

GUIDE TO PRACTICES IN ACID MINE-DRAINAGE CONTROL

*(Some Operating, Planning and Administrative Techniques
Relating to the Practical Application of
ORSANCO Resolution No. 5-60)*

The following material is intended to be explanatory of the five measures contained in Resolution 5-60. This material is presented as a guide to operators and an aid to administrative agencies in applying the provisions of Resolution 5-60. This material is not necessarily complete, nor is it intended to limit the application of Resolution 5-60. It is believed, however, that it covers most of the known practical techniques in acid mine-drainage control. As progress is made in the application of such control techniques, revision and expansion of this material may be required. The application of these techniques has to be fitted to the wide variations in local conditions which characterize coal mining.

It is to be noted that attention should be given to over-all planning of mining operations to facilitate application of good drainage practices.

CONTROL MEASURE I (a)

"Surface waters and ground waters shall be diverted where practicable to prevent the entry or reduce the flow of water into and through workings."

The application of this measure obviously requires that in every mine an effort must be made to determine the source of all mine drainage. In underground mines such water may come from water-bearing strata overlying or underlying the coal, from cracks to the surface, from adjoining mines or mine workings, or from shaft, drift or slope openings.

Where the source of mine drainage can be determined, every practicable effort should be made to shut off the water source. In some cases cracks to the surface can be plugged by filling the cracks with earth. In some cases it may be practical to seal such cracks by grouting methods. Where surface water is being admitted by shaft, slope, drift, or other mine openings, water should be diverted around such openings, or other measures taken to prevent the flow into the mine.

In strip mining the same principles should be applied. Control Measure "I (a)" would require that wherever practicable, diversion ditches be maintained above the highwall to minimize run-off water from entering the pit.

In an area where mining operations encounter other mine workings, or mine pits, precautions should be taken to prevent entry of water from such encountered mine workings or mine pits into or through such mining operations. Measures should also be taken to control the discharge of such water into the drainage system affected in accordance with Control Measure III of Resolution 5-60.

CONTROL MEASURE I (b)

"Water that does gain entry to the workings shall be handled in a manner which will minimize the formation and discharge of acid mine-drainage to streams."

This provision requires that mine drainage be controlled within the mine to minimize the distribution or flow through or over acid-producing materials. To accomplish this, mine drainage should be removed as quickly as possible from acid-forming materials, or accumulated in sumps or other storage facilities for removal, as near as practicable to the point of entry into the mine. Local depressions in the floor which permit the accumulated water to spread out over a relatively large area are not suitable sumps. Wherever practicable mine water should be conducted in pipes rather than ditches, unless such ditches can be kept free from acid-producing materials. Where such water cannot be handled in pipes, or suitable ditches, by gravity flow, local pumping stations or suction pick-up stations should be employed. These techniques can be applied to both underground and strip mines. In both underground and strip mines, good housekeeping practices should be followed with respect to accumulations of crushed coal or other acid-producing materials. Acid is formed on exposed surfaces and acid-producing debris is capable of producing large quantities of acid. Where flowing or standing mine water is permitted to contact such debris, it may become contaminated