

Lucerne 3A/Waterworks Passive Treatment System

Growing Greener Watershed Protection Grant Program

Grant Document No: C990002434

Sponsor: Indiana County Conservation District

PROJECT DESCRIPTION

The Lucerne 3A discharge site near Two Lick Creek was previously treated using a lime-dosing system that was expensive, maintenance-heavy, and increasingly ineffective. This project decommissioned the aging system and installed a passive treatment system consisting of a flow-splitting pool, two vertical flow ponds, and an aerobic wetland. The project began with design and permitting and concluded with successful construction and post-installation monitoring.

PROJECT GOALS

The project aimed to reduce acidity and metal loading (iron, aluminum, manganese), raise pH, and improve water quality and biological health in a 6.5-mile stretch of Two Lick Creek.

PROJECT RESULTS

The passive treatment system has proven effective at improving water quality at the Lucerne 3A discharge. Monitoring indicates that the system is reducing iron by 8.50 lbs/day, aluminum by 8.45 lbs/day, manganese by 0.13 lbs/day, and acidity by 167.10 lbs/day, while increasing alkalinity by 41.76 lbs/day. pH levels have improved significantly, rising from 2.75 at the influent to 7.2 at the effluent, and conductivity has decreased from 1,418 to 1,170.5 $\mu\text{S}/\text{cm}$. These improvements demonstrate the system's success in neutralizing acidity and reducing metal loading to Two Lick Creek.

PICTURES



Before AMD Treatment

After AMD Treatment (Vertical Flow Ponds 1&2, and Aerobic Wetland)

PROJECT COSTS

The total project cost was \$644,322.64. Funding was provided through multiple sources, including \$510,667 from the Pennsylvania Department of Environmental Protection's Growing Greener program, \$80,000 from the Office of Surface Mining's Watershed Cooperative Agreement Program, and \$29,385 from the Foundation for Pennsylvania Watersheds. Additional support included \$20,961.64 in in-kind contributions and \$3,309 from Trout Unlimited.

LESSONS LEARNED

Maintaining strong communication with DEP and partners allowed the project to adapt to COVID-related delays and cost inflation. Supplemental funding was essential to covering rising construction costs. Passive treatment systems reduce operational costs and offer long-term sustainability when designed and maintained effectively.

PARTNERS

BioMost, Inc.; Stream Restoration Inc.; Trout Unlimited; Conemaugh Valley Conservancy; Foundation for Pennsylvania Watersheds; Office of Surface Mining Reclamation and Enforcement; Indiana County Conservation District.

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