Big Sandy Fly Ash Pond Closure Project
Supplemental Explanation

The overall scope of work for the project included a sequentially phased closure of the impoundment, which includes the lowering of the main dam and removal of the saddle dam and construction of a new spillway for the main dam and saddle dam. Closure work generally included dewatering and stabilization of the ash; grading of the remaining material; installation of a cover cap system that includes: liner membrane; installation of soil materials to protect the liner; and addition of topsoil and vegetative growth to complete the work. The general sequencing of construction is shown in Figure 1.

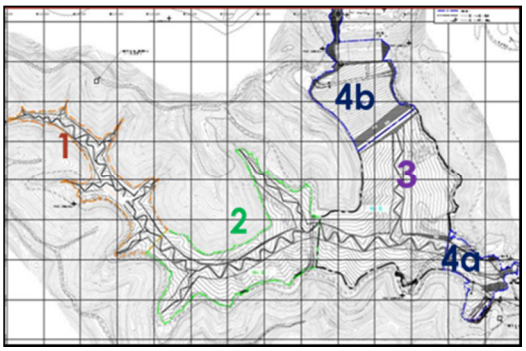


Figure 1

Closure construction started with the draining of surface water via pumping and/or by digging temporary drainage channels in the deposited ash to direct water to an area immediately behind the main dam. Once the top several feet of material is dewatered, the bearing capacity increases enough to support the excavation, as well as placement and compaction of the ash material. In the event that a stabilized surface cannot be obtained by dewatering means and methods, the unsuitable material is over-excavated and replaced with suitable granular borrow material fill until a stabilized design subgrade elevation is reached. A pool of surface water is maintained behind the main dam and discharged through a decant tower to Blaine Creek in accordance with Kentucky Power's KPDES (Kentucky Pollutant Discharge Elimination System) permit for the Big Sandy Impoundment. The dewatering of the ash and management of the water behind the dam were the means and methods selected by the Contractor. In general, work progressed from the highest to lowest elevations across the impoundment in phases to manage storm water during construction. The proposed means and methods also included a self-designed integrated well point dewatering system to supplement dewatering and stabilization of the ash.

Figures 2 and 3 show well point installation.

Figure 2

Figure 3

Testing during 2018 determined that the pore water (the water found between the ash particles) being removed from the ash via the well point dewatering system had a high probability of negatively impacting the water discharge quality to such an extent that the discharged water could exceed the permit limits. To ensure that Kentucky Power's discharge met all applicable regulatory requirements,

including the requirements of its KPDES permit , the project team ceased operation of the well point dewatering systems.

In their place, Kentucky Power began prudent water treatment, both chemical and filtration, prior to discharge to Blaine Creek. Figures 4 and 5 show the water treatment systems for toxicity and TSS (total suspended solids) to maintain permitted limits for Blaine Creek outfall.

Figure 4

Figure 5

In addition, the the Company's contractor increased the use of heavy earthwork equipment means and methods to excavate drainage channels, over-excavated saturated ash, stockpile and dry ash, as well as the placement of granular borrow material fill to establish a stabilized subgrade elevation.

Figure 6 shows over-excavation of saturated ash. Figure 7 shows ash excavation. Figure 8 shows the drying of saturated ash.

Figure 6

Figure 7

Figure 8