

Municipal Vulnerability Preparedness Program Action Grant Case Study

Municipality: Norwood, MA

Project Title: Traphole Brook Flood Prevention and Stream Restoration Project

Award Year (FY): 2022 and 2023

Grant Award: \$ \$991,967

Match: \$ \$335,781

Match Source: Trustees for the Blackburn and Union Privileges Superfund Site Natural Resource Damages Settlement, In-kind time, Town provided materials (Trees, Boulders, Woodchips)

One or Two Year Project: Two

Municipal Department Leading Project: Conservation Commission

Project Website URL: <https://www.neponset.org/mill-pond-dam/>

Community Overview:

The Town of Norwood is located in Norfolk County, just south of the I-93/I-95 Interchange, with U.S. 1 and 1A running through the center of the Town. Norwood is a nearly fully developed, being significantly more densely populated than neighboring towns and a major center for manufacturing, biotech, and auto sales.

The Town has approximately 31,000 residents as of the 2020 census, 77% of whom are non-Hispanic white. Despite being more white than the metro Boston region as a whole, Norwood's population became significantly more racially and ethnically diverse in the years after 2000. While the town's total population grew by only 0.05% between 2000 and 2010, representation of every racial and ethnic group besides White, non-Hispanic residents increased. The Black, Non-Hispanic and Hispanic/Latino populations each more than doubled. Traphole Brook, the site of the Mill Pond Dam, flows through the southeast of the city, near the border with Sharon and Walpole. The community closest to the removal project is substantially more diverse than Norwood as a whole, with only 61% identifying as non-Hispanic white in the 2020 census tract. The nearest neighbors to the project area include mostly single-family homes with the exception of Norwood Gardens, a large apartment complex with a racially and culturally diverse population and varied age ranges. The neighborhood was mapped as an EJ population for minority populations in the 2010 census, which was used during the application process. Following the 2020 census the EJ area has shifted ¼ mile to the east of the project site.

Project Description and Goals:

Mill Pond was an 1.1 acre impoundment on Traphole Brook, a tributary that flows from Moose Hill Sanctuary in Sharon to its confluence with the Neponset River in Norwood. The Mill Pond Dam dated back to the 18th century and remained the primary impediment to fish passage along Traphole Brook. Following years of sedimentation, the former pond became a shallow pool with several thousand tons of sediment held back by the earthen dam.

In Norwood's 2018 Community Resilience Building summary, the risk posed by aging and deteriorating dams was spelled out as a top priority. Mill Pond was owned partially by the Town, and presented the opportunity to restore Traphole Brook and remove a major risk of dam failure in the face of climate change induced flooding. With the impoundment in place, a dam failure would have resulted in inundation downstream with both impounded water and sediment. This is a particular risk for a low-lying apartment complex, Norwood Gardens, less than a quarter mile downstream. Additionally, Sumner St. above the pond is an important artery for the Town of Norwood and could have been structurally damaged by the failure of the earthen berm dam.

Given this, the project was designed to remove the Mill Pond Dam and rechannelize the former impoundment to increase flood storage capacity and bolster the culvert at Sumner St while disposing of the impounded sediment to avoid its downstream transport. The removal of the dam, the construction of new channel, and the stabilization and revegetation of banks were all construction tasks set out for this project. Additionally, community members were engaged in voicing their own concerns about the impacts of climate change and the opportunities presented by green infrastructure. Awareness of the brook's biodiversity and methods abutters could use for bank stabilization and restoration through live tree staking were also employed.

An associated benefit to the removal of this dam was the improvement of water quality, passage, and habitat for coldwater fish. The sedimentation of the pond and the lack of canopy cover resulted in increased temperatures and lower dissolved oxygen levels for the stream. This in particular is of concern given the brook's status as a Coldwater Fish Resource (MA DFG designation) for the presence of Brook Trout. By removing the dam and creating appropriate in-stream habitat, the new section of Traphole Brook has the potential to connect populations up and downstream as well as serve as habitat itself. Riparian connectivity has been identified as an important aspect of ecosystem resiliency for climate change in allowing sensitive species to repopulate as well as find cooler upstream havens during warm weather.

The project was successfully completed in July of 2023, with a newly formed channel replacing the prior pond and the local community engaged in several events related to green infrastructure, climate mitigation, and existing biodiversity. The risk of catastrophic flooding and sediment transport related to dam failure has been eliminated by the dam's removal and anecdotal evidence of fish passage and habitation has already occurred. The Town of Norwood also has recommendations from the community about future improvements to the conservation land and options for green infrastructure in these neighborhoods.

Results and Deliverables:

The project successfully restored 437 linear feet of stream habitat and provided connectivity between the upstream and downstream Brook Trout populations. Over 5000 tons of impounded sediment was removed to landfills and an additional 1.1 acres was opened for eventual canopy cover as the riparian vegetation grows back. As previously mentioned, the risk of downstream impacts from a dam failure was removed with a newly constructed channel

designed for the impacts of climate change. The Town owned conservation land was also improved, with recreational access to the stream bank for catch and release fishing and hiking trail passage.

Project deliverables included the restored stream itself, community outreach events, recommendations to the Town of Norwood on green infrastructure options, and a public facing blog with regular updates. These deliverables can be found online at www.neponset.org/mill-pond-blog, or upon request.

Lessons Learned:

This project served as important experience in the removal of dams that are partially privately owned. The design work, implementation, and the need for schedule flexibility are all key takeaways from this experience. Early and frequent communication between all project partners is a critical element to project success and keeping on schedule.

Dam removal is a challenging undertaking, requiring the coordination of community members, several state and local agencies and departments, and design and construction teams, at considerable time and resource cost. However, the project yields positive results when all partners are committed to the project goals and understanding of unanticipated challenges.

Partners and Other Support:

- The Neponset River Watershed Association (NepRWA) provided outreach and administrative support through the project, from conception to completion
- The Division of Ecological Restoration provided project oversight, permitting and dam removal experience, and financial assistance to non-project incidental costs. DER partnership with the design team (Interfluve Inc.) was critical to project success
- The Natural Resource Damages program (overseen by MA DEP and USFWS) provided financial support for the project and contingency guaranteed funds, as well as broader contributions to improvements on Traphole Brook
- Greater Boston Trout Unlimited provided contingency funds and advocated strongly for project completion. GBTU members assisted in photography, tree planting, and live tree stake deployment in a volunteer context.

Project Photos:



Mill Pond prior to dam removal. January 2022. PC: Sterling Worrell



Mill Pond following dam removal and channel reconstruction. June 2022. PC: Sterling Worrell