



THE REPORT

## REPORT ABSTRACT

Big Run was selected for this mine drainage study because it is currently discharging a small acid load into Little Sandy Creek which is a major tributary to Redbank Creek and ultimately the Allegheny River which supports a game fishery and recreational potential for the Commonwealth.

The specific purpose of this study is to determine the extent and severity of mine drainage in the Big Run Watershed, conduct a detailed pollution source inventory, determine the impact of this pollution on Little Sandy Creek, develop remedial measures for each pollution source, estimate the cost of abating the pollution and recommend an abatement plan for the watershed.

Big Run is a 17.7 square mile watershed located in Perry, Oliver and Ringgold Townships, Jefferson County, Pennsylvania. The watershed has a total relief of approximately 660 feet. The coal measures within the counties range vertically from the Brookville bed to the Lower Freeport formation within the Allegheny series.

The watershed study was planned and executed in phases. All available information was gathered and reviewed in detail. Weir locations were selected and weirs constructed to monitor the watershed throughout the study.

Detailed field explorations were undertaken to locate, define and evaluate all pollution sources to clearly establish the

criterion for abatement plans.

Analysis confirms that Big Run is alkaline in its headwaters and gathers only three minor acid loadings downstream to its junction with Little Sandy Creek. The average pH at the mouth of Big Run is 6.68 with an average alkaline load of 1,6+7 pounds per day.

The abatement plan is based on all findings gathered during the course of the study and is presented in this report. The plan includes priority ranking of the pollution sources and possible implementation of abatement measures.

It is not recommended that any abatement measures be carried out at this time on the Big Run Watershed for three reasons. First, the stream is in relatively good aquatic condition as it currently supports a game fishery and is stocked with trout by the Pennsylvania Fish Commission. Secondly, the net gain in acid reduction if all measures were 100 percent successful would be 902 pounds per day at an estimated cost of \$195,730.00. As the stream is already alkaline throughout its length,, this abatement would only serve to increase the alkalinity discharge into Little Sandy Creek which also already supports a game fishery. As the stream has a pH of 6.68 at its mouth, the abatement measures, if pursued, could only possibly raise the total pH at the mouth of Big Run by a few tenths at most.

The third reason for not implementing any abatement

procedures on Big Run Watershed at this time is that with the large expenditures necessary to conduct the abatement of acid drainage on Big Run and the little net gain that would result from this abatement, it is felt that these funds would be more justifiably expended on a watershed which is more severely degraded by acid mine drainage. The net worth on a watershed of this nature would justify this type of expenditure with a greater net worth in terms of acid reduction.

## INTRODUCTION

The Pennsylvania State Legislature mirrored the desires of the citizenry by stating its intentions in the 1965 Clean Streams Law; "...to reclaim and restore to a clean, unpolluted condition every stream in Pennsylvania that is presently polluted..."

It was known that in order to accomplish this goal, abandoned mine drainage (the most serious source of pollution in Pennsylvania) would have to be abated. During December, 1967, the State Legislature enacted "The Land and Water Conservation and Reclamation Act" (Act 443) which authorized the establishment of an indebtedness of \$500 million for the conservation and reclamation of land and water resources. Of this total \$150 million was allocated for the prevention, control and elimination of stream pollution from mine drainage.

In October, 1970, the Bureau of Mining Area Restoration of the Pennsylvania Department of Mines and Mineral Industries was requested to conduct an investigation of the mine drainage pollution of Big Run.

On January 19, 1971, the Department of Mines and Mineral Industries was abolished and the Department of Environmental Resources was formed. The Office of Resources Management under the Department of Environmental Resources continued the investigation of coal mine drainage pollution within the Big Run Watershed in Jefferson County.

The investigation was directed by Mr. A. E. Molinski, District Engineer, Office of Resources Management. The Project Engineers in charge were Walter Zimmerman and Michael R. Ferko with the assistance of the District Office staff.

Big Run is one of several tributaries to Little Sandy Creek which in turn is a tributary to Redbank Creek and ultimately the Allegheny River. Big Run currently is alkaline throughout its length and contains a productive fishery. The bulk of the mining conducted within the watershed has been confined to the middle and upper reaches of the stream and this past mining activity slightly degrades a portion of the stream.

An improvement of Big Run Water quality can only be minimal and only slightly improve Little Sandy Creek from its junction downstream

to Redbank Creek. This report is intended to mirror the pollution and water conditions within the watershed.

#### PURPOSE

The purpose of this study was to:

- (1) Determine the extent and severity of mine drainage pollution of Big Run and its tributaries.
- (2) Conduct a pollution source inventory by locating and measuring the specific discharges associated with past and present mining.
- (3) Determine the impact of Big Run on the quality of Little Sandy Creek.
- (4) Develop measures for each significant source of pollution which would control and/or eliminate the pollution.
- (5) Rank the measures according to recommended priority.
- (6) Develop and recommend an "abatement plan" for the watershed.