

# North Liberty Reclamation Area Phase I and II



**Final Report  
March 2004**



**Liberty Township, Mercer County, PA**

## **Stream Restoration Incorporated**

**A PA Non-Profit Organization 501(c)(3)**

3016 Unionville Rd., Cranberry Twp., PA 16066

PH: 724-776-0161; FX: 724-776-0166; [sri@streamrestorationinc.org](mailto:sri@streamrestorationinc.org)

Date: March 15, 2004

To: PA Department of Environmental Protection  
Bureau of District Mining Operations  
P.O. Box 669, Knox, PA 16232-0669

Attn: John Simms, Project Officer

Re: Final Report  
ME# 350411; Project # NW01781  
ME# 351405; Project # NW10269  
North Liberty Reclamation Area Phase I and Phase II  
Liberty Township, Mercer County, Pennsylvania  
760102/FR-trans

Enclosed is the final report for the above noted projects.

This report represents only a portion of the "success stories" made possible by this grant. The public-private partnership effort has resulted in the successful reclamation of over 40 acres of abandoned mine lands to productive farmland including the elimination of 15 acres of open pits and 1300 feet of dangerous highwalls.

This project has provided "hands-on" educational opportunities as well as additional outreach efforts, which will hopefully spur interest in the restoration of this and other watersheds impacted by abandoned mine lands. We hope that this report will meaningfully acknowledge the importance of this project and the funding received through your office.

Please review and comment. The submission of a good quality work product is important to all of us.

Your patience and assistance has been very much appreciated. If there are any questions or comments, please do not hesitate to contact us.

From: Stream Restoration Incorporated

By: Margaret H. Dunn, PG, President

Sent: First Class Mail

## **Slippery Rock Watershed Coalition**

*“Making It Happen” through Public-Private Partnership Efforts*

# **NORTH LIBERTY RECLAMATION AREA PHASES I AND II**

## **FINAL REPORT**

Wolf Creek, Slippery Rock Creek Watershed, Beaver & Ohio River Basins  
Liberty Township, Mercer County, Pennsylvania

### A Pennsylvania Growing Greener Watershed Restoration Project

#### **Brief Description of Project Work through Grant and Partnership Contributions**

- Compiled water monitoring data (source: PA DEP, BioMost, Inc., etc.)
- Received support, by petition, from 128 local residents
- Prepared funding proposals, completed applications/notifications and received grants, permits, and approvals
- Installed approved Erosion and Sediment Controls
- Installed temporary water treatment basins
- Pumped and treated over 7 million gallons of degraded water with liquid caustic (sodium hydroxide) from 4 large abandoned pits
- Limed and backfilled approximately 15 acres of open pits and 1300 linear feet of highwalls (maximum highwall height: ~60 feet)
- Regraded and revegetated about 43 acres of abandoned mine lands to productive farmland
- Planted trees around historic home to serve as a windbreak
- Planted 3000 wetland plants with adjudicated youth from George Junior Republic to provide wildlife habitat
- Submitted quarterly status reports and final report with “As-Builts” and selected photos, and administered contract

**Funding:** PA DEP Environmental Stewardship and Watershed Protection Grants  
ME#350411; NW01781; \$550,000 and ME#351405; NW10269; \$8,000

**Matching/In-Kind:** Amerikohl Mining, Inc.; BioMost, Inc.; Urban Wetland Institute;  
Grove City College; George Junior Republic; Dave Beatty  
(landowner); Stream Restoration Inc. [non-profit]; volunteers;  
~ \$ 421,000 in-kind/match

## **PUBLIC-PRIVATE PARTNERSHIP**

### **Water Quality Monitoring, Construction Inspection**

**PA Department of Environmental Protection, Bureau of District Mining Operations,**  
PO Box 669, Knox, PA 16232

GILLEN, Timothy, PG; BOWMAN, Roger, Engineer; BISH, Brad, MCI; SIMS, John, Insp.  
Supervisor; ODENTHAL, Lorraine, Permit Chief; CARLIN, Sherry, Watershed Manager;  
MIRZA, Javed, Dist. Mining Mgr. (814) 797-1191

### **Landowners**

BEATTY, David & Linda, Courtney Mill Road, Grove City, PA 16127  
LAPA, Agnes, #9 Glenoak, Greensburg, PA 15601

### **Land Reclamation**

**Amerikohl Mining, Inc.,** 202 Sunset Drive, Butler, PA 16001  
STILLEY, John, President; SAUGRICH, John, Vice-President (724) 282-2339

### **Environmental Assessment**

**Brenner Ecological,** 789 North Liberty Rd., Grove City, PA 16127  
BRENNER, Frederick, President (724) 748-4310

### **Conceptual and Engineering Design, Water Quality Monitoring,**

**BioMost, Inc.,** 3016 Unionville Rd., Cranberry Twp., PA 16066  
DANEHY, Timothy, QEP; DUNN, Margaret, PG; BUSLER, Shaun, Biologist; DENHOLM,  
Clifford, Environmental Scientist; DANEHY, Sylvia, Office Manager (724) 776-0161

### **Aquatic Life and Water Quality Monitoring**

**Grove City College,** 100 Campus Dr., Grove City, PA 16127  
BRENNER, Frederick, PhD, Biologist, Biology Dept. (724) 458-2113

### **Wetland Planting**

**George Junior Republic,** [non-profit], PO Box 1058, Grove City, PA 16127 (724) 458-9330

### **Wetland Planting, Education and Public Outreach**

**Urban Wetland Institute** [non-profit], 789 North Liberty Rd., Grove City, PA 16127  
BRENNER, Frederick, President (724) 748-4310

**Slippery Rock Watershed Coalition,** c/o Stream Restoration Inc. [non-profit]  
3016 Unionville Rd., Cranberry Twp., PA 16066

### **Grant Administration, Wetland Planting, Education/Public Outreach, Volunteer Effort**

**Stream Restoration Inc.** [non-profit], 3016 Unionville Rd., Cranberry Twp., PA 16066  
DANEHY, Timothy, QEP; DUNN, Margaret, PG; BUSLER, Shaun, Biologist; DENHOLM,  
Clifford, Environmental Scientist; DANEHY, Sylvia, Office Manager (724) 776-0161

**TABLE OF CONTENTS**

<b>SECTION</b>	<b>TITLE</b>
<b>1</b>	<b><u>Preface</u></b> Brief Description of Project Work Public-Private Partnership Table of Contents
<b>2</b>	<b><u>Executive Summary</u></b> Project Summary Comprehensive Timeline
<b>3</b>	<b><u>Project Description</u></b> Project Location Site History and Pre-Construction Conditions Site Preparation Reclamation Post-Reclamation Education and Outreach Location Map Aerial Photo Comparison
<b>4</b>	<b><u>Environmental Results</u></b> Environmental Results Water Monitoring Location Map
<b>5</b>	<b><u>Photos</u></b>
<b>6</b>	<b><u>Water Monitoring Data</u></b>
<b>7</b>	<b><u>Newsletter Items</u></b>
<b>8</b>	<b><u>“As-Builts”</u></b>

## **NORTH LIBERTY RECLAMATION AREA PHASE I AND II**

### **FINAL REPORT**

Wolf Creek, Slippery Rock Creek Watershed, Beaver & Ohio River Basins  
Liberty Township, Mercer County, Pennsylvania

submitted to

**Pennsylvania Department of Environmental Protection**

### **PROJECT SUMMARY**

Participants of the Slippery Rock Watershed Coalition received two grants from the Pennsylvania Department of Environmental Protection through the Commonwealth's Growing Greener initiative. The purpose of the grants were to fund the reclamation of a >40-acre abandoned mine site characterized by open, water-filled pits and associated highwalls that were safety hazards as well as contributing to the degradation of the local surface and subsurface water resources. One of the unreclaimed pits and its associated highwall was located approximately 250 feet from a historic farmhouse. Water-filled pits were also located along both sides of, and dangerously close to, Courtney Mill Road.

Within 10 months of Phase I grant approval and 3 months of Phase II approval, not only were the necessary permits/approvals received, but also the entire site was backfilled without change orders. This economic, efficient, and effective method of project implementation is attributed to the public-private partnership effort that included state and local government agencies, elected officials, landowners, private industry, nonprofits, a local college, a delinquent youth facility, and volunteers. Selected highlights of the reclamation effort included:

- Pumping and treating over 7 million gallons of degraded water with liquid caustic (sodium hydroxide) from 4 large abandoned pits;
- Incorporating alkaline material to neutralize existing acid-producing spoils during backfilling of ~15 acres of open pits with 1300 linear feet of highwalls, with a maximum highwall height of ~60 feet;
- Restoring ~43 acres of abandoned mine lands to productive farmland, which was characterized by spoil piles and dangerous highwalls and water-filled pits with degraded drainage for 50+ years;
- Planting 51 trees around the historic farm house (2<sup>nd</sup> oldest dwelling in Mercer Co.) to serve as a windbreak;
- Planting ~3000 wetland plants with adjudicated youth from George Junior Republic to provide wildlife habitat.

Through this public-private partnership effort, this site, which was previously an eye sore, a safety hazard, and responsible for degrading the local surface and subsurface water resources is now capable of producing hay, is visually aesthetic, and no longer poses a risk to public safety with site drainage currently meeting state water quality standards.

**COMPREHENSIVE TIMELINE**

<b>Date</b>	<b>Description</b>
01/06/00	Preliminary investigation to determine feasibility of restoration
01/18/00	Site investigation and water sampling
01/28/00	Site investigation
02/11/00	Revised Growing Greener proposal for Phase I submitted
06/26/00	Site investigation and water sampling
08/11/00	Phase I Growing Greener proposal submitted
08/31/00	Field meeting (PA DEP, Amerikohl Mining, BioMost, Aquascape)
01/04/01	Growing Greener grant awarded for Phase I
01/11/01	Site investigation, water sampling, with topo survey by Earthtech, Inc.
01/15/01	Site investigation for Environmental Assessment (EA)
01/16/01	Site investigation, water sampling, and wetland delineation for EA
01/17/01	Site investigation, water sampling, and wetland delineation for EA
01/19/01	Site investigation, water sampling, and wetland delineation for EA
01/30/01	Site investigation and water sampling
02/08/01	Growing Greener grantee training for Phase I
02/26/01	Growing Greener Phase I contract submitted to PA DEP
03/09/01	Growing Greener grant submitted for Phase II to PA DEP
03/16/01	PA Natural Diversity Inventory Search submitted to Mercer Co. Cons. Dist.
04/11/01	Site information/notifications submitted to Liberty Twp. Supervisors & Mercer Co. Commissioners; PA Historical & Museum Comm. notification submitted
04/17/01	PA One Call notified
04/18/01	Environmental Assessment, restoration waiver, etc. submitted to PA DEP
04/19/01	NPDES app. submitted to Liberty Twp. Supervisors & Mercer Co. Comm.
04/27/01	E&S Control Plan submitted to Mercer County Conservation District
05/02/01	Requested data submitted to PA DEP; Amerikohl maintenance agreement
05/14/01	Site investigation
05/18/01	E&S requested information submitted to Mercer County Conservation District
05/23/01	E&S Control Plan approved by Mercer County Conservation District
06/04/01	Site inspection by PA DEP; Settling Basin 1 has been installed
06/11/01	Site inspection by PA DEP; Settling Basin 2 & ditches have been installed
06/18/01	Site inspection by PA DEP; PA DEP completed processing of Phase I grant
06/25/01	Site inspection by PA DEP
06/28/01	Site inspection by PA DEP
07/05/01	Site inspection by PA DEP
07/12/01	Site inspection by PA DEP
07/16/01	Site inspection by PA DEP; clearing & grubbing; access constructed to Pit #1
07/19/01	Site inspection by PA DEP; clearing & grubbing; rough grading
07/23/01	Site inspection by PA DEP; clearing & grubbing; Pit #1 has been backfilled
07/24/01	Site Inspection; Pit #1 backfilled, remaining spoil to be regraded; Settling Basins #1 & #2 constructed

07/26/01	Site inspection by PA DEP; clearing & grubbing
08/01/01	Growing Greener grant awarded for Phase II
08/02/01	Site inspection by PA DEP; grubbing continues; “drying” Pits #1 & 2 with Recmix
08/15/01	Site inspection by PA DEP; grubbing continues; Pit #1 reclaimed; Pit #2 is 50% completed; Pit #3 being pumped
08/16/01	Site inspection by PA DEP; regrading spoil; Pit #2 being backfilled; pumping Pit #3
08/17/01	Regrading Pit #3; Pit #3 being pumped
08/21/01	Site inspection by PA DEP; Pit #3 being pumped; regrading Pit #3
08/22/01	Application for reimbursement submitted; Quarterly Report submitted
08/27/01	Site inspection by PA DEP; entire site cleared & grubbed; Pit #3 being pumped; regrading Pit #3 75% complete
08/31/01	Site inspection by PA DEP; Pit #3 completely pumped; Pits #1 & 2 completely regraded
09/10/01	Site inspection by PA DEP; Recmix being placed in Pit #3; Pit #4 being pumped
09/13/01	Site Inspection; pumps set at Phase II; Pit #4 being pumped; equipment running reshaping land to approximate original contours
09/19/01	Field meeting with PA DEP, landowner, township supervisor, and others; equipment running; final grading
09/25/01	Growing Greener grantee training for Phase II
09/27/01	Site inspection by PA DEP
10/04/01	Site inspection by PA DEP
10/11/01	Site inspection by PA DEP
10/15/01	Approximate major construction completion date
10/16/01	Meeting to review invoice with John Saugrich of Amerikohl Mining Inc.
10/19/01	Topsoil spread and smoothed; Phase I & II site inspection by PA DEP
10/25/01	Phase I & II site inspection by PA DEP
11/01/01	Phase I & II site inspection by PA DEP; seeding & mulching
11/05/01	Site inspection
11/08/01	Seeding & mulching completed; Phase I & II site inspection by PA DEP
11/15/01	Field meeting with landowner, Mercer County Conservation District, Township Supervisor, and others; Phase I & II site inspection by PA DEP
11/27/01	Contract submitted to PA DEP for Phase II
11/30/01	Phase I & II site inspection by PA DEP
12/21/01	Phase I & II site inspection by PA DEP
12/26/01	Fully executed contract received from PA DEP for Phase II
01/15/02	Quarterly Reports submitted to PA DEP for Phase I and II
01/24/02	Phase I & II site inspection by PA DEP
01/28/02	Application for Reimbursement revisions submitted to PA DEP
02/14/02	Meeting with Sherry Carlin and John Sims of PA DEP Knox DMO to review invoice and discuss allowable/non-allowable costs
03/06/02	Application for Reimbursement revisions submitted to PA DEP
03/07/02	Phase I & II site inspection by PA DEP
03/15/02	Private well water sampled by PA DEP

03/25/02	Site inspection
04/02/02	Application for Reimbursement revisions submitted to PA DEP
04/05/02	Private well water sampled by PA DEP
04/17/02	Reimbursement request for Phase II submitted
04/18/02	Quarterly Reports submitted to PA DEP for Phase I & II
05/17/02	Field meeting with landowner and Larry Reed for tree planting plan
05/23/02	Site inspection by PA DEP
07/12/02	Site inspection by PA DEP
07/16/02	Site inspection
07/17/02	Quarterly Reports submitted to PA DEP for Phase I & II
08/14/02	Site inspection by PA DEP
09/03/02	E&S inspection by Mercer County Conservation District
09/18/02	Site inspection; portion of silt fencing removed
09/19/02	Phase I site inspection by PA DEP
10/07/02	Phase I grant extension request submitted to PA DEP
10/10/02	Phase I grant extension approved by PA DEP
10/17/02	Site inspection; removed silt fencing; Rapid Static GPS Survey conducted by Land & Mapping Services
10/21/02	Rapid Static GPS Survey Report completed; Quarterly Reports submitted to PA DEP for Phase I & II
10/31/02	Site inspection by PA DEP
01/13/03	Site inspection
01/15/03	Quarterly Reports submitted to PA DEP for Phase I & II
01/23/03	Revised Phase I & II Quarterly Reports submitted to PA DEP
03/21/03	Phase I & II site inspection by PA DEP
04/17/03	Quarterly Reports submitted to PA DEP for Phase I & II
04/30/03	Phase I site inspection by PA DEP
05/19/03	Phase I & Phase II grant extension requests submitted to PA DEP
05/22/03	Phase I grant extension approved & Phase II grant extension denied by PA DEP
05/29/03	Phase I site inspection by PA DEP
06/19/03	Phase I site inspection by PA DEP
06/20/03	Phase II grant extension request submitted to PA DEP
06/30/03	Phase II grant extension approved by PA DEP
07/10/03	Quarterly Reports submitted to PA DEP for Phase I & II
08/07/03	Phase I & II site inspection by PA DEP
10/02/03	Phase II site inspection by PA DEP
10/03/03	Phase I site inspection by PA DEP
10/08/03	Wetland plants ordered from Kester's Wild Game Food Nurseries, Inc.
10/15/03	Quarterly Reports submitted to PA DEP for Phase I & II
10/18/03	Wetland planting with George Junior Republic
10/24/03	Site inspection by PA DEP
12/05/03	Site inspection; removed remaining silt fence
03/12/04	Site inspection; Field checked "As-Built"

## **PROJECT DESCRIPTION**

### **Project Location**

The North Liberty Reclamation Area is along both sides of Courtney Mill Road, about ¼-mile east of the SR-0258 intersection, in Liberty Township, Mercer County, PA. (See Location Map.) The site is located on the 7 ½' USGS Slippery Rock topographic map (PI 1977) at about 41<sup>0</sup> 05' 31" latitude and 80<sup>0</sup> 05' 31" longitude.

### **Site History and Pre-Construction Conditions**

A 40+ acre surface coal mining operation (permit # 1221) was previously conducted by the Bowie Coal Company in the 1940's. The site was only partially reclaimed by planting trees on the spoil piles, which was successful, but much of the site including about 15 acres of water-filled open pits and 1300 linear feet of 50 foot highwalls were left unreclaimed. The open pits contained polluted mine drainage that overflowed in the wet season into unnamed tributaries of Wolf Creek. Two of the larger water-filled pits were located dangerously close to Courtney Mill Road, a public road. Even during drier periods, polluted water that entered the subsurface would emanate in seep zones down gradient of the old minesite and in the headwaters of the unnamed tributaries. One of the pits and associated highwall was located only about 250 feet from a historic farmhouse. Built about 185 years ago, according to the landowner, this is the 2<sup>nd</sup> oldest standing home in Mercer County. In 1992, the Perry Brothers Coal Company backfilled a water-filled open pit on the site as part of a reclamation in lieu of a fine, which resulted in the creation of a "wetland" area. Other than that small reclamation effort, the site remained relatively unchanged for roughly 50 years.

For both the North Liberty Reclamation Area Phase I and II projects, this Final Report addresses the restoration activities on two properties. The financial support for this effort included two grants through the Commonwealth's "Growing Greener" initiative and from generous Matching/In-Kind contributions from our partners.

### **Site Preparation**

An E & S Control Plan was prepared by BioMost, Inc. and submitted to the Mercer County Conservation District for approval. Upon approval, Amerikohl Mining, Inc. installed the Erosion and Sediment Pollution Controls consisting of two collection channels, one for each sediment pond and silt fencing installed about the perimeter of the construction site. Brenner Ecological and BioMost, Inc. completed the Environmental Assessment, which was submitted to the PA DEP Meadville Regional Office. A wetland waiver was received. Amerikohl Mining, Inc. completed the necessary applications for road bonds. The reclamation and E&S plans were also submitted to and reviewed by the PA DEP Knox District Mining Office. Submission to the PA Historical and Museum Commission relating to cultural resources revealed nothing of historical interest within the construction area. (The historic home was not registered with the PHMC due to an addition completed in 1981.) PA One Call relating to underground utilities was contacted. As no underground utilities were reported in the proposed construction area, the site was cleared and grubbed.

### **Reclamation**

Once the E&S controls were installed and the site cleared and grubbed, reclamation was conducted by Amerikohl Mining, Inc. Temporary treatment ponds were constructed to “pump and treat” the pollutive water from the four pits. The treatment ponds were constructed in series to allow for adequate mixing of the alkaline treatment medium (20% diaphragm-grade liquid sodium hydroxide) and to allow for settling of metals. Reclime, a PA DEP material with a co-product designation, from Recmix of PA was used in Pit #1 and Pit #2 to absorb the remaining water in the pits in order to reduce the costs of pumping and treating. The pits were also “limed” with Reclime in order to help inhibit future acidic mine drainage production. During backfilling, Reclime was also incorporated into the spoil. About 580 Tons of Reclime was used at the site. After backfilling was completed, the area was “rough graded” to approximated original contour. Any soil-type material that was encountered during reclamation was segregated from the spoil and stockpiled and later respread on the final subgrade. Prior to revegetation, the area was limed at 11 Tons/acre, fertilized with a 10-20-20 fertilizer that was applied at 680 lbs/acre, and mulched at 3 Tons/acre. The site was then seeded with a permanent seed mixture of Perennial Ryegrass (20%); Creeping Red Fescue (30%); Kentucky Bluegrass (50%) (Penn Dot Formula B) applied at 102 lbs/acre in order to restore the area to hayland. In addition, a drain field with 141 tons of river gravel constructed from an outlet of an existing gutter was installed to convey the flow from precipitation events away from the historic house.

### **Post-Reclamation**

Following successful land reclamation, 51 coniferous trees consisting of a mixture of Blue Spruce and Norway Spruce were planted by Larry Reed of Reeds Farm around the historic home to serve as a windbreak, which was needed since the house is on a topographic high. The site had to be cleared to complete the reclamation effort leaving no trees to protect the house from high winds.

In addition, portions of the E&S collection ditches were transformed into “channel” wetlands using native species. In the original proposal, it was planned to create 2 acres of wetlands from the two E&S settling ponds. Instead, wetland plants were planted around the edge of the two settling ponds, which were left on site as fishing ponds at the landowner’s request. (Fish have been observed in the ponds. Due to the previous degraded nature of site drainage, this would not have been possible prior to the restoration effort.) The wetland plants serve multiple functions including filtering sediment and nutrients from the ponds, providing wildlife habit and food, and aesthetics. The plantings were conducted by adjudicated youth from George Junior Republic, Dr. Fred Brenner of Grove City College, and Shaun Busler and Cliff Denholm from BioMost, Inc. Before planting 3000 wetland plants (See Table I.), the youth were given a brief history of the site, a short lesson relating to the function and value of the plants, and proper planting procedures. They were also given a brief description of the Slippery Rock Watershed Coalition’s watershed restoration activities. Post-reclamation site inspections have been regularly conducted by the PA DEP Knox District Mining Office and BioMost, Inc.

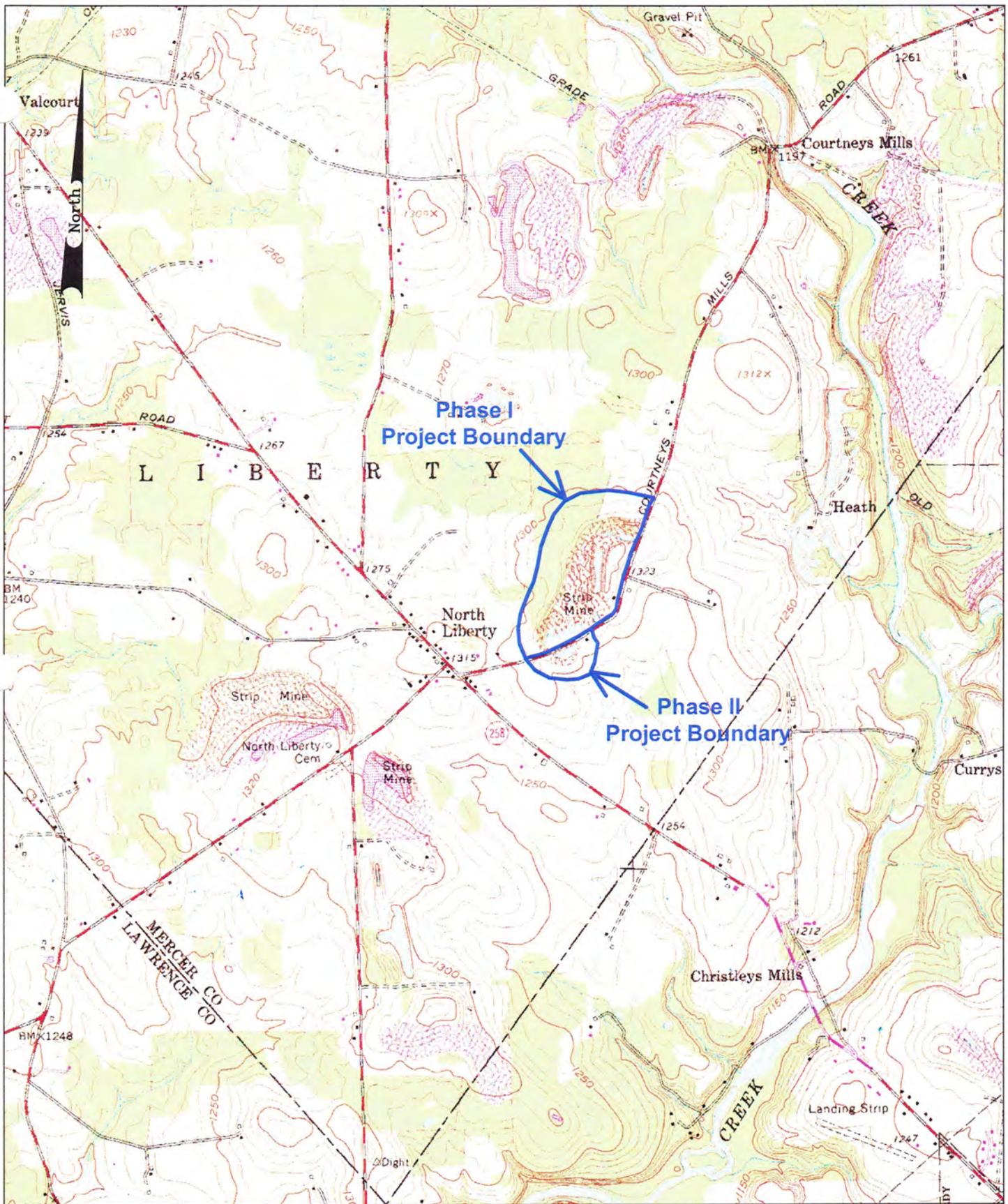
**Table I. Wetland Plants Used at the North Liberty Reclamation Area**

<b>Common Name</b>	<b>Scientific Name</b>	<b>Quantity</b>
Water Iris – Blue	<i>Iris versicolor</i>	1000
Arrow Arum	<i>Petandra verginica</i>	500
Pickrel Plant	<i>Pontederia cordata</i>	250
Swamp Milk Weed	<i>Asclepias incarnata</i>	500
Burreed	<i>Sparganium eurycarpum</i>	500

### **Education and Outreach**

Education and Outreach activities are a part of every Slippery Rock Watershed Coalition project. The site has been used in numerous poster and PowerPoint presentations including the March 2001 *Pennsylvania Growing Smarter: Land Use in PA Conference* held in Hershey, PA. In May 2001, the site was included in a helicopter tour of mining and reclamation projects conducted by John Stilley, President of Amerikohl Mining, Inc., for former PA DEP Secretary Dave Hess, PA State Senator Mary Jo White, and PA State Representative Sam Smith. Pictures from the helicopter tour including the North Liberty site appeared in the Secretary's Scrapbook on the PA DEP website [http://www.dep.state.pa.us/scrapbook.archive/sec\\_scrapbook.asp](http://www.dep.state.pa.us/scrapbook.archive/sec_scrapbook.asp). The project has also been featured in three issues (4/01, 6/01, 11/03) of the Slippery Rock Watershed Coalition's monthly newsletter, *The Catalyst*. (See Newsletter Items section.) An article about the project has also been included on the Slippery Rock Watershed Coalition website [www.srwc.org](http://www.srwc.org) as well as the Stream Restoration Incorporated website [www.streamrestorationinc.org](http://www.streamrestorationinc.org).

Fred Brenner, PhD, Biologist, from Grove City College has also used the North Liberty Reclamation project area to provide "hands-on" activities for his students including site characterization, water monitoring, and environmental assessments. As previously noted, adjudicated youth from George Junior Republic assisted in the wetland planting as part of their community service program. (See Post-Reclamation section.)



**PROJECT LOCATION - USGS 7.5' Slippery Rock, PA (PI1977)**  
**NORTH LIBERTY RESTORATION AREA - PHASE I & II**

Approximate Center of Project (deg-min-sec)  
 41-05-31 latitude 80-05-13 longitude

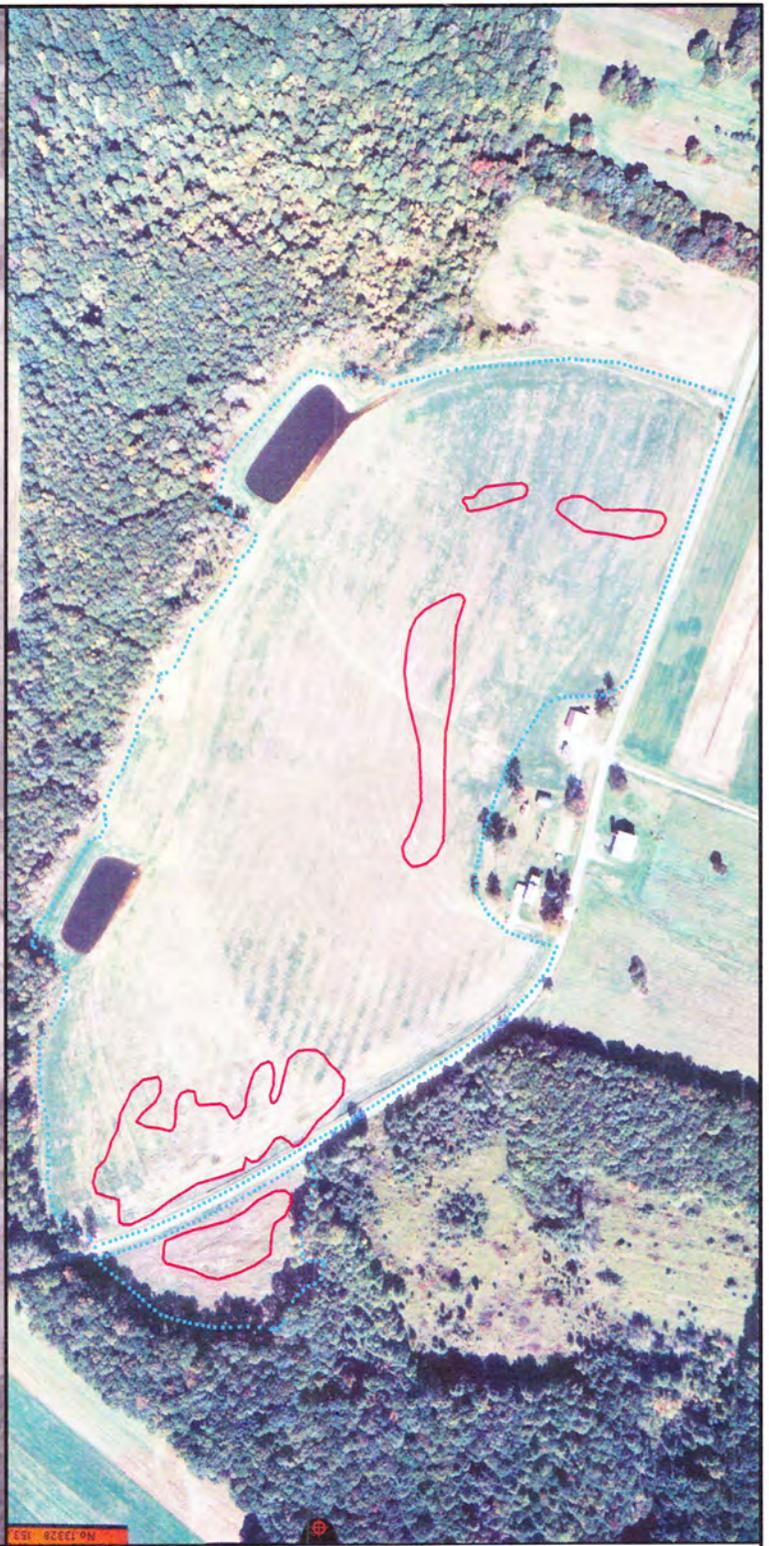
Slippery Rock Watershed Coalition  
 Liberty Township, Mercer County, PA  
 Stream Restoration Incorporated  
 March 2004, Scale 1" = 2000'





# BEFORE

USGS Digital Orthophoto Quarter Quadrangle (DOQQ)  
Slippery Rock NW, PA



# AFTER

Aerial Photograph Taken on October 6, 2002

## AERIAL PHOTO COMPARISON NORTH LIBERTY RESTORATION AREA - PHASE I & II

Slippery Rock Watershed Coalition  
Liberty Township, Mercer County, PA  
Stream Restoration Incorporated  
March 2004, Scale 1" = 140'

..... APPROXIMATE RECLAMATION LIMIT  
—— ABANDONED STRIP PIT



## ENVIRONMENTAL RESULTS

As previous noted, the successful completion of Phases I and II has resulted in the reclamation and revegetation of approximately 43 acres of abandoned mine lands that had contained about 15 acres of dangerous open, water-filled pits and about 1300 linear feet of associated highwalls, which were safety hazards as well as contributing to the degradation of the local surface and subsurface water resources. During the reclamation of the site, over 7 million gallons of degraded water from 4 large abandoned pits was pumped and treated with liquid caustic.

Overall Impact on Site Water Quality: Water quality improvement to surface and near-surface flows at the site following reclamation is quite clear by comparing the water monitoring data (Table II) from the open water-filled pits with the effluent from the settling basins, that are to remain on site as fishing ponds at the landowner's request.

**Table II. Comparison of Pre- and Post- Reclamation Water Quality Data**

Reference	Sampling Point	Lab pH	Alkalinity	Acidity	Fe	Mn	Al
Pre-restoration	Pit #1	4.80	6	142	41	9	4
	Pit #2	3.53	0	271	7	27	30
	Pit #3	2.88	0	281	12	6	21
	Pit #4	3.10	0	134	12	4	7
Post-restoration	Settling Basin #1	6.92	36	0	1	<1	1
	Settling Basin #2	7.23	48	0	<1	1	<1

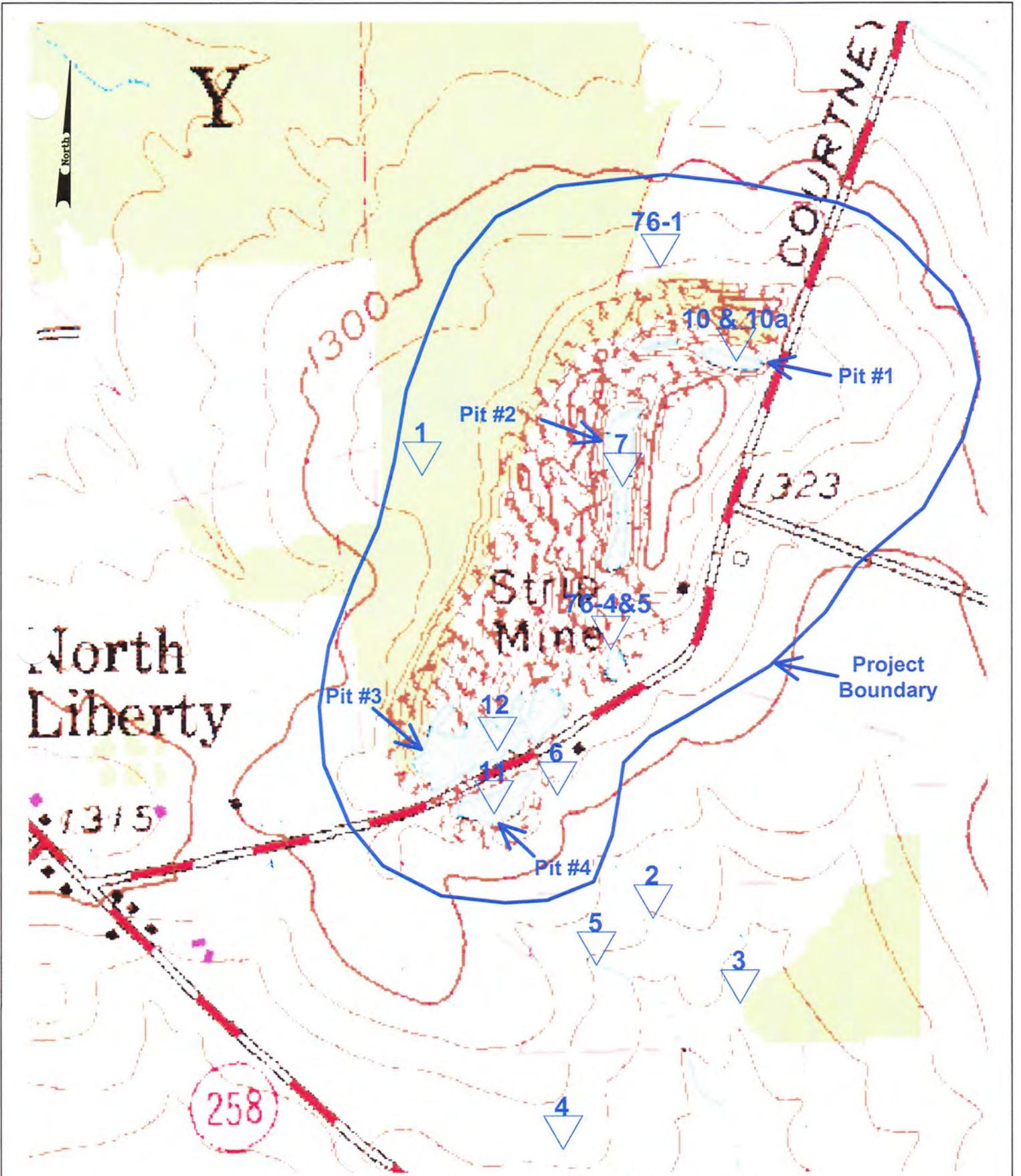
*Average values; alkalinity, acidity, and total metals concentrations in mg/L; average pH not calculated from H-ion concentrations; See attached water sample analyses.*

Prior to reclamation all four of the pits were filled with acidic mine drainage containing elevated concentrations of iron, manganese, and aluminum. Following reclamation, surface and near-surface flows from the site, collected and then discharged by the settling basins, have been circumneutral, net alkaline water with total concentrations of iron, manganese, and aluminum of 1 mg/L or less which is below federal and state requirements.

Other Benefits: In addition to the improvement of surface water quality from the site and the elimination of safety hazards, other benefits have resulted from the completion of this project.

- ◆ Backfilling with alkaline addition and revegetation of the site appear to have resulted in an improvement to the local groundwater resources, although the investigation to document that impact is beyond the scope of this project.
- ◆ The 51 trees planted around the historic home as a windbreak also adds wildlife value.

- ◆ The 3000 wetland plants placed in the collection channels and around the edges of the settling basins with adjudicated youth from George Junior Republic will provide wildlife habitat and also help to improve water quality.
- ◆ Revegetation of the site with grasses and legumes, which tends to decrease the availability of oxygen in the subsurface, thereby, improving water quality, has restored the site to productive farmland.
- ◆ Reclamation has eliminated not only the safety issues relating to the open, water-filled pits in proximity to the well-traveled public road, but also aesthetically improved the area improving adjoining and nearby properties. (Please note that 128 local residents in this rural area signed a petition in support of this restoration project.)



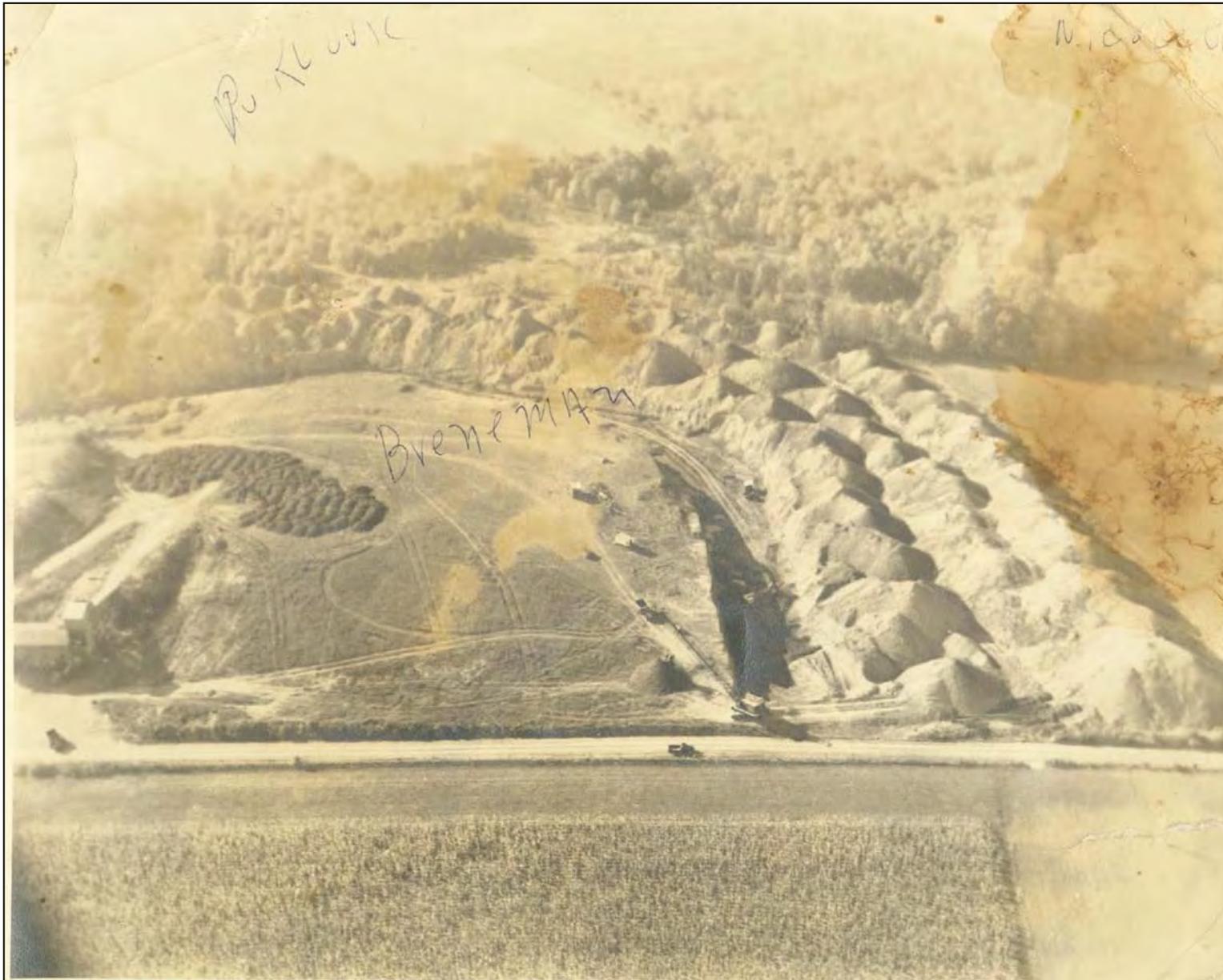
**PRE-CONSTRUCTION WATER MONITORING LOCATION MAP**  
**USGS 7.5' Slippy Rock, PA (PI1977)**  
**NORTH LIBERTY RECLAMATION AREA**

Approximate Center of Project (deg-min-sec)  
 41-05-42 latitude 80-05-08 longitude

Slippy Rock Watershed Coalition  
 Liberty Township, Mercer County, PA  
 Stream Restoration Incorporated  
 March 2004, Scale 1" = 500'

 **Water Sample Location Point**





“Aerial” photograph of the original mining (Circa 1940’s). The dragline (near the center), working pit and surrounding spoil piles can be seen. The site was left unreclaimed except for planting trees on the spoil.



Water-filled abandoned surface mine pits with dangerous highwalls (some as high as 60 ft.) such as this one (**Top**) were scattered throughout the Beatty property and in close proximity (one less than 250 feet away) to their historic farmhouse (**Bottom**) located on Courtney Mills Road, Liberty Township, Mercer County, Pennsylvania.





An abandoned, water filled, surface mining pit on the Beatty property that had been utilized as an illegal dumping grounds for decades prior to reclamation. Note the iron staining of the garbage, which indicates that the mine drainage water level can significantly fluctuate within the pit.





Large open pits were located dangerously close on each side of Courtney Mills Road, a frequently traveled public road. The pit on the north side of the road (**Top**) was reclaimed during Phase I and was estimated to contain approximately 10,000,000 gallons of degraded water while the pit on the south side of the road (**Bottom**) was reclaimed during Phase II and was estimated to contain approximately 1,000,000 gallons of degraded water.





Polluted seeps located throughout the property indicated an impact to the local groundwater. Some seeps were located over 1200 feet from the nearest pit such as Point #4 (**Below**) which contained 37 mg/L of iron. Note the iron staining in both photos.





Wetland located where an abandoned open, water-filled pit was backfilled by the Perry Brothers Coal Company in 1992 as part of a reclamation project.





**Top:** Before reclamation, the site was cleared and grubbed.

**Bottom:** Many of the trees were harvested for use.





**Top:** “Aerial” photo of the site during the clearing and grubbing operation provided by the former PA DEP Secretary Dave Hess during a helicopter tour of mining reclamation sites.

**Bottom:** Amerikohl Mining Inc. conducted the land reclamation activities at the site.





Land reclamation operation in progress.





As part of the reclamation process, the acidic, abandoned mine drainage in the open pits was pumped to treatment ponds and chemically treated before discharging to an unnamed tributary to Wolf Creek.





**Top:** View of the temporary treatment ponds used while pumping acidic, abandoned mine drainage from open water-filled pits.

**Bottom:** Seeding and mulching a portion of the site.





Phase I (**Top**) and Phase II (**Bottom**) following reclamation. The foreground of both photos is the former location of the two large open pits that were located dangerously close to the public road.





Following reclamation, the property that was once a safety and environmental liability could now be used as productive farmland for hay crops **(Top)** as well as provide aesthetic beauty and wildlife habitat **(Below)**.





**Top:** One of the two sediment ponds that were left at the landowner's request. Prior to reclamation, ponds constructed at these sites would have been filled with acidic, abandoned mine drainage. The landowner has stocked these ponds with fish. **Bottom:** Trees planted around the historic farmhouse serve as a windbreak and provide wildlife habitat.





Cliff Denholm (**Top**) and Shaun Busler (**Bottom**) of BioMost, Inc., assisted in the wetland planting with adjudicated youth from George Junior Republic, who are not permitted to be photographed.



# North Liberty Water Quality Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
PIT #2	6/25/01				3.3				0	293	8.5	33.1	37.8	1286	12
<b>Min</b>					3.3				0	293	8.5	33.1	37.8	1286	12
<b>Max</b>					3.3				0	293	8.5	33.1	37.8	1286	12
<b>Avg</b>					3.3				0	293	8.5	33.1	37.8	1286	12
<b>Range</b>					0.0				0	0	0.0	0.0	0.0	0	0

Description: Water filled abandoned surface mine pit; Pit #2 was formerly located approximately 250 feet behind the house; PA DEP Data

# North Liberty Water Quality Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
PIT #3	6/25/01				2.9				0	280	13.6	6.5	23.2	389	76
PIT #3	8/13/01	Estimated	150		2.8				0	320	16.2	6.5	22.4	417	0
	<b>Min</b>		150		2.8				0	280	13.6	6.5	22.4	389	0
	<b>Max</b>		150		2.9				0	320	16.2	6.5	23.2	417	76
	<b>Avg</b>		150		2.9				0	300	14.9	6.5	22.8	403	38
	<b>Range</b>		0		0.1				0	40	2.6	0.0	0.8	29	76

Description: Water filled abandoned surface mine pit; Pit #3 was formerly located along the north side of Courtneys Mill Road; PA DEP Data

# North Liberty Water Quality Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
PIT #4	6/25/01				3.1				0	105	5.2	4.5	5.7	293	4
	<b>Min</b>				3.1				0	105	5.2	4.5	5.7	293	4
	<b>Max</b>				3.1				0	105	5.2	4.5	5.7	293	4
	<b>Avg</b>				3.1				0	105	5.2	4.5	5.7	293	4
	<b>Range</b>				0.0				0	0	0.0	0.0	0.0	0	0

Description: Water filled abandoned surface mine pit; Pit #4 was formerly located along the south side of Courtneys Mill Road; PA DEP Data

# North Liberty Water Quality Database

Sample Point	Date	Method of Flow Meas. (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
SB1	9/19/01			4.3				4	54	0.0	4.8	0.9	178	14
SB1	10/11/01			4.1				4	30	0.0	4.4	0.7	203	0
SB1	10/25/01	Estimated	50	5.9				10	7	0.7	2.9	0.7	236	8
SB1	1/24/02	Estimated	100	6.8				44	0	3.1	1.2	4.1	264	22
SB1	3/7/02	Estimated	25	7.8				44	0	1.3	0.9	1.1	243	16
SB1	5/23/02	Estimated	45	6.6				40	0	1.3	0.4	1.1	140	8
SB1	7/12/02	Estimated	5	6.9				34	0	0.6	0.2	0.0	82	0
SB1	7/25/02	Estimated	5	6.9				34	0	0.6	0.2	0.0	82	0
SB1	10/31/02	Estimated	10	6.9				34	0	0.4	0.4	0.0	112	0
SB1	11/22/02	Estimated	10	6.9				7	0	0.4	0.4	0.0	112	0
SB1	3/21/03		3	6.5				23	0	0.0	1.6	0.0	132	4
SB1	3/21/03		3	6.5				23	0	0.0	1.6	0.0	132	4
	<b>Min</b>		3	6.5				4	0	0.0	0.2	0.0	82	0
	<b>Max</b>		100	6.5				44	54	3.1	4.8	4.1	264	22
	<b>Avg</b>		26	6.5				25	8	0.7	1.6	0.8	160	6
	<b>Range</b>		97	0.0				40	54	3.1	4.6	4.1	182	22

Description: Settling Basin #1; PA DEP Data

# North Liberty Water Quality Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
SB2	9/19/01				4.2				3	74	0.0	5.9	1.8	312	8
SB2	10/11/01				9.6				36	0	0.0	0.2	0.0	319	0
SB2	10/25/01	Estimated	50		6.1				12	3	0.5	2.8	0.7	298	10
SB2	1/24/02	Estimated	75		7.1				54	0	2.0	2.0	1.7	296	34
SB2	3/7/02	Estimated	50		8.3				52	0	1.2	1.4	0.6	264	36
SB2	5/23/02	Assumed	7		6.5				44	0	0.5	0.6	0.0	143	0
SB2	7/12/02				7.2				44	0	0.4	0.3	0.0	96	8
SB2	7/25/02			7.0	7.2				44	0	0.4	0.3	0.0	96	8
SB2	10/31/02	Estimated	7	6.5	7.0				7	0	0.0	0.4	0.0	117	0
SB2	10/31/02	Estimated	7		7.4				58	0	0.0	0.4	0.0	117	0
SB2	3/21/03		4	6.5	6.9				35	0	0.0	1.4	0.0	174	8
SB2	3/21/03		4		6.9				35	0	0.0	1.4	0.0	174	8
<b>Min</b>			4	6.5	4.2				3	0	0.0	0.2	0.0	96	0
<b>Max</b>			75	7.0	9.6				58	74	2.0	5.9	1.8	319	36
<b>Avg</b>			25	6.7	7.0				35	6	0.4	1.4	0.4	201	10
<b>Range</b>			71	0.5	5.4				55	74	2.0	5.7	1.8	223	36

Description: Settling Basin #2; PA DEP Data

# North Liberty Water Quality Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
TB1	8/13/01				3.0				0	235	15.5	5.7	20.0	447	116
TB1	8/16/01				3.4			0	0	143	5.3	6.5	20.4	460	132
TB1	8/17/01	Estimated	70		6.2			12	23	23	0.0	2.7	3.3	633	0
TB1	8/21/01	Estimated	75		6.0			10	24	24	0.0	2.0	0.6	571	8
TB1	9/13/01	Estimated	75		4.7			9	51	51	1.0	4.3	4.3	511	14
TB1	9/19/01	Measured	1		9.6			26	0	0	0.0	0.1	0.8	386	6
		<b>Min</b>			3.0			0	0	0	0.0	0.1	0.6	386	0
		<b>Max</b>			9.6			26	235	235	15.5	6.5	20.4	633	132
		<b>Avg</b>			5.5			10	79	79	3.6	3.5	8.2	501	46
		<b>Range</b>			6.6			26	235	235	15.5	6.4	19.8	247	132

Description: Treatment Basin #1; PA DEP Data

# North Liberty Water Quality Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
1	1/18/00			5.5	5.8	289	1		40	32	6.1	3.1	0.7	88	12
1	1/19/01			5.1	3.8	214	2		0	20	0.1	0.6	0.4	63	5
	<b>Min</b>			5.1	3.8	214	1		0	20	0.1	0.6	0.4	63	5
	<b>Max</b>			5.5	5.8	289	2		40	32	6.1	3.1	0.7	88	12
	<b>Avg</b>			5.3	4.8	252	2		20	26	3.1	1.8	0.6	75	9
	<b>Range</b>			0.4	2.0	75	1		40	12	6.0	2.5	0.3	25	7

Description: Tire Rut; Located ~300 yards west of toe of spoil on far western edge of the site

# North Liberty Water Quality Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
2	1/18/00			4.6	3.7	604	0		0	100	0.6	5.8	9.1	286	5
	<b>Min</b>			4.6	3.7	604	0		0	100	0.6	5.8	9.1	286	5
	<b>Max</b>			4.6	3.7	604	0		0	100	0.6	5.8	9.1	286	5
	<b>Avg</b>			4.6	3.7	604	0		0	100	0.6	5.8	9.1	286	5
	<b>Range</b>			0.0	0.0	0	0		0	0	0.0	0.0	0.0	0	0

Description: Well spring of unnamed tributary to Wolf Creek located south of site

# North Liberty Water Quality Database

Sample Point	Date	Method of Flow		Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
		Flow Meas.	Flow (gpm)												
3	1/18/00			6.5	7.0	921	0		56	0	0.4	0.8	0.6	495	4
<b>Min</b>				6.5	7.0	921	0		56	0	0.4	0.8	0.6	495	4
<b>Max</b>				6.5	7.0	921	0		56	0	0.4	0.8	0.6	495	4
<b>Avg</b>				6.5	7.0	921	0		56	0	0.4	0.8	0.6	495	4
<b>Range</b>				0.0	0.0	0	0		0	0	0.0	0.0	0.0	0	0

Description: Unnamed tributary to Wolf Creek; Sample point located south of site

# North Liberty Water Quality Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
4	1/18/00			6.0	6.1	2090	6		69	95	36.5	6.2	0.2	1763	1
<b>Min</b>				6.0	6.1	2090	6		69	95	36.5	6.2	0.2	1763	1
<b>Max</b>				6.0	6.1	2090	6		69	95	36.5	6.2	0.2	1763	1
<b>Avg</b>				6.0	6.1	2090	6		69	95	36.5	6.2	0.2	1763	1
<b>Range</b>				0.0	0.0	0	0		0	0	0.0	0.0	0.0	0	0

Description: Seep; Sample point located in field, south of site, along SR258

# North Liberty Water Quality Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
5	1/18/00			4.5	4.1	387	1		0	52	0.1	2.5	6.3	154	2
<b>Min</b>				4.5	4.1	387	1		0	52	0.1	2.5	6.3	154	2
<b>Max</b>				4.5	4.1	387	1		0	52	0.1	2.5	6.3	154	2
<b>Avg</b>				4.5	4.1	387	1		0	52	0.1	2.5	6.3	154	2
<b>Range</b>				0.0	0.0	0	0		0	0	0.0	0.0	0.0	0	0

Description: Well spring of unnamed tributary to Wolf Creek, located south of site

# North Liberty Water Quality Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
6	1/18/00			4.3	3.0	902	0		0	148	12.0	3.4	8.0	135	2
6	6/26/00			4.3	3.0	1033	20		0	185	33.4	4.3	6.3	403	5
6	1/11/01	Estimated	1	4.5	3.1	810	2		0	108	7.6	3.3	6.3	306	31
<b>Min</b>			1	4.3	3.0	810	0		0	108	7.6	3.3	6.3	135	2
<b>Max</b>			1	4.5	3.1	1033	20		0	185	33.4	4.3	8.0	403	31
<b>Avg</b>			1	4.4	3.0	915	7		0	147	17.6	3.7	6.8	281	13
<b>Range</b>			0	0.2	0.2	223	20		0	77	25.8	1.0	1.7	268	29

Description: Seep; Sampled at toe of spoil, East of Pit #4 on south side of Courtney Mills Road

# North Liberty Water Quality Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
7	1/18/00			4.3	3.7	1105	2		0	160	2.1	13.2	17.3	777	4
7	1/11/01			4.4	3.6	2434	0		0	359	10.1	35.3	35.5	2574	14
<b>Min</b>				4.3	3.6	1105	0		0	160	2.1	13.2	17.3	777	4
<b>Max</b>				4.4	3.7	2434	2		0	359	10.1	35.3	35.5	2574	14
<b>Avg</b>				4.4	3.7	1770	1		0	260	6.1	24.2	26.4	1676	9
<b>Range</b>				0.1	0.0	1329	2		0	200	8.0	22.1	18.3	1798	10

Description: Pit #2; Water filled abandoned surface mine pit located approximately 250 feet behind house; Water level in the pit appeared to vary and at some point was 10' higher

# North Liberty Water Quality Database

Sample Point	Date	Method of Flow		Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
		Flow Meas.	Flow (gpm)												
10	1/18/00			4.4	4.1	431	1		0	39	3.4	3.9	2.7	185	5
10	1/11/01			5.7	5.7	1079	1		14	213	91.3	11.0	0.9	752	15
	<b>Min</b>			4.4	4.1	431	1		0	39	3.4	3.9	0.9	185	5
	<b>Max</b>			5.7	5.7	1079	1		14	213	91.3	11.0	2.7	752	15
	<b>Avg</b>			5.1	4.9	755	1		7	126	47.3	7.4	1.8	469	10
	<b>Range</b>			1.3	1.6	648	0		14	174	87.9	7.1	1.8	567	10

Description: Pit #1; Water filled abandoned surface mine pit formerly located about 800 feet north of house near Courtney Mills Road

# North Liberty Water Quality Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
10A	1/11/01			4.7	4.6	1062	1		3	175	28.4	11.6	7.5	761	9
<b>Min</b>				4.7	4.6	1062	1		3	175	28.4	11.6	7.5	761	9
<b>Max</b>				4.7	4.6	1062	1		3	175	28.4	11.6	7.5	761	9
<b>Avg</b>				4.7	4.6	1062	1		3	175	28.4	11.6	7.5	761	9
<b>Range</b>				0.0	0.0	0	0		0	0	0.0	0.0	0.0	0	0

Description: Pit #1; Water filled abandoned surface mine pit; Sample point located approximately 50 feet north of Courtney Mills Road

# North Liberty Water Quality Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
11	1/18/00			4.5	3.2	814	5		0	116	7.7	3.4		311	4
11	6/26/00			4.5	3.1	932	28		0	133	6.2	4.2	7.2	246	1
11	1/11/01			4.5	3.2	890	1		0	145	13.5	3.9	5.7	388	12
	<b>Min</b>			4.5	3.1	814	1		0	116	6.2	3.4	5.7	246	1
	<b>Max</b>			4.5	3.2	932	28		0	145	13.5	4.2	7.2	388	12
	<b>Avg</b>			4.5	3.1	879	11		0	131	9.1	3.8	6.5	315	6
	<b>Range</b>			0.0	0.2	118	27		0	29	7.3	0.9	1.5	142	11

Description: Pit #4; Water filled abandoned surface mine pit formerly located along south side of Courtney Mills Road

# North Liberty Water Quality Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
12	1/18/00			4.1	2.9	1001	3		0	286	10.7			520	5
12	6/26/00			4.0	2.9	1272	28		0	263	10.5	5.2	22.1	1180	6
12	1/11/01			4.3	2.9	1380	0		0	256	11.3	4.2	16.3	626	9
	<b>Min</b>			4.0	2.9	1001	0		0	256	10.5	4.2	16.3	520	5
	<b>Max</b>			4.3	2.9	1380	28		0	286	11.3	5.2	22.1	1180	9
	<b>Avg</b>			4.1	2.9	1218	10		0	268	10.8	4.7	19.2	775	7
	<b>Range</b>			0.3	0.1	379	28		0	30	0.8	1.0	5.8	660	4

Description: Pit #3; Water filled abandoned surface mine pit formerly located along north side of Courtney Mills Road

# North Liberty Water Quality Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
76-1	1/16/01			4.9	4.6	151	1		1	26	1.3	1.4	3.1	66	16
<b>Min</b>				4.9	4.6	151	1		1	26	1.3	1.4	3.1	66	16
<b>Max</b>				4.9	4.6	151	1		1	26	1.3	1.4	3.1	66	16
<b>Avg</b>				4.9	4.6	151	1		1	26	1.3	1.4	3.1	66	16
<b>Range</b>				0.0	0.0	0	0		0	0	0.0	0.0	0.0	0	0

Description: Depression next to spoil north of site.

# North Liberty Water Quality Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
76-4	1/16/01			4.4	4.5	313	1		0	15	0.9	2.1	2.8	184	62
	<b>Min</b>			4.4	4.5	313	1		0	15	0.9	2.1	2.8	184	62
	<b>Max</b>			4.4	4.5	313	1		0	15	0.9	2.1	2.8	184	62
	<b>Avg</b>			4.4	4.5	313	1		0	15	0.9	2.1	2.8	184	62
	<b>Range</b>			0.0	0.0	0	0		0	0	0.0	0.0	0.0	0	0

Description:

# North Liberty Water Quality Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
76-5	1/16/01			5.0	5.0	262	1		2	9	3.8	0.2	6.9	49	244
<b>Min</b>				5.0	5.0	262	1		2	9	3.8	0.2	6.9	49	244
<b>Max</b>				5.0	5.0	262	1		2	9	3.8	0.2	6.9	49	244
<b>Avg</b>				5.0	5.0	262	1		2	9	3.8	0.2	6.9	49	244
<b>Range</b>				0.0	0.0	0	0		0	0	0.0	0.0	0.0	0	0

Description:

# THE CATALYST-

## SLIPPERY ROCK WATERSHED COALITION MONTHLY ACTIVITIES UPDATE

**THIS MONTH'S MEETING:** Thursday April 12 @ 7:00 PM, Jennings Environmental Education Center, Pizza and Pop will be provided!! 3/8/01 meeting attendance: J. Belgredan, F. Brenner, C. Cooper, C. Denholm, D. Johnson, V. Kefeli, and W. Taylor.

### 2001 SYMPOSIUM VIRTUAL FIELD TOUR

Come on out and learn about passive treatment technology first hand from participants active in the Slippery Rock Watershed Coalition in a field tour of some projects in the watershed. Below is a brief description of each with a before and after picture of the site. The tour will begin approximately around 1:00 PM on Friday, April 6.



#### De Sale Phase I

Constructed in Spring 2000 by Amerikohl Mining Inc., the passive treatment system treats one of the worst discharges in the watershed. Amazingly it only took five weeks to construct this system. With full support, projects can be completed quickly and cost effectively.



#### De Sale Phase II

After seeing the reclamation of De Sale Phase I, an adjoining landowner with a 200 gpm discharge became interested, which resulted in Phase II. This system treats an entire stream! Using only environmentally friendly materials, the two passive treatment systems at De Sale are the first steps to restore Seaton Creek.



#### Goff Station Restoration Area

Scarred by towering gob piles that form the stream banks of Murrin Run and strip pits filled with acidic mine drainage, Goff Station is one of the largest projects to date within the Slippery Rock Creek Headwaters. Construction will be completed later this year by Quality Aggregates Inc. The construction will include a **bat hibernaculum**, which is first known of its kind east of the Mississippi.  
**(more on bats inside!)**





# SRWC ANNUAL SYMPOSIUM



## THURSDAY, APRIL 5

6:30 PM - 8:30 PM

Multimedia presentation entitled Hard Coal, Soft Coal: PA Mining in Film and Song by Dr. Philip Mosley, a historical, interpretative entertainer

- Food
- Posters
- Educational
- Family Fun!!

Call Jennings at (724) 794-6011 for more information.

## FRIDAY, APRIL 6

8:30 AM - 3:30 PM

### Speakers

- Fred Brenner, PhD, Professor of Biology, Grove City College
- Jeff Jarrett, PA Department of Environmental Protection
- Joan Clippinger, PA Department of Conservation and Natural Resources
- Joe Aloe, President, Quality Aggregates Inc.
- Maurie Kelly, Pennsylvania Spatial Data Access (PASDA)
- Valentine Kefeli, Soil Scientist, Slippery Rock Watershed Coalition
- Students from local universities

As a new feature at our symposium this year, the Slippery Rock Watershed Coalition is having a panel of experts address questions regarding watershed/stream restoration, conservation, and protection. Please prepare questions and **stump the experts!!**

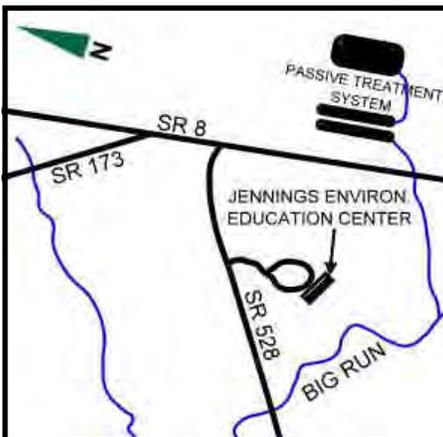
### Panel will include:

- Bob Beran, Wetland Specialist, Aquascape
- Dave Johnston, Butler County Planning Commission
- John Stilley, President, Amerikohl Mining, Inc.
- John Oliver, Secretary PA Department of Conservation and Natural Resources
- Margaret Dunn, President, Stream Restoration Incorporated

**Lunch will be provided!**

A field tour of several recent projects will be conducted after lunch.

**NO FEES OR DUES FOR ATTENDING!!**



The Symposium will be held at JEEC, which is located at the corner of State Routes 8 and 528 across from the Old Stone House about 8 miles north of Butler.

## GET TOGETHER!

It is time once again for the annual "Get Together" which will be held at the Epiphany Catholic Church located off of Forestville Road and Rt. 308 in Boyers, PA on May 9, 2001 from 6:00 P.M. to 8:00 P.M. There will be door prizes, great picnic foods and loads of fun for everyone. So, come on out!!! All are Welcome!!! Bring the Family!!! Bring the Kids!!! Smash some Piñatas!!! For directions and more information call (724) 776-0161.

## WILDLIFE LECTURE AT GROVE CITY COLLEGE

Jerry Hassinger, Endangered Species Coordinator, Pennsylvania Game Commission, will be presenting a lecture at Grove City College concerning the value of wildlife. The lecture will take place May 2 at 7:00 PM in Room 113, Rockwell Hall.



# THE BATTY CATALYST

THE UNVEILING OF THE BAT HIBERNACULUM AT GOFF STATION



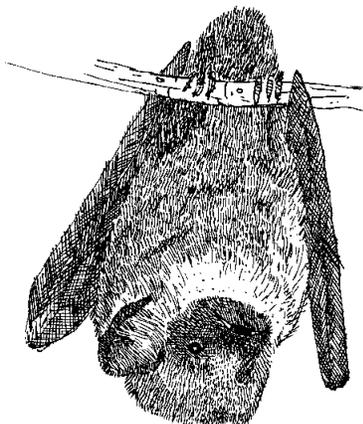
## BAT HIBERNACULUM TO BE COMPLETED ON APRIL 6

Come and see the construction of the hibernaculum for yourself on April 6th as part of the Slippery Rock Watershed Coalition's Symposium Field Tour. That's right! The Slippery Rock Watershed Coalition is celebrating the construction of the bat hibernaculum at the Goff Station Restoration Area. Special thanks goes to Quality Aggregates Inc. who have donated the time, labor, and materials for this expansion project, which will further enrich and support the local ecosystem. Located in ideal bat habitat, this site will be the first manmade hibernaculum east of the Mississippi, that we know of, and will help support and increase the numbers of these vital animals in our area.



### BAT FACTS

- ◆ Bats consume more than half their own weight nightly in mosquitoes and moths!
- ◆ Bats have perfectly good eyesight!
- ◆ Some bats can live for more than 30 years!
- ◆ Bats make their unnerving swoops over people's heads looking for mosquitoes!
- ◆ Less than 1/2 of 1% of bats are rabid, and they do not become aggressive when sick!
- ◆ Peaches, plantains, bananas, avocados, cashews, cloves, and mescal are all pollinated by bats!
- ◆ Very few bats eat blood, and none that do live in America!



### OH GIVE ME A HIBERNACULUM!

Bats survive the harsh Pennsylvania winters by falling into a deep sleep called hibernation. By hibernating, bats can conserve their precious energy and survive for months without food or water. A hibernating bat's breathing and heart rate slows and their temperature drops dramatically. Often, it is hard to tell that they are alive at all!

Although hibernation helps bats conserve energy, it also leaves them helpless and weak. If a bat is disturbed during its hibernation, the energy it uses to wake up is wasted, and it may die before spring. Each time a bat has to wake up, two months worth of energy is consumed. In fact, tens of thousands of bats die every year because of human disturbances.

For these reasons, bats need to find a safe, warm and quiet place to hibernate. A cave or other such place that is used by bats is called a hibernaculum.

However, suitable hibernacula are increasingly hard to come by. Human disturbances have made many hibernacula unfit for bats. Without appropriate areas to hibernate, whole bat populations are at risk. The hibernaculum at Goff Station seeks to provide an ideal hibernating space for a wide range of bat species. Proper ventilation, insulation and predator exclusion have all been considered in our design, which we hope will serve generations of these tiny

P  
H  
O  
T  
O  
O  
F  
T  
H  
E  
M  
O  
N  
T  
H



P  
H  
O  
T  
O  
O  
F  
T  
H  
E  
M  
O  
N  
T  
H

### WATERSHED RESTORATION AND LAND USE

The **Growing Smarter: Land Use in PA Conference** was recently held on March 18-20, 2001 at the Hershey Lodge & Convention Center in Hershey, PA. **Margaret Dunn, Tim Danehy, Shaun Busler, and Cliff Denholm**, representing the Slippery Rock Watershed Coalition, were among the **1400 people** in attendance. The conference focused on sound land use practices that are currently being utilized on the state, regional and local levels and how they can be further used and developed to ensure sustainable development and a high quality of life for all citizens. The Coalition presented a poster on the restoration activities at the De Sale Restoration Area and the North Liberty Reclamation sites and how they tied in with sound land use practices. Margaret was one of the speakers at the *Watershed Planning Initiatives at the Community Level* session and did an excellent job. We met lots of wonderful and interesting people from a wide variety of organizations. A great time was had by all!

Thanks to The William & Frances Aloe Charitable Foundation, Amerikohl Mining, Inc., Quality Aggregates Inc., and Allegheny Mineral Corporation for their support. For more information contact: Slippery Rock Watershed Coalition, c/o Stream Restoration Incorporated (PA non-profit), 3016 Unionville Road, Cranberry Twp., PA 16066, (724) 776-0161, fax (724)776-0166, [sri@salsgiver.com](mailto:sri@salsgiver.com), [www.srwc.org](http://www.srwc.org). April Distribution: 651 copies



Slippery Rock Watershed Coalition c/o Stream Restoration Incorporated  
A PA Non-Profit Organization  
3016 Unionville Road  
Cranberry Twp., PA 16066

NONPROFIT  
ORGANIZATION  
U.S. POSTAGE  
PAID  
PERMIT NO. 434  
CRANBERRY, PA

# THE CATALYST

## SLIPPERY ROCK WATERSHED COALITION MONTHLY ACTIVITIES UPDATE

**THIS MONTH'S MEETING:** Thursday, June 14 @ 7:00 PM, Jennings Environmental Education Center, Pizza and Pop will be provided!! There was no May meeting due to the Get-Together.

### In the News!

Check out the two recently published newspaper articles regarding the bat hibernaculum at Goff Station. Both articles can be found online. The Pittsburgh Post Gazette published an article entitled "Making a Place For Bats" by Don Hopey on Monday, May 14. The Tribune Review published another article entitled "Going Batty" by Larry Sanata on Thursday, May 10. Also, WPXI Channel 11 local news broadcasted a segment on the bat hibernaculum which aired Monday, May 14. We have received many wonderful comments. The bat hibernaculum is an "outgrowth" of the Growing Greener project to passively treat abandoned mine drainage. **Thanks to Quality Aggregates for donating materials, equipment, and manpower. Thank you to WPXI Channel 11 local news, Tribune Review, Larry Sanata, the Pittsburgh Post Gazette, and Don Hopey for taking the time to look at the Goff Station bat habitat project.**

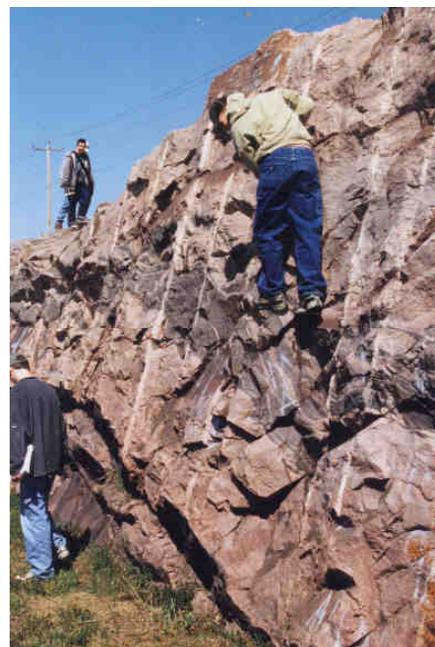

 Where to find the articles on the World Wide Web:  
 Go to [www.postgazette.com](http://www.postgazette.com) and search for the article by the title, "Making a Place for Bats" & Go to <http://library.triblive.com/interconnect/intercon.dll> and search

### Slippery Rock University's Earth Day Celebration

Slippery Rock held a week-long celebration in honor of Earth Day (April 19th). Over 200 high school students came from all over the area to partake in the earth friendly festivities. There were exhibition booths, workshops, and live music! **Shaun Busler** manned the Slippery Rock Watershed Coalition booth while **Cliff Denholm**, an SRU graduate, facilitated a workshop which gave an overview of passive treatment technologies. **The SRU Earth Day project was excellent and thanks to Cliff and Shaun for representing the SRWC!!**

### **Geological Field Tour**

In April, **Valentine and Galena Kefeli** attended a three day geological expedition, with students of Slippery Rock University. On the field tour Valentine studied the geological history of the area and explained soil formation in the Appalachian region. In the photo to the left are several Slippery Rock University Students studying a rock outcrop, "up close and personal."



P  
H  
O  
T  
O  
O  
F  
T  
H  
E  
M  
O  
N  
T  
H



P  
H  
O  
T  
O  
O  
F  
T  
H  
E  
M  
O  
N  
T  
H

A Look at the DeSale Restoration Area from the air. Phase I is in the foreground and Phase II is center left.

### Helicopter Tour at De Sale Restoration Area

**Senator Mary Jo White; Representative Sam Smith; Acting Secretary of DEP, Dave Hess; and President of Amerikohl Mining, Inc., John Stilley** toured the watershed on 05/17/01 via helicopter!!!! They viewed Chernicky (Able-Dreshman), North Liberty, and active mining sites from the air. They landed and took a walking tour of the De Sale Restoration Area with **Tim Danehy, Margaret Dunn, and Cliff Denholm**. Thanks to all for taking the time to stop out and especially for taking some wonderful aerial pictures of the watershed. An account of their trip appears in the Secretary's Scrapbook (05/23/01) on the PADEP website at <http://www.dep.state.pa.us/dep/hess> and click on the Secretary's Scrapbook and follow the links to find

### Girl Scout Troop Constructs Bluebird Boxes

Junior Girl Scout Troop 653 from West Sunbury constructed bluebird boxes with the guidance of **Chip Brunst of the PA Game Commission**. **Robert Beran of Aq-uascape** assisted the members of **Troop 653**, and troop leaders **Deb Bowser and Marian Hall**, with the installation of the nest-boxes at the Goff Station Restoration Area on March 3<sup>rd</sup>. The girl scouts plan to continue visiting the Goff Station Restoration Area to monitor the bluebird boxes, which will provide additional habitat opportunities on the site. **Many thanks to Troop 653 for their help and hard work!!!!**



# The Kids Catalyst

## Word Jumble



Place the highlighted letters in the boxes to the left in order from 1-5 to spell a word (read the definitions for clues).

1. LND<sup>1</sup>AW<sup>2</sup>TE<sup>3</sup>

2. DAC<sup>1</sup>I<sup>2</sup>

3. T<sup>1</sup>B<sup>2</sup>A<sup>3</sup>

MEIN 4.

MSTAER 5.

IREVR 6.

1. Noun, swamps or marshes, especially as an area preserved for wildlife.
2. Noun, a sour substance or a substance with a low pH
3. Noun, a flying mammal
4. Noun, where coal or other minerals are removed from the earth
5. Noun, a flow of running water along the earth's surface, a small river
6. Noun, a natural flow of water larger than a creek which empties into another body of water.

Remember to mail in the completed word jumble to receive a dollar discount at McDonald's or other local restaurants.  
**Mail to: Stream Restoration, Inc., 3016 Unionville Rd., Cranberry, Twp., PA 16066**



### Kid News Corner

If you belong to an organization and want your group to participate in restoration activities, there is always work to be done. Wetland plantings are coming up and help is needed. Contact Stream Restoration Incorporated for more information. You might even get your picture in the Catalyst!

# The SRWC "Get-Together"

The kids had a wild and wonderful time with the Piñatas .



Feeding Frenzy



"I'm gonna git it"



Whack the fish, get the candy!

Thanks to everyone who helped with the Get-Together. A good time was had by all and we cannot wait until next year. Maybe we'll have to bring some safety goggles for protection from all the flying candy. **A special thanks to Quality Aggregates for their donations and all their help.** Everyone had lots of food, lots of fun, and we hope to see everyone next year. Special thanks to **Mark and Gloria DeMatteis** for the wonderful time.

Thanks to The William & Frances Aloe Charitable Foundation, Amerikohl Mining, Inc., Quality Aggregates Inc., and Allegheny Mineral Corporation for their support. For more information contact: Slippery Rock Watershed Coalition, c/o Stream Restoration Incorporated (PA non-profit), 3016 Unionville Road, Cranberry Twp., PA 16066, (724) 776-0161, fax (724)776-0166, [sri@salsgiver.com](mailto:sri@salsgiver.com), [www.srwc.org](http://www.srwc.org). June Distribution: 717 copies



Slippery Rock Watershed Coalition c/o Stream Restoration Incorporated  
A PA Non-Profit Organization  
3016 Unionville Road  
Cranberry Twp., PA 16066

NONPROFIT  
ORGANIZATION  
U.S. POSTAGE  
PAID  
PERMIT NO. 434  
CRANBERRY, PA

## THE CATALYST

### SLIPPERY ROCK WATERSHED COALITION MONTHLY ACTIVITIES UPDATE

**THIS MONTH'S MEETING:** Thursday November 13 at 7pm Jennings Environmental Education Center, pizza and pop will be provided. 10/09/03 Attendance: J. Belgredan, F. Brenner, C. Cooper, T. Danehy, C. Denholm, M. Dunn, D. Johnson, V. Kefeli, S. Smith, W. Taylor

### Coraopolis Memorial Library Exercised Kids' Minds this Summer



(Left) The CML staff and volunteers in their "Get in the Game" t-shirts. Pictured from Left to Right: **Tara Pallas-Sheetz, Florence L. Pallas, Christine Rice, Lois Gould, Marva Duncan.**

(Right) The kids and their parents enjoy a good time, food, and prizes!



The **Coraopolis Memorial Library (CML)** in conjunction with the **Allegheny County Library Association**, and many enthusiastic young kids, encouraged by their parents, participated in the Summer Reading Program for fun and education. The program "kicked off" on June 5, 2003 at the CML with entertainment for the kids, free food, free library cards, stories, fables, and other exciting events. At the end of the summer program, on Saturday, August 9, 2003, the CML held a kind of "Grand Finale" at the Methodist Church adjacent to the CML for those kids who completed the reading program. In spite of the rain, it was a good showing. The kids and their parents got free food and entertainment. The children received prizes for different age groups, including even more educational and reading material to learn from, and even more fun for young and old folks alike!

The **Slippery Rock Watershed Coalition** and **Stream Restoration, Inc.** were proud and pleased to join the many donors for this wonderful event by donating over 100 copies of the "ABCs of Our Watershed", a coloring book for kids. This book, created by **Chris Treter** when he was an intern with SRI, highlights the environmental concerns, history, resources and watershed group activities for our streams. Keep up the good work, CML!

### Slippery Rock University Students Go Water Sampling

On September 16, **Slippery Rock University** students **Holly Martinchek** and **Frenando Akash** sampled 12 sites in the Slippery Rock Creek headwaters for water chemistry, algae and invertebrates as part of the ongoing watershed AMD monitoring project supervised by **Dr. Dean DeNicola** and **Dr. Mike Stapleton**. They were assisted by **Tim Gillen** of the **DEP**. This project has collected 8 years of chemical and biological data to assess recovery in the Slippery Rock Watershed resulting from passive treatment for AMD. It is great to see students involved in water sampling and analysis, and noticeable **watershed improvement has been observed during the last 8 years!**

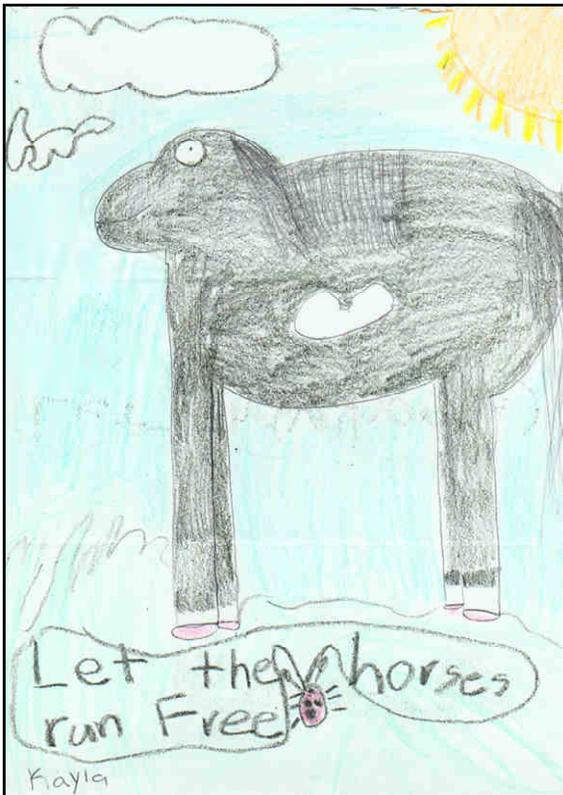
### SRWC's Soil Scientist Speaks at Slippery Rock University



Dr. Valentine Kefeli, center, presents a copy of his book to Library Director Phil Tramdack (second from right). Also pictured are Margaret Dunn of the SRWC and co-authors Dr. Maria Kalevitch and Dr. Bruno Borsari.

A standing-room-only crowd was on hand Thursday, October 16 for the "Land Stewardship and Management Through a Renovated Approach in Plant-Soil Studies" program. Held in the Special Collections Room on the campus of Slippery Rock University, the three authors of the new book [Natural Growth Inhibitors and Phytohormones in Plants and Environment](#) shared their insight and expertise in an interesting presentation and discussion of environmental challenges in the area. **Dr. Valentine Kefeli** of the **SRWC** and **BioMost, Inc.**, **Dr. Bruno Borsari** of **Slippery Rock University**, and **Dr. Maria Kalevitch** of **Robert Morris University** spoke on many topics, including methods to restore habitat and reclaim strip-mined soils using renovated plant-soil relationships. The program, sponsored by **Dr. Jane Fulton**, Dean of the College of Health, Environment, and Science, was enjoyed by all who attended! A special thank you to Dr. Fulton and to **Phil Tramdack**, Library Director and event host!

P  
H  
O  
T  
O  
O  
F  
T  
H  
E  
M  
O  
N  
T  
H



P  
H  
O  
T  
O  
O  
F  
T  
H  
E  
M  
O  
N  
T  
H

Our photo of the month for November comes from Kayla, one of our young readers! Thank you very much, Kayla, for sending us this beautiful horse drawing! We love to receive pictures in the mail from kids who read The Catalyst and enjoy doing The Kids Catalyst activity page, like 8-year old Kayla!

Attention all Kids Catalyst participants! If you would like to see one of your own original works of art appear in our newsletter, please mail them in to us! How about creating a picture with a fall theme?

### George Junior Youth Help Plant North Liberty Wetland

About ten youth from **George Junior Republic** and their two chaperones joined **Shaun Busler** and **Cliff Denholm** of the **SRWC** and **Dr. Fred Brenner** from **Grove City College** to plant 3000 wetland plants on a chilly morning on Saturday, October 18. The North Liberty site, located about 4 miles from the Outlet Malls of Grove City, was mined extensively in the 1940s. It was reclaimed with a public-private partnership effort in 2001. As part of the Erosion and Sedimentation control plan, two ponds were built to prevent sediment from entering Wolf Creek. A portion of each of these ponds was converted into wetlands, and the work done on the 18th was the final step of this process. Working quickly to escape the frigid water conditions and cold air temperature, the volunteers efficiently planted 5 different species, battling the hard clay in many locations. The 3000 plants from Kester's Nurseries had been transplanted in a mere couple of hours! Thank you, volunteers! On an interesting note, Shaun noticed some uncommon aquatic insects at the site: water scorpions and giant water bugs, both of which can inflict painful bites if carelessly handled!



### SRWC Adopt-a-Highway Clean-up



Friday, October 17 was the final Adopt-a-Highway clean-up for the **SRWC** this year. **Margaret Dunn**, **Cliff Denholm**, **Charles Cooper**, and **Shaun Busler** picked up trash along I-79 between mile markers 100 and 101. They were encouraged by the short amount of time it took to get the job done. There was a noticeable decrease in the quantity of litter for this outing compared to how much there was during their first trips to the site when they started this program last year! The Adopt-a-Highway program is making a difference! The SRWC will again have 4 trash pick-up days in 2004; if you would like to be a part of this worthwhile cause, please contact Cliff or Shaun at 724-776-0161.



# The KIDS Catalyst

## SLIPPERY ROCK WATERSHED COALITION FUN ACTIVITY



### Word Seek and Find

All the words below can be found in articles from this month's Catalyst. Find the words, circle them, and then send this paper back to us for a free gift certificate! Good Luck!

WORD BANK				
WETLAND	INSECTS	WATERSHED	LIBRARY	CREEK
FUN	PLANTS	PONDS	HABITAT	SOIL

M	A	W	T	P	L	A	F	P	L	B	M	E	T	Y	P	O	D	S	X
V	X	O	R	H	N	E	C	D	I	O	N	A	C	S	L	I	P	V	C
A	C	S	L	O	T	D	V	U	C	R	L	I	O	S	W	S	K	E	R
G	N	A	U	Q	Z	B	Q	I	N	D	I	D	T	E	N	T	M	O	L
I	W	J	P	K	O	C	H	N	O	W	B	A	R	H	S	P	M	I	A
U	S	T	A	T	I	B	A	H	F	E	R	S	K	Y	O	C	B	J	P
A	R	T	E	C	N	A	O	E	U	S	A	L	R	E	E	A	N	S	T
C	S	I	H	R	I	S	E	T	D	K	R	C	F	U	O	I	M	R	C
I	M	B	C	T	S	A	N	L	O	V	Y	E	G	R	J	O	W	C	A
F	U	N	U	N	A	O	I	P	L	O	C	D	M	I	A	E	O	R	Q
W	F	K	F	V	Q	T	J	G	Z	E	N	X	C	N	R	E	E	T	L
S	P	L	O	K	I	V	C	D	E	N	P	M	P	L	E	W	V	B	T
N	M	I	U	C	Y	T	N	S	C	E	A	L	M	B	Z	P	X	C	H
Y	I	R	S	C	H	A	T	R	E	W	Q	M	A	P	L	O	I	K	W
K	N	O	V	U	L	C	X	Z	A	S	D	F	G	N	J	N	O	E	A
E	T	E	W	T	Y	H	J	K	M	D	N	B	V	I	T	D	E	L	E
B	N	M	E	P	L	I	T	R	S	X	E	C	M	T	W	S	T	O	E
D	G	W	K	L	P	U	N	P	L	A	N	H	O	N	D	C	M	B	S
F	P	L	O	K	N	H	V	F	G	Y	R	S	S	C	B	J	U	K	O
H	P	E	A	C	E	T	U	B	T	M	I	N	U	R	B	P	L	A	L
P	O	M	N	C	Z	K	Y	U	A	Q	T	S	D	A	E	N	D	S	I
E	X	C	I	N	S	E	C	T	S	E	L	L	E	N	W	T	E	N	S
I	N	S	U	R	C	E	R	A	Y	E	A	H	T	O	G	E	A	O	A
L	O	Y	A	T	P	R	P	M	N	C	R	E	Z	W	E	X	T	W	T
P	L	A	W	T	H	C	E	V	Z	M	U	P	O	N	E	S	A	D	S

Name \_\_\_\_\_ Age \_\_\_\_\_ Address \_\_\_\_\_



Slippery Rock Watershed Coalition c/o Stream Restoration Incorporated  
A PA Non-Profit Organization  
3016 Unionville Road  
Cranberry Twp., PA 16066

NONPROFIT  
ORGANIZATION  
U.S. POSTAGE PAID  
PERMIT NO. 434  
CRANBERRY, PA

Thanks to The William & Frances Aloe Charitable Foundation, Environmentally Innovative Solutions, LLC, Dominion Peoples, Amerikohl Mining, Inc., Quality Aggregates Inc., BioMost, Inc., Allegheny Mineral Corporation and PA DEP for their support. For more information contact: Slippery Rock Watershed Coalition, c/o Stream Restoration Incorporated (PA non-profit), 3016 Unionville Road, Cranberry Twp., PA 16066, (724)776-0161, fax (724)776-0166, [sri@streamrestorationinc.org](mailto:sri@streamrestorationinc.org), [www.srwc.org](http://www.srwc.org). Nov. distribution: 1136 copies

## Highlighting Other Partnership Efforts (HOPE!)

### Montour Run Watershed Association

This month we would like to recognize the accomplishments of the **Montour Run Watershed Association (MRWA)**. The stated purpose of this organization is the protection, remediation, and long-term stewardship of the Montour Run Watershed, including land, water, and biological resources. MRWA officially began in 2000, and works to accomplish its goals through formal and informal partnerships with citizens' groups, businesses, local government agencies, elected officials, and the general public.

Their efforts were recently highlighted on TV during the **Channel 11 WPXI** news and in the newspaper! The October 19 edition of the **Pittsburgh Tribune-Review** featured an article about MRWA's proposed stream clean-up plan. The plan suggests several treatment systems be built to treat water negatively impacted by abandoned mine drainage. **BioMost, Inc.** partnered with MRWA to create passive treatment designs and site rankings for 13 impacted locations in the watershed. MRWA received a state grant to help pay for the construction of a treatment facility, and hopes to obtain future federal funding to cover the expenses involved in building and maintaining treatment systems at Boggs Road and Clinton Road, located in Findlay Township. These 2 sites have been deemed "high priority".

The 37-square-mile watershed encompasses portions of Coraopolis, Findlay, Moon, North Fayette, and Robinson. Many locations in these areas have become devoid of aquatic life due to drainage from abandoned mines. One of MRWA's principal goals is to improve the condition of the watershed to support trout and other game fish. This goal was partially met with the **PA Fish & Boat Commission's** stocking of a 2.3 mile section of Montour Run extending from the SR 3077 bridge (Beaver Grade Road) downstream to the SR 3074 bridge (Hassam Road) with brown and rainbow trout for the 2003 season.

Many groups are partnering with MRWA to clean up the mine drainage problem, characterized by erosion and metal compounds which harm the fish and other aquatic life. Some of the partners working with MRWA to achieve a trout fishery are: **The PA DEP Greensburg District Mining Office, Imperial Land Corporation, landowners William and Mary Kropf, Aquascape, BioMost, Inc., Quality Aggregates, Inc., Stream Restoration Inc., US Office of Surface Mining, McClymonds Supply & Transit Co., Inc., G and C Coal Analysis Lab, Inc., Allegheny County Conservation District, State Senator Jack Wagner, State Senator John Pippy, Wildlife Habitat Council, WPCAMR, and Findlay Township Board of Supervisors.**

MRWA meetings are typically held at 7:00 PM on the fourth Tuesday of the month in the conference room at the Robinson Township Municipal Building. For more information or to volunteer to help with a project, email MRWA president **Stan Sattinger** at [mrwa@trfn.clpgh.org](mailto:mrwa@trfn.clpgh.org). The official MRWA web site is located at [www.trfn.clpgh.org/mrwa](http://www.trfn.clpgh.org/mrwa).