

## WEST VIRGINIA ABANDONED MINE LAND RECLAMATION

Robinson, N. A. (Project Manager, West Virginia Department of Energy, Charleston, WV). Public Law 95-87 provides funds, through taxes levied on each ton of coal mined, to reclaim abandoned mine sites which pose health and safety hazards to the general public. Only those sites which were abandoned before August 3, 1977, or for which there is no continuing reclamation responsibility are eligible for abandoned mine land (AML) funding. Due to its extensive mining history, West Virginia possesses some of the most severe hazards in the nation, including subsidence, unstable refuse piles, unsealed or improperly sealed mine entries, and underground mine fires. Where homes located above abandoned mine workings are affected by subsidence, exploratory drilling programs are used to reveal the conditions of the mine void, which is then filled with a grout or concrete mixture, stabilizing ground surface movement. Coal refuse piles which are burning can choke narrow valleys with smoke and noxious fumes, and piles which were initially dumped haphazardly over steep hillsides can present a stability problem. Constant erosion introduces acid and sediment loads to the receiving streams. Reclamation involves regrading the refuse material into the stable configuration and controlling surface drainage. Open entries to underground deep mines with decaying roof supports are sealed using a gravel bulkhead to prevent public access. Collapsed deep mine entries can dam up mine drainage until hydraulic head pressure forces a "blowout" or explosive discharge of this drainage. A gravel bulkhead seal with a perforated PVC pipe is installed in the entry to prevent access, provide for the free flow of drainage, and eliminate potential hydraulic head buildup. Underground coal mine fires, a serious threat throughout West Virginia's coalfields, have ignited forest fires that subsequently devoured large acreages of forests and endangered local residents. West Virginia's AML program has extinguished one mine fire to date utilizing a method known as total filling. The West Virginia Abandoned Mine Lands Program has completed over 150 projects, costing 60 million dollars, and successfully abating health and safety hazards on all.

Additional Key Words: mine subsidence, coal refuse fires, slope stability, erosion, mine sealing, mine fires.

## CONTROLLED GROUT COLUMNS: A POINT-SUPPORT TECHNIQUE FOR MINE SUBSIDENCE ABATEMENT

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Additional Key Words: mine stabilization.