

APPROACH AND FINDINGS

Utilization of Previous Investigations

Interpretation of existing data assisted in the determination of site conditions including depth of coal, extent of mine workings, probable location of haulage ways and entries, historical mine pool elevations, attitude of Pittsburgh coalbed, and overburden characteristics. This information was particularly instrumental in the effective and efficient development of successful exploratory drilling programs and location of the permanent Primary Drain.

Approach of Current Investigations

Current investigations were used to gather necessary supplemental information to be integrated with available data from earlier efforts. For instance, eight piezometers were initially installed in McDonald Borough to provide the opportunity to monitor the mine pool in response to pumping and non-pumping periods at the "blowout". Responses (measurement of water levels during specific intervals) were then used to construct water level change maps to determine areas of highest hydraulic conductivity (most rapid response). (See Appendix B for overlay of Mine Pool Response Test.) This hydrologic relationship also appeared to be reflected/substantiated by the water quality in the piezometers. (See Appendix B - Water Sample Analyses.)

Available mapping of the Nickle Plate Mine (See Appendix B for overlay of Underground Mine Map.) was reviewed and spatially adjusted to fit data obtained from the drilling program to aid in locating near-surface entries and haulage ways on undeveloped, private property owned by cooperative landowners. These entries and haulage ways were expected to provide major conduits that would allow the control of the mine pool to be relocated outside of McDonald Borough. Additional site investigations were conducted to identify surface expressions of these major conduits. As surface mining operations conducted in the 1940s eliminated or significantly obscured drift entries at or near the coal crop, further drilling, including the installation of five additional piezometers, was completed to observe mine pool fluctuations responding to pumping/non-pumping at the "blowout". The installation of the additional piezometers greatly assisted in determining areas for excavation of test pits and in evaluating attempts to relocate control of the mine pool to the undeveloped property.

Upon identifying potential areas to install a permanent gravity drain, four test pits were excavated. Mine voids were encountered in Test Pit 1 and Test Pit 3. As Test Pit 1 appeared to provide the highest potential discharge and was located in the area with the least constraints (downstream road culverts with adequate capacity, for example) regarding installation of a permanent gravity drain, pumping (6" pump) at a rate of about 1200 gpm was initiated. Monitoring indicated that within 6 hours, the water level at the "blowout", about ½-mile to the southwest, was being lowered. A temporary gravity drain was installed and the proposal to design and build permanent facilities was submitted to BAMR for consideration. The proposal included the installation of a Primary Drain at Test Pit 1, a Secondary ("Back-Up") Drain at Test Pit 3, and an Early Warning System at the "blowout".

(See Project Timeline, Highlights and Details. See also Site Plan, and Appendix B - Generalized Columnar Section, Geologic Cross-Section, and Bed Map overlay.)