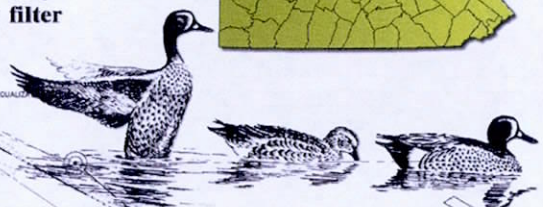
Minersville Wetland

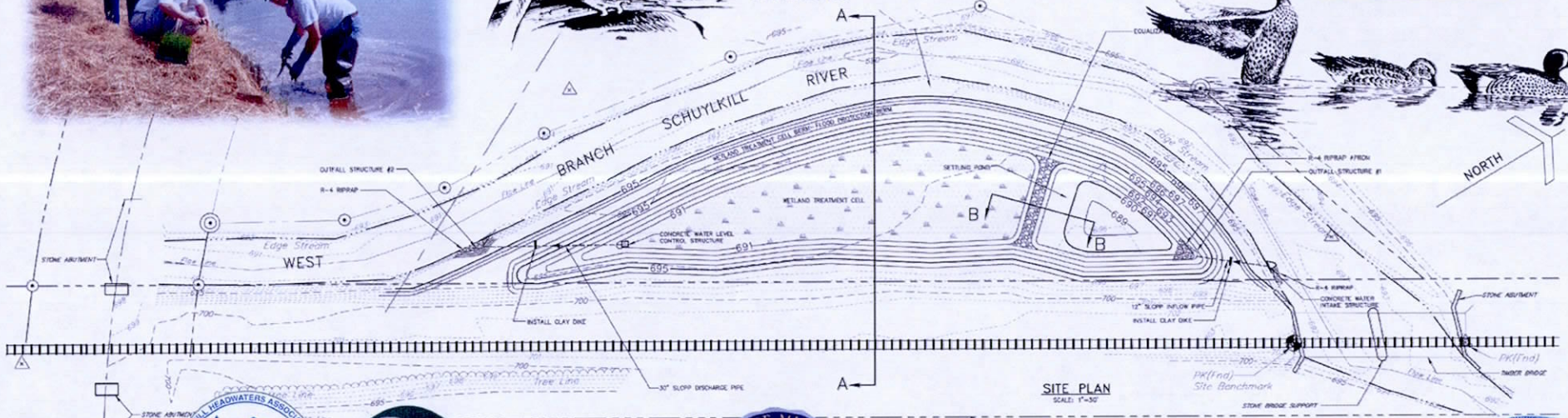
FOR

Schuylkill Headwaters

ASSOCIATION, INC.

The Minersville Wetland was constructed to be a natural filter to help remove acid mine drainage from the impacted West Branch of the Schuylkill River. This wetland diverts a portion of the flow from the West Branch of the Schuylkill River into the treatment system to remove metals, specifically iron, aluminum, and manganese, from the river's water. A passive wetland treatment system, such as the Minersville Wetland, generally consists of a settling pond to remove large particles and a vegetated shallow pond to filter out metals.





SITE PLAN
SCALE: 1"=50'

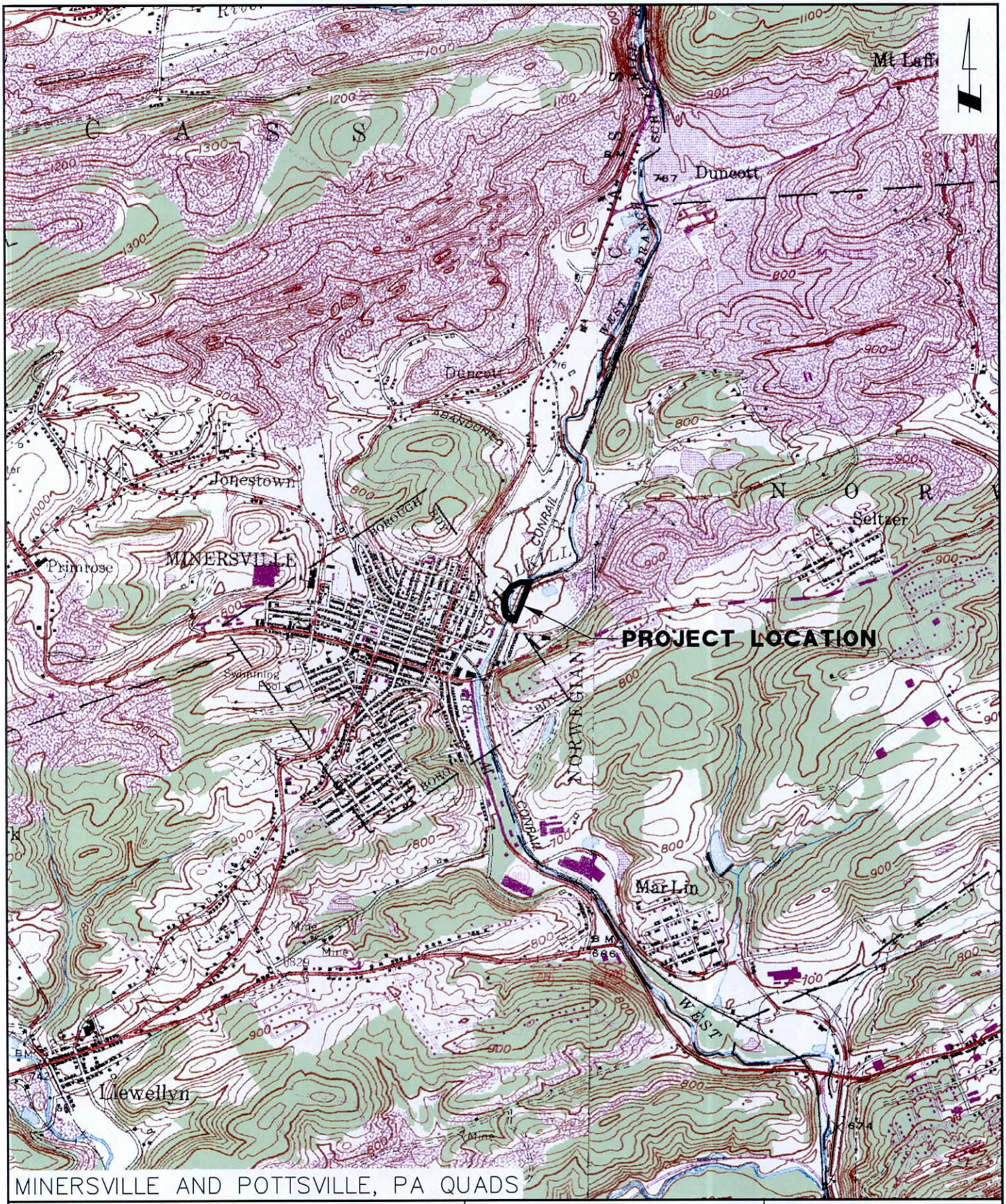
REITEW ASSOCIATES INC.

SCHUYLKILL CONSERVATION DISTRICT

"The Road of Anthracite"
R B M & N Railroad Company

MINERSVILLE SAFE DEPOSIT BANK & TRUST COMPANY

Arthur "Pat" Aungst



MINERSVILLE AND POTTSVILLE, PA QUADS

SCHUYLKILL HEADWATERS ASSOCIATION, INC.
ABANDONED MINE DRAINAGE REMEDIATION

MINERSVILLE WETLAND

NORWEGIAN TOWNSHIP SCHUYLKILL COUNTY

RETTEW

RETTEW Associates, Inc
Union Street Station, 101 East Union Street
Pottsville, PA 17901
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DRAWN BY: CH
DATE: AUGUST 2005
SCALE: 1" = 2000'
DWG. NO. 00-04234-001

ABANDONED MINE DRAINAGE REMEDIATION PROJECT FOR THE WEST BRANCH SCHUYLKILL RIVER AT MINERSVILLE, SCHUYLKILL COUNTY, PA

The West Branch Schuylkill River is a watershed where abandoned mine drainage (AMD) and coal wash deposition material has severely impaired the water quality and aquatic community. Biological assessments performed by the Pennsylvania Department of Environmental Protection (PADEP) provide clear evidence as to how impaired the West Branch really is in that during their assessment not one species of benthic macro-invertebrate was collected. In addition, the *Upper Schuylkill River Tributaries Assessment*, completed in 2000, identified Pine Knot/Oak Hill Mine and Oak Hill Boreholes as two priority AMD sites that contribute high levels of iron, aluminum, and manganese to the West Branch Schuylkill River. Pine Knot/Oak Hill has a low feasibility of remediation due to an extremely high flow rate. However, space was available downstream of the Oak Hill Boreholes to install a passive wetland treatment system to treat a portion of diverted river flow for the purpose of decreasing iron hydroxide concentrations and, to a lesser degree, manganese and aluminum. Schuylkill Headwaters Association, Inc. (SHA) retained RETTEW Associates, Inc. (RETTEW) to apply for and secure a PADEP Growing Greener Grant, in the amount of $150,000, to design and construct the Minersville Wetland Treatment System.

The treatment system design entailed the utilization of a water intake / primary screening structure on the river (upstream), a settling pond, a passive wetland treatment cell, a water level control structure, and an outfall structure (downstream) to discharge treated water back to the river. The wetland treatment cell is an aerobic treatment cell comprised of an impervious clay liner, a one-foot 50/50 mixture of topsoil and alkaline mushroom compost soil, and a wetland plant community. Diverted water from the river enters the treatment system via the intake structure and once treated is discharged back into the river system through the concrete water level control structure. The only encroachment within the river channel itself involved the permanent installation of the intake and outfall structures along the river banks. The goal of the project is to treat approximately 1 cfs of river flow to reduce the current total iron concentration in the river from 5.3 mg/L to a level near PADEP's protective criteria for aquatic life or 1.5 mg/L. Follow-up water quality monitoring is being conducted on a regular basis to determine the performance of the passive wetland treatment system.

The Minersville Wetland Project was successfully completed in 2002 through the involvement and participation of numerous project partners, government agencies, and the community. The project was initiated out of a partnership between SHA, Reading, Blue Mountain, & Northern Railroad Company (RBMN), the Borough of Minersville, Arthur "Pat" Aungst, Inc. (contractor), and RETTEW Associates, Inc. (engineer).

Participation from the business sector involved landowner permission from RBMN Railroad Company, without which the project never would have been completed. In addition, two local banks, First National Bank of Minersville and Minersville Safe Deposit Bank & Trust Co., supplied some matching funds toward the installation of the interpretative sign adjacent to the project site.

Government agencies including Schuylkill Conservation District, Borough of Minersville, U.S. Geological Survey (USGS), PADEP, District Mining Office, Pottsville, PADEP, Bureau of Abandoned Mine Reclamation, and Schuylkill County government officials were significantly involved with the project during the grant application and construction phases.