

Millie Turner Dam Removal & Nissitissit River Restoration Case Study

Project Background: In September 2015, a private dam owner, the Town of Pepperell, the Massachusetts Department of Fish and Game (MA DFG) and partners removed the Millie Turner Dam on the Nissitissit River in Pepperell. The Nissitissit River is a high-quality cold water stream with native Eastern brook trout, state-listed mussel habitat, and exemplary natural communities (BioMap Core habitat). The dam raised water temperatures and lowered dissolved oxygen in the impoundment and limited access to cold water habitat for native brook trout. Project goals included (1) restoring habitat connectivity, (2) improving water quality, and (3) eliminating risks and liabilities associated with the deteriorated dam.

Town role: The Town of Pepperell Conservation Commission was a key member of the project planning team. The Conservation Agent helped collect field data, reviewed and commented on design plans, shared information about the project in local media, and organized and hosted community meetings about the project. During construction, the Conservation Agent visited the site regularly, attended weekly construction meetings, and coordinated with relevant Town departments.

Climate Adaptation Outcomes:

Aquatic Ecosystem Resilience: Dam removal helps fish and wildlife survive climate change by expanding the amount, quality, and diversity of habitat available. Removal of the Millie Turner Dam opened over 40 miles of mainstem and tributary habitat. Fish and other aquatic species are now able to access coldwater refugia during the warm summer months, access critical spawning, rearing, and feeding areas, and seek quieter streams during mainstem floods.

Community Resilience: Removing the dam reduced dam owner liability and protected Town infrastructure and resources from the threat of a catastrophic dam breach. The High Hazard, Poor condition dam posed a risk to the Route 111 Bridge and residences downstream. The dam exacerbated upstream flooding. Had the dam not been removed, it would have continued to deteriorate during flood events and eventually failed.



Project Partners: MA DFG led the project in partnership with the Town, the private dam owner, US Fish and Wildlife Service, Trout Unlimited, Nashua River Watershed Association, Nashoba Conservation Trust, MA Outdoor Heritage Foundation, Nissitissit River Land Trust, and others within the watershed. Gomez & Sullivan was the project engineer and T. Ford Company was the construction contractor.

Funding: Removing the dam cost \$330,000 including design and permitting compared with an estimated \$2.8 million to repair the dam. Funding came from the National Fish and Wildlife Foundation's Hurricane Sandy Resilience Program and the Massachusetts Division of Ecological Restoration. The Massachusetts Division of Fisheries & Wildlife provided \$475,000 in matching funds associated with land acquisition to protect 17 acres of wildlife habitat surrounding the site.



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