

Municipal Vulnerability Preparedness Program Action Grant Case Study

Municipality: Haverhill

Project Title: Little River Dam Removal and River Restoration Design and Permitting

Award Year (FY): FY22/23

Grant Award: \$ 475,000

Match: \$ 155,250

Match Source: Cash; In-kind staff time

One or Two Year Project: Two-Year Project

Municipal Department Leading Project: Mayor's Office

Project Website URL: [Little River Dam Project Information](#)

Community Overview:

- The City of Haverhill has a population of approximately 63,000 and is located in northeastern Massachusetts in northern Essex County, along the Merrimack River.
- The Little River Dam is located within a mapped minority EJ community in Haverhill. Resilientma.org indicates that this community's population is 29% minority, with a 2010 median household income of \$51,096 (compared to \$62,072 for the state of Massachusetts as a whole). 7% of residents in this neighborhood have no high school diploma, and 1.4% have no English language ability. This EJ community stretches northward along the Little River to I-495. Immediately south and east of the project site, an additional EJ community is mapped as having both a low-income and high minority population (median household income of \$30,942; 34.85% minority; 30.3% without a high school diploma; and 2.2% of residents with no English language ability).
- Haverhill is the most inland City on the tidally-influenced portion of the Merrimack River. As a gateway city, Haverhill has significant historical importance and its history is closely tied to the Merrimack River, the Little River, and other waterways in the City that provided power and transportation to the City's mills during the industrial revolution. The Little River Dam itself is a relic of the City's industrial legacy. While Haverhill's industry was most commonly associated with shoe production, the Little River Dam was a source of mechanical hydropower to power the adjacent Stevens Mill, which produced woolen textiles. The mill was expanded several times over its history and mechanical hydropower was replaced with hydroelectric power generation. Within the last 40 years that mill ceased to operate and the dam was no longer needed for power generation.

Project Description and Goals:

- The Little River Dam is a run-of-the-river dam located on the Little River, a tributary to the Merrimack River. The Little River Dam is located in a highly developed area in the center of the City of Haverhill, just north of Winter Street (Route 97) and approximately 240 feet west of the intersection with Stevens Street. The dam is immediately adjacent to the Stevens Mill Building (aka Pentucket Mill), the foundation of which is integrated with the dam abutment.

- During the City’s MVP planning process, stakeholders identified areas upstream of the Little River Dam as a particular concern in terms of flooding. The Little River Dam was originally built to power the Stevens Mill, although it has not been used for this purpose for many decades. Future extreme precipitation events brought about by climate change will impact the Little River in the coming years. Estimates developed during the project indicate that peak river flow rates during storm events will be 48% higher 50 years from now than they are currently. This has the potential to increase flood risk at individual properties upstream, even where flooding has not been seen historically. Significantly higher volumes of water during storm events may also result in increased risk of scour and erosion along riverfront properties. It also increases the risk of a catastrophic dam failure, which would result in uncontrolled release of contaminated sediment, debris, and the large volume of impounded water currently held back by the dam. The damages from such a failure could be significant.

- An FY21 MVP Action Grant funded a feasibility study and initial public outreach. From that process, a set of project goals emerged that guided the design and permitting phase:
 - Reduce the risk associated with current and future flooding, particularly in the face of increasingly heavy and intense precipitation events
 - Address historic contamination through a plan for sediment management and disposal
 - Protect infrastructure from scour once the dam is removed
 - Respond to the needs of the adjacent mill owner
 - Respond to the key concerns and desires expressed by neighborhood residents, including:
 - Maintenance of fishing access and fishing quality
 - Maintenance of opportunities for recreational boating
 - Clean up of all debris and trash exposed by the removal of the dam’s impoundment
 - Provide additional river access for the neighborhood, e.g., via a walking trail, fishing platform, and kayak/canoe launch area
 - Improve the connectivity of the neighborhood with existing recreation opportunities at Cashman Park
 - Provide pleasing vistas at the former dam site
 - Enhance fish passage through the river reach
 - Promote biodiversity via habitat restoration and re-vegetation of the river corridor with native species
 - Improve water quality and alleviate conditions conducive to harmful algal blooms

- The project has met all of the goals set forth in the City’s grant application in terms of:
 - Employing nature-based solutions
 - 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 Little River Dam will restore the natural flow of the river, removing the existing impoundment, and thereby lower both current and projected future flood elevations in the adjacent EJ neighborhood. Removing the dam also removes a barrier in the river which currently impedes the passage of fish and many other aquatic organisms and would open up an approximately 4-mile stretch of river between the Merrimack and the New Hampshire state line.
 - Improving equitable outcomes for, and fostering strong partnerships with, EJ and other Climate Vulnerable Populations
 - The City of Haverhill employed a Community Liaison model for this project and has built a successful partnership that has been very effective in reaching residents, homeowners, and business owners in the impacted EJ neighborhood, as well as other community stakeholders. The outreach efforts by the Community Liaison have proved invaluable in connecting directly with residents, generating participation and feedback from the public, and providing sufficient support time to listen to and coordinate responses to individuals’ concerns and questions. Feedback from the community was directly incorporated into the concept design at all stages, and helped shape the project plans that were advanced to permitting, and the City looks forward to continued dialog with residents as the project progresses.
 - Providing regional benefits
 - Given the Little River Dam’s central location in the city, close to City Hall, benefits of the project will extend to larger segments of the population outside of the adjacent EJ community. The concept design includes increased walkable connectivity to existing recreational resources, including an access route and walkway along the river that would connect between Cashman Park and the Stevens Mill/Winter Street area. The concept also includes an overlook platform and pocket park at Winter Street to welcome City residents and visitors into the site. Tree planting along the river edge would also increase shade and cooling for the river and adjacent properties.
 - Removal of the dam will remove the risk of catastrophic flooding should the dam fail, and will open up connectivity to a significant length of upstream habitat all the way to the New Hampshire State line. The removal of the Little River Dam would therefore eliminate the first barrier to anadromous fish passage on the Little River and extend available spawning habitat an additional 4 river miles upstream.

- Implementing the public involvement and community engagement plan set forth in your application
 - The principal engagement elements of the project centered on additional community forums (building on the outreach conducted during FY21), one of which was held as a remote session in both English and Spanish, and one which was held on-site at Cashman Park as a drop-in, open house style event during consecutive sessions. Both were well-attended and the open house offered opportunities for one-on-one discussion with abutters and other interested residents.
 - The Community Liaisons developed flyers and did extensive on-the-ground outreach at local businesses and events to let stakeholders know about the upcoming events. The Liaisons also orchestrated translation of the print materials and presentations into Spanish and arranged live interpretation for the Spanish language events. This was an exciting precedent for the City in terms of equitable engagement.
- Finishing the project on time
 - All project deliverables were completed on time and on budget.

Results and Deliverables:

- Project Results
 - The design plans were completed as planned in June 2022 and have since been used to advance permitting processes.
 - MEPA review was completed, including submission and review of an Expanded Environmental Notification Form and a Single Environmental Impact Report. Both Secretary's Certificates have been issued as of April, 2023.
 - A Chapter 253 Dam Safety Permit was issued April 18, 2023.
 - Review of other required permits is in progress, with permits expected later this year
 - 401 WQC
 - MA Wetlands Protection Act NOI
 - USACE Section 404 Pre-Construction Notification
 - MA Chapter 91 Waterways License and Dredge Permit
 - Coordination with MBTA is ongoing and moving forward for the potential construction of a connector path along the east side of Little River
Continued successful engagement by local neighborhood residents, as evidenced by participation in community meetings and public comment opportunities.
- Key project deliverables include the design plans and permit documents, which contain detailed descriptions of the project and proposed conditions, as well as restoration outcomes and monitoring goals.

Lessons Learned:

- The Community Liaison model works. Having dedicated project staff with existing connections and trusted relationships in the community is key to reaching people, being responsive to questions and feedback, and making residents feel genuinely heard throughout the project. Our Community Liaisons also took on the role of making sure information about the project was presented in a way that was easy to understand and accessible for a wide audience. This was not only in terms of spoken and written languages, but in targeting the level of language used (especially scientific and acronym-filled information) to as broad an audience as possible.
- When faced with change, many people tend to assume that the existing conditions (if somewhat positive and pleasant) are the natural state and future conditions can be difficult to envision or imagine, resulting in opposition to the proposed change no matter what the potential benefits. Engaging residents early and often was key to building rapport and demonstrating that the City was serious about responding to residents' concerns and making the project beneficial and successful for everyone.
- Tips for other communities approaching this type of project:
 - Be thorough in presenting the history of the project area under study. Most often the landscape has been heavily altered from its original natural condition – use historic maps and photos to show how this is a man-made or man-affected landscape that may not be suitable for its current use/configuration.
 - Create clear and compelling graphic representations of the potential future to help people see what is meant by proposed improvements and use these as a jumping off point for further discussion and refinement.
 - Provide clear and measurable benefits for the potential future condition. Residents had detailed and thoughtful questions and wanted to know in detail what future conditions of the river would entail, including water depths, sediment disposal, riverbank vegetation and dimensions, and measurable water quality forecasts. Presenting these details clearly helps move the discussion from “do this because we say it’s a good idea” to “here are the 6 ways this will benefit the community, the ecosystem and the City’s overall resilience.”

Partners and Other Support:

- City of Haverhill Project Team
 - Mike Stankovich, Former DPW Director (FY23)
 - Allison Heartquist, Mayor’s Chief of Staff (FY22)
 - John Pettis, City Engineer
 - Mayor James Fiorentini
 - Rob Moore, Conservation Agent
 - Bill Cox, City Solicitor
 - Andrew Herlihy, Community Development
 - Orlando Pacheco, Energy Consultant

As the project leads for the City, Allison Heartquist and Mike Stankovich provided project management, grant oversight and administration, and leadership of the project team and coordination of the work done by the project's community liaisons. John Pettis and Mike Stankovich also led information gathering with respect to utilities, existing plans and planning related to the improvements at Cashman Park and elsewhere and coordinated with abutters where project access is proposed. Mike Stankovich has also been leading coordination with MBTA regarding the potential formation of a trail along the east side of the restored river corridor. Rob Moore has been organizing volunteers to monitor fish at the base of the dam during spawning season. Bill Cox and Orlando Pacheco are heavily involved in coordination with the existing owner and future developer of the adjacent mill and are involved in ownership transfer arrangements and gaining an understanding of title rights within the remainder of the impoundment. The Mayor is actively involved in all of these discussions and a very active member of the team in terms of planning, leadership, and coordination of ownership arrangements and funding support.

- Fuss & O'Neill – Engineering Consultant Team

Julianne Busa, PhD, Project Manager
Phil Moreschi, PE, Water Resources Engineer
Sean Arruda, PE, Hydraulic and Hydrologic modeling
Greg Wilson, PLA, Landscape Architect
April Doroski, PWS, Permitting Lead
Claire Nauman, Climate Resilience Engineer

- Community Liaisons – coordination of outreach, public information sessions, and media coverage

Christine Soundara
John Cuneo

Project Photos:

- See attached photo of existing conditions and rendering of proposed conditions. Photo credit: Fuss & O'Neill.