Placement of Coal Ash at Abandoned Mine Land Sites

The purpose of the Abandoned Mine Land (AML) program is to protect public health, safety, and property and to restore land and water resources and the environment previously degraded by adverse effects of coal mining practices. Lands which are eligible for reclamation are those that were mined for coal or affected by mining and abandoned or left in an inadequate reclamation status prior to August 3, 1977.

According to the Office of Surface Mining's Final Environmental statement on the AML program, a total of 383,400 abandoned surface coal mined acres accumulated from 1931 to 1971. Furthermore, over 400,000 acres were threatened by the potential of subsidence, over 10,000 miles of stream had been affected by mining, and over 5,000 miles of stream had been impacted by acid mine drainage.

Coal combustion materials legitimately utilized in a beneficial manner have, and continue to be, a significant by-product with properties conducive for use in AML activities. Many state programs have specific statutory or regulatory criteria which allows the beneficial use of these materials for specific purposes. For some states, the use for AML reclamation is stated specifically in law or regulation. Many state programs utilize these materials in reclamation activities each year. As many of these uses are specific to the site, intensive nationwide regulations or guidelines could serve as a disincentive for the use of an otherwise quality material.

The use of coal combustion materials is dependent on several factors. The factor with most significance is likely access to the material. Areas in need of reclamation activities that do not have a source of coal combustion materials in close proximity will be impacted by transportation costs such that either an alternative material will be required or the project simply does not take place.

The use of coal combustion materials for structural fills associated with AML reclamation activities is a common occurrence. This use is oftentimes for the purpose of stabilization of abandoned highwalls for the prevention of slides or elimination of a safety hazard. Another use for structural fills is the sealing and stabilization of abandoned underground mines. This beneficial use is for subsidence prevention and water discharge deterrent. Likewise, coal combustion materials are utilized in the AML program for providing a cap to coal refuse piles. This use decreases infiltration and recharge to water tables which may have formed in the refuse pile, thus helping to mitigate acid mine drainage which develops downslope of these areas. Normally, the generator of the material is required to provide chemical and structural analyses. Parameters include pH, metals, and acid-base accounting. Proctor analysis for determining optimum lift and compaction are included. Surface water monitoring oftentimes occurs with groundwater monitoring dependent upon the beneficial use application and the condition of the groundwater present at the site.

The use of coal combustion materials as an alkaline recharge material is very significant, particularly in the eastern region. Oftentimes, highly alkaline coal combustion materials are utilized to increase neutralization potential which decreases acid mine drainage. The manner in which this use occurs varies dependent upon the specifics associated with the mine which is being reclaimed. In some instances, it may be for filling vertical shafts several hundred feet deep. This eliminates both a safety hazard and allows alkaline materials to mingle with groundwater and mitigate the affects of acid mine drainage prior to exiting the mine downslope. In these cases, the material is characterized for pH, metals, and acid-base accounting. Only those materials which are conducive for providing alkaline recharge are utilized. Surface water monitoring at locations that water exits the mine takes place. In the event that water does not exit the mine and the quality of the water is at issue, groundwater monitoring is enacted.