

Municipal Vulnerability Preparedness Program Action Grant Case Study

Municipality: Belchertown

Project Title: Belchertown Land Conservation and Restoration of the Scarborough Brook Headwaters for Climate Resilience

Award Year (FY): FY22

Grant Award: \$480,025

Match: \$183,500

Match Source: Cash, CPA funds, in-kind services, matching grants

One or Two Year Project: One Year Project

Municipal Department Leading Project: Conservation

Project Website URL:

https://www.belchertown.org/conservation/climate_change_vulnerability_and_resilience.php

Community Overview:

Belchertown is a [town](#) in [Hampshire County, Massachusetts](#). Belchertown is a part of the [Springfield, Massachusetts Metropolitan Area](#) with a population of approximately 14,650. The town has a total area of 55.4 square miles, of which 52.7 square miles is land and 2.6 square miles is water. Belchertown lies along the western banks of the western branch of the [Quabbin Reservoir](#), with the lands around that water being part of the Quabbin Reservation. The town is hilly north of the town center, the hills forming part of the former Swift River Valley, with most of the rest of the town being relatively slowly sloping plains, spotted with plenty of meadow lands. Along the Swift River, which forms the eastern border of the Town, lies the Herman Covey – Swift River Wildlife Management Area. Several other brooks and ponds dot the Town's landscape, with some marshy lands lying along the Broad Brook.

Extreme weather and natural and climate-related hazards are an increasing concern for the communities of Massachusetts, and there is a clear need to involve municipalities, corporations, organizations, and the State in increasing resilience at all levels. Recent storm events affecting the region have highlighted many of the vulnerabilities that towns and cities face. Hurricane Irene and Superstorm Sandy brought intense flooding to many municipalities and threatened (or destroyed) infrastructure across the state. Extreme temperatures at both ends of the spectrum have pushed the limits of communities' preparedness to protect both infrastructure and people.

Project Description and Goals:

- Belchertown's FY22 project focused around the headwaters of the Scarborough Brook watershed and the existing Scarborough Brook Conservation Area (SBCA). Scarborough Brook is a coldwater fishery resource and provides the primary recharge for the Daigle aquifer and downgradient Lawrence Swamp aquifer, major aquifers that serve as public

water sources for Belchertown and Amherst. Scarborough Brook discharges directly within the aquifer recharge area (Zone II) for the Daigle Well, a primary source of drinking water for Belchertown serving approximately 3,300 people.

- The project sought to focus on climate change vulnerabilities related to flooding along the Scarborough Brook corridor by addressing hydraulic constrictions at existing culverts and restoring natural hydrology by pursuing the removal of existing dam and to provide enhanced ecological resilience through land conservation along this corridor. By thinking proactively about maintaining habitat connectivity and taking proactive action to preserve parcels this preservation effort will forestall potential future development in this area that would exacerbate climate impacts and risks. Proactive preservation will also protect and enhance groundwater resources (that are also drinking water supply resources) that could otherwise be threatened by increasing drought conditions, as well as the increase in sediment load and nutrient loading that typically accompany heavy precipitation events.

The subject parcels for acquisition for land conservation are within an area of prime forestland with a top 40% conservation assessment and prioritization system (CAPS) value -- these qualities would be forever lost if the land was converted to housing. The Dubois and Jackson parcels also score better than average on the University of Massachusetts' and The Nature Conservancy's *critical linkages* metric, which evaluates habitat connectivity based on the difficulty of species to migrate across intervening man-made features. 65% of the Dubois parcel is included within the "resilient and connected networks" identified by The Nature Conservancy's resilient land mapping tool. The "resilient and connected networks" represent places that are "buffered from climate change because they contain many connected micro-climates that create options for species." Areas of the parcel feature each of the three key factors captured in the dataset: resilient land (many connected microclimates), flow and connectivity (to facilitate gradual climate migration), and recognized biodiversity value. The larger corridor encompassing all portions of the project (acquisition, dam removal, and culvert replacement) has similar statistics, with 60% of the overall project corridor within the resilient and connected network.

- The MVP Action Grant had several key tasks:
 - Acquisition of the Dubois and Jackson Parcels for conservation and passive recreation purposes
 - Field data collection to inform potential dam removal and culvert replacements.
 - Wetland delineation and ecological conditions assessment
 - Site survey
 - Geotechnical evaluations at two culvert locations
 - Sediment quality and depth assessment within the Scarborough Reservoir impoundments
 - Hydrologic and Hydraulic Analysis to inform feasibility studies and design for the dam removals and culvert replacements

- Early coordination with regulators to discuss potential project concepts and options
- Development of preliminary design plans for the two culvert replacements
- Development of a design memo and conceptual graphic summarizing recommendations for watershed improvements
- The project has met all of the goals set forth in the Town's grant application in terms of:
 - Employing nature-based solutions
 - By preventing future development, the land acquisition component of the project promotes biodiversity and helps to contribute to long-term habitat connectivity that is expected to play a key role in species migration and adaptation in the face of changing climate conditions.
 - Dam removal offers an opportunity to employ nature-based solutions by eliminating a hard-engineered structure to restore the natural path of a watercourse. Dam removal is thus a nature-based approach to both flood resiliency and ecosystem restoration. Removal of the dams in the Scarborough Brook Conservation Area would restore the natural flow of the river, removing the existing impoundment and restoring connectivity to a coldwater stream. All information gathered through the dam removal feasibility study points to a viable implementation project to achieve these outcomes.
 - Right-sizing of culverts will eliminate barriers to aquatic passage along the brook and provide increased hydraulic capacity to safely pass floodwaters.
 - Improving equitable outcomes for, and fostering strong partnerships with, EJ and other Climate Vulnerable Populations
 - While Belchertown has no mapped centralized Environmental Justice areas, the Town has climate vulnerable populations due to their access to transportation, income level, disability, racial inequity, health status, or age. Too often there is siloing of justice movements and this project represented an opportunity to leverage both the decentralized nature of Belchertown's vulnerability populations and existing social and racial justice movements to expand conversations and inclusivity around conservation land. Our partnership with the Belchertown Justice Collaborative allowed us to reach a different audience than we might otherwise have connected with and to explore alternative means of outreach. We genuinely learned a lot through this process about the challenges and benefits of working with existing community groups and joining forces with other movements, and we are excited to present these lessons in a guide as one of our project deliverables.
 - Providing regional benefits
 - The protection and enhancement of natural resources along Scarborough Brook through the three-pronged approach taken by this project (1-land acquisition/preservation, 2-dam removal, and 3-right-sizing of culverts) all contribute to regional benefits for water quality/water supply and the

provision of regional habitat and migration corridors. Scarborough Brook is a coldwater fishery resource and provides the primary recharge for the Daigle aquifer and downgradient Lawrence Swamp aquifer, major aquifers that serve as public water supply sources for both Belchertown and neighboring Amherst. Scarborough Brook discharges directly within the aquifer recharge area (Zone II) for the Daigle Well, a primary source of drinking water for Belchertown which serves approximately 3,300 people. The protected parcels contain a headwaters stream of Scarborough Brook and the greater Fort River watershed. Protecting the headwaters of the Fort River from development-related impacts helps maintain the integrity of important water supply and wildlife resources located further downstream. This project helped create a nucleus of protected land from which expanded outdoor recreation and conservation land can be established in Northern Belchertown with other willing landowners in the future.

- Implementing the public involvement and community engagement plan set forth in your application
 - Our public involvement and community engagement plan offered a lot of varied opportunities to connect with residents in different ways. This was a purposeful attempt to test different methods of reaching a decentralized population of climate vulnerable residents. Belchertown Justice Collaborative was a key partner for outreach and strategizing about ways to reach a broader audience. We developed three different PSAs in different formats to appeal to different groups. We also held a listening session with Ms. Levy's class in the high school and hosted a field trip to the new conservation land with the students. Postcards were distributed at the Town election with links to the survey, project website, and how to sign-up for project updates. A second public listening session was hosted in the spring, and flyers and a display were developed for print distribution. Finally, the Belchertown Justice Collaborative held an outreach event centered around the history of Belchertown land and conservation in partnership with a local indigenous teacher. The lessons learned from this variety of engagement has been collected into a guide for sharing with other communities.
- Finishing the project on time
 - An extension was requested and received to finalize the land acquisition component of the project. All other project deliverables were completed on time and on budget.

Results and Deliverables:

- Three key metrics of success were identified in the grant application:
 1. Prevention of future development at the Dubois and Jackson parcels and implementation of long-term conservation protections for the acquired land.

This metric was met. Through combined funding from MVP and other state grants, the 80 acre Dubois parcel was preserved, and a new trail and kiosk with educational signage were installed. Acquisition and preservation of the 22 acre Jackson parcels, again with combined MVP and other grant funding, is expected to be finalized in early FY23.

2. Success of the dam removal and culvert replacement components of the project will be based on the following:
 - Application of the RMAT guidelines to guide design process and development of a design that meets project goals and is feasible for implementation in terms of both cost and permitting/regulatory constraints. The first project phase identified feasible options to meet climate resilience goals and all feedback from the regulatory meeting points toward a project that will be able to be successfully permitted. Multiple pathways were identified for project options and phasing that would allow the Town flexibility based on available funding or to build out the full project across multiple implementation phases.
 - Ability to engage with public to obtain feedback and develop a project that the public both understands and supports. Public participation in terms of attendance at related meetings and comments/social media engagement will be tracked. Public participation to date has largely centered around general conversations about the nature of land conservation and how it relates to climate change. Now that a basic concept has been developed from field information, the next phase will focus on engaging the public around specifics of the project goals and design process.
3. Engagement of BIPOC residents and youth via partnership with the Belchertown Justice Collaborative as a means of generating implementable ideas from the BIPOC community and youth that represent the needs and desires of those communities and will help increase the accessibility of climate benefits generated through the project for members of these communities as well as engaging them in ongoing discussions about climate adaptation and mitigation.
 - Working with Belchertown Justice Collaborative has allowed the project to engage with stakeholders who would likely not otherwise have been engaged. The project was successful in identifying some key lessons to share with respect to working with other community groups and cross-movement collaborations.
- Provide a brief summary of project deliverables with web links, if available.
 - Acquisition of Jackson Parcels and signage, trail, and parking installation at recently acquired Dubois Parcel
 - Wetland delineation report and habitat assessment memorandum summarizing ecological conditions
 - Site survey and base mapping

- Preliminary geotechnical evaluations to guide culvert replacement design
- Hydrologic and hydraulic analysis report to support design of dam removal and culvert replacements
- Assessment of sediment depth and quality to inform dam removal permitting and design
- Early coordination meeting with regulatory authorities/permitting agencies
- Preliminary engineering design plans for replacement of two culverts
- Design memo summarizing data analysis and recommendations for the dam removal feasibility study and culvert replacements
- Outreach events including school field trip, an inclusive stakeholder event in partnership with Belchertown Justice Collaborative
- “Reach Out for Outreach” best practices guide for community collaborations

Lessons Learned:

- Early coordination with regulators can be a good way to start a conversation and gain an understanding of potential topics of concern that need to be considered in the design process. We gained valuable insights to help develop the design concept and inform plans for the next project phase.
- We learned a number of lessons with regards to working with a youth-led community non-profit. These have been collected in our best practices guide.
- What is the best way for other communities to learn from your project/process?
 - The “Reach Out for Outreach” best practices guide was developed specifically to assist other communities in planning for collaborations with community organizations, especially youth-led and other traditionally under-represented groups

Partners and Other Support:

- Belchertown Justice Collaborative
- Fuss & O’Neill
- Ms. Louise Levy, Belchertown Public Schools High School Science Teacher
- Mr. Doug Albertson, Town Planner, Belchertown Planning Department

Project Photos:

See attached.