

CASE STUDY / **ASH POND CLOSURE PROJECT**

MEETING CCR REQUIREMENTS WITH PROACTIVE PROJECT

As rules and regulations around coal combustion residual (CCR) landfills and surface impoundments become stricter, owners and operators of coal-fired plants face new compliance challenges. Ameren Missouri took an aggressive, progressive approach to program implementation as it tackled its first ash pond closures under the EPA's CCR rule.



INNOVATIVE THINKING PUSHES POND CLOSURE PROJECT BEYOND THE BASICS

Thorough evaluations and specifications yield designs that meet compliance needs while reducing expenses over the long term.

PROJECT STATS

CLIENT

Ameren Missouri

LOCATION

St. Louis County, Missouri

TOTAL PROJECT COST

\$10 million

COMPLETION DATE

April 2018

30

ACRES OF ASH PONDS

9.5M

GALLON-PER-DAY NEW LIFT STATION PUMPING CAPACITY

3

ALTERNATIVE COVER SYSTEMS EVALUATED

CHALLENGE

Meramec Energy Center (MEC) is an 831-megawatt generating facility fueled by natural gas and coal at the confluence of the Mississippi and Meramec rivers in St. Louis County, Missouri. Units 1 and 2 were converted from coal to natural gas in 2016, while units 3 and 4 remain coal-fired. The facility generates coal combustion residuals (CCRs), including fly ash and bottom ash.

Ameren Missouri wanted to take an approach to closing two coal ash ponds at MEC that would demonstrate proactive management as part of Ameren's comprehensive program to manage CCR in an environmentally responsible way.

Complicating matters, the Missouri Department of Natural Resources (MDNR) was still in the process of developing its own ash pond closure regulations while Ameren was in the midst of planning and constructing this project.

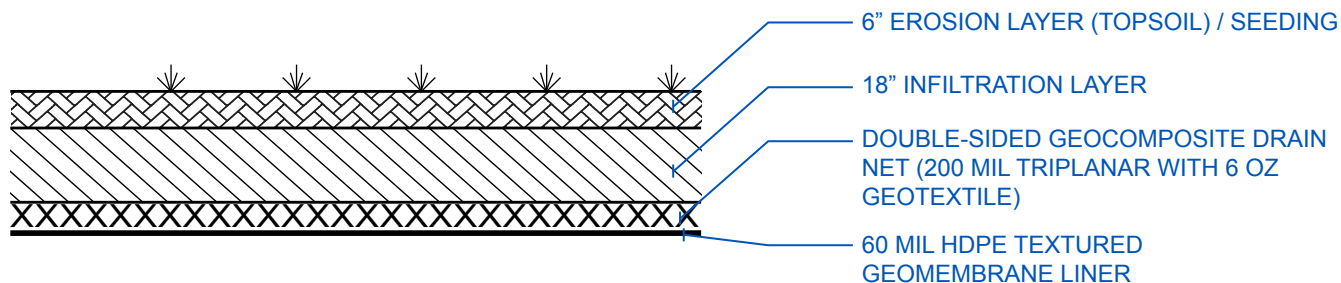
SOLUTION

We were retained by Ameren for more than the simple closure of 30 acres of two ash ponds at MEC. The project scope included reviewing current operational practices and developing a constructable and operable design in concern with diverse regulatory requirements, including the federal CCR rule, MDNR's working regulations, and MEC's National Pollutant Discharge Elimination System (NPDES) operating permit.

We also conducted a process water rerouting evaluation to identify the modifications necessary to accommodate ash pond closure, as well as specifying stormwater best management practices relating to maintaining and improving existing water quality during and after completion of construction.

Preparing CCR management, dewatering and stabilization specifications was another important aspect of the project. Saturated CCRs pose significant challenges due to their often unstable and unpredictable characteristics under dynamic construction loads. The design included performance-based specifications to facilitate safe and effective impoundment closure execution, including provisions for excavation, material handling, grading, subgrade stabilization, work sequencing and more.





Graphic representation of layers involved in the third alternative option for the ash pond cover system.

Finally, the project solution included evaluating, designing and bidding three alternative final cover systems. Two of the systems evaluated consisted of a synthetic turf cover system with a lower geomembrane component. The third alternative consisted of a composite 60-mil high density polyethylene (HDPE) flexible geomembrane material, a geocomposite drainage layer, a nominally compacted 18-inch infiltration soil layer and a 6-inch erosion layer capable of sustaining native plants.

While one of the ash ponds was closed with a prescriptive final cover system, the larger second pond was closed with the third alternative final cover system.

RESULTS

The MEC project was substantially completed in April 2018, meeting the deadline Ameren had set in 2015 and coming in within budget.

The project represented one step in a comprehensive program to increase recycling and beneficial use of CCRs, perform extensive water safety assessments, and implement significant reductions in water usage. Ameren’s aggressive pond closure schedule aims to reduce long-term water usage and industrial wastewater generation across its portfolio to save approximately 11 billion gallons of water annually.

The process water rerouting evaluation led to implementation of multiple stormwater best management practices, as well as the design

and construction of stormwater conveyance systems and a new lift station capable of pumping more than 9.5 million gallons per day.

Through the imaginative approach to alternative closure solutions, we identified an alternative engineered solution that was equivalent to the prescriptive regulatory requirements while saving Ameren approximately \$2 million in construction costs. It also is expected to deliver long-term savings of more than \$1 million.

Finally and less tangibly, the project put Ameren in a leadership role of contributing to MDNR’s rule-making process and helping establish best practices for balancing multiple federal and state requirements regarding CCRs.





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