

Municipal Vulnerability Preparedness Program Action Grant Case Study

Municipality: Regional Project – Town of Lakeville (lead applicant), alongside the Towns of Middleborough, Rochester and Freetown, and the Cities of New Bedford and Taunton

Project Title: Assawompset Ponds Complex Watershed Management and Climate Action Plan

Award Year (FY): FY21

Grant Award: \$93,236

Match: \$32,500

Match Source: The Nature Conservancy (TNC) and Taunton River Stewardship Council (TRSC)

One or Two Year Project: Two

Municipal Department Leading Project: Conservation Commission

Project Website URL: <https://srpedd.org/environment/watershed-planning/apc-nemasket-river-watershed-management-and-climate-action-plan/>

Community Overview:

The Assawompset Pond Complex (APC) and Nemasket River play numerous important roles for both the natural ecology and the people of southeastern Massachusetts. Six watershed stakeholder municipalities are most directly affected by conditions of the APC and Nemasket River. The Ponds are the public drinking water supply for approximately 250,000 people in the cities of New Bedford (population 101,079), Taunton (pop. 57,327), and portions of other nearby towns.

The APC is the state's largest natural pond system. It is a scenic residential and recreation area for four pondside communities, spanning the towns of Lakeville (lead MVP Regional Action Grant applicant; pop. 11,523), Middleborough (pop. 24,245), Rochester (pop. 5,717) and Freetown (pop. 9,206). Water flows out of the APC through one principal outlet - the Nemasket River. The Nemasket is the longest herring run in the state of Massachusetts, with fish making an annual trip from Narragansett Bay, up the Taunton and Nemasket Rivers into their breeding grounds at the Ponds. It is a significant habitat area for fish, birds, plant and mammal species.

In the six watershed stakeholder municipalities there are Environmental Justice (EJ) populations in three communities. Middleborough contains one EJ block group that qualifies on the basis of income. Taunton contains 18 EJ block groups; four that qualify on the basis of income, six that qualify on the basis of minority, and eight that qualify on the basis of both income and minority. New Bedford contains 69 EJ block groups; eight that qualify on the basis of income, 13 that qualify on the basis of minority, and 36 that qualify on the basis of both income and minority, and 12 that qualify on the basis of income, minority and English isolation. Developing the Plan required the project team to center the needs of the Environmental Justice populations that are part of the six stakeholder communities, particularly in ensuring that any suggested management actions do not compromise the ability of the cities of Taunton and New Bedford to supply vital, high quality drinking water to residents. The Watershed is situated on the ancestral unceded lands of the Massa-adchu-es-et (Massachusetts), Wôpanâak (Wampanoag) and Pauquunaukit (Pokanoket).

Project Description and Goals:

The purpose this MVP Action Grant project was to develop a *Watershed Management and Climate Action Plan for the Assawompset Ponds Complex (APC) and Nemasket River*. The project by its nature took a comprehensive view of the 44,900-acre combined APC-Nemasket River watershed. While the Nemasket and APC are precious in so many ways for drinking water, habitat, and residential communities, there are a number of existing management challenges. These include (to name a few):

- Holding enough water back in the Ponds via the antiquated APC dam to ensure adequate public water supply;
- An inability to release water from the Ponds into the Nemasket River during periods of high water due to decades of sedimentation and shoaling, causing a backup of water and flooding for pondside communities;
- The prevalence of invasive weeds and sediment in Long Pond and the Nemasket River, obstructing flow, recreation, aquatic habitat and fish passage;
- Finding alternatives to aquatic herbicides for the removal of invasive weeds so as not to introduce undesirable chemicals into the water supply treatment train;
- Keeping recreational users outside of restricted areas;
- Considering existing and future land development, and land uses around the ponds that contribute excessive nutrients into the system;
- Infrastructure pinch points that contribute to stalled river flow, sedimentation, and that present fish passage barriers;
- The precarity that comes during periods of drought for drinking water suppliers; and
- Communication gaps between the APC Management Team members, water suppliers and local residents around the maintenance of goal pond water levels.

In some management areas, activity that furthers one goal can pose a challenge or present a negative outcome for other aspects of the watershed. Management actions included in the Plan had to balance five key tensions; water supply management and flood mitigation, land development and flood hazard mitigation, land development and water quality/ecology, water supply management and ecology, and recreation and ecology.

Without some effort toward mitigation, these challenges would only deepen over the Plan's 30-year horizon as climate change brings about more extremes periods of drought and periods of intense rainfall, as the ResilientMA Taunton River Basin climate model predicts. The project used the ResilientMA model predictions as benchmarks against which to consider the scale and extend of Plan recommendations.

Five principal tasks were established in order to accomplish a Plan that would build off of existing data and be reflective of local public and other stakeholder ideas, insights, and desired future vision of the watershed.

In **Task 1**, the project consultant team convened a project Steering Committee and held bi-monthly meetings (11 meetings in total). The core of the Committee was made up of the long-standing APC Management Team, and was expanded both at the outset and throughout the project to include those stakeholders not present on the Management Team.

In **Task 2**, the project team organized and held a series of six public topical workshops that rotated location throughout the watershed region. The COVID-19 pandemic significantly impacted traditional public meeting approaches. To overcome these issues, for five of these meetings, the project team held in-person outdoor meetings and simultaneous (but separate) online sessions over Zoom. The team also relied on the project webpage to communicate progress, engagement activities, and next steps, and developed a contact list for periodic updates and announcements over the course of the meetings, and developed a unique watershed management tour, an animated visual aid to help explain watershed dynamics.

In **Task 3**, the project team floodplain areas, habitat information, land use/land cover, land ownership, and significant natural resource inventory elements for the watershed. A specific portion of the data collection effort will be aimed at gathering estimated climate change impacts on water and precipitation levels, habitat types, and other conditions in the APC. Data summaries will be brought into the content of public events, as well as the existing conditions and anticipated future climate conditions sections of the plan. Existing conditions data was compiled into topical white papers.

In **Task 4**, the project team undertook a dedicated effort of bylaw review in the pondside communities, promoting nature-based solutions to watershed management that rely on an understanding the local regulatory frameworks that either incentivize or prohibit low impact development strategies. Based on our understanding of the watershed and topical expertise in NBS, the project team selected the three most impactful regulatory mechanisms for improving conditions related to one of the major plan themes (flooding, water quality, etc.), and audited pondside communities for the presence of supportive mechanisms for these approaches in local regulations. A regional comparative matrix was prepared and presented as part of each public workshop, and Plan recommendations sought opportunities to align regulatory approaches across the region that support management plan goals.

In **Task 5**, the project team wrote the Plan document, bringing together existing conditions and climate change data, public input, and Steering Committee prioritization of management actions. The final document has 8 sections: (1) introduction, (2) guiding vision, (3) watershed climate conditions, (4) topical areas of concern, (5) key watershed management tensions, (6) management action recommendations, (7) conclusions and next steps, and (8) appendices. There are 90 management actions in Section 6 addressing 8 major goals, but 12 of these in particular were identified as the top next steps. This 12-point plan was presented to and

endorsed by the Lakeville and Middleborough Select Boards, where a majority of the work will take place.

The project met several programmatic MVP goals for nature-based solutions, equitable outcomes and partnerships with EJ communities, regional benefits, and public engagement. The management actions are presented in tables with narrative support for further explanation. The table includes a column indicating which actions are **nature-based solutions**, which represent 29 of the 90 management actions presented in the final Plan (or 32%). As a **regional effort**, this plan will further the implementation of NBS and collaborative engagement on multiple layers of watershed issues, including the protection of drinking water quality, flood water control, recreational access, and other co-benefits to benefit a significant portion of the population in southeastern Massachusetts

Plan action items are aimed at increasing the climate resilience of several **EJ populations** throughout the region, with recommendations that support EJ populations within the watershed area itself, where direct flooding concerns are present, versus EJ populations which utilize the APC system for drinking water supply. Through the project Steering Committee, the New Bedford and Taunton water suppliers advocated for the needs of EJ communities in their service area. Partnerships were strengthened with conversations at Steering Committee and public meetings that highlighted the contributions that all parties, pondside and drinking water communities alike, are making toward watershed health and stewardship. The original **public engagement plan** set forth in the MVP application was ambitious, and our team largely accomplished our goals for holding six, rotating, in-person meetings that took COVID precautions into consideration, and offered for five of these meetings, an online digital session. We translated public workshop advertisements into Spanish and Portuguese, and reached out to local media outlets to describe the project and public engagement program. The digital watershed tour that emerged from year one work is a particular accomplishment of this process, with clear, locally-driven examples and information for the public on watershed dynamics, and the connections between individual household and community actions on water quality, flooding, and other watershed aspects.

The project was completed in a timely manner, though not by June 30, 2023 as originally anticipated. The complete draft Plan was completed for the final “meet-your-plan” public open house on July 14, 2022; feedback received at this session and via email was then incorporated into the final Plan document, completed and posted on August 1, 2022.

Results and Deliverables:

1	APC-Nemasket Watershed Management and Climate Action Plan.	LINK TO PLAN.
90	Watershed management and climate resilience recommended action items.	LINK TO SUMMARY OF ACTION ITEMS.

1	Prioritized 12-Point Plan for next steps, of which 6 action items have already been advanced to initial implementation.	LINK TO 12-POINT PLAN WITH PROJECT STATUS.
8	Topical Research White Papers completed.	LINK TO WHITE PAPERS.
6	In-person public meetings held, with a presentation and engagement activity designed for each. Meeting attendance ranged from three to 21 attendees.	LINK TO PUBLIC ENGAGEMENT MATERIALS, DOCS, AND SUMMARIES.
5	Online public meetings held, utilizing the same materials design for the in-person session.	<i>^^ included in link above.</i>
4	Pop-up tablings at regularly scheduled community events.	<i>^^ included in link above.</i>
8	Digital watershed tour animated videos produced.	LINK TO VIDEOS.
1	Project webpage.	LINK TO WEBPAGE.
20	Bylaws/natural resource best practices evaluated in each of 4 pondside communities.	LINK TO BYLAW REVIEW MATERIALS.
11	Steering Committee meetings held, with a presentation created for each and periodic specific workshop activities.	LINK TO STEERING COMMITTEE MATERIALS, DOCS, AND NOTES.

Lessons Learned:

Three Key Technical Lessons Learned

1. The APC Dam is not the driving functional force during periods of climate extremes such as drought (when the water pulls back from the dam, leaving the fish ladder inaccessible) or during periods of high water, when sedimentation prevents water from flowing into and through the Nemasket. However, water suppliers do keep water back in anticipation of drought.
2. Ecoharvesting (i.e. mechanical) weed pull technology may be the most feasible option for invasive weed removal in this context – herbicides are problematic for the water supply in this system.
3. Much is still yet to be understood or viable in the area of property buy-outs to support climate resilience. When mentioned, many people instinctively associate voluntary buy-out programs with eminent-domain type of property takings. This option for flood hazard mitigation is not yet especially viable in this region. More immediate priorities for flood control are the reconstruction or removal of contributing problematic infrastructure, and channel restoration to restore the flow capacity of the Nemasket River.

Three Key Process Lessons Learned

1. For public meetings: Arranging formal child care for meetings was not practical for our process; trained educators or similar were difficult to come by and parents want their children within visual range. It was far easier and as effective to advertise the meetings not as providing childcare, but as child-friendly, and to bring along a coloring or similar activity for children to participate in (for those too young to participate in the discussion directly). Outdoor public meetings are possible to arrange, but require careful planning in terms of rain and weather protection, and lighting (timing with sundown).
2. Animaker was a great, relatively accessible for new users, tool for developing the animated digital watershed tour videos.
3. Having a set of clear next step priority action items was key. Developing the 12-point plan on top of the set of management actions contained in the plan has given stakeholders a focus, made implementation funding decisions clearer with solid backing, and is keeping the project stakeholder group together in project-specific sub-groups.

Other communities can best learn from our project and process by reviewing the materials and project webpage in the materials linked above. Please also reach out to Helen Zincavage (hzincavage@srpedd.org), Danica Belknap (dbelknap@srpedd.org), or Bill Napolitano (bnap@srpedd.org) at SRPEDD directly with questions, as well as to Nancy Yeatts, project manager for Lakeville, the lead town applicant, via contacting the Lakeville Conservation Commission.

Partners and Other Support:

PROJECT STEERING COMMITTEE	
Name	Affiliation
Michael Arruda	Water Division - Taunton MA
Tom Barron	Middleboro-Lakeville Herring Commission
Kate Bentsen	Mass Division of Ecological Services
Aaron Best	Massachusetts Department of Fish & Game
Patricia Cassidy	Town of Middleborough Conservation Agent
Dave Cavanaugh	Middleboro-Lakeville Herring Commission
Victoria D'Antoni	Freetown Conservation Commission Senior Clerk
Pete DeFusco	Resident of Long Pond
Phillip Duarte	Taunton City Council
Nancy Durfee	Rochester Town Planner
Lia Fabian	Lakeville Select Board
Laurel Farinon	Town of Rochester Conservation Agent
Maureen Flanagan	District Legislative Aide, Senator Michael Rodrigues
Ymane Galotti	New Bedford Superintendent of Water
Jonathan Hobill	Dept. Of Environmental Protection
Kris Houle	Mass Division of Ecological Services
Patti Kellogg	Mass. Dept of Water Resources

Merilee Kelly	Town of Rochester Conservation Agent
Bren Ladino	Long Pond Association
Joshua Newhall	Legislative Aide, Office of Representative Norman Orrall
Michele Paul	City of New Bedford Director of Resilience and Environmental Stewardship
Chance Perks	City of New Bedford Conservation Agent
Joan Pierce	Mass Wildlife – Dept. of Fish and Game Land Agent
Jodi Raposa	Water Division – Taunton MA
Courtney Rocha	MVP Coordinator
Caitlin Rowley	District Director, Senator Michael Rodrigues
Gary Santos	New Bedford Dept. Infrastructure
Mike Schroeder	Lakeville Open Space Committee
William Schwartz	Dept. Of Environmental Protection
Kate Sousa	Taunton Water Supply
Lu-Ann Souza	Freetown, Executive Assistant to Town Administrator
Nancy Yeatts	APC Ranger
Martha Worley	Resident of Long Pond
PROJECT CONSULTING TEAM	
Ellie Baker	Horsley Witten Group
Danica Belknap	Southeastern Regional Planning and Economic Development District
Jenna Bernabe	Horsley Witten Group
Nicholas Cohen	Horsley Witten Group
Marea Gabriel	The Nature Conservancy
Brian Graves	Horsley Witten Group
Kellie King	Horsley Witten Group
Benjamin Myers	Southeastern Regional Planning and Economic Development District
Bill Napolitano	Southeastern Regional Planning and Economic Development District
Jonas Procton	Horsley Witten Group
Kalaina Thorne	The Nature Conservancy
Eric Walberg	Walberg Consulting
Helen Zincavage	Southeastern Regional Planning and Economic Development District

Project Photos:



Outdoor public meeting in Lakeville at Ted Williams Camp in 2021.

Goal 3: Improve Water Quality

SUMMARY: Water quality throughout the watershed remains stable. While water quality monitoring exists, it is not sufficient to protect water quality. Development and implementation of a watershed water quality monitoring plan and implementing a water quality monitoring program throughout the watershed, both steps are needed to ensure public drinking water flows and improve the health of the watershed.

Action Item	Responsible Person/Agency	Timeline	Responsible Party	Priority	Tracking	Sub-Objectives
Objective A: Eliminate potential contaminants at the source using structural treatment and regulation.						
A-1 Explore grant and bond funding for septic system upgrades from conventional to dual-chamber systems.	City of Dallas, Public Works, Health, Planning	Ongoing	Local staff and bond revenue (2020) or grant revenue (2020) or grant revenue (2020) or grant revenue (2020)	1 point	✓	
A-2 Adopt uniform local septic beliefs that go beyond minimum TDS regulations to reduce nutrient releases from septic systems contaminating groundwater.	Planning & Bond, Dept. of Health, Conservation	2 years	Local staff and bond revenue (2020) or grant revenue (2020) or grant revenue (2020) or grant revenue (2020)	1 point	✓	
Objective B: Preserve and improve the riparian of the watershed.						
B-1 Restore buffers on lands adjacent to waterways and wetlands to enhance water filtration and purification. Where these buffers are currently in place, retain and enhance "native riparian" on riparian lands.	City of Dallas, Public Works, Health, Planning	2 years	Local staff and bond revenue (2020) or grant revenue (2020) or grant revenue (2020) or grant revenue (2020)	1 point	✓	
B-2 Adopt riparian management practices that compromise the integrity of buffer areas, and establish "native riparian" on riparian lands surrounding water bodies and wetlands.	City of Dallas, Public Works, Health, Planning	2 years	Local staff and bond revenue (2020) or grant revenue (2020) or grant revenue (2020) or grant revenue (2020)	1 point	✓	
B-3 Adopt local wetland buffers that protect wetlands and their buffers for summertime flooding.	City of Dallas, Public Works, Health, Planning	2 years	Local staff and bond revenue (2020) or grant revenue (2020) or grant revenue (2020) or grant revenue (2020)	1 point	✓	
B-4 Install permeable reactive barriers to filter nutrients from groundwater, as appropriate.	City of Dallas, Public Works, Health, Planning	2 years	Local staff and bond revenue (2020) or grant revenue (2020) or grant revenue (2020) or grant revenue (2020)	1 point	✓	
B-5 Install more water-quality monitoring stations and develop a volunteer network dedicated to routine water quality sampling.	City of Dallas, Public Works, Health, Planning	2 years	Local staff and bond revenue (2020) or grant revenue (2020) or grant revenue (2020) or grant revenue (2020)	1 point	✓	
B-6 Restore excessive sedimentation by removing sandbars near water crossing infrastructure and installing drainage culverts where needed.	City of Dallas, Public Works, Health, Planning	2 years	Local staff and bond revenue (2020) or grant revenue (2020) or grant revenue (2020) or grant revenue (2020)	1 point	✓	
Objective C: Enhance protection on riparian lands that can be used to improve water quality.						
C-1 Enhance riparian protection on riparian lands that can be used to improve water quality.	City of Dallas, Public Works, Health, Planning	2 years	Local staff and bond revenue (2020) or grant revenue (2020) or grant revenue (2020) or grant revenue (2020)	1 point	✓	
C-2 Implement and spread water quality protection best practices (particularly on riparian lands to storage and infiltration) used by municipal on public lands.	City of Dallas, Public Works, Health, Planning	2 years	Local staff and bond revenue (2020) or grant revenue (2020) or grant revenue (2020) or grant revenue (2020)	1 point	✓	

Watershed boundaries should be included, used, and maintained, in order to protect public health and safety. Watershed boundaries should be included, used, and maintained, in order to protect public health and safety.

Reference Terms:

Permeable Reactive Barriers (PRBs)

Icon Legend:

 Drinking Water Supply

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Action Item Prioritization Session (above)

Drone shots of the APC/Nemasket (below)



