 221141100 Method: Mud-Rotary
Date Drilled: 12/5/2011 Approx. Ground Elevation: +/-42.5 feet

Notes:
+/- 18" of railroad ballast at ground surface.
PPqu = Unconfined Compressive Strength.
☒ - Split Spoon Sample ■ - Undisturbed Sample

Depth (ft.)	Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
			Stiff, grey CLAY with trace fine sand										
	10.0												
35			... medium	X	3-3-6 (9)							0.5	
	5.0												
40			Loose, grey, silty fine to medium SAND	X	2-3-3 (6)		NP	NP	NP		29.7		USCS = SM
	0.0												
45			... medium dense, light grey and tan with rock fragments	X	7-9-10 (19)								
	-5.0												
50			... same	X	5-6-7 (13)								
	-10.0												
55			Medium dense, light grey and tan, fine to medium SAND with trace silt	X	9-15-12 (27)		NP	NP	NP		6.8		USCS = SP-SM
	-15.0												Borehole backfilled with grout upon completion.
			... tan (Coastal Plain Deposits)	X	5-8-6 (14)								

Boring terminated at 60.0 feet.

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Boring T-3

Project Name: Lowman CCR Rule Phase I
Project Location: Leroy,AL Hammer Type: Automatic
CDG Project Number: 061521207 Method: Diedrich D-50 Mud Rotary
Date Drilled: 8/10/2016 Approx. Ground Elevation: +/-42.0 feet

Notes:
+/- 18" of railroad ballast at ground surface

☒ - Split Spoon Sample

Depth (ft.)	Approx. Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
0	40.0												
5	35.0		Medium dense, red, silty fine to medium SAND	X	3-6-14 (20)								
10	30.0		...same	X	8-12-11 (23)								
15	25.0		Dense, red, silty fine to coarse SAND with rock fragments	X	11-16-15 (31)		NP	NP	NP		10.3		USCS=SP-SM
20	20.0		...medium dense	X	11-15-12 (27)								
25			...dense	X	15-17-20 (37)								

(Continued Next Page)

Boring T-3

Project Name: Lowman CCR Rule Phase I
Project Location: Leroy,AL Hammer Type: Automatic
CDG Project Number: 061521207 Method: Diedrich D-50 Mud Rotary
Date Drilled: 8/10/2016 Approx. Ground Elevation: +/-42.0 feet

Notes:
+/- 18" of railroad ballast at ground surface

☒ - Split Spoon Sample

Depth (ft.)	Approx. Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
	15.0		...dense *(Continued from previous page)*										
30			...medium dense	X	10-9-7 (16)								
	10.0												
35			(Fill)	X	1-1-1 (2)		66	22	44		84.4	<0.25	USCS=CH
			Very soft, gray, plastic CLAY with trace of root fragment										
	5.0												
40			...soft	X	2-3-4 (7)							0.50	
	0.0		Loose, gray, silty fine SAND										
45			...medium dense	X	5-4-7 (11)								
	-5.0												
50			...same	X	6-7-8 (15)								

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Boring T-3

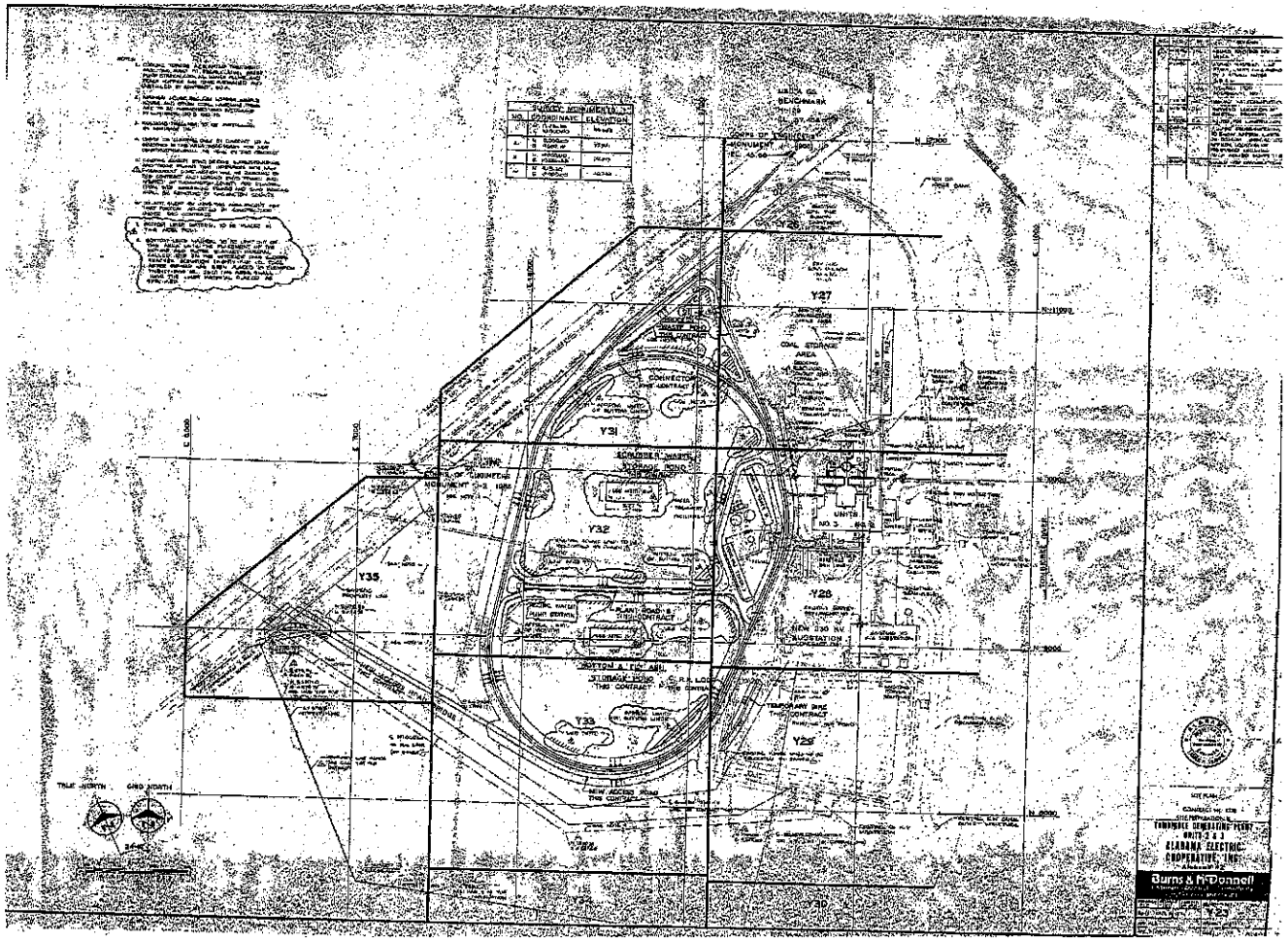
Project Name: Lowman CCR Rule Phase I
Project Location: Leroy,AL Hammer Type: Automatic
CDG Project Number: 061521207 Method: Diedrich D-50 Mud Rotary
Date Drilled: 8/10/2016 Approx. Ground Elevation: +/-42.0 feet

Notes:
+/- 18" of railroad ballast at ground surface

☒ - Split Spoon Sample

Depth (ft.)	Approx. Elev. (ft.)	Graphic Log	Material Description	Type	Blows/6" (N-Value)	Rec. % (RQD)	LL	PL	PI	MC	Fines (%)	PPqu (tsf)	Remarks
55	-15.0		...same *(Continued from previous page)*	☒	8-10-12 (22)								
60			...same (Coastal Plain Deposits)	☒	8-11-11 (22)								Borehole backfilled with grout upon completion.
			Boring terminated at 60.0 feet.										
65	-20.0												
70	-25.0												
75	-30.0												
	-35.0												

Appendix C



Appendix C - Plan Copy of
TOMBIGBEE GENERATING PLANT UNIT
2&3 PLANS CREATED BY BURNS &
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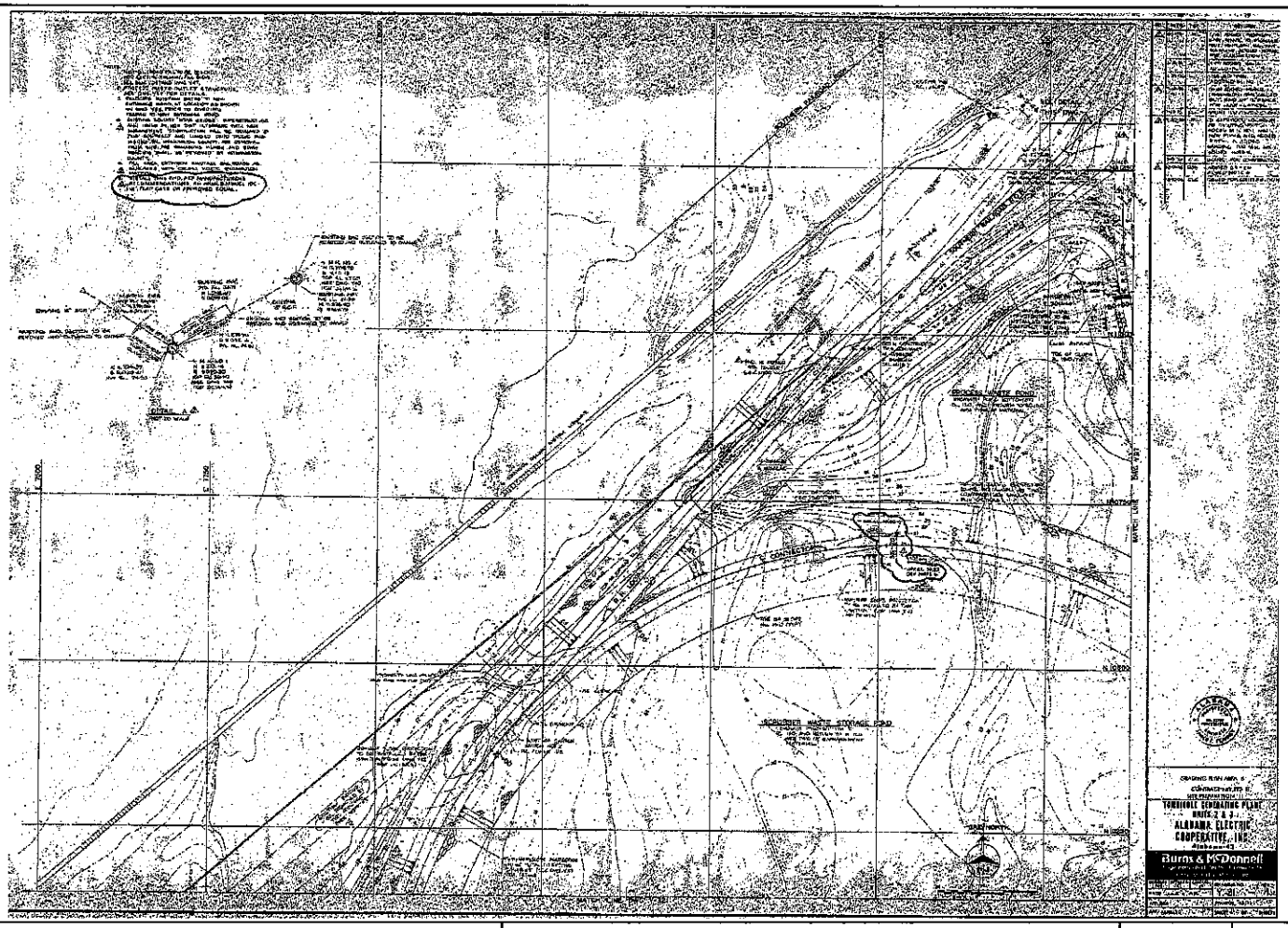
NOT TO SCALE

Drawn By: JRA

Checked by: RDW

Date: OCTOBER 2016

SHEET SHOWN IS EXCERPT FROM THE TOMBIGBEE GENERATING PLANT UNIT 2&3 PLANS CREATED BY BURNS & MCDONNEL, CIRCA 1975.



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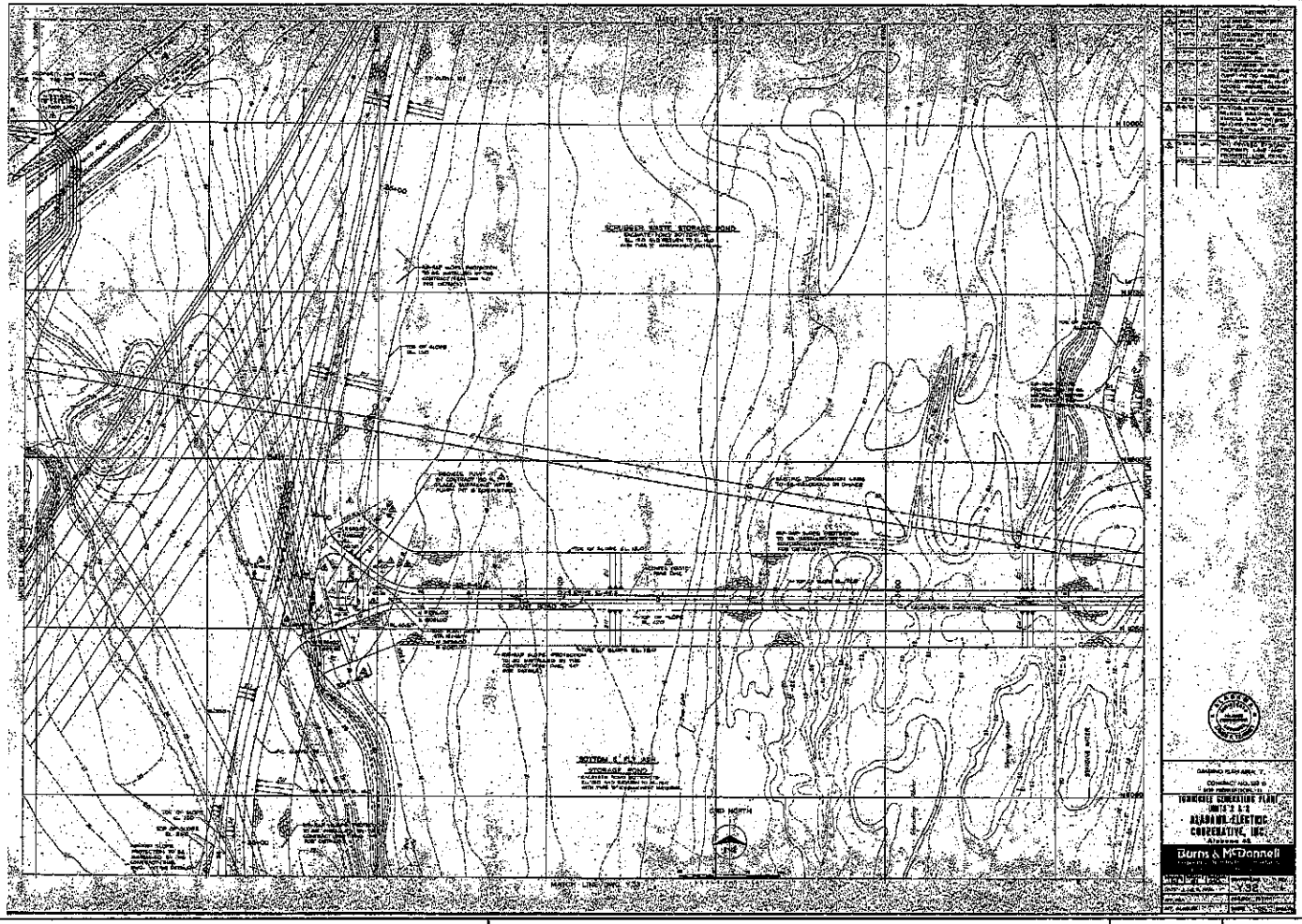
Drawn By: JRA

Checked by: RDW

Date: OCTOBER 2016



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