Georgia Power Plant McManus

NPDES Permit No. GA0003794

Ash Pond Dewatering Plan

November 2016

Purpose

The following plan discusses the additional safeguards and enhanced wastewater treatment system that Georgia Power has put in place to ensure the facility's NPDES permit effluent limitations continue to be met and that the receiving waterbody continues to be protected during the ash pond dewatering process. The plan provides an overview of the wastewater treatment system, a narrative description of the key processes, details of the major process control measurements being performed, and a plan for performing additional effluent monitoring. This document intends to convey the general processes and operational controls being utilized, but also envisions that further adjustments may occur to improve performance and that such changes may not be depicted in this plan.

Wastewater Treatment System

The wastewater treatment system that is being utilized is a physical-chemical treatment plant that consists of pH neutralization followed by solids separation, flocculation, clarification, and finally filtration. Solids are dewatered by filter-press and hauled off-site for disposal at a permitted facility. A schematic of the wastewater treatment system (System) and a discussion of the major components is provided below.

Location
The System is located adjacent to and within the drainage area of the plant's ash pond. This assures that any ash pond water remains within the NPDES wastewater permitted basin until treated for discharge.

The System operates on an as-needed basis on either a 12 hour per day or 24 hour per day basis. The treatment system is designed to handle a maximum 2000 gpm.

Influent
Wastewater is pumped to the System directly from the ash pond. The intake for the influent pump is operated to minimize solids inflow to the System. As the water level in the ash pond drops, treatment operations may cease until the volume of water in the pond is adequate for operations, or other measures may be implemented to provide sufficient water volume for pumping to the System. Water levels in the ash pond fluctuate based upon storm water inflows and dewatering activities. As overall water volumes in the ash pond decrease, operation of the wastewater system will primarily be intermittent and on an "as needed" basis, although continuous operation may be utilized in response to wet weather conditions. Monitoring of the influent for pH and turbidity is performed as a guide for treatment requirements.

pH & Coagulant
All water pumped to the System is pH tested as it enters the system. Based upon the pH of the water being pumped into the System, the pH can be adjusted. Following pH adjustment, a coagulant can be injected into the flow to aid in flocculation prior to entering the solids removal stage. The dosage rates for all chemicals are dependent upon the flow rates, sediment loads, and required pH adjustment.

Solids Removal
In the solids removal stage, the incoming water flows through a density meter (solids concentration measurement) and then across a three-panel vibratory scalper. The scalper is designed to remove all debris and/or objects larger than ¼". All aggregates, organic debris, trash, or other items removed at this point are discharged onto the stockpile conveyor belt system for collection and disposal. The remaining wastewater is pumped through (2) sets of hydrocylones. The solids removed by the hydroclones are discharged onto the stockpile conveyor belt system for collection and disposal.

Clarifier

The effluent exiting the solids removal system is pumped through the polymer injection and treatment portion of the System. The effluent flows through a flow meter to estimate chemical dosage needed for this stage of the System. Chemical injection aids in the flocculation and settlement of the remaining solids.

The treated flow enters a clarifier (currently 45,000 gallon capacity) and flocculated material settles. An auger pulls the underflow at the bottom of the clarifier towards the underflow discharge point where it is pumped to a mix tank for homogenization. A final dose of polymer is added to the water on the mix tank to tighten the flocs prior to running through a plate and frame press. After running through the plate and frame press, the dewatered cake is discharged onto a conveyor belt system and collected in a roll-off for disposal. The filtrate and rinse water from this process is then recycled to the solids removal system for additional processing.

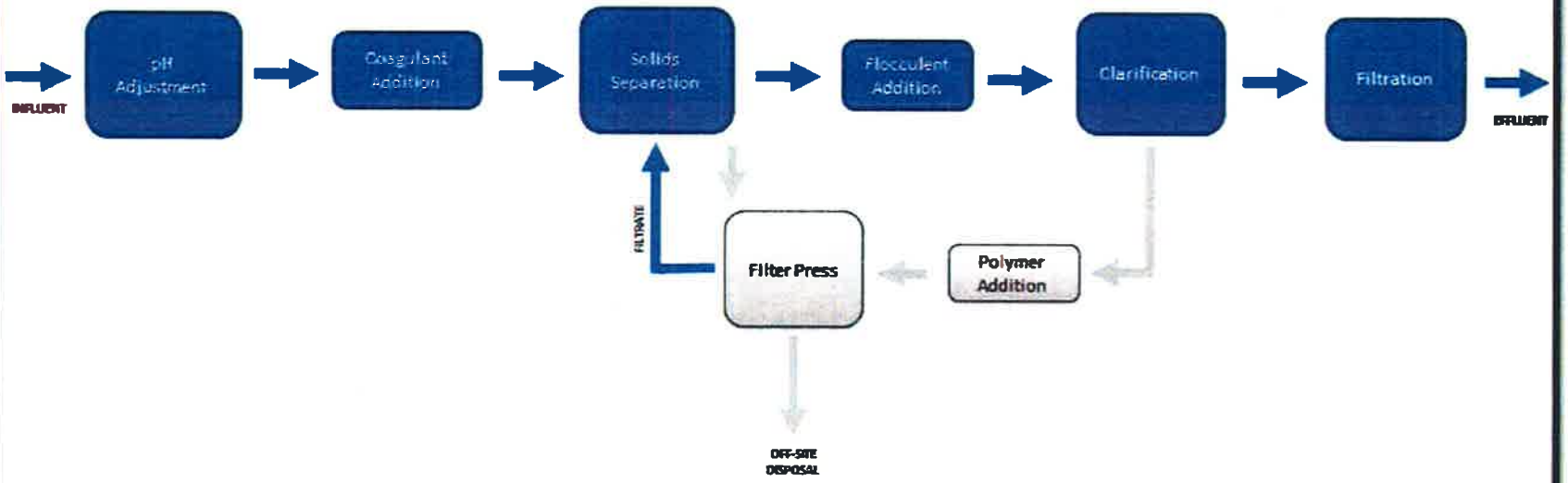
Filtration

The effluent from the clarifier is again tested for pH and turbidity and is pumped through a set of filter pots to further polish the discharge. Depending upon the flow characteristics, the pots are either filled with 5 micron, 20 micron, or a combination of cartridge filters. Samples of the filtered water are tested to verify the System is working as designed.

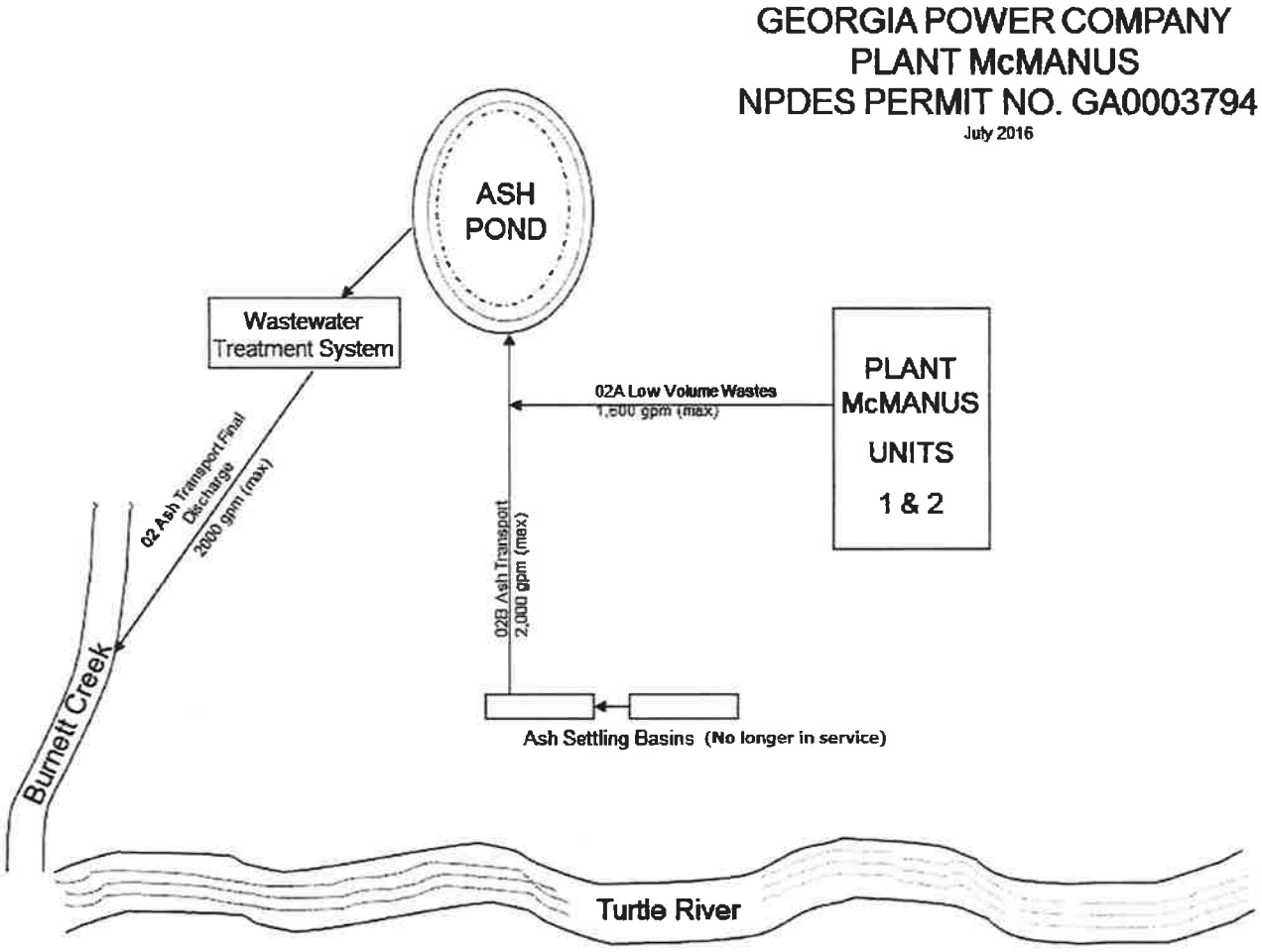
Operation

The operational oversight of the System is performed by a certified wastewater treatment plant operator in accordance with the certification requirements of the Georgia water and wastewater treatment plant operator's and laboratory analysts rule.

Plant McManus Wastewater Treatment System Schematic



Treatment System Location



Process Control Monitoring

Each day, following system startup, the pH and turbidity from the influent and effluent of the System is verified prior to the treated water being discharged to the permitted outfall. Effluent sampling of the System discharge is performed in the discharge line following the filter canisters. The sampling point is labeled as ESP (Effluent Sampling Point). Upon the data collected that verifies the System is performing as expected, the discharge is routed to the permitted outfall.

During treated discharge operations, every two hours pH and turbidity are measured and a visual inspection of the discharge is also performed. If inspection of the treated effluent indicates a change during operations, discharge to the permitted outfall will cease and the treated water will be recycled to the ash pond until adjustments are made.

Maintenance

Instrumentation for use on the site is maintained to ensure optimal performance and provide accurate results. Each piece of technical equipment is calibrated at the manufacturer's recommended intervals and potentially more often if deemed necessary by on-site personnel. The instrumentation includes a turbidity meter, a pH meter, a Total Suspended Solids (TSS) meter, flow meters, and the chemical feed pumps.

Testing

Samples are collected from both the influent (impoundment) and the System ESP to guide system operations and compare against the Effluent Quality Standards (EQSs) listed below. The results are used to verify that the treatment system is performing optimally, as well as to obtain data to establish the correlation between the TSS and turbidity of the System effluent.

Effluent Quality Standards (EQSs)

- **pH**: 6.4 to 8.6 operational limits
- **Turbidity**: <10.0 NTU determined by TSS correlation by laboratory analysis
- **Flow rate**: <2000 gpm
- **Total Suspended Solids** (TSS): <26 mg/L; 2 samples per week
- **Oil & Grease**: <15 mg/L daily average with 20 mg/L daily maximum over a monthly period; two samples per month

Analytical Instrument Description

- **pH**: Hanna HI991301 Portable pH Meter
- **Turbidity**: Hach 2100 Q Portable Turbidity Meter
- **Flow rate**: Fuji Electric Systems Co. Portaflow Ultrasonic Flowmeter Model FSCS2
- **TSS**: S::scan TSS probe; model solilyser

TSS Meter

In an effort to effect immediate water TSS results, a TSS probe is installed after final filtration. Data from the probe is correlated to Turbidity measurements and compared and correlated to laboratory TSS measurements. The use of the TSS probe is for discharge process control monitoring only. The use of the TSS probe will not affect compliance sample collection.

Effluent Monitoring and Reporting

Stream Monitoring

Effluent Characteristics mg/L or (Units)	Requirement	Measurement Frequency	Sample Type	Sample Location
pH (s.u.)	Report	1/Month	Grab	Upstream & Downstream*
TSS	Report	1/Month	Grab	Upstream & Downstream*
Oil & Grease	Report	1/Month	Grab	Upstream & Downstream*
Turbidity (NTU)	Report	1/Month	Grab	Upstream & Downstream*
TDS	Report	1/Month	Grab	Upstream & Downstream*
Copper, total	Report	1/Month	Grab	Upstream & Downstream*
Selenium, total	Report	1/Month	Grab	Upstream & Downstream*
Arsenic, total	Report	1/Month	Grab	Upstream & Downstream*
Mercury, total	Report	1/Month	Grab	Upstream & Downstream*
Chromium, total	Report	1/Month	Grab	Upstream & Downstream*
Lead, total	Report	1/Month	Grab	Upstream & Downstream*
Cadmium, total	Report	1/Month	Grab	Upstream & Downstream*
Zinc, total	Report	1/Month	Grab	Upstream & Downstream*
Nickel, total	Report	1/Month	Grab	Upstream & Downstream*
Ammonia	Report	1/Month	Grab	Upstream & Downstream*
TKN	Report	1/Month	Grab	Upstream & Downstream*
Nitrate/Nitrite	Report	1/Month	Grab	Upstream & Downstream*
Organic Nitrogen	Report	1/Month	Grab	Upstream & Downstream*
Phosphorus	Report	1/Month	Grab	Upstream & Downstream*
Ortho-phosphorus	Report	1/Month	Grab	Upstream & Downstream*
Hardness	Report	1/Month	Grab	Upstream & Downstream*

Sampling and monitoring to be performed using standard methods as provided for in 40 CFR Part 136, which will be sufficiently sensitive.

* Instream sampling shall occur at approximately 1000ft upstream and downstream of the final discharge to Burnett Creek. Sampling shall occur during the receding tide.

Effluent Monitoring

Effluent Characteristics mg/L or (Units)	Monthly Average	Daily Maximum	Measure Frequency	Sample Type	Sample Location
Flow (MGD)	Report	Report	Daily	Continuous	Final Effluent
pH (s.u.)	Report	Report	Daily	Continuous	Final Effluent
TSS	Report	Report	2/Month	Grab	Final Effluent
Oil & Grease	Report	Report	2/Month	Grab	Final Effluent
Turbidity (NTU)	Report	Report	2/Month	Grab	Final Effluent
TDS	Report	Report	2/Month	Grab	Final Effluent
Copper, total	Report	Report	2/Month	Grab	Final Effluent
Selenium, total	Report	Report	2/Month	Grab	Final Effluent
Arsenic, total	Report	Report	2/Month	Grab	Final Effluent
Mercury, total	Report	Report	2/Month	Grab	Final Effluent
Chromium, total	Report	Report	2/Month	Grab	Final Effluent
Lead, total	Report	Report	2/Month	Grab	Final Effluent
Cadmium, total	Report	Report	2/Month	Grab	Final Effluent
Zinc, total	Report	Report	2/Month	Grab	Final Effluent
Nickel, total	Report	Report	2/Month	Grab	Final Effluent
Ammonia	Report	Report	2/Month	Grab	Final Effluent
TKN	Report	Report	2/Month	Grab	Final Effluent
Nitrate/Nitrite	Report	Report	2/Month	Grab	Final Effluent
Organic Nitrogen	Report	Report	2/Month	Grab	Final Effluent
Phosphorus	Report	Report	2/Month	Grab	Final Effluent
Ortho-phosphorus	Report	Report	2/Month	Grab	Final Effluent
Hardness	Report	Report	2/Month	Grab	Final Effluent

Sampling and monitoring to be performed using standard methods as provided for in 40 CFR Part 136, which will be sufficiently sensitive.

Reporting

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 shall be submitted in an excel spreadsheet to both the EPD compliance office and the industrial permitting unit. A copy will also be mailed to the EPD compliance office. Laboratory analysis and data sheets shall be retained on site. The first report will be submitted January 15, 2017.