

North Fork Montour Run Passive Treatment System
SRI O&M TAG Project # 26 Request #1
OSM PTS ID: PA-235

Requesting Organization: Montour Run Watershed Association (in-kind partner)
Receiving Stream: North Fork Montour Run (Montour Run Watershed)
Hydrologic Order: North Fork Montour Run→Montour Run→Ohio River
Municipality/County: Findlay Township, Allegheny County
Latitude/Longitude: 40°28'27.9984"N / 80°16'40.0008"W
Construction Year: 2008

In 2008, a passive system was installed to treat an underground mine discharge, which impacts the North Fork of Montour Run. The project incorporated the use of 3 ponds built by the PA Turnpike Commission during construction of the Findlay Connector (I-576). The passive system was designed by BioMost, Inc., (BMI) and consists of two settling ponds in series, a third pond containing a shallow terrace, two parallel vertical flow ponds, an inlet pool, and a polishing wetland. The system was also retrofitted with three trompes which provide passive aeration to the second settling pond utilizing flowing/falling water and gravity in the trompe to compress air which is conveyed to disc diffuser heads. The Montour Run Watershed Association (MRWA) and Stream Restoration Inc. (SRI) work together to maintain and monitor the system.

On 2/26/13, SRI was contacted by MRWA concerning the need for maintenance. Recent work related to the onsite trompe project revealed the accumulation of substantial sludge within the first two ponds. These ponds were previously constructed as part of a chemical treatment system that was used to treat the mine drainage encountered during installation of the Findlay Connector. As part of the highway construction, an ALD-like limestone drain was constructed and the ponds were left in place. The MRWA then received a grant to install additional passive treatment components. As the sludge is a mixture of iron, aluminum, and lime, the recovery of the material for beneficial use does not appear economically feasible.

BMI proposed that sludge containment ponds be built on site to allow the sludge to be pumped from the settling ponds directly to the sludge ponds for drying and long-term storage. Removal of the iron sludge from the settling ponds would provide for better treatment as aeration is believed to be more effective the deeper the bubble disc diffusers are placed in the pond. MRWA was in agreement, but as the system is located on Allegheny County Airport Authority property, SRI had to first obtain permission to utilize additional land.

After obtaining permission, BMI began mobilization on 9/3/13 to construct the sludge containment ponds. A bulldozer, excavator, and skid-loader were utilized to construct two sludge containment ponds connected by a channel. This design allows for a greater amount of sludge to settle and accumulate in the first pond before water is distributed to the second pond, which discharges to a previously constructed stormwater diversion channel. The stormwater diversion channel empties to a wetland below the final system outlet. Construction of the sludge ponds took approximately 5 days. The ponds were seeded to prevent erosion. The sludge ponds were built as large as possible within the confines of the site conditions in order to provide capacity to meet future sludge pumping needs.

On 9/27/13, BMI began pumping sludge from Ponds 1 and 2 to the sludge ponds. A 6-inch pump was utilized with a mini-excavator to maneuver around the treatment ponds, while a skid-loader was used to hydraulically power the 6-inch pump. Both Pond 1 and 2 were essentially pumped clean of sludge.

The project team thanks the Montour Run Watershed Association and the Allegheny County Airport Authority for all of their efforts including support, access, and assistance. Funding for technical assistance and maintenance was provided by the PA DEP's Growing Greener and the Foundation for Pennsylvania Watersheds grant programs and in-kind services by project partners.

Additional Recommendations & Considerations:

- Continue to conduct site visits and water quality testing on at least a quarterly basis. Include field parameters of pH and flow at a minimum and alkalinity, as feasible.
- Continue to maintain and inspect the trompes, which provide aeration to the settling ponds allowing iron to precipitate earlier within the system.
- Inspect the new sludge containment ponds along with other system components when visiting the site.
- Pump sludge as needed.



A sludge containment pond was constructed (*top left and right*) as part of the North Fork Passive Treatment System. Ponds 1 and 2 were cleaned of accumulated sludge utilizing a 6" pump, powered by a skid-loader. As needed, sludge in Ponds 1 and 2 was directed to the pump intake by a mini-excavator (*middle left*) and by water spray (*middle right*). The newly-constructed sludge pond receives and provides storage for the accumulated iron-bearing material pumped from Ponds 1 and 2 (*bottom left and right*).