



## WATER RESOURCES RESEARCH GRANT PROPOSAL

**Project ID:** 2002WV4B

**Title:** Assessing Extent and Longevity of Degradation Following Coal Mining in West Virginia

**Project Type:** Research

**Focus Categories:** None

**Keywords:** None

**Start Date:** 03/01/2002

**End Date:** 02/28/2003

**Federal Funds:** \$23,542

**Non-Federal Matching Funds:** \$48,728

**Congressional District:** 1

**Principal Investigator:**

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**Abstract**

A recent study at West Virginia University has shown that many acid mine drainage (AMD) impacted streams may improve over time through natural reduction in acid generation from mine sources. However, quantifying the impacts of AMD and its duration after mining continues to be a problem for regulatory agencies. This project will examine the effect of time on reduction of acid generation and stream degradation. Water quality parameters, such as pH, acidity, alkalinity, Fe, Al and Mn will be monitored on two adjacent watersheds. Watershed will be selected from a United States Forest Service (USFS) stream survey conducted in the 1970s and 80s. These are paired watersheds: one AMD-impacted and one non AMD-impacted. The watersheds will be of similar size and topography and must be undisturbed since the original USFS study. Water quality data will then be compared to data collected during the USFS study to determine the amount of water quality improvement in the last 20 years.

In addition to chemical water quality, a benthic survey will be conducted on each stream to determine the general biologic health of the stream. The non AMD-impacted watershed will be used as a benthic baseline. The benthic survey of the AMD-impacted stream will then be compared to this baseline. Similar pollution tolerant organisms in both streams will be an indicator of improved water quality in the AMD-impacted stream.

The results of this project will demonstrate and quantify the natural attenuation of acid generation from acidic materials over time. It will also demonstrate the effectiveness of this reduced acidity on the restoration of benthic communities to historically AMD-impacted streams. This information can then be used to plan new mining activities and water treatment systems with advance knowledge of the quantity, quality and duration of surface water changes.