FINAL REPORT:
NORTH FORK MONTOUR RUN RESTORATION - PHASE 1

Environmental Stewardship/Watershed Protection Project
Growing Greener Project Document No. 4100028955

Watershed: Montour Run (Allegheny County)
Grantee: Montour Run Watershed Association (MRWA)

DEP Project Advisor: Ron Horansky

A. Technical Report

1. Narrative Description of Project

   a. What was the project supposed to accomplish?

      (1) Remediation of abandoned mine drainage (AMD) discharges, bringing about immediate water quality improvement in the two miles of the North Fork of Montour Run leading to its confluence with the South Fork.
      (2) Significant decrease in non-point-source acidity and metal loadings (particularly iron) to the North Fork of Montour Run.
      (3) Creation of a naturally functioning wetland for water treatment and wildlife habitat.
      (4) Positive impact on nine miles of the main trunk of Montour Run, including improved survival of fish and other aquatic life.

   b. What you actually did and how it differs from your plan?

      The project to design and construct the North Fork Montour Run Restoration Facility proceeded in compliance with plans to the degree possible. A number of new circumstances were introduced before the project start by the construction of the Southern Beltway Findlay Connector by the Pennsylvania Turnpike Commission. These construction activities introduced disturbances to the flows of water and the concentrations of contaminants relative to pre-construction measurements at the original sampling location, which had been designated as NFMU9. These disturbances resulted in changes described below to the original project concept.

      (1) A low-maintenance facility has been established and is successfully treating acidic, metal-bearing drainage from abandoned underground coal mines that previously degraded the North Fork of Montour Run. Tasks that were entailed included design, permitting, erosion and sedimentation controls, clearing, access road construction, dewatering, grading, and revegetation of the restoration site, which is situated on Allegheny County Airport Authority (Pittsburgh International Airport) property.

      (2) The system consists of:

      - A mine drainage conveyance pipe running beneath the Findlay Connector, including alkaline bedding stone, installed by the Turnpike Commission for purposes of de-watering the Clinton Block mine complex.
      - Three settling ponds installed by the Turnpike Commission for mine de-watering and modified for long-term use during the course of this project. A

significant portion of the dissolved iron precipitates and settles in these ponds.

- A pair of vertical flow ponds (VFP's) that can operate either in parallel or in series. These are basically limestone- and mulch-filled basins that neutralize acidity and generate alkalinity.
- A 1/3-acre treatment wetland that completes the precipitation of the iron.

Original project plans called for the two upstream settling ponds to be converted to vertical flow ponds. However, Southern Beltway construction completely shut off flows to the NFMU9 sampling location and diverted them to the treatment site, greatly increasing the flows to be treated. Thus it was necessary to add the new VFP's to the scope of the project. To offset the additional cost, a grant for an additional $100,000 in Watershed Cooperative Agreement Program funds was requested from and awarded by the U.S. Office of Surface Mining.

(3) An Operation, Maintenance, and Replacement Plan for the North Fork Montour Run Restoration Facility is appended to this technical report.

c. What were your successes and reasons for your success?

(1) Based on the results of initial after-construction sampling, this passive treatment system has reduced the acidity from an influent level of about 110 mg/l $CaCO_3$ to an effluent level of -166 (net alkaline). The iron has been reduced from an influent level of 95 mg/l to an effluent level of less than 1 mg/l.

(2) The acid and iron loadings to the receiving stream from the North Fork site have also been reduced. Sampling Location NFMU6, at the mouth of an unnamed tributary to the North Fork of Montour Run, was at a pre-construction pH of 4 and acidity 60, but had post-construction pH of 7 and acidity -23. Pre-construction iron at that location was at 4 and decreased to less than 1. Aluminum readings have been in the vicinity of 1 mg/l both before and after construction.

(3) The system is preventing about 16 tons of acid and 16 tons of iron annually from entering the North Fork of Montour Run. In addition, based on current monitoring, the system is providing about 24 tons of "excess" alkalinity to the stream. As a result, the health of an estimated 2 miles' length of this stream has been substantially improved. Our success in obtaining these results has been due primarily to the capabilities of our prime subcontractor, BioMost, Inc., and its sub-tier contractor, Quality Aggregates, Inc.

(4) Water quality in the main trunk of Montour Run has also been positively impacted by the cleanup of the North Fork, improving the survivability of fish and other aquatic life.

(5) The design and construction of the North Fork Montour Run Restoration Facility was described in two issues of the MRWA's newsletter, "Montour Run Review," and in two issues of the area's community magazine, "Allegheny West." A pre-construction tour of the site for MRWA Board members was conducted on March 14, 2004. A ceremony dedicating the Turnpike Commission's donation of the settling ponds was held on Nov. 19, 2004. An on-site dedication ceremony for the completed facility was attended by approximately 40 citizens and officials on June 25, 2008.

d. What problems were encountered and how you dealt with them?

Significant delays and unanticipated efforts were incurred in obtaining the necessary permits from the various agencies having oversight.

e. How your work contributed to solution of original problems?

The re-use of the Turnpike Commission's piping and ponds, originally intended to be demolished after mine de-watering use, for portions of this long-term restoration facility constituted resource recycling on a large scale.

f. What else needs to be done?

Other implementation projects remain to be completed as per recommendations in the MRWA's Abandoned Mine Drainage Cleanup Plan, September 2003. A concurrent Growing Greener-funded project to design and construct the McCaslin Road Mine Drainage Remediation Project is under way. This and other AMD source remediation projects not yet completed will eliminate much of the contamination that reaches the main trunk of Montour Run.

g. What are your plans for disseminating results of your work?

We will appear at a Findlay Township supervisors' meeting in the near future to present a copy of this report. A copy will also be permanently placed on file at the West Allegheny Library in Imperial, PA. Additional copies will be sent to local Pennsylvania representatives, and a copy will be exhibited with the MRWA's public displays.

h. How well did your spending align with your budget request?

Except for a remainder of $453.20 in the Administrative expense category and $597.48 in the Equipment/Supplies category, the $337,367 Growing Greener funding granted by the Pennsylvania Department of Environmental Protection for this project was completely consumed on the project tasks, as was the U.S. Office of Surface Mining's contribution of $100,000. The estimated value of the Turnpike Commission's in-kind contribution was $189,120, and matching cash, goods, and services valued at $47,794 were provided by prime subcontractor BioMost and its partners Quality Aggregates Inc., Stream Restoration Incorporated, and G&C Coal Analysis Lab.

2. Summary in 50 words or less suitable for sharing with the public:

   A new facility has been installed to treat acidic, metal-bearing drainage from an abandoned underground coal mine on the Pittsburgh International Airport property adjacent to the Findlay Connector in Findlay Township, Allegheny County. The system is preventing about 16 tons (32,300 lbs) of acid and more than 16 tons (32,000 lbs) of iron compounds annually from entering the North Fork of Montour Run. This was a project of the Montour Run Watershed Association with prime subcontractor BioMost, Inc. The $674,281 total project cost was funded with $337,367 from the DEP's Growing Greener program and $100,000 from OSM's Watershed Cooperative Agreement Program. In addition, in-kind services valued at $189,120 were provided by the PA Turnpike Commission in conjunction with the building of the Southern Beltway's Findlay Connector. Also, matching cash, goods, and services valued at $47,794 have been provided by BioMost and its partners.

3. Accomplishment Worksheets: attached.

4. Photographs: attached.

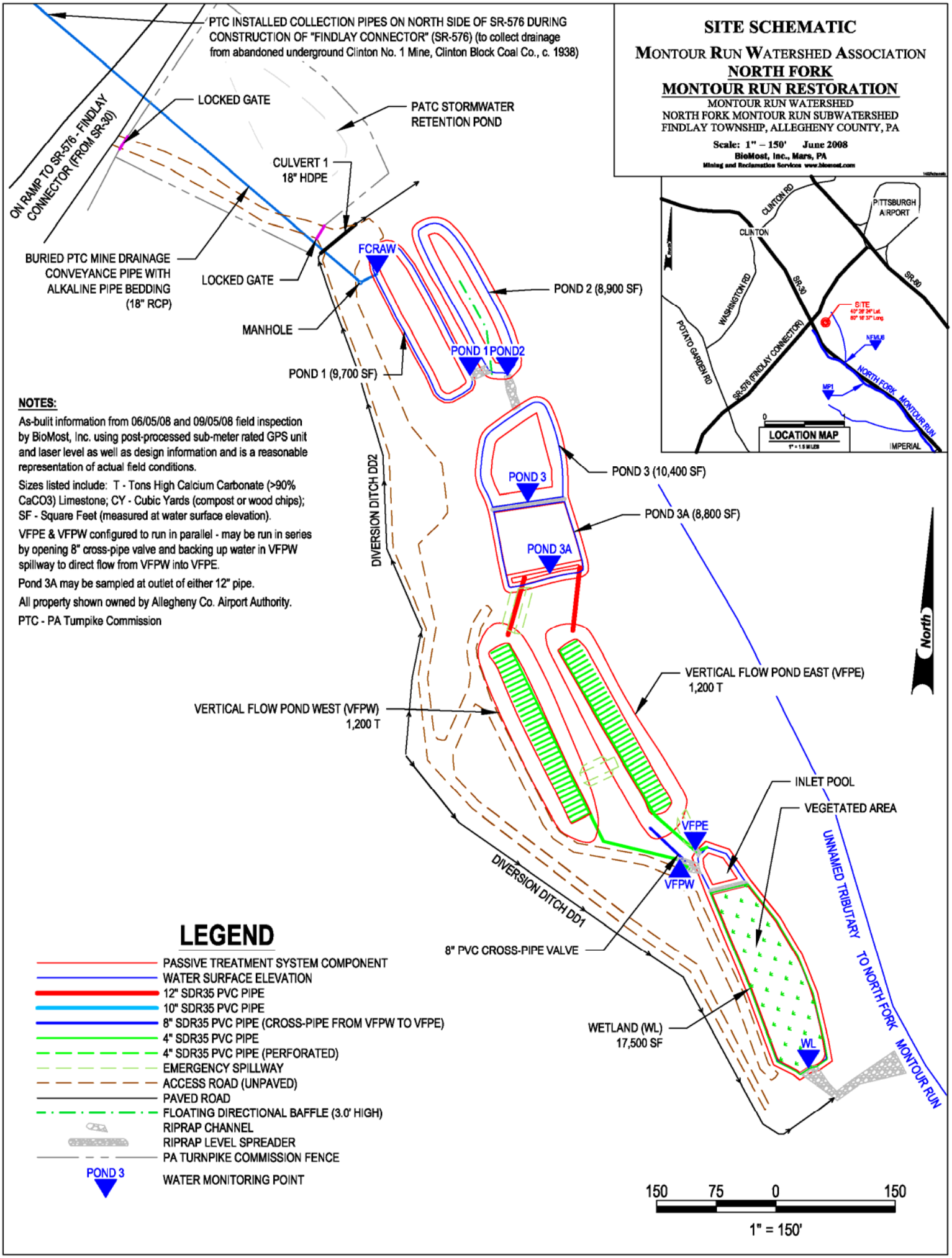
5. Detailed Technical Report: not applicable.

6. Operation, Maintenance, and Replacement Plans: attached.

B. Financial Report: submitted under separate cover.

This project was financed in part by a Growing Greener Grant provided by the Pennsylvania Department of Environmental Protection. The views expressed herein are those of the author and do not necessarily reflect the views of the Department of Environmental Protection.

Stan Sattinger
Vice President, MRWA
September 11, 2008


SITE SCHEMATIC
MONTOUR RUN WATERSHED ASSOCIATION
NORTH FORK
MONTOUR RUN RESTORATION
MONTOUR RUN WATERSHED
NORTH FORK MONTOUR RUN SUBWATERSHED
FINDLAY TOWNSHIP, ALLEGHENY COUNTY, PA
Scale: 1" – 150' June 2008
BioMost, Inc., Mars, PA
Mining and Reclamation Services www.biomost.com
PTC INSTALLED COLLECTION PIPES ON NORTH SIDE OF SR-576 DURING CONSTRUCTION OF "FINDLAY CONNECTOR" (SR-576) (to collect drainage from abandoned underground Clinton No. 1 Mine, Clinton Block Coal Co., c. 1938)
ON RAMP TO SR-576 - FINDLAY CONNECTOR (FROM SR-30)
LOCKED GATE
PATC STORMWATER RETENTION POND
CULVERT 1 18" HDPE
BURIED PTC MINE DRAINAGE CONVEYANCE PIPE WITH ALKALINE PIPE BEDDING (18" RCP)
LOCKED GATE
FCRAW
POND 2 (8,900 SF)
MANHOLE
POND 1
POND2
POND 1 (9,700 SF)
DIVERSION DITCH DD2
POND 3
POND 3 (10,400 SF)
POND 3A (8,800 SF)
POND 3A
VERTICAL FLOW POND EAST (VFPE) 1,200 T
VERTICAL FLOW POND WEST (VFPW) 1,200 T
INLET POOL
VEGETATED AREA
VFPE
VFPW
DIVERSION DITCH DD1
8" PVC CROSS-PIPE VALVE
WETLAND (WL) 17,500 SF
WL
UNNAMED TRIBUTARY TO NORTH FORK MONTOUR RUN
North
CLINTON RD
PITTSBURGH AIRPORT
CLINTON
WASHINGTON BD
SR-30
SR-60
POTATO GARDEN RD
SR-576 (FINDLAY CONNECTOR)
SITE
NFMU6
MP1
NORTH FORK MONTOUR RUN
LOCATION MAP
IMPERIAL
NOTES:
As-bulit information from 06/05/08 and 09/05/08 field inspection by BioMost, Inc. using post-processed sub-meter rated GPS unit and laser level as well as design information and is a reasonable representation of actual field conditions.
Sizes listed include: T - Tons High Calcium Carbonate (>90% CaCO3) Limestone; CY - Cubic Yards (compost or wood chips); SF - Square Feet (measured at water surface elevation).
VFPE & VFPW configured to run in parallel - may be run in series by opening 8" cross-pipe valve and backing up water in VFPW spillway to direct flow from VFPW into VFPE.
Pond 3A may be sampled at outlet of either 12" pipe.
All property shown owned by Allegheny Co. Airport Authority.
PTC - PA Turnpike Commission
LEGEND
PASSIVE TREATMENT SYSTEM COMPONENT
WATER SURFACE ELEVATION
12" SDR35 PVC PIPE
10" SDR35 PVC PIPE
8" SDR35 PVC PIPE (CROSS-PIPE FROM VFPW TO VFPE)
4" SDR35 PVC PIPE
4" SDR35 PVC PIPE (PERFORATED)
EMERGENCY SPILLWAY
ACCESS ROAD (UNPAVED)
PAVED ROAD
FLOATING DIRECTIONAL BAFFLE (3.0' HIGH)
RIPRAP CHANNEL
RIPRAP LEVEL SPREADER
PA TURNPIKE COMMISSION FENCE
POND 3
WATER MONITORING POINT
150 75 0 150
1" = 150'

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Quality Aggregates Inc. Construction Crew led by site Foreman Wayne Fuchs Building Vertical Flow Pond East (VFPE)

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View of the Ponds North Fork Montour facility looking north 06/25/2008.
Ponds 1, 2 & 3 in the background and Vertical Flow Ponds (VFPE and VFPW) in the foreground.

1/3-Acre Treatment Wetland Located at the Bottom of the North Fork Montour Run treatment system (before planting 06/25/2008).

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Attendees at the Dedication Ceremonies held on June 25, 2008