Prepared for

Crisp County Power Commission
202 S. 7th Street
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ASH POND DEWATERING PLAN

NPDES PERMIT NO. GA0050314

CRISP COUNTY POWER COMMISSION
PLANT CRISP ASH POND
Warwick, Georgia

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LIST OF ACRONYMS

CCPC	Crisp County Power Commission
CCR	Coal Combustion Residuals
C.F.R.	Code of Federal Regulations
EQS	Effluent Quality Standard
ESP	Effluent Sampling Point
GA EPD	Georgia Environmental Protection Division
GPM	Gallons per Minute
mg/L	Milligram per Liter
MW	Megawatt
NPDES	National Pollution Discharge Elimination System
NPS	New Source Performance Standards
O&G	Oil and Grease
S.U.	Standard Units
TSS	Total Suspended Solids
WWTS	Wastewater Treatment System

1.0 BACKGROUND

1.1 Site History

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. The byproducts of power generation from the combustion of coal (commonly referred to as coal combustion residuals or CCR) at Plant Crisp included mainly fly ash and bottom ash. The CCR was disposed into a 6.5-acre ash pond located within the plant property using wet sluicing method. The ash pond was constructed in the mid-1970s and started to receive sluiced ash in 1976. The coal burning and resulting ash disposal was conducted until August 2015. The coal burn unit was briefly re-activated in December 2016 to eliminate an existing small coal supply. The last burning of coal took place on March 22, 2017.

The electrical generation facility, ash pond, and hydroelectric dam are located on approximately 100 acres of Crisp County Power Commission (CCPC) property near Lake Blackshear and the Flint River. The ash pond currently contains negligible amount of free (ponded) water, which is subject to change as a result of precipitation, evaporation, and future dewatering activities.

1.2 Purpose

This Ash Pond Dewatering Plan (Plan) describes the additional procedures, safeguards, and enhanced wastewater treatment measures that CCPC will implement to comply with the facility's National Pollution Discharge Elimination System (NPDES) permit effluent limitations and the receiving waterbody continues to be protected during the ash pond dewatering process. This Plan provides an overview of the proposed wastewater treatment system, describes the key processes, details the major process control measurements to be performed, and explains the effluent monitoring to be completed during dewatering.

This Plan will be implemented upon commencement of active ash pond closure activities. Following approval of the dewatering plan by the Georgia Environmental Protection Division (GA EPD), and prior to commencement of dewatering, CCPC will provide GA EPD with notification of dewatering implementation. As explained below, in addition to the requirements implemented during the dewatering process, CCPC will continue to meet the effluent limitations of the plant's NPDES permit and comply with the requirements of the NPDES permit.

2.0 WASTEWATER TREATMENT SYSTEM

2.1 Wastewater Treatment System Overview

The wastewater treatment system (WWTS) will be located adjacent to the ash pond and treat dewatering water and contact water generated during ash pond closure activities. The WWTS will operate on an as-needed basis up to 24 hours per day and is sized to treat for a maximum flow of 800 gallons per minute (gpm). The treated water will be discharged at the outfall located north of the pond, along the Flint River in accordance with the NPDES permit.

2.2 Effluent Quality Standards (EQSs)

Based on the new source performance standards (NPS) in accordance with 40 C.F.R. §423.15 (b), and as specified in the NPDES permit (Permit No. GA0050314), treated water from the WWTS will meet the following effluent quality standards (EQSs):

- Total Suspended Solids (TSS): 30.0 milligrams per liter (mg/L) daily average and 100.0 mg/L daily maximum;
- Oil and Grease (O&G): 15.0 mg/L daily average and 20.0 mg/L daily maximum; and
- pH: 6.0 to 9.0 standard units (S.U.)
- Flow rate: 800 gpm max

2.3 Wastewater Treatment System Process Narrative

The WWTS that will be utilized for treatment of contact water and dewatering water is a physical-chemical treatment plant that consists of an equalization tank, a bag filtration skid, a sludge tank, a pH adjustment skid, and an effluent tank. **Figure 1** provides a schematic of the WWTS which depicts major unit operations and processes.

Influent

As depicted in **Figure 1**, wastewater will be pumped from the ash pond directly to the WWTS for treatment. As the water levels in the ash pond drop, treatment operations may cease until the volume of water in the pond is adequate for operations. The intake of the influent pumps will be operated to minimize solids carry over to the WWTS. As dewatering progresses, water level in the ash pond may fluctuate based on storm water inflows, ash pond closure construction management, and dewatering activities. As overall water volumes in the ash pond decrease, operation of the WWTS will be on an as-needed basis, although continuous operation may be utilized under wet weather conditions.

The influent to the WWTS will be continuously monitored for pH and turbidity using inline instrumentation. These parameters will guide the system operator in evaluating treatment requirements. Influent flow rates will be managed to limit drawdown to maintain structural integrity of the impoundment as determined by the Engineer.

Equalization Tank

At the WWTS, influent from the ash pond will be conveyed to a weir tank. The purpose of the weir tank is to provide hydraulic retention time for settling of suspended solids and limit the inflow of solids to downstream unit operations. As described previously, the influent to the equalization tank will be monitored for pH and turbidity using inline instrumentation installed on the influent line. On a periodic basis and depending on the concentration of solids in the influent to the WWTS, settled solids in the equalization tank may be removed using temporary sludge pumps for gravity dewatering in the sludge tank.

Bag Filter Skid

Water from the equalization tank will be conveyed to a bag filtration skid that will operate in service-standby mode. The bag filter housing will be equipped with six 10-micron filter bags to remove additional suspended solids that may not have settled in the equalization tank. Each bag filter will be rated for the maximum design flow such that while one bag is in service, the other five are in standby. This configuration will allow for continuous operation of the WWTS while maintenance or bag replacement is performed on the skid. The filter skid will be equipped with pressure sensors to inform bag changeout requirements. Used filter bags will be disposed off-site. The effluent from the bag filtration skid will be monitored for pH using an inline pH meter. The pH data will inform operation of the pH adjustment skid downstream of the bag filters as necessary.

pH Adjustment Skid

Effluent from the bag filter skid will be conveyed to a pH adjustment skid that will operate if the effluent from the bag filter is outside the pH range specified in the EQSs. The pH adjustment skid will consist of a caustic tote, an acid tote, and dosing pumps. The effluent from the pH adjustment skid will be equipped with inline pH, temperature, and turbidity sensors to confirm that treated water quality is compliant with the EQSs and permit requirements. The Effluent Sampling Point (ESP) will be located on the effluent line of the pH adjustment skid. The dosage of acid or caustic will be dependent on system performance and dose rates of chemicals will be recorded by the system operator and kept on-Site.

Effluent Tank

Effluent from the pH skid will be conveyed to an effluent holding tank for sample collection and confirmation of treatment system performance prior to discharge. In addition to providing

capacity for effluent testing, the effluent tank will allow for water to be recirculated through the WWTS in case of a system upset to limit the effect of WWTS performance on dewatering activities. Treated water from the WWTS will be discharged to the permitted outfall from the effluent tank. The discharge line will be equipped with a continuous flow meter with totalizer capability to confirm flow rates are consistent with the NPDES permit. Treated water will be continuously discharged to the outfall if water quality meets EQSs. If the inline meters upstream of the effluent tank detect readings above a preset set point, water from the effluent tank will be automatically diverted to the equalization tank or the ash pond, and discharge to the outfall will be stopped.

Sludge Tank

Periodically, solids that settle in the equalization tank may need to be dewatered for landfill disposal. In such an event, solids will be conveyed to a cone bottom sludge tank for gravity settling. The underflow from the cone bottom tank will be disposed off-site, while the decant water will be recirculated back to the equalization tank for treatment prior to discharge.

Design Flexibility

The WWTS was designed based on available water quality data and includes the flexibility to add additional unit operations to the process, if necessary. If additional unit operations are required, this Plan will be updated to include their purpose, description, and other pertinent information. Potential unit operations that may be added to the WWTS (pending performance monitoring of the current system) include:

- Chemical dosing (e.g., hypochlorite, caustic, or polymer) for precipitation and settling of metals and other dissolved components; and
- Grease traps or separators for O&G removal.

2.4 Operations and Maintenance

As previously indicated, the WWTS will be designed for continuous operation for up to 24 hours per day on an as-needed basis depending on closure activities and weather conditions.

Instrumentation for use on the site will be maintained for optimal performance and to provide accurate results. Each instrument will be calibrated at the manufacturer's recommended intervals and more often if deemed necessary by on-site personnel. WWTS instrumentation will include two turbidity meters, three pH and temperature meters, and one flow meter. Pumps, tanks, and other major equipment will be maintained routinely in accordance with manufacturer's recommended procedures.

2.5 Process Control and Monitoring

Each day following Treatment System startup, pH and turbidity of the influent and effluent of the Treatment System will be verified prior to discharge of treated water to the permitted outfall. Upon verification the Treatment System performs as expected, the discharge will be routed to the permitted outfall.

During discharge operations, pH, temperature, and turbidity will be continuously measured, and the discharge will be visually inspected, to confirm the EQSs are met. If the treated effluent indicates a significant change during operations, discharge to the permitted outfall will be automatically diverted and the treated water will be recycled to the equalization tank while adjustments are made. After any issues are resolved, the WWTS will be returned to normal operation with discharge to the permitted outfall following system performance verification.

2.6 Sample Collection and Testing

Samples of the influent from the ash pond and the effluent of the WWTS will be collected to guide system operations and to compare against permit criteria. The results will be utilized to evaluate WWTS performance and to obtain data to establish compliance with permit requirements. During initial system operations, turbidity data collected in the influent and effluent will be compared against analytical TSS measurements to develop a correlation between turbidity and TSS. Given the design of the WWTS, and available data on influent quality, the turbidity of the effluent is anticipated to be low. During the first week of system operation, TSS data at the effluent will be collected on a daily basis to establish the turbidity setpoint for the system. If a large increase in turbidity is observed or TSS is outside EQSs, the turbidity/TSS correlation will be updated.

For inline monitoring, the following instrumentation (or equivalent) will be used:

- pH and Temperature: Hach DPD1P1 pH probe with a Hach SC200 transmitter
- Turbidity: Hach 1720E Turbidimeter with a Hach SC200 transmitter
- Flow rate: Siemens Mag 5100 W magnetic flow meter with transmitter

3.0 EFFLUENT MONITORING AND REPORTING

3.1 Effluent Monitoring

Effluent from the WWTS will be monitored in accordance with permit requirements as shown in **Table 1**.

3.2 In-Stream Monitoring

In-stream water quality will be monitored in accordance with permit requirements as shown in **Table 2**.

3.3 Reporting and Notification

Effluent and instream monitoring results will be submitted to EPD via e-mail by the 15th day of the month following the sampling period. Results will be submitted in an Excel spreadsheet to both the EPD compliance office and the EPD industrial permitting unit. Laboratory analysis and data sheets will be retained on site. The first sampling report will be submitted the month following WWTS startup.

If any of the EQS's are not achieved, and the automatic recirculation system fails, both the EPD compliance office and industrial permitting unit will be immediately notified (within 24 hours) and a corrective action plan will be implemented.

TABLES

Table 1. Effluent Monitoring Requirements
Ash Pond Dewatering Plan
Crisp County Power Commission Plant Crisp

Effluent Characteristics (mg/L) or (units)	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type	Sample Location
Flow (MGD) - EQS	Report	Report	Daily	Continuous	ESP[1]
pH (S.U) - EQS	Report	Report	Daily	Continuous	ESP[1]
TSS - EQS	Report	Report	Weekly	Grab	ESP[1]
Oil & Grease - EQS	Report	Report	Weekly	Grab	ESP[1]
Turbidity (NTU)	Report	Report	Daily	Continuous	ESP[1]
TDS	Report	Report	Weekly	Grab	ESP[1]
$BOD_{5\text{-}Day}$	Report	Report	Weekly	Grab	ESP[1]
Copper, Total	Report	Report	Weekly	Grab	ESP[1]
Selenium, Total	Report	Report	Weekly	Grab	ESP[1]
Arsenic, Total	Report	Report	Weekly	Grab	ESP[1]
Mercury, Total	Report	Report	Weekly	Grab	ESP[1]
Chromium, Total	Report	Report	Weekly	Grab	ESP[1]
Lead, Total	Report	Report	Weekly	Grab	ESP[1]
Cadmium, Total	Report	Report	Weekly	Grab	ESP[1]
Zinc, Total	Report	Report	Weekly	Grab	ESP[1]
Nickel, Total	Report	Report	Weekly	Grab	ESP[1]
Ammonia-N	Report	Report	Weekly	Grab	ESP[1]
TKN	Report	Report	Weekly	Grab	ESP[1]
Nitrate/Nitrite	Report	Report	Weekly	Grab	ESP[1]
Organic Nitrogen	Report	Report	Weekly	Grab	ESP[1]
Phosphorous, Total	Report	Report	Weekly	Grab	ESP[1]
Orthophosphate-P	Report	Report	Weekly	Grab	ESP[1]
Hardness	Report	Report	Weekly	Grab	ESP[1]

Notes:
1. ESP indicates Effluent Sampling Point.
2. EQS indicates Effluent Quality Standard.
3. Sampling and Monitoring will be performed using standard methods as provided for in 40 C.F.R. Part 136.
4. mg/L indicates milligrams per liter.
5. S.U. indicates standard units.
6. NTU indicates Nephelometric Turbidity Units.
7. TSS indicates Total Suspended Solids.
8. TDS indicates Total Dissolved Solids.
9. MGD indicates Million Gallons per Day.
10. $BOD_{5\text{-}Day}$ indicates 5-day Biochemical Oxygen Demand.
11. TKN indicates Total Kjeldahl Nitrogen.

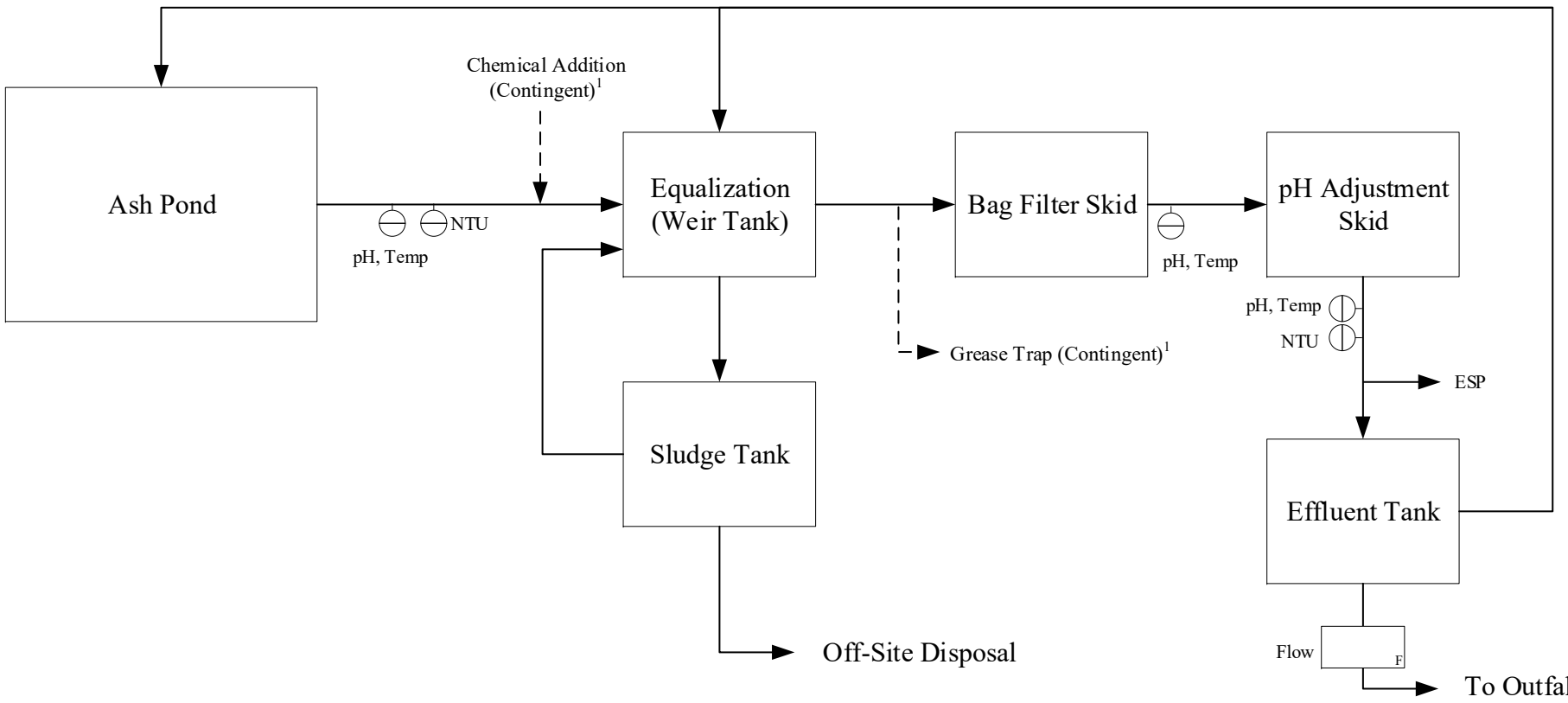
Table 2. In-Stream Water Quality Monitoring Requirements
Ash Pond Dewatering Plan
Crisp County Power Commission Plant Crisp

Effluent Characteristics (mg/L) or (units)	Requirement	Measurement Frequency	Sample Type	Sample Location
pH (S.U)	Report	2/Month	Grab	Upstream & Downstream[1]
TSS	Report	2/Month	Grab	Upstream & Downstream[1]
Oil & Grease	Report	2/Month	Grab	Upstream & Downstream[1]
Turbidity (NTU)	Report	2/Month	Grab	Upstream & Downstream[1]
TDS	Report	2/Month	Grab	Upstream & Downstream[1]
$BOD_{5\text{-}Day}$	Report	2/Month	Grab	Upstream & Downstream[1]
Copper, Total	Report	2/Month	Grab	Upstream & Downstream[1]
Selenium, Total	Report	2/Month	Grab	Upstream & Downstream[1]
Arsenic, Total	Report	2/Month	Grab	Upstream & Downstream[1]
Mercury, Total	Report	2/Month	Grab	Upstream & Downstream[1]
Chromium, Total	Report	2/Month	Grab	Upstream & Downstream[1]
Lead, Total	Report	2/Month	Grab	Upstream & Downstream[1]
Cadmium, Total	Report	2/Month	Grab	Upstream & Downstream[1]
Zinc, Total	Report	2/Month	Grab	Upstream & Downstream[1]
Nickel, Total	Report	2/Month	Grab	Upstream & Downstream[1]
Ammonia-N	Report	2/Month	Grab	Upstream & Downstream[1]
TKN	Report	2/Month	Grab	Upstream & Downstream[1]
Nitrate/Nitrite	Report	2/Month	Grab	Upstream & Downstream[1]
Organic Nitrogen	Report	2/Month	Grab	Upstream & Downstream[1]
Phosphorous, Total	Report	2/Month	Grab	Upstream & Downstream[1]
Orthophosphate-P	Report	2/Month	Grab	Upstream & Downstream[1]
Hardness	Report	2/Month	Grab	Upstream & Downstream[1]

Notes:

1. In-stream sample collection shall occur approximately 1,000 feet upstream and downstream of the final discharge to the Flint River.
2. Sampling and monitoring will be performed using standard methods as provided for in 40 C.F.R. Part 136.
3. mg/L indicates milligrams per liter.
4. S.U. indicates standard units.
5. NTU indicates Nephelometric Turbidity Units.
6. TSS indicates Total Suspended Solids.
7. TDS indicates Total Dissolved Solids.
8. $BOD_{5\text{-}Day}$ indicates 5-day Biochemical Oxygen Demand.
9. TKN indicates Total Kjeldahl Nitrogen.

FIGURES



Notes:

1. The WWTS design includes flexibility to commission additional unit operations depending on performance and changing influent water quality.
2. WWTS indicates Wastewater Treatment System.
3. pH, Tenp indicates inline pH and temperature meter.
4. NTU indicates inline turbidity meter.
5. Temp indicates inline temperature sensor.
6. ESP indicates effluent sampling point.
7. Flow indicates flow meter.

WWTS SCHEMATIC
ASH POND DEWATERING PLAN
CRISP COUNTY POWER COMMISSION PLANT CRISP

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Figure 1