ACID MINING DRAINAGE STUDY - NORTH BRANCH POTOMAC RIVER[1]

by

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Abstract: The specific utilization of the model developed for the North Branch of the Potomac will hopefully indicate other applications for modeling in this watershed in order to prioritize AMD abatement.

Since 1914, underground mining in the headwaters of the North Branch of the Potomac River in Western Maryland and Northern West Virginia has introduced contaminated drainage to the Potomac River itself. By the time Public Law 95-87 was implemented over 4,100 acres of the upper North Branch watershed had been strip mined and abandoned or poorly reclaimed. These surface mines, in addition to expansive draining underground mines, combined to severely impact the North Branch of the Potomac River.

Today, many of the receiving streams are completely devoid of aquatic life, due to the constant loading of acid, dissolved metals, and sediments from abandoned mines. The cumulative effects to the endpoint, Jennings Randolph Lake, are potentially worse. The lake not only approaches extinction of its native aquatic life, but untended, may become useless for public recreation as well. The buffering effects of over-treated alkaline effluent from numerous active mine sites and one power plant also have helped to mitigate the pollution. However, the benefits of these alkaline discharges will only last as long as the activity at the mines and the plant.

This project was undertaken for the States of Maryland and West Virginia in conjunction with the Office of Surface Mining to review the status of the North Branch watershed and to find a way to prioritize treatment of AMD sources.

The field activity undertaken to characterize the watershed, including the rationale behind the sampling frequency and parameters tested will be reviewed. The basis for modeling the watershed and how the algorithms were developed to model the interaction of merging flows will be defined. Discussion will also cover varying methods of stream flow calculation and how field data is not a suitable source of data.

Characterization of the watershed by the existing conditions, and utilizing the results from the model will indicate what the overall effect would be by either removing acidic loading, adding neutralization agents, or changing the stream flows.

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