

Four Corners CCR Impoundment

Fruitland, New Mexico

Four Corners Generating Station needed to increase the capacity of its CCR impoundment for a number of reasons. Keller installed wick drains to provide the necessary drainage for the project.



The project

The Four Corners Generating Station is a five-unit, coal-fired power station located in northwestern New Mexico with a generating capacity of about 2,040 megawatts. The combustion of coal produces a number of byproducts known as coal combustion residuals (CCRs), aka coal ash. The US Environmental Protection Agency regulates the storage and disposal of CCRs. The owner was using a lined ash impoundment for disposal that was approaching its design capacity. To avert an impending storage shortage and maintain regulatory compliance for continued facility operations, Keller was selected to increase the capacity of the CCR impoundment.

The challenge

The general contractor chose a common “upstream” dam lift technique to raise the top of the impoundment on the north toe of the existing dam. In this method, the slope for the downstream of the dam is maintained, while a new levee is constructed on the materials that were being held in by the impoundment. The ash materials that the designers wished to build upon were too soft and too weak to support a new embankment. The ash material has a fine, clay-like consistency and low permeability. Due to the low permeability of the ash, consolidation and the corresponding settlement of the ash material in the pond would take decades without the installation of wick drains.

The solution

Keller installed approximately 3,600 prefabricated vertical drains (wick drains) to depths of up to 60 feet in a 9-foot triangular pattern. Installation of the wick drains took about two weeks and provided the drainage necessary to accomplish the project on time.

Project facts

Owner(s)

Arizona Public Services

Keller business unit(s)

Keller

Main contractor(s)

URS

Solutions

Ground improvement
Environmental remediation

Markets

Power
Coal Combustion Residuals (CCR)

Techniques

Wick (PVD) drains

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