



# SWCA Riparian Restoration in High-Priority Sites Across the Commonwealth

3/21/25 | Massachusetts Land Conservation Conference

Sound Science, Creative Solutions.®

#### **Presentation Outline**

Project Overview and Goals
Project Site Selection
Outreach and Next Steps



### **Project Overview and Goals**



### **Riparian Zone Restoration Program**

MA Executive Office of Energy & Environmental Affairs ecological restoration program that plants trees & shrubs in understocked riparian areas in targeted sites throughout Massachusetts





A goal of the Commonwealth is to plant 16,100 new acres of urban and riparian tree cover by 2030.



#### Expanding Nature's Benefits Across the Commonwealth A Vision and Strategy



Massachusetts Clean Energy and Climate Plan for 2025 and 2030

JANUARY 202

June 30, 2022



Massachusetts Iobal Warming Solutions

## **Program Goals**

- Climate resilience
- Provide cooling services
- Extreme Heat Mitigation
- Improve & enhance water quality
- Manage streambank erosion
- Preservation of cold water streams
- Manage stormwater runoff & filter pollution
- Enhance riparian area biodiversity

#### **Initial Program Phase**

- EEA identified riparian planting as a priority in the Resilient Land Initiative and Clean Energy & Climate Plan.
- The Nature Conservancy hires the Land Stewardship Inc, to execute preliminary work.
- LSI created best practice documents, permitting checklist and conducted initial landowner outreach, for future use in Riparian Zone Restoration Program.
- EEA team hires SWCA Consultant team to assist with program implementation.





#### **Current Program**



Mill River, Williamsburg MA, July 2023. Photo credit: Sam Hudzik/NEPM

- EEA provides SWCA Consultants with data and outreach information from initial program phase.
- SWCA expands upon landowner outreach.
- EEA team and SWCA consultants meet bi-weekly to discuss potential projects and move towards program implementation.



#### **Site Evaluation Criteria**

- Coldwater fisheries
- Presence of impervious surfaces
- Identified hotspots
- Conserved land
- Environmental Justice Neighborhoods
- Geographic location





#### Implementation

- Select project locations
- Connect with local governments, non-profit organizations and land trusts to discuss site viability.
- Coordinate site visits
- Design restoration plans
- Organize planting
- Facilitate long term maintenance of new plants and site upkeep.



Mill River, Williamsburg MA, July 2023. Photo credit: Sam Hudzik/NEPM



### **Project Site Selection**



#### **Site Selection Process**

GIS analysis

- Identify specific areas where restoration makes sense
- Statewide analysis
- Site Scoring
  - Environmental GIS data
  - Match project goals
  - Weighted values
- Manual site evaluation
  - Team effort
  - ArcGIS Online
- Selection of high priorities
  - High level review
  - Develop site summaries





Riparian zones
Mowed/cleared/disturbed
Increase flood storage
No loss of important functions
No legal restrictions





#### Riparian Zones

- Within 200 feet of rivers
- GIS data
  - National Hydrography Dataset (Perennial Streams)
  - MassDEP Wetlands (Open Water)









#### Disturbed Areas

- Mowed / cleared
- Select relevant land cover types (e.g., grassland, shrub/scrub, bare land, emergent wetland, pasture/hay)
- GIS data: MassGIS 2016 Land Cover/Land Use









Flood storage enhancement opportunities

- GIS data:
  - FEMA National Flood Hazard Layer (NHFL), plus Q3 zones
  - MassGIS 2016 Land Cover/Land Use (Impervious)





#### Avoid important functions

- Avoid prime farmland/active agriculture
- GIS data:
  - NRCS Prime Farmland Soils
  - MassGIS 2016 Land Cover/Land Use







- Avoid legal restrictions
  - Agricultural Preservation Restrictions (APRs)
  - Utility right-of-ways
  - GIS data:
    - DCR Protected and Recreational OpenSpace
    - MassGIS Property Tax Parcels
    - MassGIS 2016 Land Cover/Land Use







#### Refining

- Consolidate polygons by parcel
- Limit by size

#### Pros and cons

- Available MassGIS data
- Land cover data not current/perfect
- National Hydrography data not perfect
- No digital floodplain data in Franklin County
- Next steps
  - Site scoring
    - Evaluate for applicability
    - Prioritize sites for further evaluation
  - Manual site evaluation





Scoring Criteria	Data	Essential	Desirable	Score
Permanent Protection or Land Trust Management	DCR Protected & Recreational OpenSpace	х		10
Coldwater Fisheries Resources	MADFW Coldwater Fisheries Resources	Х		10
Flood Storage Opportunities	FEMA NHFL and Impervious	Х		10
Heat Hot Spot	EEA Land Surface Temperature	Х		10
Enhance Habitat Connectivity	BioMap3 Critical Natural Landscapes		Х	1
Enhance Flood Resiliency	FEMA NHFL		Х	1
Impaired Waterbody	MassDEP Integrated List of Waters		Х	1
Environmental Justice	EEA Environmental Justice Populations		Х	1
Drinking Water Protection: SWSPA Zone A	MassGIS Surface Water Supply Protection Areas		х	1
Drinking Water Protection: SWSPA Zone B	MassGIS Surface Water Supply Protection Areas		х	1
Drinking water protection: Watersheds containing a Class A water source	MassGIS Surface Water Supply Protection Areas		Х	1
Drinking water protection: Reservoir adjacency	MassGIS Surface Water Supply Protection Areas		Х	1



#### **Site Scoring**

#### Results: 32,746 sites

Score	Number of Sites
0	1,169
1-9	9,109
10-19	14,582
20-29	6,423
30-39	1,356
40-49	107





#### **Manual Site Evalution**

- ArcGIS Online web map
- Team effort
- Eliminate or rank priority
- □ Aerial imagery "truthing"
- Wetlands and uplands
- Topography
- Size thresholds
- Accessibility

SWO

Landowner considerations



#### Manual Site Evaluation: ArcGIS Online

Ð	Laye	ers	1	×
	Q	Search layers		
		Municipality	Þ	
56 56		Potential Sites		
		RFA	9s	
		Perennial Streams	Þ	
600		LSI TNC Site Parcels	Þ	
9	:: >	Previous Sites	¶≥	
	:: >	Scoring Data	d's	
Ľ		Road	90	
		Certified Vernal Pool	90	
88	::	MassDEP Wetland	¢5	
비	::	Agricultural Preservation Restrictions	¢,	
	::	Prime Farmland Soils in Ag	¢,	
	::	Parcels	1s	
		Contours	9s	
0		V Add		





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SWO

Landowner considerations



#### **Selection of High Priorities**

- Adjust site areas
- Confirm essential criteria
- Combine sites on adjacent parcels
- **FEMA FIRMettes**
- Landowner considerations
- Other considerations





_	N		
	Site Number/Name: 1 - I	Millers Meadow	
	Approx. Size: 7 acres		
	Adjacent River: Green Riv	ver	
Landowner(s): Town of Greenfield, 14 Court Square, Greenfield, MA 01301			
	Address(es): 0 Colrain St	treet, Greenfield	
	Parcel Number(s):	48-24-0	
	GIS Data Overlaps:		ACEC
	<b>Coldwater Fisheries</b>		BioMap Critical Natural Landscapes
	Heat Hotspot		EJ Populations
	Impervious		Impaired Waterbodies
	Protected Land		Reservoir Adjacency
			SWP Zone A
			SWP Zone B
			TNC Reforestation Hub
			Watershed with Class A Waters

#### Site Description:

SW

Appears to be in upland. Presence of floodplain unknown (no digital floodplain data in Franklin County). Greening Greenfield has already proposed site restoration and is interested in partnering to augment their current plans. Direct site access from Colrain St. The entire site falls within NHESP Priority Habitat.



#### **Selection of High Priority Sites**

- □ High likelihood of impactful restoration
- Suggested priorities
- Consider site diversity
  - Scoring criteria
  - Geographic
  - Urban rural gradient
- □ Site summaries for EEA
  - Property information
  - Restoration area size
  - Scoring criteria overlaps
  - Site description access, land cover, regulations
  - Project status and updates
  - Restoration cost estimates

### **Landowner Outreach and Next Steps**



#### **Coordination with Pilot Phase**

 Reviewed pilot phase outreach
 Continued with interested parties
 Cross checked with GIS criteria
 Added to list of potential reforestation sites





### **Landowner Outreach**



Outreach via mailed letter to top 4 sites

Municipal landowners Distributed across MA



Followed up by phone

Tried to find department contact



Connect with local stakeholders Success!



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#### **Stakeholder Assistance**

- Local Land Trusts provide background
  - □ Site ownership
  - Site history
- Info not found in desktop analysis
  - "This site is already developing a plan"
  - Our organization works with this landowner to increase capacity"
  - "There's a youth group in town that could help"

Identify direct landowner contact





### **Project Example: Allegro Conservation Restriction**



Site Number/Name: 34 - Kennedy He	ealth Center
Approx. Size: 3 acres (maybe more)	
Adjacent River: Great Brook	
Landowner(s): Recently purchased b	y Greater Worcester Land Trust
Site Address(es): 115 NORTHEAST C	UTOFF, WORCESTER
Parcel Number(s): 252-006-01+02	
GIS Data Overlaps:	BioMap Critical Natural Landscapes
Coldwater Fisheries	EJ Populations
Heat Hotspot	Impaired Waterbodies
Impervious/Flood Zone	Reservoir Adjacency
Protected Land	SWP Zone A
	SWP Zone B
	TNC Reforestation Hub
	Watershed with Class A Waters
Site Description: Located across fro	om Site 10. The Edward M. Kennedy Community Health Center is/was located on the
property. Appears to be upland and e	asily accssed from the parking lots. There may be more space available for restoration
depending on the CR size. Approx. 50	% of the site polygon shown overlaps with 100-year flood zone.



#### Why choose Allegro CR?

- Connection with stakeholder from another site
- Fit 2 essential criteria and 4 desirable criteria
- Landowner interest
- Potential to expand





### **Next Steps: Allegro Conservation Restriction**



### Site visit – identify the factors not shown on GIS

Invasive plants

Trash

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Site access



#### **Discuss Design**

Planting plan Maintenance and monitoring schedule Impervious surface removal



#### **Discuss Implementation**

Stakeholder involvement SWCA involvement



#### **Project Example: Millers Meadow**



Site Number/Name: 1 - Millers Mea		
one number/nume. I interorited	dow	
Approx. Size: 7 acres		
Adjacent River: Green River		
Landowner(s): Town of Greenfield, 1	4 Court Square, Greenfield, MA 01301	
Address(es): 0 Colrain Street, Green	field	
Parcel Number(s): 48-24-0		
Parcel Number(s): 48-24-0		
Parcel Number(s): 48-24-0 GIS Data Overlaps:	ACEC	
Parcel Number(s): 48-24-0 GIS Data Overlaps: Coldwater Fisheries	ACEC BioMap Critical Natural Landscapes	
Parcel Number(s): 48-24-0 GIS Data Overlaps: Coldwater Fisheries Heat Hotspot	ACEC BioMap Critical Natural Landscapes EJ Populations	
Parcel Number(s): 48-24-0 GIS Data Overlaps: Coldwater Fisheries Heat Hotspot Impervious	ACEC BioMap Critical Natural Landscapes EJ Populations Impaired Waterbodies	
Parcel Number(s): 48-24-0 GIS Data Overlaps: Coldwater Fisheries Heat Hotspot Impervious Protected Land	ACEC BioMap Critical Natural Landscapes <b>EJ Populations</b> Impaired Waterbodies Reservoir Adjacency	
Parcel Number(s): 48-24-0 GIS Data Overlaps: Coldwater Fisheries Heat Hotspot Impervious Protected Land	ACEC BioMap Critical Natural Landscapes EJ Populations Impaired Waterbodies Reservoir Adjacency SWP Zone A	
Parcel Number(s): 48-24-0 GIS Data Overlaps: Coldwater Fisheries Heat Hotspot Impervious Protected Land	ACEC BioMap Critical Natural Landscapes EJ Populations Impaired Waterbodies Reservoir Adjacency SWP Zone A SWP Zone B	
Parcel Number(s): 48-24-0 GIS Data Overlaps: Coldwater Fisheries Heat Hotspot Impervious Protected Land	ACEC BioMap Critical Natural Landscapes EJ Populations Impaired Waterbodies Reservoir Adjacency SWP Zone A SWP Zone B TNC Reforestation Hub	

#### Site Description:

Appears to be in upland. Presence of floodplain unknown (no digital floodplain data in Franklin County). Greening Greenfield has already proposed site restoration and is interested in partnering to augment their current plans. Direct site access from Colrain St. The entire site falls within NHESP Priority Habitat.

#### Why choose Millers Meadow?

- Ranked very highly fit all 4 essential criteria
- Environmental Justice Community
- Easy to start has an ongoing project

The Millers Meadow Restoration Project (funded by a grant from the EBAS Municipal Vulnerabilities and reparadeness program via list establish 1.7 adaptes of Rorest and meadow at Millers Meadow. Adjacent to the Green Rivier the project will milgale flood risk to GreenReis Gouncion neighborhoods by incheajeng the floodpoints capacity to manage Stomwale and flooding. Adabionally, the project will increase the area's georogical health by Greating high-quality habitat, and promote health will be table and social promote health will be to an easy and promote health will be to an easy and the device health will be table to an easy and the device health will be table to an easy and the device health will be table to an easy and the device health will be table to an easy and the device health will be table to an easy and the device health will be table to an easy and the device to the stand will be table to an easy and the device to the stand will be table to an easy and the device the stand will be and the stand will be table.

> planting plan

phase

Building resilience through habitat restoration at **MillerS** 

sewer pipe 1" = 40"

Meado

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SWCA

#### **Background from Landowner**

Outreach began in the Pilot Phase

MVP Grant

- Planting list and layout have been created
- Half of the plants have been purchased or donated
- Large stakeholder involvement
  - Volunteer planting days
  - Local youth group to help maintain





#### **Next Steps: Millers Meadow**

- Reconnect with landowner and identify how EEA can help support these efforts.
- Potential options include
  - Invasive plant control of Japanese knotweed on the banks.
  - Reduce impervious surface
  - Expand planting area





#### **Potential Pitfalls**

- Lack of personnel
   Need to keep track of logistics
- Lack of consistency
  - Need to track the project throughout its life
- Lack of maintenance
  - Need to annually monitor the conditions
  - May need plant replacements
  - May need herbivory control
  - May need invasive control





#### Land Trusts as Stakeholders

- Local influence
  - Familiar with the history and owner of project sites
- They may have capacity
  - Project supporters to keep track of logistics
  - Individuals available to implement corrective actions
- They have direct experience
  - Understand volunteer efforts
  - Monitoring
  - Management of non-target and invasive vegetation
- Shared interest
  - Potential to incorporate CR on restored land





#### **Program Next Steps**

- Continue site identification and selection
- Prioritize sites with the highest potential restoration outcomes
- Contact additional land trusts as applicable
- Develop and implement additional restoration project plans





## How can you get involved?



#### **Site Identification is Ongoing**

- Do you have a potential project site that overlaps with one of our essential criteria?
  - Coldwater fisheries
  - Heat hot spots
  - Floodplain / impervious overlap
  - Permanent protection / land trust management
- Reach out to our project team to discuss!







### **Thank You!**

Hilary Dimino – Hilary.M.Dimino@mass.gov

Naomi Valentine – Nvalentine@swca.com

Adriana Hughes – Adriana.hughes@swca.com Lori Johnson – ljohnson@swca.com