"What Next!"

The Saxman Run Mine Drainage Treatment and Hydroelectric Project – Five Years in the Making

Presented by Drew Banas,
Executive Director of the Loyalhanna Watershed Association.

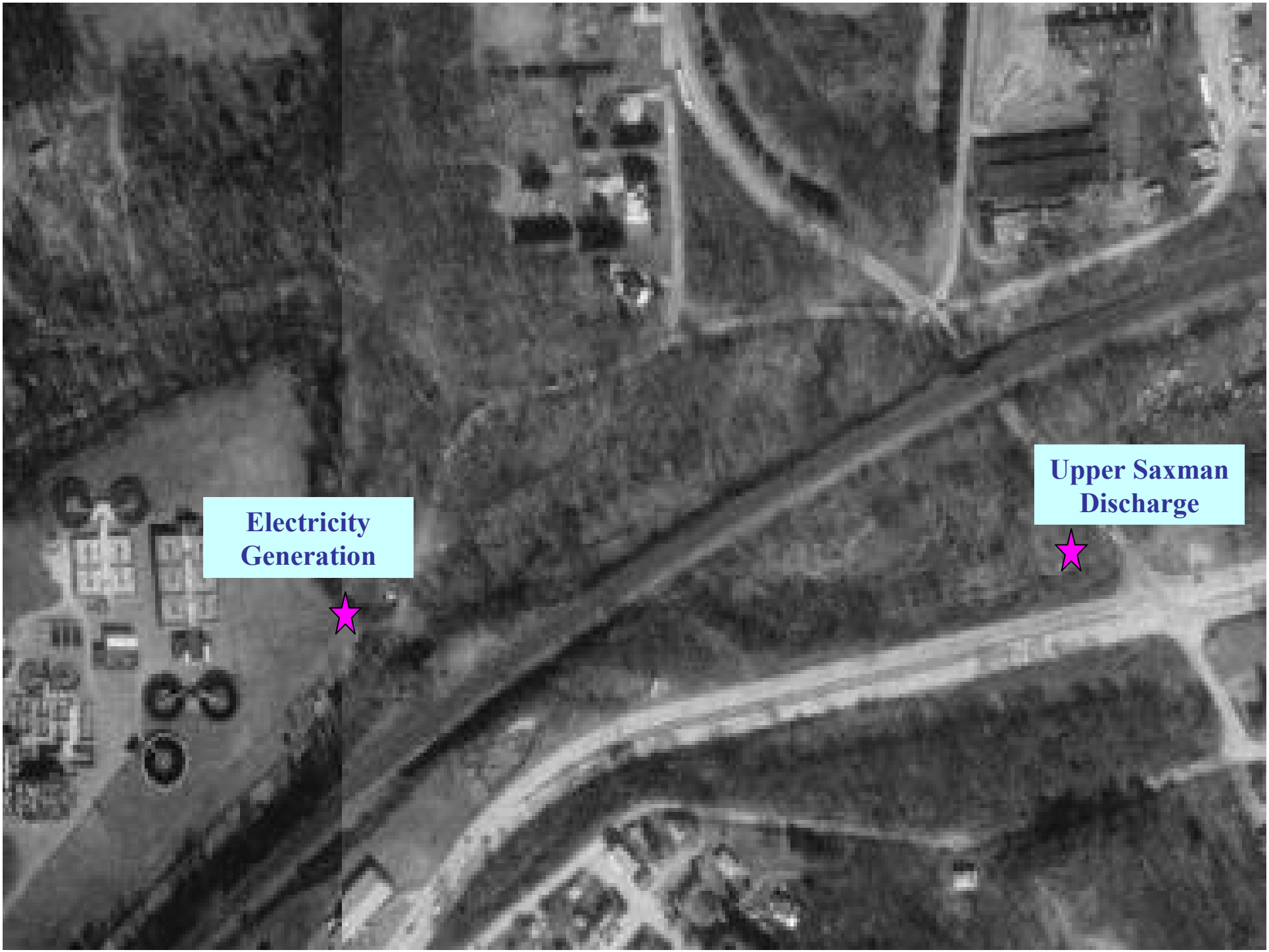
LOYALHANNA WATERSHED ASSOCIATION

Project Background

- Began in 2004 after Upper Saxman Discharge was relocated during PennDOT project
- No way to possibly treat discharge at current location through passive AMD treatment
- Idea arose to utilize the energy from the flowing water (ave. 5,000 gpm) to power an active treatment system demonstration project
- In order to do this, the discharge needed to be moved 1,600 feet downstream to the Latrobe Wastewater Treatment Plant

Project Goals

- Capture and relocate the Upper Saxman Run Discharge downstream to the Latrobe Wastewater Treatment Plant
- Generate electricity through a micro-hydroturbine and generator using the flow from the discharge
- Use the electricity to power and existing demonstration treatment system at the Latrobe Wastewater Treatment Plant and a full-scale treatment system planned for the future
- Demonstrate a viable option for meeting O&M costs for active AMD treatment through Pennsylvania and the Appalachian Region


Electricity Generation
Upper Saxman Discharge

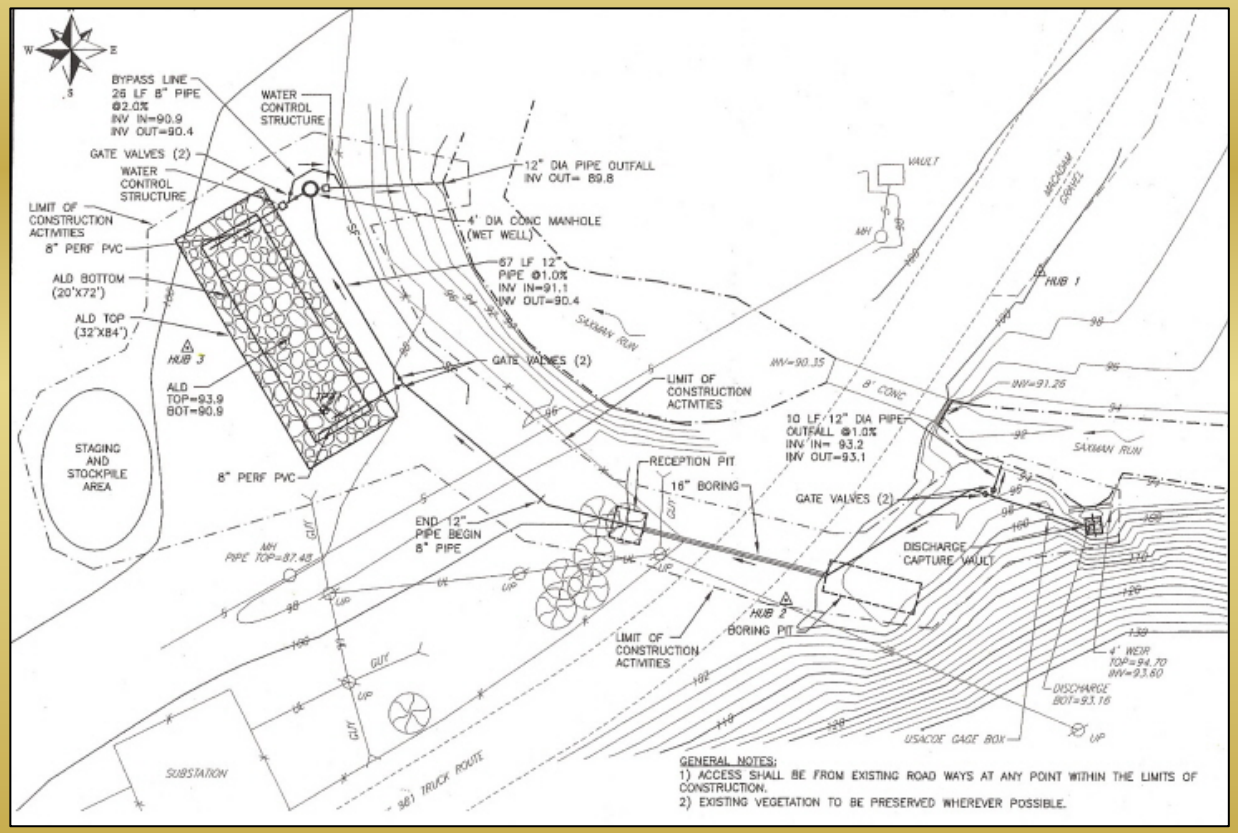
What Actually Happened

- Initial project delay was a result of consulting engineering company's lack of performance and change of project managers - This pushed the project back about a year and a half (We are currently working with the 5th project manager assigned to this project.)
- Unexpected involvement with the Federal Energy Regulatory Commission – had never worked with a project like this and did not even know what AMD was!
- Difficulty with Norfolk Southern Railway Company and obtaining access agreement
- Project Budget doubled due to significant economic changes
- DEP required a "Limited Power Permit" that they had never processed before (it ended up getting lost in Harrisburg)
- Original Company that was to manufacture the turbine equipment went bankrupt

Where We Are Today

Design…

- 90% Completed
- Contractor hired to construct pipeline
- 1,600 feet of 24” HDPE Pipe
- Turbine – 120/240 VAC, 3 phase power – 60 Hz. Will generate 3kW electricity



Federal Energy Regulatory Commission…

- Requirements….
  - File Declaration of Intent
  - Public Notice Waiting Period
  - Jurisdictional Determination
  - License Application for a License Exemption
  - And by the way…why is the water orange?
- License Exemption Granted

Norfolk Southern Railway…

- Would not allow a pipeline to travel through a culvert (although a sewage pipeline already does)
- Plans were revised to have the pipeline bored through the railroad grade (additional $50,000 cost to project)
- Filed an application for review - $2,100
- Purchased a License Agreement - $6,300 (discounted from $20,000)

Project Budget…

2004

- Engineering/Design - $25,100
- Turbine Equipment - $33,500
- Intake Manifold - $3,810
- Transmission Pipeline - $135,590
- Mobilization - $5,000
- Road Construction - $5,000
- Other Expenses: $40,000

Total Project Cost: $248,000

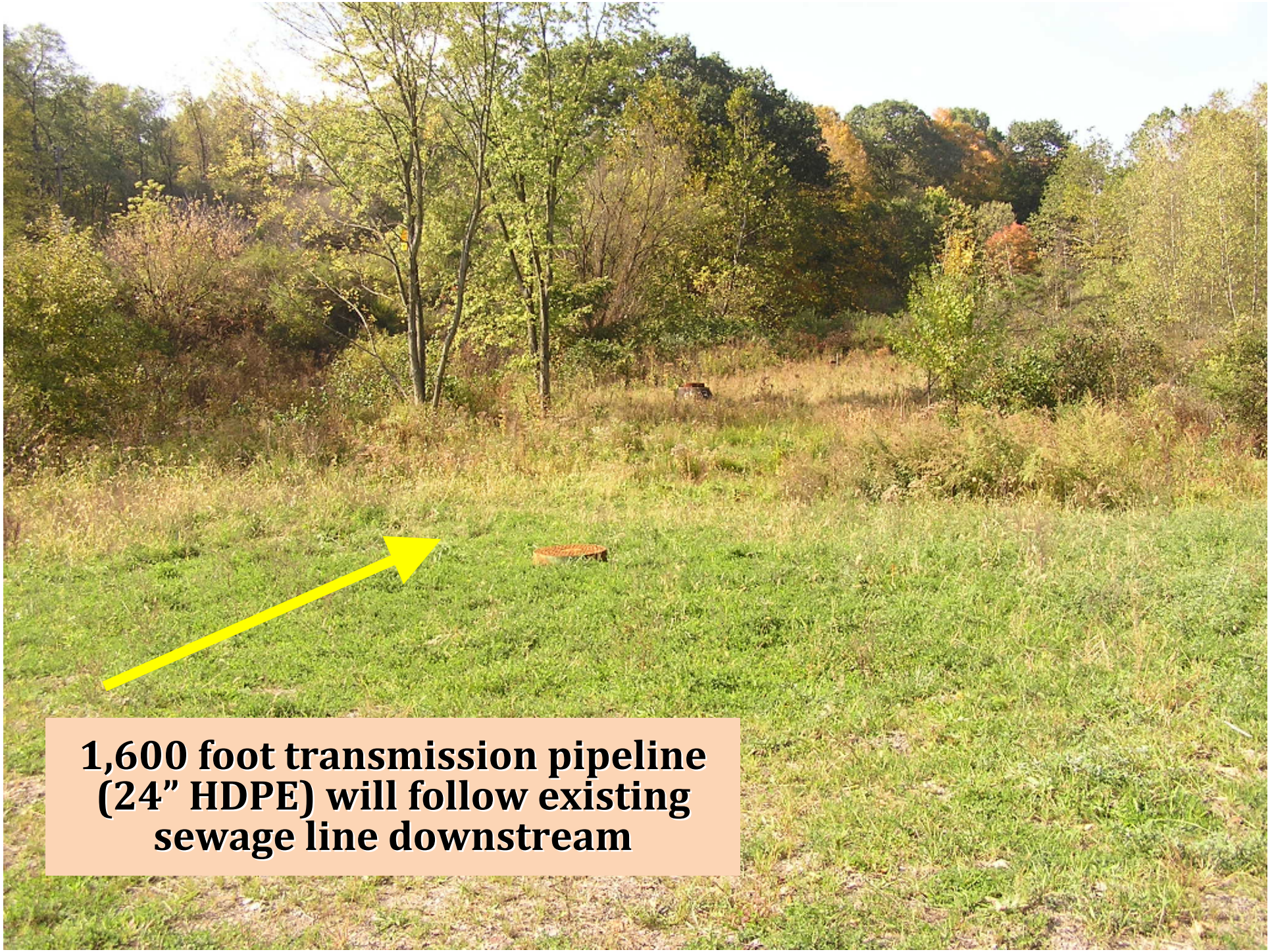
2009

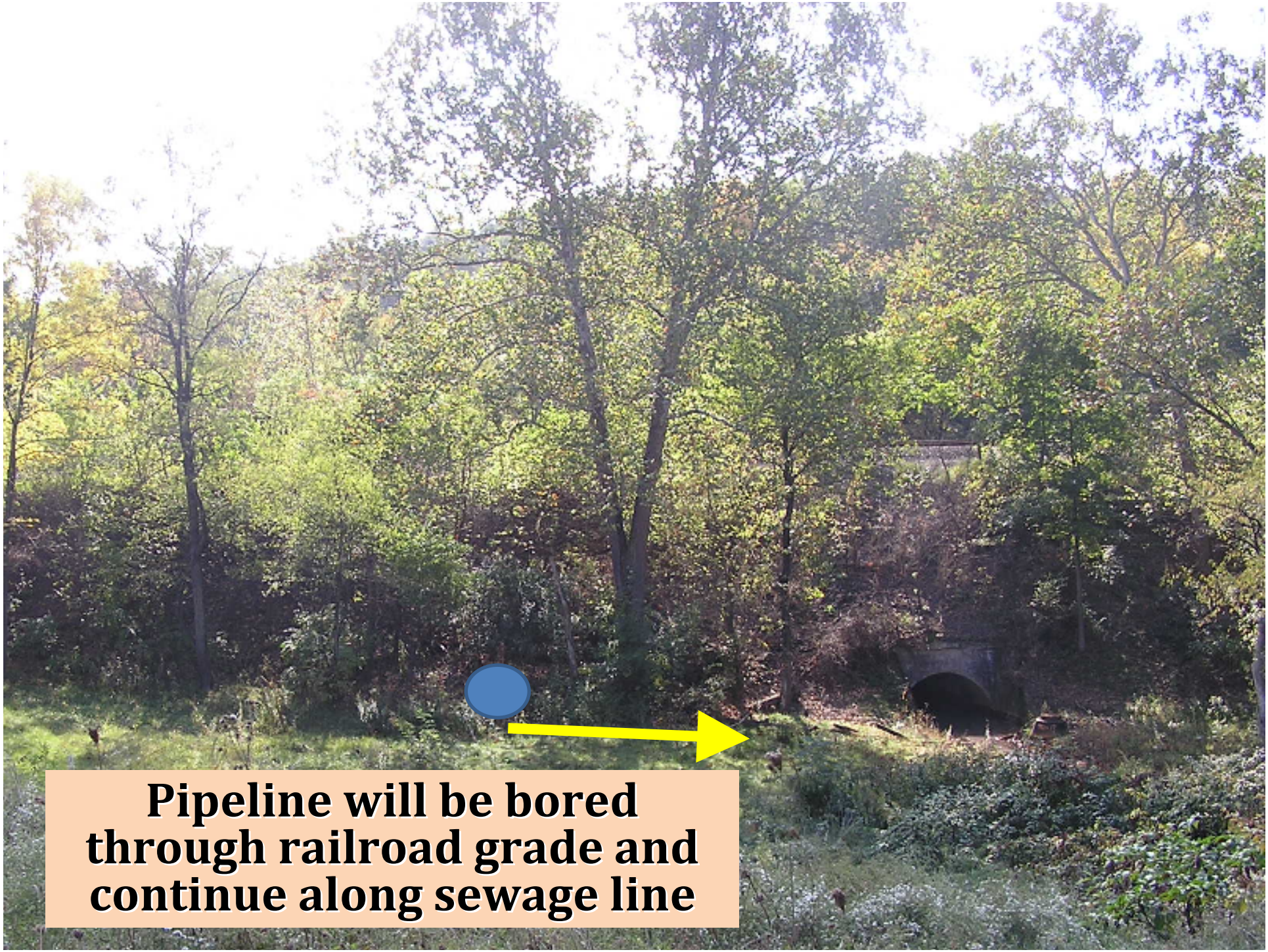
- Engineering/Design - $25,100
- Turbine Equipment - $74,597
- Intake Manifold - $17,354
- Transmission Pipeline $178,000
- Mobilization - $3,675
- Construction Oversight - $18,453
- Railroad/Road Borings - $65,520
- Stream Crossing - $16,984
- Permit/Agreement Fees - $8,605

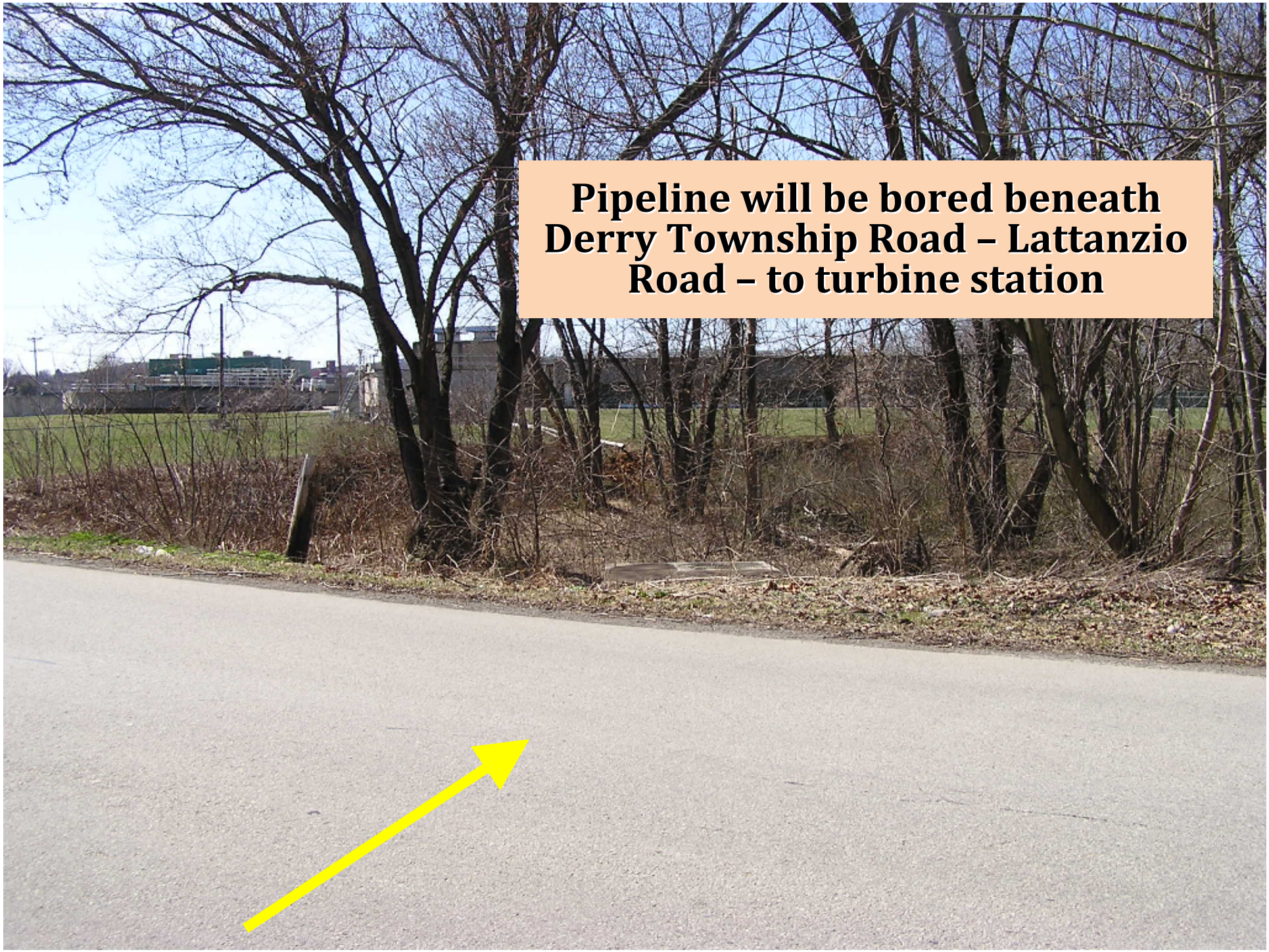
Total Project Cost: $408,288

Current Plan

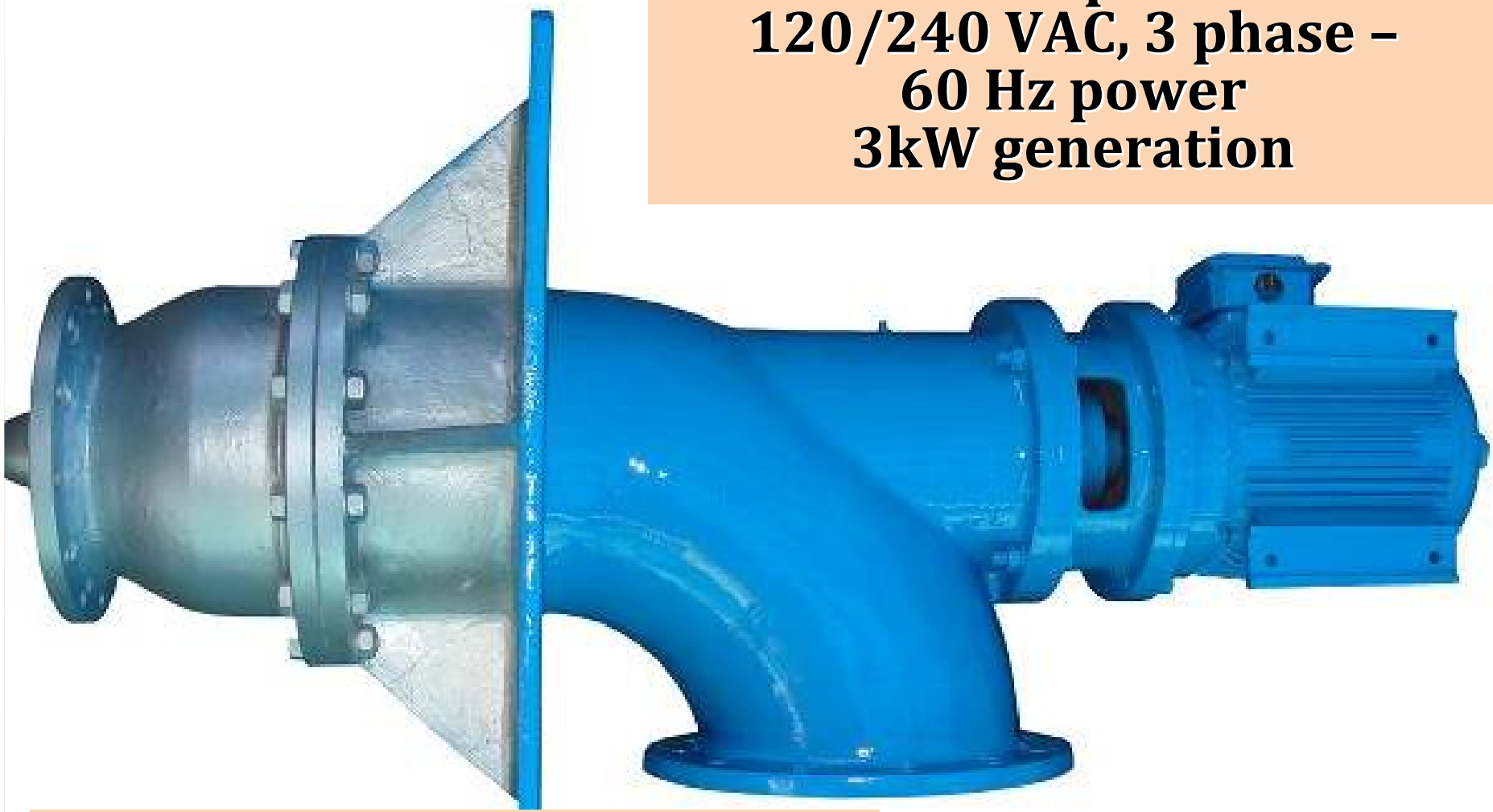
Intake Manifold Structure – Capture Flow into Transmission Pipeline


1,600 foot transmission pipeline
(24” HDPE) will follow existing
sewage line downstream


Pipeline will be bored through railroad grade and continue along sewage line


Pipeline will be bored beneath Derry Township Road – Lattanzio Road – to turbine station

Horizontal Kaplan Turbine
120/240 VAC, 3 phase – 60 Hz power
3kW generation



System includes: Horizontal Kaplan turbine, synchronous 3 phase generator, electronic load controller, manual valve, resistive dump load, custom adapter flange.
Manufactured by St. Onge Environmental Engineering, PLLC.

Turbine station will be located across Saxman Run from the AIS-SBR System. 2kW required to operate system, the remainder will power accessory lighting. A power line will travel across Saxman Run to the system.

Project Partners

- Loyalhanna Watershed Association
- Saint Vincent College
- Iron Oxide Technologies
- Derry Township Supervisors
- Derry Township Municipal Authority
- Latrobe Municipal Authority
- Western PA Conservancy
- Westmoreland Conservation District
- Western PA Coalition for Abandoned Mine Reclamation

Project Funding

- Foundation for Pennsylvania Watersheds – Community Foundation for the Alleghenies
- Department of Environmental Protection – Growing Greener Program
- Department of Environmental Protection – Energy Harvest Program
- U.S. Department of the Interior Office of Surface Mining

Tips for Future Projects

- Compile consistant data on water flow (monthly for at least three years) to ensure adequate head pressure and flow measurements to determine project viability
- Examine and resolve all property ownership / right of way issues before seeking project funding
- Compile detailed budget for all project aspects, including permit and agreement fees, before seeking project funding
- Develop a realistic timeline for completion of project that takes into account all of the time needed for permit review, right of way obtainment, etc.
- Work with reputable consultants/contractors experienced with a project of this nature
- DON'T GIVE UP! All worthwhile projects take time!

LOYALHANNA
WATERSHED
ASSOCIATION