



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2003WV15B

Title: WRI55: Hydrologic Connections and Impacts on Water Supply in the Great Valley Karst Aquifer. A Case Study in Martinsburg, West Virginia

Project Type: Research

Focus Categories: Water Supply, Water Quantity, Water Quality

Keywords: water supply, water quantity, water quality, hydrology, ground water, surface water, hydrogeology

Start Date: 03/01/2003

End Date: 02/28/2004

Federal Funds Requested: \$21,829

Non-Federal Matching Funds Requested: \$25,891

Congressional District: WV 1st

Principal Investigators:

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Abstract

Ensuring that sufficient water quality and quantity are available in the future is a critical issue for states and water suppliers. Recognizing the sources and their limitations is critical for future resource planning. Berkeley and Jefferson Counties, in the West Virginia panhandle, are confronting increased demand on their water resources because of urban encroachment from the Washington, DC area. This problem has been compounded by recent drought cycles that diminish water availability. Managing water supplies in these counties is yet further complicated because they draw much of their ground water from the Great Valley Karst Aquifer. While ground water is often plentiful in karst aquifers, their close connection to the surface often makes them vulnerable to contamination and highly-variable in both quantity and quality. In a recent poll of Berkeley County farmers and of the Berkeley-Morgan Farm Service Administration Representatives, the two most important issues related to water and urban sprawl were urban encroachment and ground water quantity.

The objectives of this study are to develop novel scientific techniques for identifying the interconnections between several components of porosity in a regional karst aquifer by using detailed observations at springs, wells, and quarries. Although the proposed work is focused on the Martinsburg area, the understanding of spring-quarry interaction will also be directly applicable to other Great Valley water users/suppliers in Berkeley and Jefferson Counties, West Virginia, as well as in neighboring regions of Virginia and Maryland. The information collected will be used for developing general techniques to assess safe aquifer yield, as well as being directly applicable for planning future water management in Berkeley County. The preliminary data collected in this seed project will be used to design and develop funding for a larger-scale investigation of water movement, availability and quality in Berkeley and Jefferson Counties, West Virginia.