SLIPPERY ROCK WATERSHED COALITION

DE SALE PHASE II RESTORATION PROJECT

Venango Township, northern Butler County, PA

"A Public-Private Partnership Effort"

PROJECT PARTICIPANTS:

- PA DEP Knox District Mining Office
- Grove City College
- BioMost, Inc.
- Private Landowners
- Quality Aggregrates Inc.
- Urban Wetland Institute
- Amerikohl Mining, Inc.
- Aquascape
- SRWC Volunteers
- WOPEC
- Stream Restoration Inc.

SITE HISTORY: Half-century old, abandoned surface coal mining activities severely impacted a tributary to Seaton Creek within the headwaters of the Slippery Rock Creek Watershed. The flow from this essentially "dead" stream was one of the major pollution contributors to Seaton Creek.

DRAINAGE ABATEMENT: Passive treatment system installed in six weeks (7/13/00 to 8/29/00) included six components: stream intake (3' ht.); forebay (8000 SF); two Vertical Flow Ponds (in parallel with two-tier underdrain system with 2 miles piping and 4400 tons, AASHTO #1, 90% $CaCO_3$, limestone aggregate overlain by ½-foot spent mushroom compost); Settling Pond (0.2 ac., 5' depth); Constructed Wetland (1.5 ac.); Horizontal Flow Limestone Bed (2900 tons, AASHTO #1, 90% $CaCO_3$, limestone aggregate).

The treatment media generates alkalinity. Two tiers of perforated plastic pipe installed in the aggregate collect the water flowing through the Vertical Flow Ponds. The treated water discharges through the outlet control structures into a settling pond. This settling pond allows periodic flushing of the Vertical Flow Ponds in order to remove accumulated metal precipitates (mainly iron and aluminum). The wetland facilitates additional iron oxidization and settling of iron and aluminum precipitates. Finally, the water passes through a Horizontal Flow Limestone Bed, adding alkalinity and removing a portion of manganese, which discharges through a 8" perforated underdrain.

WATER QUALITY (representative)**:**

	Flow (gpm)	pH	Alk (mg/L)	Acid (mg/L)	Fe (mg/L)	Mn (mg/L)	Al (mg/L)
Pre-construction Raw	85/150	3.5/3.0	0/0	179/420	9/20	36/81	7/14
Post-construction Final	85/200	7.3	72	0	2	3	<1

total metals reported; 200 gpm design flow

FUNDING SOURCE:

Commonwealth of Pennsylvania "Growing Greener" initiative
Contributions from project partners