

Municipal Vulnerability Preparedness Program Action Grant Case Study

Municipality: Town of Ayer, Massachusetts

Project Title: Ayer-Devens Main Streets Regional Pocket Forest Pilot Project

Award Year (FY): FY23

Grant Award: \$ 282,624.00

Match: \$92,045.00

Match Source: Municipal In-Kind & Volunteer Time, Municipal Cash – including Town of Ayer DPW Time & Materials, Private BSC Group \$3,500 Contribution of Labor.

One or Two Year Project: One

Municipal Department Leading Project: Ayer Office of Community & Economic Development

Project Website URL: <https://climateresilient.wixsite.com/ayerdevens>

Community Overview:

What is the population size of your community and where is it located?

Population - Town of Ayer: Approx. 8,400

Location – Town of Ayer: Northern Middlesex County, North Central Massachusetts. Town of Groton to the north, Town of Harvard to the south, Town of Littleton to the east, and Town of Shirley to the west.

Do you have any [Environmental Justice](#) or other Climate Vulnerable communities?

EJ Community: Yes

Other unique traits of your municipality like who the top employers are, geography, history, etc.

Top Employers: Nashoba Valley Medical Center, Catania Oils, Nasoya, EPIC Enterprises, Ayer/Shirley Regional School District, Main Street Bank.

Project Description and Goals:

Where was the project located?

0 Main Street, Ayer MA; municipally-owned greenspace parcel .44 acres in size located upon East Main Street at the Main Street Railroad Overhead Bridge.

What climate change impacts did the project address?

Excessive & adverse heat island impact, poor/unhealthy air quality from abutting heavy freight railroad yard & heavy trucking route, municipal aquifer protection, and loss of natural habitat and species within Ayer's EJ Grove Pond Neighborhood.

What were the specific goals and tasks of the project as stated in your application?

Stated Goals:

The proposed project takes action on community priorities for building climate resilience in Ayer and Devens by planning, designing, and piloting pocket forests for

strategically valuable locations to better connect people with nature and reduce the vulnerability and impacts of climate change by reducing urban heat-island impacts, improving air quality in Environmental Justice neighborhoods, and reducing flooding.

To ensure project outcomes are equitable and lead to long-term benefits for the communities, the process will draw upon scientific data, local expertise and lived experience to help make sure the pocket forests are in the right locations and meeting real community needs.

This project will also seed the skills and knowledge necessary for community members to plant additional pocket forests by producing hands-on experiences and educational materials for multiple audiences. This regional project will build green infrastructure connections as well as social connections between people and places in Devens and Ayer.

The Pocket Forest project reflects priorities established in the approved MVP plans for both Ayer and Devens approved report (extreme heat, extreme precipitation and flooding, severe storms, and wildland fires) and will improve air quality, reduce flooding, and help regulate micro-climates in urban areas that are home to environmental justice populations.

Our project team ran the proposed project through the RMA Climate Resilience Standards Tool and scored HIGH for ecosystem benefits, MODERATE EXPOSURE for Extreme Precipitation – Urban Flooding, HIGH EXPOSURE for Extreme Precipitation – Riverine Flooding, and HIGH EXPOSURE for Extreme Heat.

The project will respond to these exposures by strategically locating the pocket forests and selecting appropriate plant species that will maximize carbon sequestration, absorption of particulate matter, nitrogen, sulfur, and ozone.

The pocket forests, as a green infrastructure tool, will be located and designed to reduce impervious surface area, naturally filter stormwater runoff, and aid in reducing peak flows, leading to better micro-climate conditions, improved water quality, and reduced flooding.

Additional Project Goals: The design and structure of these pocket forests will facilitate many benefits to the natural environment as well by restoring ecological diversity.

By strategically locating these pocket forests, the communities of Devens and Ayer will also facilitate increased wildlife habitat (including pollinator habitat) as these pockets become another tool in our green infrastructure toolbox that will better connect important natural communities within Ayer and Devens.

In addition, these pocket forests will be used as an education, community involvement, and support tool as we partner with local agencies such as the Nashua

River Watershed Association, Ayer Affordable Housing Committee, Devens Enterprise Commission, Ayer Conservation Commission, People of Ayer Concerned for the Environment, the United Native American Cultural Center, local schools, community officials and boards/commissions in Ayer and Devens to educate and raise awareness of the multiple environmental, economic, and social benefits that these pocket forests will facilitate.

Pocket forests located in and around existing recreational areas can also help enhance recreation activities by providing climactic relief for people on high heat index days and improve social cohesion, as well as mental and physical health at the same time.

Most importantly, this project will help improve the adaptability and resilience of our communities as climate change continues to bring more frequent and intense storm events, as well as prolonged heat and drought conditions. Without this project, environmental justice populations in our region will continue to experience disproportionate impacts of climate change: flooding will be more prevalent, as will poor-air quality and increased urban heat island impacts, as well as increased heating and cooling costs.

Stated Tasks:

Task 1: Project Kick-Off, Management, & Reporting

Sub-Task 1.1 Project Team Kick-off Meeting

Sub-Task 1.2 Monthly Progress Reports

Sub-Task 1.3 BSC Group Project Management & Coordination

Sub-Task 1.4 Biweekly Consultant Team Coordination Zoom Meetings

Sub-Task 1.5 Monthly Project Team (including municipalities) Coordination Zoom Meetings

Sub-Task 1.6 Project Case Study

Task 2: Public Involvement and Community Engagement in FY23

Sub-Task 2.1 - Community Discovery

Sub-Task 2.2 - Planning for Pocket Forests/Community Kickoff Meeting-Forum

Sub-Task 2.3 – Youth and Student Involvement/Activities

Sub-Task 2.4 – Pocket Forest Planning Task Group Walking Tours

Sub-Task 2.5 FY23/24 Pocket Forest Planning Task Group Meeting: Pocket Forest Design Charette

Sub-Task 2.6 FY23/24 Pocket Forest Planning Task Group Wrap-up

Sub-Task 2.7 – Pilot Pocket Forest Planting Day Coordination and Outreach

Task 3: Pilot Pocket Forest Design & Build

Sub-Task 3.1 Pilot Pocket Forest Design Development

Sub-Task 3.2 Pilot Pocket Forest Establishment and Maintenance Guide Preparation

Sub-Task 3.3 Site Preparation

Sub-Task 3.4 Pilot Pocket Forest Site Preparation Construction Administration

Sub-Task 3.5 Pilot Pocket Forest Site Preparation Ayer DPW Build

Sub-Task 3.6 Material Sourcing

Sub-Task 3.7 Community Build/Planting Day Administration
Sub-Task 3.8 Community Build/Planting Day
Sub-Task 3.9 Establishment Training
Sub-Task 3.10 Citizen Science/Community Volunteer Training and Recording
Sub-Task 3.11 Interpretive Signage Installation
Sub-Task 3.12 Community Staff Establishment
Sub-Task 3.13 Citizen Science/Community Volunteer Monitoring
Task 4 – Permitting for FY24/25 Pocket Forest Sites
Sub-Task 4.1 -Desktop Permitting Assessment
Sub-Task 4.2 – Permitting Assessment Site Visits
Sub-Task 4.3 – Permit Application/Notification Preparation
Sub-Task 4.4 – Permit Reporting
Task 5: Public Engagement & Educational Materials Development
Sub-Task 5.1 Project Website
Sub-Task 5.2 Project Data Viewer Development
Sub-Task 5.3 Educational Information & Materials

Did your project meet the goals set forth in your application in terms of:

- Employing nature-based solutions: Response – Yes.
- Improving equitable outcomes for and fostering strong partnerships with EJ and other Climate Vulnerable Populations: Response – Yes.
- Providing regional benefits: Response – Yes.
- Implementing the public involvement and community engagement plan set forth in your application: Response – Yes.
- Finishing the project on time: Response – Yes.

Results and Deliverables:

- Describe and quantify (where possible) project results. Report-out on the metrics outlined in your application.
 - .44 acres of barren land located on East Main Street at the nexus of the heavy freight railroad line and the heavy trucking route at the Downtown Ayer Main Street Overhead Railroad Bridge, embedded within Ayer’s Grove Pond (EJ) neighborhood – has been transformed into a diverse, native, cooling, healthful, and life-giving natural habitat.
 - In excess of (100) one-hundred local/regional residents (adults/teens/children) volunteered their time and hard-labor for the April 29, 2023 Ayer Pilot Pocket Forest Planting Day.
 - Approx. 140 indigenous trees, comprising thirty (30) different species, were planted in the .44-acre site.
 - Twelve (12) different species of indigenous shrubs were planted.
 - Nine (9) species of indigenous ground cover plants were planted.

- In excess of nine (9) species of nurse seed cover-crop and seed-pockets were planted.
- Four (4) types of beneficial fungi were introduced into the planting site.
- In total approx. (350) three hundred and fifty indigenous plants were planted at the Ayer Pilot Pocket Forest Project Site on East Main Street by the hands of over (100) one-hundred community residents.
- Provide a brief summary of project deliverables with web links, if available.
 - Project Website Development & Provision
 - Project Data Viewer Tool
 - Ayer/Devens Community Project Kick-Off Public Forum at Ayer Town Hall (6:00PM, Wednesday, November 16, 2022).
 - Ayer/Devens Pocket Forest Site Selection Public Walking Tours – Devens Sites Tour (10:00AM Saturday, December 10, 2022 & Ayer Sites Tour 10:00AM Thursday, January 5, 2023).
 - Ayer Pilot Pocket Forest Project Public Design Charrette at St. Andrew’s Church Hall (10:00AM Saturday, March 4, 2023).
 - Ayer Pilot Pocket Forest Project East Main Street Site Preparation (February-April 2023).
 - Permitting Assessments for proposed FY24/25 Ayer & Devens Pocket Forest Projects (February-May 2023).
 - Ayer Pilot Pocket Forest Public Foraging Day Event at Ayer/Shirley Regional High School Woodland (9:00AM Saturday, March 25, 2023).
 - Forests Educational Information & Materials including formulation and production of “How to Pocket Forest Guide” & “Pocket Forest Maintenance Guide”.
 - Ayer Pilot Pocket Forest Project Community Planting Day Event at East Main Street Site (10:00AM Saturday, April 29, 2023).
 - Ayer Pilot Pocket Forest Project Team Establishment Training Sessions (May-June 2023)
 - Ayer Pilot Pocket Forest Community/Public/Youth Establishment & Monitoring Training Event on Site (6:00PM Wednesday, June 28, 2023)

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.

The “Project” served as a vessel (of dynamic community-based teaching and learning) - carrying a large, diverse, and engaged group of community members, civic stakeholders, and professional project team members together on a year-long voyage to discover, observe, understand, measure, document, monitor, and innovatively mitigate the global, national, regional, local, and neighborhood adverse impacts of climate-change and its impact upon the health, well-being,

and resiliency of the people, wildlife (flora & fauna), land, water bodies and waterways, air quality, and natural/indigenous habitat within the Town of Ayer and the Devens Community.

Lessons Learned include:

The Project resulted in a renewed interest and understanding of the importance of the Town of Ayer Municipal Vulnerability Preparedness Plan adopted in 2020.

Techniques on location, patterns, causes, effects, mapping, and incremental mitigation measures & techniques to diminish Heat Islands in the neighborhoods/districts of the Town of Ayer & Devens Community.

Deeper understanding and knowledge of identifying, mapping, assessing, engaging, empowering, and supporting community members living in Environmental Justice (EJ) neighborhoods/districts of Ayer & Devens.

Heightened community-wide knowledge, awareness, and value of local /regional indigenous plants, shrubs, trees, habitat and wildlife – and their associated importance to a more sustainable and resilient neighborhoods and communities.

The “Ayer-Devens Project” experience provided (our communities) invaluable lessons on how to best structure the exceedingly innovative, engagement-based, and at times potentially complicated, framework to envision, educate, engage, promote, fund, site-identify/select, map, permit, coordinate, schedule, plan, design, formulate, approve, deploy, construct/build/plant, monitor, measure and nurture the creation of a new sustainable Pocket Forest – the best lesson learned are as follows:

- Municipalities should strongly consider and be prepared to provide adequate staffing capacity to effectively administer the demanding schedule, pace, and detail of the project work/deliverables;
- It would benefit the effectiveness of the municipal project partners for the project expert consultants to compose/deploy a “lean core team” working in coordination with the municipal partners.
- Municipal project partners are (should be) best suited and most effective in leading the “community engagement” duties and responsibilities for the “Project”.
- As most departmental/project professionals have come to learn and appreciate – the provision of high-quality, accurate, compelling, and abundant visual and text content for a Project Website is exceedingly demanding and often most challenging to deliver on a daily or weekly basis. Be prepared to dedicate significant amount of staff hours to Website content/updates.
- To respectfully and truly engage (and engage with) the EJ residents of our communities – project team must afford more advance time for outreach and must be dedicated to meeting with the “neighborhood folks” right in their neighborhoods and on their streets. It is the municipal staff that has

the benefit long-term familiarity, relationships, and connectivity with the neighborhoods and most vulnerable residents.

- Engagement, partnership and coordination with the school district, and with the teachers and students, will require a long-term commitment, creative approaches, and a great deal of patience by the core project team – but this is critical to the future success of the project/s.
- What is the best way for other communities to learn from your project/process? By other communities outreaching to the Ayer-Devens Pocket Forest Team members so that through direct dialogue, exchange of information & practical knowledge, provision of content, and most importantly through local project site visitation & guided tours by Ayer-Devens (as our Team did with our visit to the City of Cambridge Miyawaki Forest projects at the start of the Ayer-Devens Project).

Partners and Other Support:

- Include a list of all project partners and describe their role in supporting/assisting in the project.

St. Mary's Church – Ayer

St. Andrew's Episcopal Church – Ayer

Historic Sandy Pond Schoolhouse Association, Inc.

Ayer/Shirley Regional Middle School

Siobhan Pierce – Science Teacher, Ayer/Shirley Middle School

Ayer/Shirley Regional High School

Ayer/Shirley Regional School District

Grow Native Massachusetts, Inc.

PACE (People of Ayer Concerned for the Environment)

Ayer Scout Troop #3 (BSA)

City of Cambridge MA – Supt. of Urban Forestry

MassDevelopment

PACE

Parker Charter School – Devens

Devens Community

Ayer Fire Dept.

Ayer Conservation Commission

Nashua River Watershed Association

Montachusett Regional Planning Commission

Montachusett Area Regional Transit Authority

Ayer Historic Commission

Ayer Library

Devens Enterprise Commission (DEC) Board of Directors

Project Photos:

(See attached Ayer-Devens Pocket Forest Project photographic content).









