

Municipal Vulnerability Preparedness Program Action Grant Case Study

Municipality: Wrentham

Project Title: Wrentham Eagle Dam Removal Phase II

Award Year (FY): FY 23

Grant Award: \$ 41,337

Match: \$ 13,780

Match Source: In kind time

One or Two Year Project: One Year

Municipal Department Leading Project: Department of Public Works

Project Website URLs:

www.wrentham.gov/cms/One.aspx?portalId=18318918&pageId=19372225
crwa.org/dam-removal

Community Overview:

- The Town of Wrentham was established in 1660, however this area was home to multiple native civilizations long before colonists arrived. In the late 1600s, Wrentham was a small frontier town; it grew during the early 18th century and developed into the major town in the area. In the 1700s, Wrentham had a predominantly agricultural economy, primarily poultry, hay, corn, and cattle farming. Toward the end of the century the economy became increasingly varied. Abundant meadow areas provided agricultural space for growing straw which fueled a successful straw-hat manufacturing center. Wrentham is located at the headwaters of four distinct watersheds (Charles, Taunton, Blackstone and Ten Mile) and the Town's local water resources were very important to early inhabitants. A known Native American hunting trail crossed "The Falls" on the Charles River. Water has also long been critical to Wrentham's economy and Mill River, Wrentham's main water supply in the Town's early days, supported a number of small-scale cotton and wool cloth mills.
- Wrentham is located roughly 30 miles southwest of Boston, just north of the Rhode Island border. As of the 2020 census, the town population was 12,178 residents. The Town's MVP Plan identifies the following climate vulnerable groups within the community: people with disabilities, people with medical rehabilitation needs, people living in assisted living facilities, people whose English is not their primary language, people with mental illness, older adults, courthouse employees, and low-income individuals. Additionally, the Town recognizes there are portions of the community with a high concentration of young children (<5) (including 5 day care centers) who are likely to be more affected by pollution impacts and less resilience to the negative effects of climate change. Additionally, according to the Massachusetts Department of Elementary and Secondary Education 2.5% of students in the public schools are English Language Learners.

Project Description and Goals:

- Eagle Dam is a municipality-owned jurisdictional dam in unsafe condition on Eagle Brook in Wrentham downstream of Red Dam which elevates the water levels in the otherwise natural Lake Pearl. The dam is also upstream of a bridge on state route 140 or Franklin Street in Wrentham. Eagle Dam, being in unsafe condition from a 2022 inspection may not be able to withstand the types of storms and flooding expected to hit the Commonwealth as our climate changes in its current condition.
- What were the specific goals and tasks of the project as stated in your application?
 - The project successfully completed goals of community engagement of residents in Wrentham and Norfolk about the potential removal of the dam. The technical leads of the team also successfully completed additional feasibility assessment for flood modeling and hydraulic and hydrologic analysis of the Eagle Brook stream corridor upstream and downstream of the dam including state route 140 bridge.
- Did your project meet the goals set forth in your application in terms of:
 - **Employing nature-based solutions**
 - This phase of feasibility study furthered the project towards the ultimate goal of implementing a nature-based solution that will restore 1,500 linear feet of Eagle Brook to more natural, sustainable conditions, improving degraded habitat and water quality. The fully-constructed project would provide flood and storm damage protection by eliminating the risk of dam failure which threatens downstream infrastructure such as Route 140, downstream relic dams, and other properties in Wrentham and Norfolk.
 - **Improving equitable outcomes for and fostering strong partnerships with EJ and other Climate Vulnerable Populations**
 - Route 140 is a major connector into, out of and through the eastern part of Wrentham, connecting to both Route 1 and I-495 and the Town of Franklin. Disruption to this major artery would pose a threat to emergency access, and washout, Route 140 it would disrupt travel to the King Philip Regional High School, Maple Rehabilitation and Nursing Home, Wrentham District Court and other important business and services in Wrentham Center.
 - Providing regional benefits
 - The project determined that post-dam removal there would be no changes in flooding downstream including for state-route 140,

downstream residences in Norfolk and Wrentham along Park and Lawrence Streets as well as downstream crossings at Lawrence Street and Main Street at City Mills Dam in Norfolk.

- The project also further moves forward a project that will eliminate the impacts of a dam failure at Eagle Brook that could have significant impacts downstream residences, business and infrastructure in the Towns of Norfolk and Wrentham
- Implementing the public involvement and community engagement plan set forth in your application
 - The Town worked with CRWA and Weston & Sampson to engage members of the public in Wrentham. The project team held two site tours of Eagle Dam one in January and April, held two virtual public meetings in Wrentham and Norfolk in May, presented findings to the Norfolk Select Board and had two abutter meetings. CRWA also met with downstream abutting members of the Wrentham Angler's Club and with students from Long Philip Regional High School Environmental Science Program. Project team met with Tribal Council Member and Tribal Historic Preservation Officer David Weeden. Project team also conducted a public survey for public input on the project.
- Project team finished the project on time.

Results and Deliverables:

- The project was successfully completed. Major activities included:
 - Public involvement and community education and engagement of the project (described above).
 - Technical hydraulic analysis and updates to the Charles River Flood Model including more detailed mapping of flooding from Lake Pearl to Main Street / City Mills Dam in Norfolk. This analysis found no significant changes in flooding downstream of the dam under a dam-out scenario including maintenance of freeboard on the state route 140 bridge in a flood scenario.
- Project deliverables include the following which are posted on the project websites www.wrentham.gov/cms/One.aspx?portalId=18318918&pageId=19372225
crwa.org/dam-removal
 - Dam Removal Fact Sheet
 - H&H Results Fact Sheet
 - Online Project Websites from Town of Wrentham and CRWA

- Survey Results
- Social Media posts, newsletter post
- Photos from Site Walks
- Meeting recordings and meeting notes from public
- Meeting notes from abutter meetings
- King Philip High School Youth Engagement Approach Summary
- Meeting notes from Meeting with Wampanoag Tribe
- Downstream Impact Memo
- Technical memorandum of findings from field surveys
- GIS/CAD Shapefile of elevation data collected
- Technical memorandum of model updates
- Hydraulic analysis report draft and final with modeling results
- MassDOT coordination meeting notes
- Updated/amended technical feasibility study

Lessons Learned:

- **What lessons were learned as a result of the project? Focus on both the technical matter of the project and process-oriented lessons learned.**
 - There is a need for additional funding and technical support for municipalities in dealing with derelict dams and other aging infrastructure that do not serve a purpose in order to promote more nature-based solutions. Additionally, time is key for making community connections for these important projects and the more outreach done to different constituencies helps in project success.
- **What is the best way for other communities to learn from your project/process?**
 - Suggest that early and continued engagement with state agencies, regulators and indigenous peoples is key for project success. Partnerships and community engagement is also key and having multiple meetings and meeting people where there are is most effective. Additionally, working with Town to have survey, project materials and invitations put out in current channels including Town electronic signs, Town Meeting Announcements, website, social media and other community organizations helped get the word out to many residents.

Partners and Other Support:

- Charles River Watershed Association assisted with community engagement and project management.
- Weston & Sampson provided technical assistance with flood modeling.
- Hartman Deetz, consultant and member of Mashpee Wampanoag Tribe provided support with traditional knowledge and community engagement for public site tours.

Project Photos:







1875 Flood

When the Eagle Brook dam at the foot of Lake Pearl burst, the flood waters raced down the Mill River washing out the railroad tracks and the mill dam on Main Street and a large part of the mill.

