

PROJECT PROFILE / **COAL COMBUSTION RESIDUALS IMPOUNDMENT CLOSURE AND RESTORATION**

## LAKE FILLED WITH COAL ASH TAKES ON NEW LIFE

The City of Columbia, Missouri, is transforming a coal ash impoundment into a freshwater lake and centerpiece of a public park. Through closure and restoration efforts, the city has proactively managed coal combustion residuals, met environmental regulations and demonstrated a strong commitment to environmental stewardship.



# DELIVERING UNIQUE COAL ASH REMEDIATION SOLUTIONS

An innovative remediation effort uses coal ash as landfill road embankment material to help save landfill airspace, cover soil and preserve tipping fee revenue.

## PROJECT STATS

### CLIENT

City of Columbia, Missouri

### LOCATION

Columbia, Missouri

### PROJECT START

2015

### PHASE 1 COMPLETION

CCR Remediation:  
February 2020

### ANTICIPATED PHASE 2 COMPLETION

Power Plant Park  
Construction:  
Fall/Winter 2021

In April 2015, the U.S. Environmental Protection Agency (EPA) published the final rule establishing a comprehensive set of requirements for the disposal of coal combustion residuals (CCR) in landfills and surface impoundments. The CCR rule changed long-standing industry practices. These rules prompted the City of Columbia, Missouri, to begin the More's Lake Coal Combustion Residuals Impoundment Closure and Restoration Project.

More's Lake was originally constructed by the More family in the late 1800s for farm and recreational purposes in Columbia. By the 1910s, More's Lake had become part of the Columbia Municipal Power Plant, an operating coal-fired power utility. Over time, the lake — which had no engineered bottom liner — was filled with coal ash. By 2015, after a century of operation, the lake had accumulated over 90,000 cubic yards of CCR.

To meet the new EPA regulations, the City of Columbia elected to close the CCR unit by removing the material and clearing all areas affected.

A Burns & McDonnell team of engineers, geologists, environmental scientists and compliance specialists partnered with the city to navigate

the new regulations. Our team developed closure plans, designed and constructed the site groundwater monitoring well network, performed groundwater monitoring and reporting, provided regulatory submittals, and certified the closure of the facility. We also performed the engineering design and completed the construction plans and specifications for a beneficial use aspect of the work, and designed the final restoration of the site.

Once the bulk of the ash was removed from the lake, we focused on systematically eliminating all traces of CCR. Burns & McDonnell and the city effectively collaborated with the Missouri Department of Natural Resources and other stakeholders. These efforts were communicated to residents through City Council meetings, the city's website and local news media. Our team also led the groundwater monitoring to confirm that the coal ash had not adversely impacted the local groundwater beyond the established regulatory levels.

Being the first to develop solutions to new challenges carries a special responsibility — the responsibility to establish precedent for those who follow. This project involved a

# 90K

CUBIC YARDS  
COAL ASH REMOVED

# \$750K

UNDER BUDGET



unique solution where coal ash was beneficially used as embankment fill material at the landfill. This approach demonstrated how waste coal ash could be used for an essential purpose by mitigating coal ash's unique and challenging material properties using layers of geogrid under the road base.

In February 2020, less than five years after the CCR rule was promulgated, Burns & McDonnell certified closure of the facility. Together, our team has restored More's Lake from a heaping coal ash impoundment into a clean recreational pond that will soon become part of a public park.

Upon the CCR unit's closure, the city wanted to consider further options to restore the site to a recreational space. The city has retained Burns & McDonnell to provide a comprehensive design for a public park, which will be known as Power Plant Park. The restored lake will be the centerpiece of the park, which will also have walking trails, trailside benches offering views of the lake, a picnic shelter, a fishing pier, green spaces and landscaping, new parking with Americans with Disabilities Act (ADA)-compliant access, and a bioretention cell that will collect

and filter stormwater runoff from the roadway and parking area.

The site closure and future restoration plans offer opportunities to help educate the public on the roles engineers play in protecting the environment. To the community at large, the closure of this ash lake demonstrates the city's ability to manage a huge environmental liability and achieve regulatory compliance. It also reinforces the city's larger goal of long-term environmental stewardship.

The future Power Plant Park will be enhanced with educational features and artifacts from the power plant. The city is also considering avian, terrestrial and aquatic habitat development throughout the park. Part of this project involves the restoration of an island, constructed in the 1800s, that was originally part of the lake. Our team designed a new pedestrian bridge to provide access to the island.

The threat of groundwater contamination has been mitigated now that the CCR was removed from the unlined pond and transferred to a monitored landfill with an

engineered liner. Not only did this project enhance the environment and achieve regulatory compliance, but it also led to economic benefits through beneficial reuse and financial savings for the City of Columbia. It will soon offer social and health benefits for the community.

The development of Power Plant Park will offer residents a new green space to enjoy while learning about the lake's intriguing history spanning over a century in an area of the city that historically has not offered such recreational benefits.

The Missouri chapter of the American Council of Engineering Companies has recognized this CCR impoundment closure and restoration project with the Grand Award in the chapter's Engineering Excellence Awards. This award is given to engineering firms that work on projects that demonstrate an exceptional degree of innovation, complexity, achievement and value. Additionally, this unique design experience has been featured in presentations focused on solid waste best practices at the Missouri Waste Control Coalition annual conference.

