Site Study Fitchburg: Greene's Pond

About this site: Located on the east and west side of Ashby State Road, approximately 1,000 feet north of the intersection of John Fitch Highway and Route 31, the conservation area comprises 28.5 acres. The pond, originally built for harvesting ice, covers approximately 14 acres (1). Falulah Brook (2) enters the pond at the northwest end, and exits at the south east end. The pond is the largest city-owned tract of undeveloped wetlands south of the headwaters of Falulah Brook. The pond can be used for fishing, walking, bird watching, and picnicking. There is a trail around a portion of the pond. This area is upstream of the Civic Center and Coolidge Parks, both of which sites were visited as part of this MVP project. Both the Sizer Charter School (3) and the Crocker Elementary School (4) are within walking distance of the park and could make use of it as an outdoor classroom.

Community concerns about Greene's Pond

The dam no longer appears to be fully functioning, so the pond elevation fluctuates between low and high water conditions. It has perhaps a greater potential to mitigate serious downstream flooding of John Fitch Highway, the largest single flood zone in Fitchburg.

This area has high wildlife value.

The Sizer Charter School used to use the pond for environmental science work, and there was previously a trail around a portion of the pond.

Nature-based Solutions Recommended for Fitchburg: Greene's Pond

Greene's Pond

BSC Data Viewer link:
https://arcg.is/0WvCG10

Recommended NbS
NbS #s correspond to Project Templates referenced on pages 3, 6, & 7 of Site Study

1. Falulah Brook Upstream
   - D F #13 Upstream BMPs rain-garden, bio-swale, etc.
   - D F #5 New wetland or floodplain construction/expansion
   - DL B #3 Forest/shrubland health management or restoration
2. Greene's Pond and Riverbank
   - DW #1 River/pond bank revegetation
   - DW F #4 Wetland management restoration
3. Falulah Brook Downstream and Pond
   - F #6 Pond creation/elimination/ alteration
   - B #60 Habitat enhancements
4. Ashby State Road
   - F #16 Dam modification/controls
   - DL B #58 Invasive species management

Map Key

Bright blue overlay is the FEMA 100 year floodplain

Pink overlay is FEMA 500 year floodplain

Recommended NbS Key

- F Flooding NbS
- D Drought NbS
- RT Rising temps NbS
- DW Degraded water NbS
- DL Degraded landscape NbS
- B Loss of biodiversity NbS

NbS Narrative/NbS Project Templates for Fitchburg: Greene's Pond

NbS Recommendations

- This large pond/wetland complex can potentially store 30 acre-feet (~10,000,000 gallons) of stormwater and release it slowly downstream, thereby greatly mitigating the risk of downstream flooding of the John Fitch Highway area during intense rainfall and/or snowmelt. Doing so would not degrade the ecological values inherent in this pond/wetland complex.

- Consider removing a portion (e.g., half) of the existing dam and replacing it with a leaky dam, possibly constructed of wire cage gabions filled with crushed stone and anchored securely as a retaining wall. Floodwaters during a heavy period of precipitation or snowmelt would temporarily back up behind the leaky dam, raising the pond level a foot or so without overtopping the dam. Then the water would be passively released more slowly downstream over a period of days. There is a potential for this solution to be funded by an MA Dams and Seawall Program grant.

- Manage for the presence of invasive plants: knotweed, burning bush, and bittersweet to improve habitat.

NbS Project Templates for Site Specific NbS Recommendations on previous page

Resource 1 - How to Use Templates

Resource 2 - Next Steps in Planning & Permitting

The following template numbers correspond to the NbS recommendations on the page 2 Map.

#1 River/Pond Bank Revegetation

#3 Forest Management Restoration

#4 Wetland Management Restoration

#5 Wetland or Floodplain Construction- Expansion

#6 Pond Creation/Alteration

#13 Upstream BMPs, Raingardens, and Bioswales

#16 Dam Modifications and Controls

#58 Invasive Species Management

#60 Habitat Enhancements

View Fitchburg Map Atlas **for maps on land covers, soil function and storage, water resources, ecological priority sites, and more.**

Soils Information for Fitchburg: Greene's Pond

Fitchburg

Significant acreage of degraded soils and soils with high regeneration potential that are spread throughout the city mean that better management practices and efforts to replicate lost soil function are important for increasing resilience in Fitchburg.

Fitchburg, along with neighboring Leominster, contains significant areas of developed and impervious landscapes compared with other communities in the Nashua River Watershed. Much of the most developed and degraded landscapes are found along the North Nashua River that flows through the city center. Pockets of "Highly Degraded" soils that have the potential for restored function with intensive intervention strategies are found throughout this central corridor along the river. The high functioning soils of Fitchburg are found primarily in the forested uplands in the northern half of the city with pockets of "high regeneration potential" soils located on the farmland and residential areas there.

Sites Considered for Nature-based Solutions

Sites of interest for this project are located in the more degraded and low functioning soil areas and subbasins with a focus on green infrastructure to replicate soil water filtration and holding capacity. This is an important strategy; however, paying attention to the areas of high regeneration potential on the farms, lawns, and gardens of the city's upland areas and encouraging management for better soil health there should be a complementary strategy.

Priority Actions for Protecting/Enhancing Soil Health in Fitchburg

Better management of turf, lawns, gardens, and farms.

Example Nature-based Solutions:

- Education and outreach to key landowners and farmers about smart soil practices
- Pocket forests to transform biodiversity
- Planting and earthworks to restore connectivity and hydrology
- Front yard pollinator meadows
- Dual use solar
- Planning and zoning to preserve and enhance ecosystem function

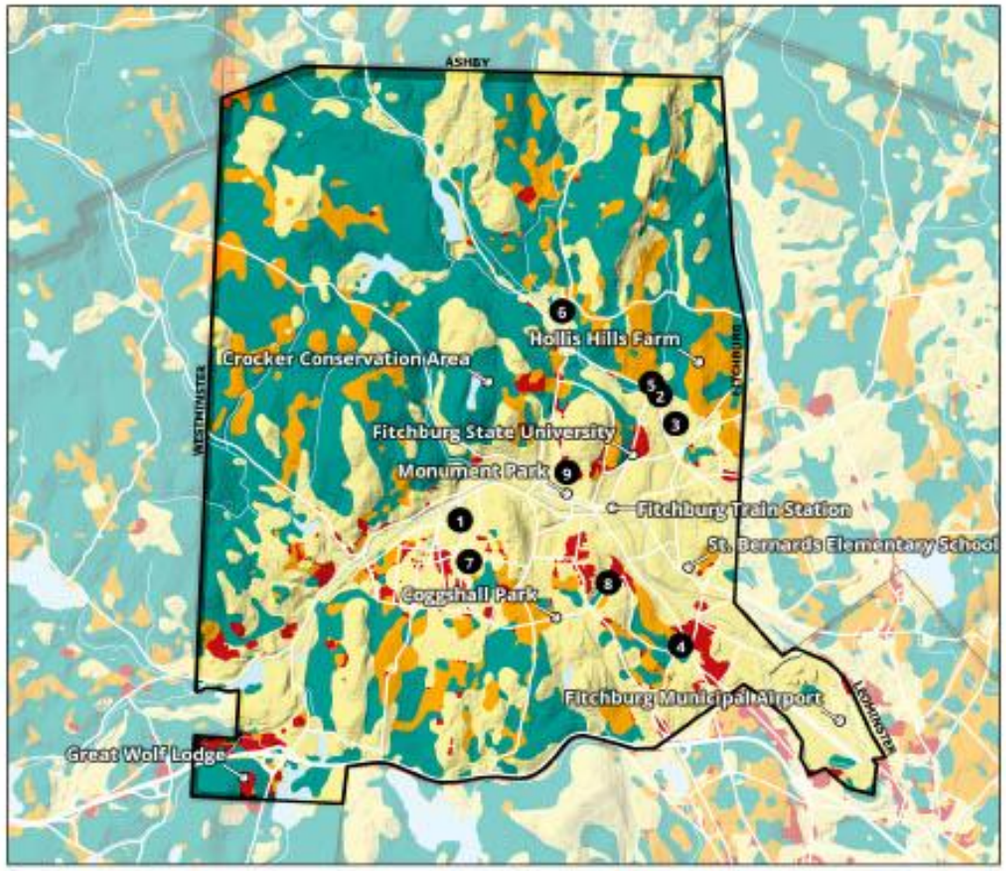
Regenerate or replicate lost soil function in highly degraded urbanized landscapes.

Example Nature-based Solutions:

- Green infrastructure (high performance tree pits, bio-swales, rain gardens)
- Parking lot renovations
- Stream daylighting

#	SITE	PREDOMINANT SOIL FUNCTIONS FOR RESILIENCE			
		Highly Degraded	High Regeneration Potential	Moderate-Low Function	High Function
1	Cleghorn St.			◆	
2	Civic Center/Falulah Brook			◆	
3	Coolidge Park			◆	
4	Green Acres		◆		
5	Putt's Pond			◆	◆
6	Greene's Pond			◆	◆
7	Parkhill Park/Sand Brook			◆	
8	Beekman St. and Hobson St. Culverts	◆		◆	
9	Longsjo School			◆	

Soil Functions for Resilience



	Fitchburg
High Performance Soils & High Carbon Soils	7,369 ac (41%)
Average Function Soils	7,952 ac (44.2%)
Degraded Soils with High Regeneration Potential	2,064 ac (11.5%)
Highly Degraded Soils	609 ac (3.4%)

○ Landmarks

❶ Sites Considered for Nature-based Solutions

[Read full Nashua River Watershed-wide Healthy Soils Report](#) (PDF 25MB)

Nature-based Solutions Opportunity Table Fitchburg: Greene's Pond

Value	BEST	BETTER	GOOD
Feasibility	high	mid	low
Ownership	Municipal		
	** see Healthy Soils Report		

Best Value = An improvement to a resource that provides significant lasting resiliency and strengthens or serves related resources

Better Value = Makes significant improvements to resiliency with long lasting effect

Good Value= Improves the habitat value, or resiliency of a site or feature

Feasibility is based on property ownership or technical access

NbS Template#	Nature-based Solution Description	Greene's Pond		NbS Template #	Nature-based Solution Description	Greene's Pond
	Natural Environment Restructuring				**Built Environment Restructuring**	
1	River / pond bank revegetation	**low**		11	Stormwater treatment wetlands	
2	Grassland meadow management restoration			13	Upstream BMPs rain-garden, bio-swale, etc.	**low**
3	Forest / shrubland heath management or restoration	**low**		14	Shade-habitat/ Infiltration tree plantings	
3A	Cliff stabilization shrubland			15	MSCS culvert improvement	
4	Wetland management restoration	**mid**		16	Dam modification / controls	**mid**
5	New wetland or floodplain construction / expansion	**low**		17	Pervious parking walking areas	
6	Pond creation/ elimination / alteration	**low**		18	Aquatic algae / invasive treatment	
7	Stream flow alteration	**low**		19	Lighting modifications / upgrades	
8	Pollinator hedgerow buffer	**mid**		20	Species crossing protections	**mid**
9	Pocket forest			22	High-performance soil specifications	

Nature-based Solutions Opportunity Table Fitchburg: Greene's Pond, cont'd.

Value	BEST	BETTER	GOOD
Feasibility	high	mid	low
Ownership	Municipal		

Best Value = An improvement to a resource that provides significant lasting resiliency and strengthens or serves related resources

Better Value = Makes significant improvements to resiliency with long lasting effect

Good Value= Improves the habitat value, or resiliency of a site or feature

Feasibility is based on property ownership or technical access

NbS Template#	Nature-based Solution Description	Greene's Pond
	Ecological Awareness & Access Projects	
24	Outdoor classroom/ Nature-play	
25	Food production and forage	
27	Soft trail	**low**
28	Paved pervious trail	
29	Soil protection-puncheon-boardwalk	**mid**
30	Pedestrian safety and bike access	
	Architectural Projects to Consider	
49	Nature-based recreational opportunities	**mid**

NbS Template#	Nature-based Solution Description	Greene's Pond
	Value Added Features on Projects	
50	Analysis and study projects	**mid**
52	Educational interpretation	
53	Furnishings / gathering space	
56	Volunteer opportunities	
58	Invasive species management	**mid**
59	Species monitoring protocol	
60	Habitat enhancements	**mid**

Greene's Pond Dam in Fitchburg

Photos by Paulina Torres

This "Building Community Climate Resilience: Nashua River Watershed-wide Nature-based Solutions Plan" is funded by a Municipal Vulnerability Preparedness grant awarded to the City of Fitchburg by the Healey-Driscoll Administration's Municipal Vulnerability Preparedness (MVP) program, which is administered by the Executive Office of Energy and Environmental Affairs (EEA). NRWA was the lead coordinator for this project.

To view the interactive online Plan, please visit nashuariverwatershed.org/Climate Resilience