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## Coal Slurry Impoundment Monitoring

Project No. WV-219

Recipient: West Virginia University

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Funding: \$167,995.94 NTTC/WJU  
\$ Cost-Share  
\$ Total Value

Project Duration: 12/19/2005 – 5/31/2007

Project Description: Following the breakthrough and release of coal slurry in Martin County, Kentucky on October 11, 2000 the United States Congress requested the National Research Council (NRC) to examine ways to reduce these types of accidents. The NRC completed their study titled "*Coal Waste Impoundments, Risks, Responses, and Alternatives*," which identified numerous areas of concern and the committee presented recommendations for improving the design, operation, and safety of coal slurry impoundments. This research addresses the National Research Council's report specific to research on the development, implementation, and evaluation of state-of-practice electronic instrumentation for monitoring parameters within the embankment, slurry pool, and toe area of an operating West Virginia coal refuse impoundment.

The scientific accomplishments of this research include comprehensive discussions and documentation of the engineering design, fabrication, assembly, and field construction and commissioning of a prototype automatic wireless data collection system for monitoring impoundment performance (weather data, piezometric water levels, pH, Specific Conductance, and Oxidation Reduction Potential). The project successfully accomplished the project objectives and brought on-line the completed wireless data acquisition system that can function primarily without assistance to collect data that is relevant to coal slurry impoundment stability and safety.

Project Significance: This project will continue to collect data over the next year and provide the information to the impoundment design engineers and the West Virginia University Coal Impoundment Research program. This project has provided key insight into remote monitoring system needs and limitations as applied to coal slurry impoundments. Future efforts would include collaboration with instrumentation vendors for commercialization of complete monitoring packages to support MSHA's visual inspection requirements.