

Bushkill Creek Restoration and Habitat Enhancement Project
October 2021 Final Report
Grantee: Wildlands Conservancy

- *Information about the public meeting held after receiving the grant and prior to beginning the project*

The Bushkill restoration project planning and discussions were on the agenda and conducted at each monthly public meetings held by The Bushkill Stream Conservancy. The meetings were held on the 4th Monday of each month. The meetings originally were held at the Tatamy Municipal building prior to COVID. Since that time the public meetings were held virtually over Zoom during the winter months and at Tatamy's Braden Park where the project is located over the warmer months. We included meeting minutes from January 2021 in the final project closeout package that details project discussions.

- a. *Date and location of meeting(s):* Bushkill Stream Conservancy (BSC)'s monthly meeting which is the 4th Monday of each month. The meeting minutes included in this closeout are from January 25, 2021.
 - b. *Organizations represented by attendees:* The meetings are well attended by the community and municipal partners. They included Forks of the Delaware Trout Unlimited, Bushkill Stream Conservancy, Hanover Engineering, Wildlands Conservancy, Tatamy Borough, Palmer Township, Bushkill Township, and Watershed Coalition of the Lehigh Valley (WCLV)
- *Before and after photos of the project site(s) taken from the same vantage point.*



Before photo of stream lacking instream habitat diversity. The depth is uniform throughout the long reach of stream, lacking instream habitat.



After photo of one of the 19 instream structures. Each structure creates a diversity of flow and instream habitat. A deep pool is forming downstream from the structure while creating more shallow, slower flow conditions along the stream banks for added habitat and stream bank stabilization.

- Project summary

- a. *What did you do and when?*

Wildlands Conservancy partnered with Bushkill Stream Conservancy, Forks of the Delaware Trout Unlimited to restore over one mile of featureless habitat in the Bushkill Creek. The "Bushkill Creek Restoration and Habitat Enhancement" project is a large-scale restoration effort with a significant number of community and municipal partners, located on the Bushkill Creek in Northampton County. The Bushkill Creek is a High Quality - Coldwater Fishery, supporting healthy populations of trout and treasured by the fishing community for its unique cold water resource in an urban and suburban environment. This reach of stream was identified for its lack of instream diversity due to the stream being relocated in past years to accommodate the construction of Bushkill Avenue. The stream was straight and featureless, lacking the pools and riffles needed to sustain populations of trout and other cold water species. Wildlands partnered with BSC and TU in the planning efforts and hired Hanover Engineering to complete the design and permitting in 2020. The construction involved 19 instream habitat structures over a 1+ mile of the Bushkill Creek. Construction was completed this summer 2021 and has held up beautifully after the heavy rainfall totally more than 12 inches in two weeks.

- b. *How did you do it? c. Who was involved? d. Where did it take place?*

Wildlands Conservancy partnered with Bushkill Stream Conservancy (BSC), Forks of the Delaware Trout Unlimited (TU) to apply for funding to successfully secure 5 grants to complete the entire scope of work in one construction phase. Hanover Engineering completed the design and permitting. We partnered with Pa Fish and Boat Commission, Pa Department of Environmental Protection, and Northampton County Conservation District in the design process to incorporate their input during the review phase and receive approval for construction. The project involved significant public outreach. The public was invited to attend and provide input on

the project at every monthly BSC meeting and regularly came out to watch the restoration work during construction. This project was unique for the numerous partnerships and the level of community involvement. We were interested in completing a large-scale restoration effort by covering over a mile of contiguous stream. We needed the approval of 5 landowners in order to accomplish this large goal. The process involved attending public meetings at Tatamy Borough and Palmer Township and presenting the project for their approval. It also involved many conversations and outreach opportunities with the private landowners to share the project plans, discuss the reason and benefit of the project, and ultimately receive their support and approval of the project.

Wildlands hired Flyway Excavating to complete the construction. Flyway has completed numerous stream restoration projects in the Valley and is highly experienced in instream habitat installation. Work began in July and finished in September 2021. The 19 instream habitat structures were built with appropriately sized rock to handle high flows. They were well tested by the many high flows from hurricanes and heavy rain events this summer. The structures provide riffles and pools within the stream channel to benefit aquatic habitat and diversity. The structures are also built to provide stream bank protection to prevent erosion and sedimentation. The construction access to the stream are now serving as fishing and stream access with a well established riparian buffer growing on either sides of the paths. The over one mile stream restoration project is adjacent two municipal parks (Tatamy Borough and Palmer Township) with a biking path connecting the parks to the City of Easton. This highly visible and easily accessible site will serve as a model to the many visitors about the benefits and opportunity for diversity within public parks, and the value of healthy stream systems throughout their community.

- Project outcomes
 - a. *Were all project objectives met?*
We are very pleased to share that all objectives were met and construction was completed in one phase.
 - b. If not, which ones and why not?
 - c. Is project considered complete? If not, what remains to be accomplished?
This project is considered complete. However, we are interested in expanding on the stream restoration efforts by completing dam removal downstream (currently in the design phase). This may be an application Wildlands will develop and submit next year.
- Project sustainability/next steps
 - a. *Discuss the long-term sustainability of the project. What are potential threats to sustainability?*
 - b. *Describe monitoring, operation and maintenance plans for the project.*
 - c. *Describe any future efforts that would increase the benefits of the current project.*
The project was designed and constructed for long term success and sustainability. The structures were built with large boulders to withstand the high flow that is prevalent in the Bushkill Creek. The project site will improve over time as the stream adjusts and establishes the riffles and pools created by the instream structures. Wildlands, TU, and BSC regularly monitor the stream, particularly after storm events. The structures are most vulnerable immediately after construction while the stream is adjusting and the structures become established. They have

held up extremely well after the heavy rains and no maintenance is needed. Dam removal projects currently in development downstream will further enhance the Bushkill Creek in future years.

- *List partners and volunteers and describe their involvement in the project including number of people, number of donated or in-kind hours, etc.*

Match was provided through cash match secured by Wildlands and BSC through grant programs including Pa Department of Conservation and Natural Resources, National Fish and Wildlife Foundation, Northampton County, and PA Department of Environmental Protection.

- Accomplishments and outputs
 - a. *Observed or measured improvement to overall condition of the stream or watershed.* The original conditions lacked any instream diversity due to the stream channelization from the construction of the adjacent road. The instream structures immediately enhanced the instream conditions by creating pools and riffles and varying depths and flow patterns. Instream habitat diversity continued to improve after several rain events as the structures and features created by the project became more established.
 - b. *Riparian buffer projects and natural stream channel projects:*
 - i. *Number of linear feet/acres improved (Remember to account for both stream banks if applicable.)* Over one mile of stream was restored.
 - ii. *Number of trees planted, if applicable*
 - iii. *Number of structures placed, if applicable* The project involved the installation of 19 instream habitat structures.
 - c. Barrier removal: N/A
 - i. Number of stream miles reconnected or opened up:
 - d. Preservation projects: N/A
 - i. Number of linear feet of stream and/or acres preserved