

Developing a Long-Term Hydrologic Monitoring Plan for Surface Coal Mines¹

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Abstract: One of the primary metrics for responsible operation and effective reclamation of a surface mine is water monitoring. Reclamation must consider the quantity and quality of groundwater and surface water before, during, and after mining. It is vital to develop a plan that will stand up to scientific and legal scrutiny in the future. A sampling plan must include locations, schedules, methods, and analytes to be studied. Federal, state, and local statutes will generally provide a framework that must be accommodated. Historical data and analyses will provide clues to potential issues. Obviously, as scientists, we want all the data we can get, but a sampling plan also must acknowledge the operations of the mine. Stations located in areas to be mined will be destroyed as mining progresses, and replacements must be in place ahead of time to maintain continuity. Stations in remote areas may be impossible to access during certain times of the year. New wells will be installed in reclaimed areas. Ownership of and access to surrounding lands may change. A monitoring plan must adapt to changing conditions without loss of continuity. In today's society, it is unlikely that most of us will ever be involved in the development of a mine from initial concept to reclamation, so generally there will be an existing monitoring plan in place. Knowing the strengths and weaknesses of a monitoring plan may be crucial to preparing a legal defense, and any monitoring plan should be open to improvement.

Additional Key Words: monitoring, reclamation, hydrology, permitting.

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