

A CASE STUDY IN HYDROLOGY, GEOLOGY, CHEMISTRY AND HISTORY: THE CONSTRUCTION OF I-80 AND THE GENESIS OF MINE DRAINAGE TO JONATHAN RUN¹

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Abstract. When Interstate 80 was constructed across Pennsylvania in the late 1960's, major changes to the landscape took place. In Centre County, extremely large cut and fill areas were required. The Jonathan Run stream channel was moved, put into a culvert, and buried under approximately 80 feet of interstate fill material. The swampy headwaters of the stream was also filled with 6 feet of material and leveled to construct a staging area. The fill material consisted of highly pyretic sandstone. Severe pollution of Jonathan Run resulted.

Hedin Environmental was hired by the Beech Creek Watershed Association to investigate the site and provide treatment alternatives. Seven discharges were initially targeted for sampling. The 1-year-long sampling program revealed that a small, inconspicuous flow emerging directly from the I-80 fill material was the primary source of pollution. Due to the highly contaminated state of this discharge, passive treatment is not possible and mitigation alternatives are being explored.

The focus of the project shifted to finding the source(s) of the highly contaminated discharge. Through various efforts, it was determined that the discharge could only be coming from a spring under I-80 or a trapped pool of water in the fill material. Monitoring wells constructed within the I-80 median showed that 9 feet of water was being retained within the fill. Efforts to drain the fill were only partially successful. Grout dams will be installed in order to prevent the passage of water along the culvert wall. Results on this work will be available for the conference.

Additional Key Words: acid mine drainage, acid rock drainage.

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