

Alkaline Activated Coal Ash and Dredged Material in the Remediation of Very Large Mine Sites

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ABSTRACT

The human and environmental impacts of Abandoned Mines Lands are well known, creating falling, drowning and asphyxiation hazards, mine void collapses, stream and groundwater diversion and the acidification of thousands of miles of waterways. The reclamation of America's 560,000 abandoned mine features will require billions of tons of fill. At the same time, environmental regulations seeking cleaner air and water are redirecting millions of tons of bulk materials to the land. Cleaner-burning coal means adding tons of lime during combustion, and collecting more of the ash that used to go up the stack. Mud dredged from navigation channels, dams and reservoirs may no longer be disposed of in the ocean. This project set out to demonstrate that dredged materials, amended with alkaline activated ash wastes, undergo a cementitious reaction that can be used beneficially to: (1) replace the devastated geology of Abandoned Mine Lands, (2) remove physical hazards, (3) return surface waters to their watersheds, (4) prevent the formation of Acid Mine Drainage, and (4) restore natural vegetation and habitat, without harm to the environment. Nearly one million tons of amended fill was used to return a double high wall along 11,000 feet of a hillside in western Pennsylvania to its original contours. Over 100,000 surface and groundwater analyses have been performed since 1998. The results of which has lead PADEP to permit this application for the remediation of a 30,000,000 cubic yard strip pit in eastern Pennsylvania. The permitting, monitoring, operations, and results of this project will be summarized.

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