

STATE OF MISSISSIPPI SOLID WASTE MANAGEMENT PERMIT

TO OPERATE A SOLID WASTE MANAGEMENT FACILITY IN
ACCORDANCE WITH THE REGULATIONS GOVERNING
SOLID WASTE MANAGEMENT

THIS CERTIFIES THAT

Mississippi Power Company, David M. Ratcliffe

has been granted permission to operate a solid waste management facility

located at

Section 4, Township 9 North, Range 15 East

under the name of

Mississippi Power Company – David M. Ratcliffe
Gasification Ash Management Unit (GAMU)

This permit is issued in accordance with the provisions of the Mississippi
Code Annotated, and the regulations and guidelines adopted and promulgated
thereunder

MISSISSIPPI ENVIRONMENTAL QUALITY PERMIT BOARD



AUTHORIZED SIGNATURE

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

Issued: November 14, 2011
Expires: October 31, 2021
Modified: April 29, 2015 (Name Change)

Permit No. SW0350040551

CONDITIONS

A. EFFECT OF PERMIT

The permittee shall operate the solid waste management facility in accordance with the Mississippi Nonhazardous Waste Management Regulations (state regulations), applicable federal regulations, and conditions of this permit.

B. PERMIT ACTIONS

This permit may be modified, revoked and reissued, or terminated for noncompliance with the terms and conditions of the permit. The filing of a request for a permit modification, revocation and reissuance, or termination or the notification of planned changes or anticipated noncompliance on the part of the permittee does not stay the applicability or enforceability of any permit condition.

C. SEVERABILITY

The provisions of the permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstances, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

D. DUTIES AND REQUIREMENTS

1. **Duty to Comply.** The permittee shall comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the solid waste law and regulations promulgated thereunder and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or for denial of a permit renewal application.
2. **Duty to Reapply.** If the permittee wishes to continue an activity allowed by this permit after the expiration date of this permit, the permittee must submit a complete application for a new permit at least 180 days before this permit expires.
3. **Duty to Mitigate.** The permittee shall take all reasonable steps to minimize, prevent, or correct any adverse impact on human health or the environment resulting from noncompliance with this permit.
4. **Proper Operation and Maintenance.** The permittee shall at all times properly operate and maintain all equipment and systems which are installed or used by the permittee to achieve compliance with the conditions of this permit and application as submitted and approved by the

Department of Environmental Quality (Department).

5. Duty to Provide Information. The permittee shall furnish to the Department, within a reasonable time, any relevant information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit.
6. Inspection and Entry. The permittee shall allow an authorized representative of the Department upon the presentation of credentials and other documents as may be required by law to:
 - (a) Enter on the permittee's premises where a regulated activity is located or conducted, or where records must be kept under the conditions of this permit;
 - (b) Have access to and copy at reasonable times any records that must be kept under the conditions of this permit;
 - (c) Inspect at reasonable times any facilities, equipment, practices, or operations regulated or required under this permit;
 - (d) Sample or monitor at reasonable times for the purposes of assuring permit compliance.
7. Transfer of Permits. This permit is not transferable to any person except after notice to and approval of the Mississippi Environmental Quality Permit Board. The Permit Board may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary.

E. SITE SPECIFIC CONDITIONS

1. Site Preparation and Construction Requirements
 - a. Prior to initial construction of the facility components, documentation that the company has obtained proper ownership and/or access rights to the subject property shall be submitted to the Department.
 - b. Construction of the components of the ash management unit shall be conducted by qualified and experienced personnel. At least 14 days prior to initiating construction of the ash management unit or any cell or construction phase therein, the Department shall be provided an approximate site preparation, construction

schedule and construction grade drawings on the affected area. The Department shall be notified at least one week prior to liner construction activities of the subject cell or planned construction phase of the unit.

- c. Should historical or archaeological artifacts be discovered at any time within the ash management unit site, the permittee shall immediately notify the Department and shall contact the Mississippi Department of Archives and History for proper guidance.
- d. The permittee shall construct a groundwater monitoring system consisting of eight monitoring wells, with three upgradient and five downgradient of the one storage cell of the GAMU. These wells will monitor the GAMU to assess whether it is impacting the Unit 2 zone which is the uppermost water-bearing unit in the vicinity of the GAMU according to the approved groundwater monitoring plan.
- e. The groundwater monitoring system shall be implemented and constructed in accordance with the state regulations and approved plans. Prior to site preparation and liner construction activities at the ash management unit, the permittee shall conduct at least one initial groundwater sampling event to establish background groundwater quality data in accordance with state regulations.
- f. A detailed construction quality assurance plan for the liner and leachate collection system shall be submitted to the Department for approval prior to initiation of site preparation activities. Field density, moisture content, and permeability tests shall be conducted in accordance with the approved plan. Test holes in the soil liner shall be sealed with bentonite, or another method approved by the Department.
- g. Construction of the cell of the ash management unit shall be conducted in accordance with the following, unless an alternate method is approved by the Department:
 - 1. In preparation of the areas for liner construction, the in situ subbase shall be inspected for cracks, large stones, other protrusions, and for solid material which would not be suitable buffer material. Areas where unsuitable soil materials or groundwater seeps exist shall be excavated and the soils replaced with soil buffer materials having a

permeability equal to or less than 1×10^{-6} cm/sec. The surface shall be compact, smooth, uniform, and free of desiccation cracks.

2. Prior to placement of the recompacted soil liner system, the surface of the prepared subbase shall be scarified for proper bonding with the liner. The liner shall be placed in 6 inch lifts, evenly compacted to the density and moisture content required. Placement of the liner on the side slopes and interior cell slopes shall be in lifts along the slope, not in horizontal lifts. Between lifts, the surface shall be scarified for proper bonding.
3. In construction and/or preparation of the buffer subbase and the recompacted soil liner system, the surface shall not be allowed to dry out and crack before placement of the next layer. If desiccation cracks do form, the surface shall be rewetted, rehomogenized, and recompacted to the depth of the cracks before placement of the succeeding layer.
4. The perimeter storm water management system and the surficial run-off collection system throughout the facility including the perimeter and interior diversion dikes, access road storm water swales, storm water collection swales, side slope diversion swales, downchutes, and the run-off collection basin/sedimentation pond shall be constructed as per approved plans and in such manner so as to inhibit erosion and other damage.
5. The ash management unit and its individual cell therein shall be constructed to include a drainage plan that separates the non contact stormwater from any stormwater that contains ash. On the east and south sides of the ash cell, the non contact water will be captured in a ditch and directed through a culvert to the sedimentation basin. On the north side, non contact water will be captured in a ditch and released to a natural drain. Non contact water on the west side will sheet flow to a natural drain. Contact stormwater will gravity flow and collect in the southwest corner of the facility, flow through culverts and empty into a lined sedimentation pond.

- h. Prior to the placement of any ash in the ash management unit, the following activities shall be conducted:
1. All borings drilled on the site in preparation of the permit application, which will not be converted to monitoring or supply wells, shall be properly sealed as per the requirements of the Office of Land and Water Resources. A copy of the decommissioning form(s) shall be submitted to the Department after plugging of the wells.
 2. Access restrictive and security measures must be installed and implemented.
 3. An installation report shall be submitted to the Department for the groundwater monitoring system, to include methodology, well specifications, depths, and a surveyed drawing depicting well locations and well identification numbers.
 4. If for any reason ash is not placed in the ash management unit within one year of the first background sampling event, a second groundwater sampling event shall be conducted in accordance with state regulations and the approved monitoring plans. At least 14 days prior to the placement of ash in the ash management unit, a groundwater quality report shall be submitted to the Department including the results of the initial background groundwater monitoring event(s).
 5. At least 14 days prior to the placement of ash in the ash management unit the newly constructed cell or phase therein, a construction quality assurance report (CQA) shall be submitted to the Department for approval. The report should contain a certification from an independent registered professional engineer in the state of Mississippi that the area has been constructed according to the approved design plan, and all applicable state regulations. The report shall also include field logs, results of testing, subgrade survey, top of liner survey, and construction testing methods.

2. Operating Conditions

- a. The permittee is authorized to landfill hydrated fine and coarse ash generated from the lignite coal combustion process by the Mississippi Power Company – Kemper County IGCC Facility as described in the Plan of Operation. Additionally, mill rejects and coal fines, which are typical by-products of the facility’s coal handling process, are also authorized to be deposited in the ash management unit. No other facility’s solid wastes, including construction or demolition debris, other process waste, or any other plant wastes may be deposited in the ash management unit, unless approved by the Department prior to deposition.
- b. The placement shall be restricted to the approved permitted area, consisting of approximately 51.64 acres and shall be within approved elevations.
- c. Within 120 days after initiation of disposal activities, the permittee shall provide to the Department a physical and chemical characterization of the fine and coarse ash, as well as the mill rejects and coal fines generated at the Kemper County IGCC Facility to confirm the characteristics of these materials.
- d. Activities involving the construction, operation, closure, and post-closure of the facility shall be conducted in accordance with the state regulations and approved plans, as submitted to the Department.
- e. A format modification of this permit must be approved by the Permit Board or the Board’s designee prior to a vertical or horizontal expansion of the facility or a significant change in the method of waste management or the conditions of this permit.
- f. Security must be maintained at the facility site to prohibit unauthorized access and disposal. Access to the site shall be secured or locked when the site is closed and when no attendant is on site.
- g. All weather access and transport roads shall be constructed and maintained at the site to maintain operations during inclement weather conditions.
- h. Appropriate actions shall be taken to inhibit ash particles from becoming windblown off the site. In addition, appropriate dust control measures shall be conducted as necessary to contain and/or suppress fugitive dust emissions from the unit, from the

access and transport roads and the unit and from other facility components.

- i. No removal of solid waste from the ash management unit shall be conducted without the approval of the Department.
- j. The Department may affect changes in the operating conditions of the ash management unit, including requiring an intermediate cover, modifying leachate management conditions and implementing other control measures as necessary to prevent or correct conditions at the landfill which cause, contribute to or allow environmental, public health, or public nuisance problems.
- k. Surface water which has contacted the ash, surface leachate flowing from filled areas of the ash management unit, and sub-surface leachate shall be collected and managed as leachate. Surface leachate and contaminated surface and/or groundwater shall not be allowed to flow offsite of the ash management unit, but shall either be recirculated for use in the ash management unit, routed for use in plant activities for ash hydration or shall be discharged as per the applicable National Pollutant Discharge Elimination System (NPDES) permit requirements.
- l. All transport piping, pumps, and other structures utilized to transport leachate from the ash management basin to the plant or within the ash management unit shall be properly maintained to ensure compliance with applicable permit conditions and in such manner so as to prevent leakage or spills. Any such leakage shall be repaired immediately.
- m. The storm water management system and the surficial run-off collection system throughout the facility including the perimeter and interior diversion dikes, access road storm water swales, storm water collection swales, slide slope diversion swales, downchutes, and the run-off collection basin shall be properly maintained. Erosion, sloughing, or other damage which may affect the integrity of the dike system shall be promptly repaired.
- n. The perimeter and interior diversion dikes and the run-off collection basin shall be constructed and maintained to control, at a minimum, the uncontaminated water volume from the facility resulting from a 24 hour, 25 year event storm. Periodic cleaning and/ or dredging shall be conducted as necessary to maintain capacity.
- o. The leachate collection systems shall be cleaned, maintained and

pumped as necessary to properly manage leachate collection. The depth of leachate over the liner, excluding the trenches and sumps, shall not exceed 30 cm. Measurements of leachate head shall be made at least weekly or more often as necessary to maintain compliance. Should any measurement indicate a head of 30 cm or greater on the liner, the permittee shall take immediate action to correct such conditions. Records shall be kept of routine measurements, quantities pumped, cleaning, maintenance, any analysis and method of disposal or reuse.

- p. The facility shall be constructed, operated and monitored in such manner so as to ensure that the Mississippi Groundwater Quality Standards are not exceeded by any activity of this facility.
- q. The ash management unit shall be constructed, operated and monitored in such a manner so as to prevent a discharge of pollutants into waters of the state, including wetlands, that violates any requirements of the Clean Water Act or the Mississippi Air and Water Pollution Control Act, including, but not limited to, the NPDES requirements.
- r. Operation of the ash management unit shall be conducted in accordance with all applicable laws, regulations and permit conditions of the U.S. Army Corps of Engineers and the U.S. Fish and Wildlife Service.
- s. An annual report shall be submitted to the Department each year no later than February 28 to include data regarding the preceding calendar year. The report shall include items listed below:
 - 1. The amount of waste deposited in the ash management unit during the calendar year;
 - 2. A drawing depicting the top elevation of the ash management unit at the end of the report year;
 - 3. An estimated remaining capacity, in terms of volume or tons of waste; and
 - 4. Records on the quantity of leachate pumped and the method of disposal and reuse.

3. Monitoring Requirements

- a. Groundwater monitoring shall be conducted at the ash management unit in accordance with the approved groundwater

monitoring plan for the following parameters:

Chloride	Total Copper
Fluoride	Total Iron
Sulfate	Total Lead
pH	Total Manganese
Total Dissolved Solids	Total Mercury
Total Suspended Solids	Total Molybdenum
Total Arsenic	Total Nickel
Total Barium	Total Selenium
Total Boron	Total Silver
Total Beryllium	Total Vanadium
Total Cadmium	Total Zinc
Total Chromium	
Total Cobalt	

- b. Groundwater monitoring shall be conducted semi-annually, unless otherwise directed by the Department, according to the following schedule:

<u>Monitoring Period</u>	<u>Report Due</u>
January – June	August 31
July – December	March 1 (of the following year)

Samples may be taken at any time during the monitoring period; however, all sampling events shall be at least four months apart.

- c. All groundwater samples shall be taken by qualified personnel as per EPA approved sampling procedures and chain of custody requirements.
- d. When requested by the Department, the permittee shall inform the Department of the next groundwater sampling schedule so that a representative of the Department may be present to collect a split of duplicate sample.
- e. The following reports and records shall be retained in the operating record, and a copy shall be submitted to the Department according to the schedule above:
1. The dates, exact location, and time of sampling;
 2. The individual who performed the sampling;
 3. Results of groundwater level measurements and a map

- indicating direction of flow;
 - 4. The date(s) laboratory analyses were performed;
 - 5. The individual(s) who performed the analyses;
 - 6. The analytical techniques or methods used;
 - 7. The results of such analyses, provided by the laboratory;
 - 8. A graphic representation of groundwater monitoring data for analyzing trends in water quality for pH, chloride, sulfate, barium, and chromium;
 - 9. A statistical comparison of analyses;
 - 10. A determination of statistically significant increase; and
 - 11. Chain of custody forms.
- f. The permittee shall not remove, abandon, or relocate any monitoring well prior to obtaining approval from the Department. If any monitoring well becomes damaged and/or inoperable, the permittee shall notify the Department as soon as feasible upon becoming aware of such conditions and shall provide a written report within seven (7) days. The written report shall detail what problem has occurred and corrective measures taken to prevent the recurrence. The location and design of any replacement or corrective monitoring well shall be approved by the Department prior to installation.
- g. Groundwater assessment monitoring and corrective action, if necessary, shall be conducted at the facility, in accordance with the state regulations and the plans approved by the Department.
- h. Upon the establishment of sufficient historical data or other suitable demonstration, the Department may consider a request for a variance or may require a variance to the monitoring points, monitoring occurrences, or monitoring parameters.
- i. A monitoring parameter shown by analytical testing to be at or below detectable limits for a consecutive period of at least two years may be considered for removal from groundwater monitoring if requested by the facility.
4. Closure/ Post Closure Requirements
- a. An updated closure/ post closure plan for the ash management unit shall be submitted to the Department for approval at least 120 days prior to initiation of final closure of the ash management unit. This plan shall include, at a minimum:
 - 1. a description of and the construction details of the final cover system and the surface water control structures;

2. a construction quality assurance (CQA) plan for the final cover system components, drainage system features and any other appropriate closure components;
 3. a plan for interior, exterior and subsurface drainage and dewatering of the unit as appropriate;
 4. a proposed schedule of closure activities; and
 5. a description of the post-closure monitoring plans and a proposed schedule of monitoring for the approved post-closure monitoring period having a minimum duration of 5 years.
- b. An approved final cover system shall be placed on the completed areas of the ash management unit in accordance with the state regulations and the approved plans.
 - c. Upon completion of final closure of the site, a surveyed drawing of the ash management unit shall be submitted to the Department depicting final contours and the boundaries of the ash management unit.
 - d. The condition of the final cover system shall be inspected at least monthly by company personnel during the post-closure monitoring period of the facility. Erosion, cracks, ponding, leachate, outbreaks, and similar problems shall be promptly repaired.
 - e. Any reduction in frequency or number of monitoring events, monitoring parameters, site inspections, or other components of the approved closure or post-closure plan must be submitted to the Department for approval before being implemented.