

ATTACHMENT 47
Closure Plan
Special Waste Landfill Permit
Big Sandy Plant – Ash Pond Closure
Lawrence County, Kentucky

The closure plan will be written in accordance with **401 KAR 45:110, Section 5, Paragraph 2** and is included as part of this attachment.

KENTUCKY POWER
BIG SANDY PLANT
LAWRENCE COUNTY, KENTUCKY

**COAL ASH POND CLOSURE
CLOSURE PLAN**

Prepared for

American Electric Power
1 Riverside Plaza
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May 8, 2013

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1.0 INTRODUCTION

This Closure Plan (CP) has been developed in support of the coal ash pond closure at Kentucky Power’s Big Sandy Plant in Lawrence County, Kentucky.

This Closure Plan has been prepared in accordance with the Kentucky Administrative Regulations (KAR), Energy and Environment Cabinet Department for Environmental Protection (Title 401), Technical and Operating Requirements for special waste landfills (401 KAR 45:110).

The purpose of this document is to describe necessary activities associated with the closure of the facility during the closure period. Information presented in this document is organized to be consistent with 401 KAR 45:110.

2.0 NARRATIVE DESCRIPTION OF THE FACILITY AND OPERATION

2.1 SITE LOCATION AND DESCRIPTION

Kentucky Power Company (KPCo), a subsidiary of American Electric Power (AEP), owns and operates the 1,097 Mega Watt (MW) Big Sandy Plant on the west bank of the Big Sandy River, near Louisa in Lawrence County. Currently, coal combustion fly ash from the plant is disposed of in the Big Sandy Fly Ash reservoir, which is impounded by the Horseford Creek Dam located approximately 0.75 miles northwest of the plant. In anticipation of proposed Federal Regulations pertaining to wet ash impoundments, the Project involves closure design of the Plant’s existing 140-acre wet fly ash impoundment. The facility will no longer be needed when Kentucky Power ceases wet sluicing operations. In an effort to close the fly ash reservoir in accordance with the proposed but, not-yet-promulgated, Federal Regulations for wet coal combustion product (CCP) impoundments, it is AEP’s desire to permanently close the facility by draining and capping the Big Sandy Fly Ash Pond.

2.2 EXPECTED YEAR OF CLOSURE

The closure of the Big Sandy Fly Ash Pond is anticipated to be constructed in phases over a number of construction seasons. The anticipated closure construction period is anticipated to be from 2015 through 2019, but will be adjusted as necessary based on considerations for safety, weather, and available resources.

2.3 FACILITY CONTACT INFORMATION

The following is a list of responsible parties involved in the permitting, design, operation, maintenance, quality control and quality assurance of the CCP disposal facility at AEP’s Big Sandy Plant.

1. Owner: Kentucky Power
Contact: Plant Manager
Kentucky Power
Big Sandy Plant
23000 Highway 23 North,
Louisa, KY 41230

Phone: 614-716-1000

As of the date of this Plan, the plant manager is Aaron Sink.

Solid waste correspondence should be directed to:

Marvin Leedy, MBA
Principal Environmental Specialist
American Electric Power
Land Remediation & Environmental Services
1 Riverside Plaza - 22nd Floor
Columbus, OH 43215
Phone: 614-716-1219

2. State: Division of Waste Management
Kentucky Department of Environmental Protection
200 Fair Oaks Ln., 2nd Floor
Frankfort, KY 40601
Phone: 502-564-6716
Fax: 502-564-4049
Contact as of the date of this manual is Mr. Anthony R. Hatton, Director for the Division of Waste Management.

2.4 DOCUMENT FORMAT

Information presented in this document has been organized and presented consistent with the requirements presented in 401 KAR 45:110. Sections within this document have been titled and enumerated consistent with the regulations to facilitate the review process. The following *italicized text* is copied verbatim from the aforementioned regulations. For clarity of discussion, each response is provided in **bold text**.

3.0 CLOSURE PLAN

3.1 CLOSURE REQUIREMENTS

401 KAR 45:110; Section 5 (1) - *A special waste landfill shall be closed in a manner that complies with 401 KAR 30:031. The owner or operator of a special waste landfill shall submit a closure plan that includes a closure design as specified in subsection (2) of this section, a closure cost estimate in accordance with Section 2 of 401 KAR 45:080, a narrative discussing the closure plan's conformance with 401 KAR 30:031 and a schedule for implementation of the plan.*

The closure plan that has been developed for the purpose of this project represents AEP's compliance with 401 KAR 30:031. The estimated cost of the closure of the pond and the modification of the outlet structures is approximately \$47,000,000.

Upon cessation of the fly ash sluicing operation, closure preparatory work is anticipated to begin. This may include the removal of free water from the site, modification to the main outfall tower (such as removal of some of the stop logs) to lower the water level, and/or some initial regrading activities. Drainage activities will take place in accordance with the facility's KPDES permit. The site will be closed in 4 to 5 phases over 4 to 5 years, as shown in Attachment 20, Sheet 5. The actual limits of each phase of closure will be adjusted during construction based on site conditions.

401 KAR 45:110; Section 5 (2) - *A closure plan shall have a closure design prepared to specify the function and design of the final cover on the special waste landfill considering:*

- a) *The type and amount of waste in the facility;*
- b) *The mobility and expected rates of migration of the waste or leachate constituents;*
- c) *The site location, topography, surrounding land use, and final site use;*
- d) *The climatic conditions in the area;*
- e) *The characteristics of the cover material including its chemical and physical composition, erodibility, slope stability, final surface contours, thickness, porosity, permeability, slope, length of run of slope, and type of vegetation on the cover; and*
- f) *The geology and soil profiles and surface and subsurface hydrology of the site.*

The closure plan specifies design requirements and procedures to control, minimize, or eliminate threats to public health and the environment. These measures include:

- Obtaining all applicable federal, state and local permits
- Construction of a final cover system
- Surface grading to promote proper surface water management
- Implementing erosion and sediment control measures
- Maintaining the groundwater monitoring network.

As indicated above, the facility is a wet impoundment for sluiced fly ash from coal combustion activities at the Big Sandy Power Plant. At the time this document was prepared, the facility had a total storage capacity of 8,302 acre-feet (13.4 Myd³). The current KPDES permit and permits through Kentucky Dam Safety allow for the settling/storage of CCP materials to an elevation of 705 ft. msl. The current elevation of CCP materials ranges from 624 ft. msl to 695 ft. msl. Sluicing of CCP materials will continue until closure, however, AEP plans to close the facility prior to reaching the total storage capacity.

At the time of construction and operation in 1969, the facility was regulated and monitored as a water impoundment through the KPDES program; permit requirements did not require a liner to be installed. Since the facility was designed and acts as a dam, the majority of impounded liquid does not migrate from the facility. However, there is a minor seep from the dam in one location. The Hydrogeologic Site Investigation (HSI) report and Ground Water Monitoring Plan with additional details may be found as Attachments 30 and 44 of the Special Waste Landfill Permit Application, respectively.

The final cover design may be found as part of Attachment 20: Design Drawing Set. Material build requirements may be found as part of Attachment 40: Construction Quality Control (CQC) Plan. A more in depth discussion of the cap system may be found in the Closure Cap Risk Analysis as Attachment 46 of the Special Waste Landfill Permit Application.

401 KAR 45:110; Section 5 (4) - Upon cessation of special waste disposal activities at the landfill, the owner or operator shall implement the approved closure plan in accordance with its terms and the requirements of this chapter. An owner or operator may be required to revise a closure plan prior to implementation.

AEP will initiate the process of obtaining the approval for the closure plan from the cabinet, before the cessation of the disposal activities. The approved closure plan will be implemented in accordance with its terms upon the cessation of the waste disposal activities.

The final elevation of the CCP material at closure is highly dependent on the amount of coal burned between now and the time of closure. This is directly related to electricity demand, balancing of loads with other regional power plants, and the ash content of the coal burned. All of these factors will vary considerably throughout the remaining life of the Big Sandy Plant. The closure grades presented in Attachment 20 are based on estimates of the amount of ash to be produced between the most recent survey date and the date of closure. As such, the grades depicted are intended to represent the general grading concept at closure. Actual closure grades for portions of the facility footprint or the entire footprint may vary 2 to 10 feet, as needed. It is intended that the majority of the site will have a typical grade of approximately 2%, a minimum grade of 0.5%, and a maximum cap grade of approximately 25%.

3.2 CLOSURE CERTIFICATION AND NOTIFICATION

401 KAR 45:110. Section 5(8) At the conclusion of the five (5) year postclosure monitoring period, the owner or operator of the special waste landfill shall submit a certification that closure and postclosure of the site is complete in accordance with the approved closure and postclosure plans, and that the site is in conformance with the terms of this chapter and 401 KAR 30:031. The cabinet shall review the certification, conduct a site visit and review the permit records to determine if the site is closed in accordance with this chapter, 401 KAR 30:031, and KRS Chapter 224. If the certification of closure is accurate and there is no outstanding environmental violations at the site, the cabinet shall accept the certification of closure and, within 180 days of accepting the certification, release any remaining financial assurance executed under 401 KAR 45:080.

Following completion of the post-closure care period for the CCP disposal facility, AEP will file with the cabinet verifying that closure and post-closure has been completed in accordance with the closure and post-closure plan.

4.0 NOTICE IN DEED TO PROPERTY

401 KAR 45:110. Section 5(7) *The owner or operator of a special waste landfill shall record a notice that shall in perpetuity notify any potential purchaser of the property of the location and time of the operation of the facility, the nature of the waste placed in the site and a caution against future disturbance of the area. This notice shall be recorded in accordance with KRS Chapter 382 and proof of recording shall be submitted to the cabinet prior to acceptance of certification of closure of the landfill.*

AEP will record a notice that shall, in perpetuity, notify any potential purchaser of the property of the location and time of the operation of the facility, the nature of the waste placed in the site and a caution against future disturbance of the area. A copy of the deed updated with the required notice will be included as part of the closure certification document.