

PHASE II  
SURFICIAL AND SUBSURFACE INVESTIGATION

Subsurface Drilling and Calipering

A subsurface drilling program was conducted at the Ernest Mine Complex site during July and August, 1969, to establish the characteristics of the soil and rock materials above the mine.

One core boring was drilled adjacent to the E-4 boreholes to determine the condition of the rock above the mine and to monitor the elevation of the pool in the mine at that location. Pressure tests were conducted to evaluate the fracturing of the rock to obtain an indication of any past mine subsidence in the area. The log for the boring drilled at E-4 is shown on Dwg. No. 70-108-M5.

Auger borings were drilled adjacent to the E-3 collapsed shaft, the Fulton A shaft, and the approximate location of the Fulton B shaft. The exact location of the Fulton B shaft was determined during construction. The auger borings were drilled to define the characteristics of the overburden materials since excavation for installing permanent seals was required at these locations. Soil samples sufficient to properly classify these materials were obtained from the auger cuttings. The log of each auger boring is also shown on Dwg. No. 70-108-M5.

The three existing boreholes at E-4 were calipered to determine their diameter and condition. One 16-inch diameter and two 8-inch diameter boreholes were calipered during the investigation and the results are presented in Appendix B.

Water was discharging from the boreholes at the time of the subsurface investigation. Although one of the two 8-inch diameter boreholes (Borehole No. 4) was partially plugged, the 16-inch borehole (Borehole No. 2) and the second 8-inch borehole (Borehole No. 1) were freely discharging mine water to an elevation about two feet above ground surface (approximately 100 feet above the top of coal). A fourth 8-inch diameter borehole (Borehole No. 3), presumed to be in the vicinity of the three existing E-4 boreholes, was not located and, therefore, could not be calipered.

In general, the results of the calipering indicated that the borehole diameters were uniform with negligible fracturing and voids throughout the depth of each hole. The degree of fracturing of the rock overburden appeared to be minimal and, in our opinion, surface subsidence over this portion-of the Ernest Mine had not been significant.

#### Surficial Study and Elevation Survey

At the completion of the subsurface drilling program, a survey of all work areas was conducted as well as a general study of the existing surface conditions. The information obtained during this phase of the work was extensively used in developing the Design Drawings and Technical Specifications. All elevation control for the project was based on the U.S.G.S. Bench Mark El. 1028.74, located on a railroad bridge abutment west of Creekside, Pennsylvania. Surface and subsurface elevations shown on the mine maps did not always agree with the U.S.G.S. datum, and consistent differences between the elevations could not be established. For uniformity, and except where noted, all references to elevations shown on the Design Drawings and in this report are based on the above-referenced U.S.G.S. Bench Mark.