CLOSURE AND POST-CLOSURE PLAN
PLANT CRISP ASH POND
CRISP COUNTY POWER COMISSION
Worth County, Georgia

Prepared for

Crisp County Power Commission

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LIST OF ACRONYMS

CCPC	Crisp County Power Commission
CCR	Coal Combustion Residual
C.F.R.	Code of Federal Regulations
CY	Cubic Yard
EPA	Environmental Protection Agency
EPA CCR Rule	USEPA Rule for Disposal of Coal Combustion Residuals from Electric Utilities (40 C.F.R. 257)
MSW	Municipal Solid Waste
MW	Megawatt

1.0 INTRODUCTION

Geosyntec Consultants (Geosyntec) of Kennesaw, Georgia, at the request of Crisp County Power Commission (CCPC), prepared this Closure and Post-Closure Plan for the ash impoundment located at CCPC's Plant Crisp. Plant Crisp is located in Warwick, Georgia on the southern end of Lake Blackshear.

1.1 Site Location and Background

Plant Crisp is a dual-fuel (coal and natural gas) electrical generation facility, with a 12.5 megawatt (MW) capacity coal-fired unit and 5 MW capacity natural gas combustion turbine. Coal Combustion Residuals (CCRs) are byproducts of coal combustion. The United States Environmental Protection Agency (EPA) has determined that CCRs constitute solid waste under Subtitle D of the Resource Conservation and Recovery Act (RCRA) [United States EPA Rule for Disposal of Coal Combustion Residuals from Electric Utilities, 80 Fed. Reg. 21302 (Apr. 17, 2015) ("EPA CCR Rule")].

Onsite, CCRs were disposed into an ash impoundment (or ash pond) using a wet sluicing method. Constructed in the mid-1970s, as an unlined pond [CDM Smith, 2014], the ash pond started to receive sluiced ash in 1976. Due to changes in plant operations and utilization of the natural gas unit, coal burning and resulting ash sluice water generation has been minimal in recent years with the most recent use of the ash pond for CCRs taking place in August 2015. Accordingly, the ash pond may currently be considered an "inactive ash pond" [1].

Shown in Figure 1, the electrical generation facility, ash pond, and hydroelectric dam are located on approximately 100 acres of CCPC property near Lake Blackshear and the Flint River. The ash pond itself is approximately 6.1 acres, with embankments on the western and

[1] An *Inactive CCR surface impoundment* means a CCR surface impoundment that no longer receives CCR on or after October 19, 2015 and still contains both CCR and liquids on or after October 19, 2015 (40 C.F.R. § 257.53; 80 Fed. Reg. 21302). On August 5, 2016, U.S. Environmental Protection Agency revised rules relating to inactive CCR surface impoundments [81 Fed. Reg. 51802 (Aug. 5, 2016)]. The revised regulations require a closure plan be prepared no later than April 17, 2018. This closure plan is being developed out of an abundance of caution given the changing nature of the rules.

partially southern and northern sides. The maximum embankment height is on the west end and is approximately 22 feet high [Rizzo Associates, 2015]. The Plant Crisp ash pond was classified as a low hazard unit during the EPA's coal combustion residuals impoundment assessment, dated February 2014 and conducted by CDM Smith [CDM Smith, 2014].

1.2 Purpose

Disposal of CCRs in landfills and surface impoundments and the safe operation and closure of these facilities are now regulated under the final EPA CCR Rule, 40 C.F.R. 257, which was published on 17 April 2015 and went into effect on 19 October 2015. The Georgia Environmental Protection Division, which administers solid waste management and disposal provisions in Georgia, is developing regulations relating to CCR landfills, surface impoundments, and expansions which will be codified at Georgia Department of Natural Resources Rules, Section 391-3-4-.10 ("GDNR CCR Rule"). This closure plan has been developed in accordance with the current draft rules, and would be modified in the event that any change in the GDNR CCR Rule requires modification or a different manner of closure and/or solid waste handling.

As noted, CPPC has not placed CCRs in the ash pond since August 2015, the last event in which coal was utilized at Plant Crisp. In accordance with EPA's CCR Rule, active ash ponds and new ash ponds which will undergo closure must develop a closure plan by 17 October 2016. Inactive ash ponds may require a closure plan be prepared no later than April 17, 2018 [40 C.F.R. § 257.100(e)(6), 40 C.F.R. § 257.102(b)(2)].

For ash ponds which the owner/operator elects to close, or those requiring closure pursuant to 40 C.F.R. Part 257, 40 C.F.R.§ 257.102(b) states that "*the owner or operator of a CCR unit must prepare a written closure plan that describes the steps necessary to close the CCR unit at any point during the active life of the CCR unit consistent with recognized and generally accepted good engineering practices.*" The written closure plan must be certified by a qualified professional engineer and completed no later than 17 October 2016. The purpose of this document is to provide the written closure plan for the ash pond at Plant Crisp.

In addition to the closure plan, 40 C.F.R. § 257.104 outlines the requirements for a written post-closure plan. 40 C.F.R. § 257.104(a)(2) states that "*An owner or operator of a CCR unit that elects to close a CCR as provided by 40 C.F.R.* § 257*.102(c) is not subject to the post-closure care criteria under this section."* Since CCPC will be closing the ash pond under 40 C.F.R. § 257.102(c), closure by removal of CCRs, post closure care and a written post-closure plan is not required for Plant Crisp Ash Pond Closure. 40 C.F.R. § 257.102(c) applies to owners and operators which elect closure by removal, as CCPC has done for the ash pond.

2.0 CLOSURE PLAN

Criteria for conducting closure of the ash pond are detailed in 40 C.F.R. § 257.102. In 40 C.F.R. § 257.102(a), two alternatives are presented for closure of CCR units, specifically:

> *Closure of a CCR landfill, CCR surface impoundment, or any lateral expansion of a CCR unit must be completed either by leaving the CCR in place and installing a final cover system or through removal of the CCR and decontamination of the CCR unit.*

CCPC conducted a feasibility assessment and elected "closure by removal of CCR and decontamination of the CCR unit" as the closure method for the unit. CCPC intends to dispose the CCRs removed from the ash pond at a local municipal solid waste (MSW) landfill permitted to receive CCRs and in accordance with GDNR Rules. Details of this closure method is presented in Section 2.1.

2.1 Closure by Removal

To remove the CCRs and decontaminate the unit, the following construction steps will be completed (listed in the order of construction):

- Mobilization and Site Preparation:
  This step includes mobilization of the contractor to the site, installation of erosion and sediment control measures, removal of vegetation present within the CCR unit, and establishing the general site setup.
- Dewatering of Ash Pond Free Liquids:
  Currently, the ash pond does not contain a significant amount of free liquids. If there is a build-up of free liquids in the ash pond due to precipitation and/or plant operations, they will be removed prior to the excavation of the CCRs. If free liquid removal is necessary, the removed liquids will be analyzed, treated as necessary, and disposed in accordance with applicable state and federal regulations and permits.
- Excavation of CCRs:

Mechanical methods (excavators, front-end loaders, etc.) will be used for excavation. Excavation will be continued until all CCRs are removed from the ash pond. Approximately 6 inches of underlying soils will also be removed.

- Dewatering of CCRs:

  If the excavated CCRs are too wet to transport and dispose of in a MSW, the moisture content will be reduced by primarily using windrowing method. If windrowing method is not effective to reduce the moisture content to the desired levels, absorbent desiccation or other drying methods may be utilized in addition. Procedures outlined in the Fugitive Dust Control Plan will be used during excavation and dewatering of CCRs to mitigate any fugitive dust concerns [Geosyntec, 2016].

- Transport and Disposal of CCRs:

  The removed ash, at an acceptable moisture content, will be loaded into conventional haul trucks using mechanical methods and will be transported to a local MSW landfill for disposal. Haul trucks will be equipped with an adequate cover over the CCRs for fugitive dust control, a construction entrance/exit will be designed and maintained to eliminate CCRs carried offsite on haul truck wheels, and haul trucks will be inspected prior to leaving the site.

- Verification of CCR Removal:

  Visual methods will be used for verification of the CCR removal. Probing of the subsurface may be used as an additional tool to assist the verification process as necessary.

- Site Grading and Stabilization:

  Once the CCR removal is complete, the dike system of the ash pond will be leveled and the site will be graded to provide positive drainage and to mimic the pre-development topography to the extent practical. Native vegetation will be re-established to stabilize the exposed areas and to prevent future erosion. As soon as practical after final grading, the contractor will take necessary steps to establish a protective vegetative cover of acceptable grasses over disturbed areas of the site. These steps shall include seeding, mulching, and any necessary fertilization at a minimum, and may include additional activities such as sodding of steeper slopes and drainage ways if necessary. Temporary

erosion control blankets may be used if necessary to provide seedbed protection and prevent wash-out of seed and fertilizer during vegetation establishment.

CCR removal and decontamination of the ash pond will be complete when all visible ash and 6 inches of underlying soils within the CCR unit have been removed, post-removal site grading and stabilization is performed, and per 40 C.F.R. § 257.102(c) *"groundwater monitoring concentrations do not exceed the groundwater protection standard established pursuant to 40 C.F.R. § 257.95(h) for constituents listed in Appendix IV of the CCR Rule."*

2.2 Groundwater Monitoring

In order to establish groundwater protection standards and in conjuncture with 40 C.F.R. § 257.90, CCPC will collect baseline groundwater monitoring data with at least eight independent sampling events from the four proposed groundwater monitoring wells presented in Figure 1. The results will be analyzed for Appendix III and IV constituents.[2] Within 90 days after completing the sampling and analysis, the groundwater results will be evaluated to determine if there has been a statistically significant increase over background concentrations for any constituent in any well. Appendix III and IV constituents are shown below.

Appendix III – Detection Monitoring Constituents

- Boron
- Calcium
- Chloride
- Fluoride
- pH
- Sulfate
- Total Dissolved Solids (TDS)

[2] Inactive surface impoundments are required to comply with the provisions of 40 C.F.R § 257.90(b), groundwater monitoring, no later than April 17, 2019. 81 Fed. Reg. 51806. Existing and new surface impoundments are required to comply with the provisions of 40 C.F.R. § 257.90(b), groundwater monitoring, no later than 17 October 2017.

Appendix IV – Assessment Monitoring Constituents

- Antimony
- Arsenic
- Barium
- Beryllium
- Cadmium
- Chromium
- Cobalt
- Fluoride
- Lead
- Lithium
- Mercury
- Molybdenum
- Selenium
- Thallium
- Radium 226 and 228 combined

Following the statistically analysis, CCPC will start a detection monitoring program in accordance with 40 C.F.R. § 257.94 and produce annual groundwater sampling reports for Appendix III constituents. Should results of the statistical analyses indicate a statistically significant increase in any of the Appendix III constituents, an assessment monitoring program will be established, as outlined in 40 C.F.R. § 257.95. In addition to the detection monitoring program parameters, the assessment monitoring program would test for Appendix IV constituents during the annual sampling events. If one or more constituents in Appendix IV are detected at statistically significant levels above the established groundwater protection standard in accordance with 40 C.F.R. § 257.90, CCPC will follow the guidelines established in 40 C.F.R. § 257.95(g) for the path forward for remedial activities.

2.3 Estimated Ash Volume and Extents

As presented in Figure 1, the ash pond at Plant Crisp covers approximately 6.1 acres. The extents of the ash are outlined and correspond to the limits of the constructed dikes. The ash limits will be further delineated using a field investigation.

Based on an estimation using Plant Crisp coal burn records provided by CCPC [CCPC, 2016] extending from 1976 (i.e., ash pond construction date) to present day, approximately 13,500 cubic yards (CYs) of CCRs are stored within the ash pond. It is assumed that top 6 inches native soil beneath the CCRs will also be removed as part of the "decontamination" process which will produce an additional 5,000 CYs of material to be disposed. In total, 18,500 CYs of ash and underlying soils will be excavated from the ash pond and disposed of at a local MSW landfill.

2.4 Estimated Closure Schedule

Ash pond closure will be initiated by 17 April 2017. The following is an estimated schedule for the closure of the Plant Crisp ash pond by removal of CCRs:

- Establishment of baseline groundwater monitoring data and statistical analysis
    - October 2016 – January 2018
- Detailed design of closure – construction drawings, specifications, and plans
    - October 2016 – March 2017
- Application for National Pollutant Discharge Elimination System (NPDES) Stormwater and, as needed, wastewater discharge permit [3]
    - November 2016 – March 2017
- Application for Georgia EPA solid waste handling/disposal permit/authorization under 391-3-4-.10, as needed.
    - November 2016 – March 2017
- Notification of intent to close
    - March 2017

[3] CCPC has contacted Georgia EPD and U.S. EPA regarding applicable permit requirements.

- Ash pond closure construction
    - April 2017 – January 2018
- Notification of CCR unit closure
    - February 2018

2.5 Deed Notification

40 C.F.R. § 257.102(i) states:

> *Deed notations:*
>
> *(1) Except as provided by paragraph (i)(4) of this section, following closure of a CCR unit, the owner or operator must record a notation on the deed to the property, or some other instrument that is normally examined during title search.*
>
> *(2) The notation on the deed must in perpetuity notify any potential purchaser of the property that:*
>
> > *(i) The land has been used as a CCR unit; and*
> >
> > *(ii) Its use is restricted under the post-closure care requirements as provided by § 257.104(d)(1)(iii).*
>
> *(3) Within 30 days of recording a notation on the deed to the property, the owner or operator must prepare a notification stating that the notation has been recorded. The owner or operator has completed the notification when it has been placed in the facility's operating record as required by § 257.105(i)(9).*
>
> *(4) An owner or operator that closes a CCR unit in accordance with paragraph (c) of this section* (i.e., Closure by Removal) *is not subject to the requirements of paragraphs (i)(1) through (3) of this section.*

Since the closure of the unit will be performed in accordance with 40 C.F.R. § 257.102(c) (i.e., Closure by Removal), a deed notification is not required in accordance with paragraph (4) of this section.

2.6 Other Considerations and Requirements

- For closure construction activities, the site is considered to be a cut-fill balance site and use of on-site or off-site borrow source is not planned.

- Since closure by removal is selected as the closure method, no specific, low-permeability cover system will be installed. As previously indicated, the site will be re-graded for positive drainage and stabilized for erosion control following removal of the CCRs.

- CCPC will maintain the Closure Plan in the facility's operating record as required by 40 C.F.R. § 257.105(i).

- No later than the date CCPC initiates closure of the ash pond, CCPC will prepare a notification of intent to close the ash pond. CCPC will maintain the notification in the facility's operating record as required by 40 C.F.R. § 257.105(i)(7).

- Upon completion of the closure of the ash pond, CCPC will obtain a certification from a qualified professional engineer verifying that closure has been completed in accordance with the closure plan.

- Within 30 days of completion of closure of the ash pond, CCPC will prepare a notification of closure of a CCR unit. The notification will include the certification by a qualified professional engineer. CCPC will maintain the notification in the facility's operating record as required by 40 C.F.R. § 257.105(i)(8).

2.7 Facility Contact

The primary contact for Plant Crisp is as follows:

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3.0 REFERENCES

CCPC. (2016), "Proposal for Plant Crisp Ash Disposal Area Closure Feasibility Study", e-mail correspondence on August 3, 2016.

CDM Smith. (2014). "Assessment of Dam Safety of Coal Combustion Surface Impoundments – Final Report: Crisp County Power Commission Plant Crisp Warwick, Georgia." Prepared for U.S. Environmental Protection Agency Washington, D.C., Rev. 1, February 2014.

Geosyntec Consultants. (2016). "Fugitive Dust Control Plan Crisp Plant Crisp Ash Pond." Prepared for Crisp County Power Commission, September 2016.

Rizzo Associates. (2015). "Dam Safety Assessment Report Plant Crisp Coal Combustion Waste Impoundment." Submitted to Crisp County Power Commission, 14-5232, Rev. 0, January 2015.

USEPA. (2015). "Subpart D – Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments," Title 40 Code of Federal Regulations, Pt. 257, April 2015.

FIGURE