

# Reevesdale South Dip Tunnel Project

The Reevesdale South Dip Tunnel Project was funded by the Pennsylvania Department of Environmental Protection's Section 319(h) Nonpoint Source Management Grant; the U.S. Dept. of the Interior's, Office of Surface Mining Appalachian Clean Streams Initiative Watershed Cooperative Agreement Grant; and, the U.S. Environmental Protection Agency's Targeted Watershed Initiative Grant



The Reevesdale South Dip Tunnel Project has been constructed to treat or remediate the abandoned mine drainage (AMD) discharge flowing from the abandoned mine workings of the Reevesdale South Dip Tunnel. The project is designed to direct the discharge into an underground oxalic limestone drain (OLD) where the abandoned mine drainage dissolves the limestone which adds alkalinity to the water and raises its pH. The metals present in

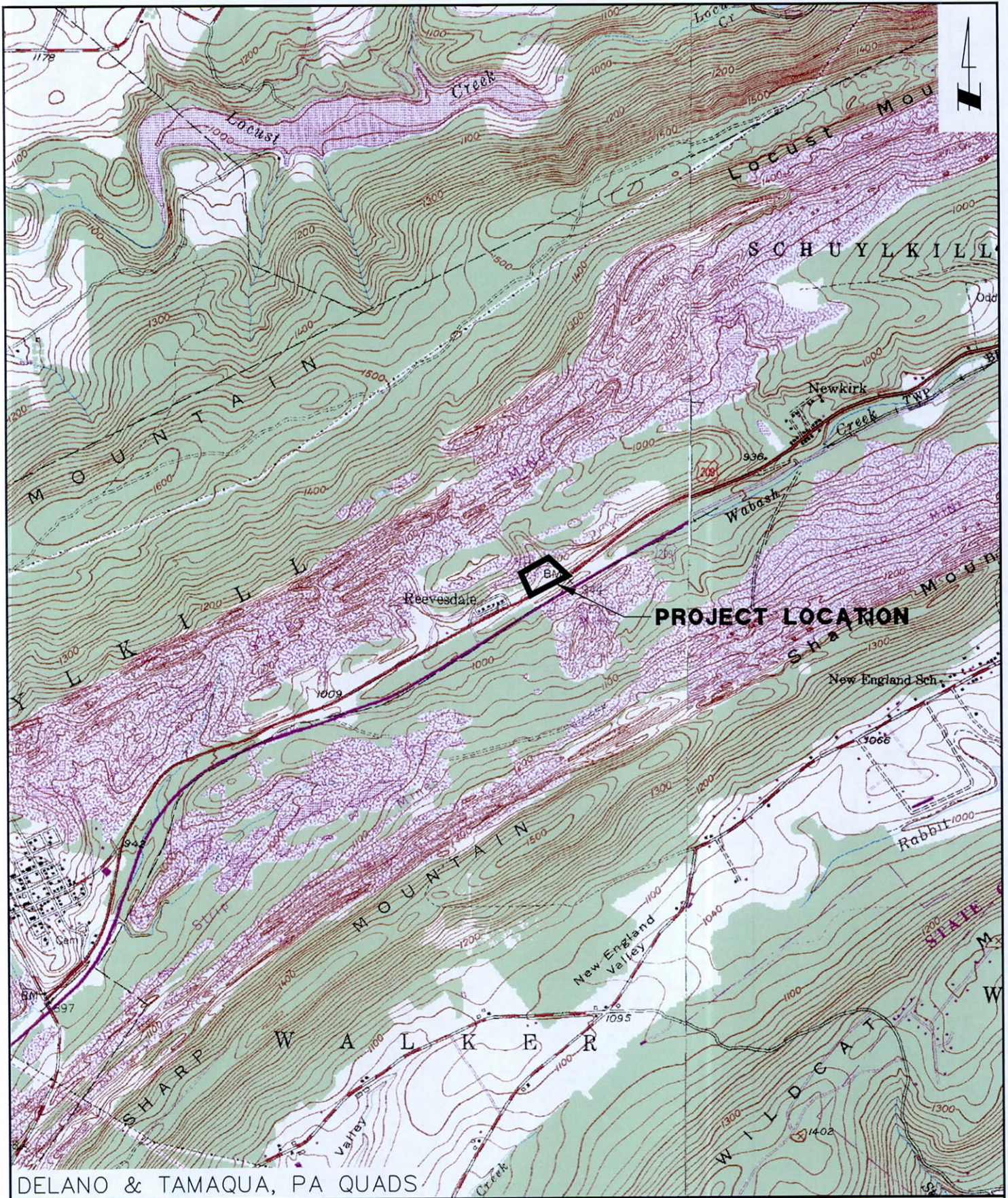


the water are then able to precipitate or drop out of the water into two wetland cells after leaving the OLD. This allows the metals to be removed from the water and the pH to be increased before the water reaches the Wabash Creek. The project is reducing the amount of pollution entering the Wabash Creek and the Little Schuylkill River and provides habitat for various species of wildlife.

The Reevesdale South Dip Tunnel Project could not have been completed without the assistance of all of the project partners that were involved with the project. A special "thank you" to all of the project partners listed below.



Partial funding for this project is provided by the U.S. Environmental Protection Agency through a Targeted Watershed Initiative Grant administered by the Philadelphia Water Department and the Partnership for the Delaware Estuary. The information presented here does not necessarily reflect the opinion or position of EPA.



DELANO & TAMAQUA, PA QUADS

SCHUYLKILL HEADWATERS ASSOCIATION, INC.  
 ABANDONED MINE DRAINAGE REMEDIATION  
**REEVESDALE #2**  
 SCHUYLKILL TOWNSHIP                      SCHUYLKILL COUNTY

**RETTEW**  
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DRAWN BY: \_\_\_\_\_ CH  
 DATE: \_\_\_\_\_ AUGUST 2005  
 SCALE: \_\_\_\_\_ 1" = 2000'  
 DWG. NO. 03-04234-002

**ABANDONED MINE DRAINAGE REMEDIATION PROJECT  
FOR THE REEVESDALE #2 DISCHARGE,  
SCHUYLKILL TOWNSHIP, SCHUYLKILL COUNTY, PA**

Abandoned mine drainage (AMD) from the Reevesdale South Dip (Reevesdale #2) Tunnel contributes aluminum, iron, manganese, and acidity to Wabash Creek, a tributary to the Little Schuylkill River in Schuylkill County, PA. Wabash Creek is designated "impaired because of metals" on the Pennsylvania Department of Environmental Protection's (PADEP) 303(d) List of Impaired Waterways. An assessment focusing on AMD nonpoint source problems in the Little Schuylkill River Watershed ranked the Reevesdale #2 Discharge as one of the most severe in the watershed (L. Robert Kimball & Associates, 2001). Despite the AMD contributions, the Little Schuylkill River is an extremely valuable aquatic resource supplying recreational opportunities to residents and tourists and habitat for wildlife and fish. The PADEP Chapter 93 Water Quality Standards designates the Little Schuylkill River as a cold water fishery. The lower section of the Little Schuylkill River also is designated a State Scenic River and is enjoyed by thousands of people annually for whitewater boating and fishing.

Recent flow and chemistry data collected since 1997 by the PADEP and the USGS indicated the flow rate at the Reevesdale #2 Discharge ranged from 19 to 1,060 gal/min and averaged about 393 gal/min. The discharge water has consistently been acidic (pH 3.8 - 5.8; acidity 5 - 27 mg/L CaCO<sub>3</sub>), slightly oxygenated (1.1 - 2.0 mg/L O<sub>2</sub>), and contaminated with dissolved metals (Al = 0.3 - 2.1 mg/L; Fe = 0.1 - 10.8 mg/L; Mn = 0.7 - 1.2 mg/L). Water having this chemical character, but less than one-tenth the flow rate, has successfully been treated with a 3-hour detention time.

The Reevesdale #2 AMD Remediation Project involved the design, installation, and evaluation of a passive treatment system consisting of a flushable, oxic limestone drain (OLD) followed by an aerobic wetland basin to reduce the acidity and metals loadings from the mine discharge to the receiving streams. Underdrain networks and outflow pipes within the OLD enable flushing of accumulated metals from the limestone bed to the wetland where final oxidation, precipitation, and settling of metallic-rich particles occurs. Although an OLD requires fewer materials and less space for treatment and, hence, has potential to increase cost-effectiveness of treatment compared to a downflow system with compost, it also has greater potential for failure due to rapid metal accumulation. Because of this concern, cubitainer testing was conducted to evaluate any effects of the metal precipitate on limestone dissolution rates, and intensive monitoring and evaluation of treatment efficiency was conducted during the project. This project will reduce AMD loadings from the Reevesdale #2 Tunnel to Wabash Creek and the Little Schuylkill River, and it will demonstrate the effectiveness of using an OLD for treatment of a low-pH, aluminum-contaminated discharge.

The \$366,636 project was funded by grants from US EPA 319 Non-Point Source Pollution Program, U.S. Department of the Interior Office of Surface Mining (OSM), and US EPA Targeted Watershed Initiative Program (TWIG). Project partners included Schuylkill Headwaters Association, Inc., RETTEW Associates, Inc., Schuylkill County Conservation District, PADEP, USGS, OSM, Reading Anthracite Company, and Lloyd S. Aungst Excavating.





