

### Quick-start Project (Grouted Mine Sealing)

In areas where drift mining has been carried out against the dip of the coal (i.e., with the rise), it was generally done to achieve favorable haulage grades for loaded cars and insure maximum natural drainage away from the active working places. The advantage thus obtained during mining becomes a liability when it is later deemed necessary to stem this flow of acid mine water from such an opening. The problems of designing a proper seal for the entryways into any abandoned drift mine are numerous, not the least of which is to build into the seal the required strength to withstand the pressures associated with water under confinement. Numerous instances of failure of poorly designed or hastily constructed mine seals are on the record.

A relatively new method of installing permanent mine seals on mine entrances or other sections requiring isolation is the grouted seal technique. Using this approach, any abandoned underground opening that is accessible to a drill hole, can be successfully sealed off. Since maximum pressure (head) exerted against the seal is assumed to be hydrostatic it will not exceed the maximum cover found at the seal location and a satisfactory seal can be designed accordingly. One apparently successful design now employed utilizes twin concrete bulkheads grouted into place at a prescribed interval within the entryway. These bulkheads fill the opening with a minimum of four feet contact at the roof. The void between these bulkheads is subsequently filled with a grouted center plug that completes the seal, except for a grout curtain that is injected into the strata to a desired limit on either side of the seal.

The design variables inherent in this mine sealing technique, such as, bulkhead spacing, curtain extent and location, materials selection, etc., give the engineer great latitude in utilizing this mine sealing method. The general locations for the installation of grout seals on the numerous abandoned mine entries in the English and Otter Run areas are shown in Appendix B.