

Use of a CCB Grout Barrier to Reduce the Formation of Acid Mine Drainage: The Siege of Acre Project, Kempton, Maryland

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ABSTRACT

The Maryland Department of Natural Resources Power Plant Research Program (PPRP) has proposed the Siege of Acre Project to demonstrate the feasibility of reducing acid mine drainage (AMD) formation by coating pyritic mine pavement with a CCB-based grout. Use of grout as a surface coating rather than bulk fill will preserve the existing and complex flow system in the mine, decreasing the risk of unintended consequences of bulk fills (i.e. blow-outs).

The Kempton Mine Complex covers 12 square miles in Maryland and West Virginia and discharges approximately 3.5 million gallons of AMD per day into Laurel Run, a tributary to the Potomac River in Western Maryland. The Siege of Acre segment forms the northern extremity of the Complex in Maryland. Siege of Acre includes an isolated straight run of three parallel tunnels, each 750 feet long by 16 feet wide, running up-dip from the edge of the Kempton mine pool. These are representative of several hundred acres of mine pavement within the Kempton Mine and in other Upper Freeport mines in Maryland and neighboring states.

The tunnel locations, orientations, and dimensions have been precisely determined. Water quality within the mine pool and flowing across the pavement has been well characterized. PPRP has also initiated long-term accelerated weathering experiments that expose cured CCP grout blocks to continuous flows of acidic water. These results of these accelerated weathering experiments will help to determine the durability of a CCP-grout coating within mine tunnels, such as those at Siege of Acre.

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