Site Study Pepperell: Heald Orchard/Heald Pond

About this site: This is an 80-acre town-owned site that was previously an apple orchard. The site uses active and passive management techniques for a variety of habitats- orchard (1), grassland (2), and early successional forest. It features trails, swimming at Heald Pond (3), and offers excellent birding opportunities.

Community concerns about Heald Orchard and Heald Pond

The orchard and pond should be more accessible to street. There is a trailer park nearby and it's not safe to walk to orchard/pond. Need better accessibility through creating sidewalks.

The lower end where it comes into Heald Street is a dam and if you let the dam out the lower land would become a wetland, but we may lose the pond.

The orchard isn't being farmed and is full of invasives and there has been clear cuttings to open up habitat.

Nature-based Solutions Recommended for Pepperell: Heald Orchard/Heald Pond

Heald Orchard/Heald Pond

DataViewer link:
https://arcg.is/101WK00

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

1. Trail through Heald Orchard
   - #14 Soil protection-puncheon boardwalk
   - #52 Educational interpretation
2. Heald Street
   - #30 Pedestrian safety and bike access
3. Upper Orchard
   - #26 Apply indigenous knowledge

   B DL #58 Invasive species management

   B DL #60 Habitat enhancements

   B DL #2 Grassland meadow management restoration
4. Lower Orchard
   - #25 Food production forage
   - #24 Outdoor classroom/nature-play

   D #28 Paved pervious trail

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 Pepperell: Heald Orchard/Heald Pond

NbS Recommendations

- More shrubland habitat could be created at Heald Orchard to boost bird populations and nesting areas. Dead and dying apple trees should be removed and replaced with shadbush or other shrubby grassland species. The defunct orchard is full of poison ivy, along with many invasive species. Using apple tree stumps or fences to create blockades around plantings would protect these plantings from deer.
- Near the Heald Orchard trail, we identified a need for soil protection -- the solution may be a puncheon boardwalk.
- Due to the density of housing nearby, we recommend making the orchard and the pond (swimming area) more accessible to the street by creating permeable sidewalks.
- On Heald Street, pedestrian safety and bike access improvements are needed.
- Interpretive signs would enhance public education.
- In the Upper Orchard, there is an opportunity to apply indigenous knowledge when we do the work of invasive species removal, habitat enhancements, and restoration of grassland meadows.
- In the lower orchard, there is an opportunity to produce forageable foods, make use of it for outdoor classrooms (nature-play), and install a paved pervious trail.
- There have been some clear cuttings to open up habitat.
- Any alteration to the Heald Pond Dam at Heald St. would likely reduce the size of the pond and create more wetland.

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.

#2 Grassland Meadow Management-Restoration

#14 Shade Habitat Infiltration Tree Planting

#24 Outdoor Classroom- Nature Play

#25 Food Production and Forage

#26 Apply Indigenous Knowledge

#28 Paved Pervious Trail

#30 Pedestrian Safety and Bike Access

#52 Educational Interpretation

#58 Invasive Species Management

#60 Habitat Enhancements

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

Soils Information for Pepperell: Heald Orchard/Heald Pond

Pepperell

With a position low in the watershed, Pepperell's farmland and suburban residential lands have major potential for better management for increased soil function that would mitigate stormwater issues and benefit the several towns downstream.

Of the five focus communities, Pepperell is "lowest" in the watershed and receives stormwater impact from a vast upland land area. The Nashua River runs along the town's southeastern border and then through the center of town before continuing north. The rich alluvial soils of this riverside community are home to significant acreage of farmland with interspersed residential neighborhoods that constitute a large portion of Pepperell's "degraded soils with high regeneration potential". Compared with other focus communities like Fitchburg and Leominster, Pepperell has a low amount of "highly degraded" soil that would need intensive intervention to replicate lost soil function. The town's acreage of High Functioning soil is below the watershed-wide average, but is still significant and protection of these lands is important for watershed health. These high-functioning soils are evenly mixed with "moderate-low function" soil throughout the town.

Sites Considered for Nature-based Solutions

At least two of the sites being considered for stormwater mitigation are on soils with "high regeneration potential" and these sites could be priorities for implementing and tracking the performance of soil-regeneration measures. The Unkety Brook site has been identified as prone to flooding but is within a subbasin that is mostly in neighboring Dunstable.

Priority Actions for Protecting/Enhancing Soil Health in Pepperell

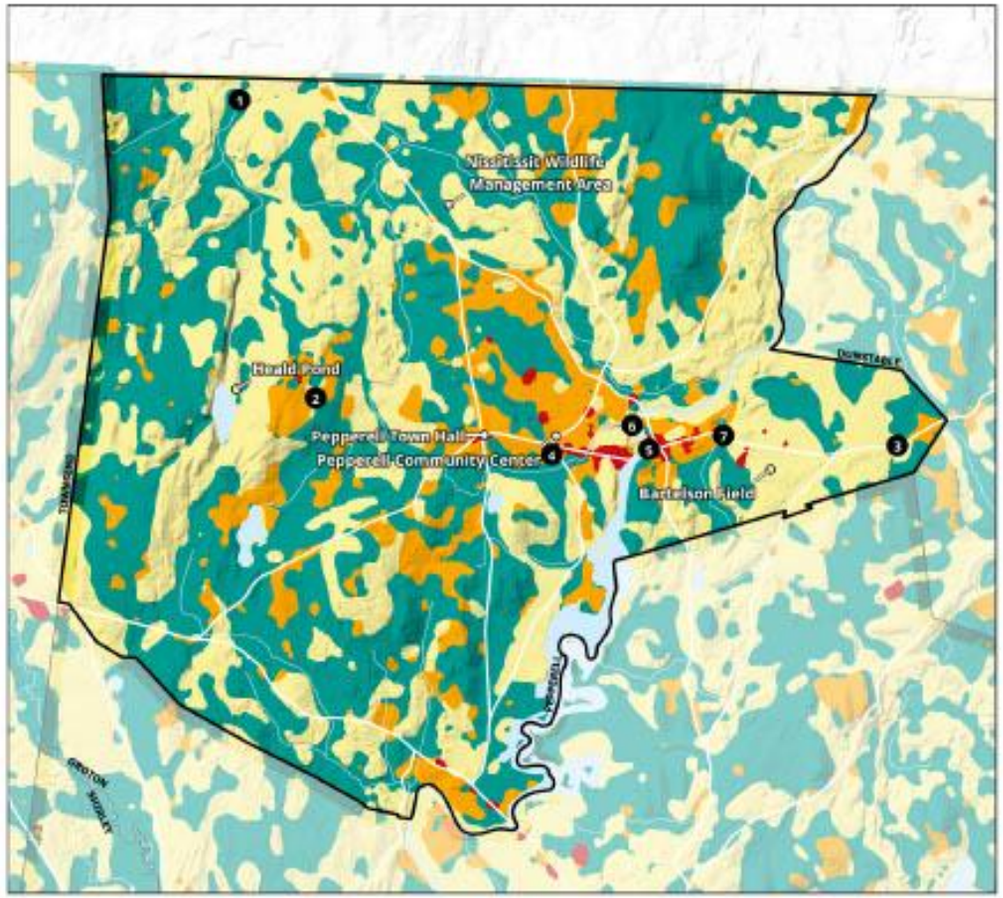
Better management of turf, lawns, gardens, and farms.

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

#	SITE	PREDOMINANT SOIL FUNCTIONS FOR RESILIENCE			
		Highly Degraded	High Regeneration Potential	Moderate-Low Function	High Function
1	Bemis Wellhead Protection Zone/Gulf Brook		◆	◆	◆
2	Heald Orchard/Heald Pond		◆		◆
3	Unkety Brook		◆	◆	◆
4	Fitzpatrick School Parking	◆	◆		
5	Railroad Square	◆	◆		
6	Mill Street/Varnum Brook			◆	
7	Reedy Meadow off Lowell Rd.		◆	◆	◆

Soil Functions for Resilience



	Pepperell
High Performance Soils & High Carbon Soils	6,811 ac (45.9%)
Average Function Soils	6,039 ac (40.7%)
Degraded Soils with High Regeneration Potential	1,893 ac (12.8%)
Highly Degraded Soils	101 ac (0.7%)

○ Landmarks

❶ Sites Considered for Nature-based Solutions

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

Nature-based Solutions Opportunity Table Pepperell: Heald Orchard/Heald Pond

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	Heald Orchard/ Heald Pond
	Natural Environment Restructuring	
1	River / pond bank revegetation	
2	Grassland meadow management restoration	high
3	Forest / shrubland heath management or restoration	
4	Wetland management restoration	
5	New wetland or floodplain construction / expansion	
7	Stream flow alteration	
8	Pollinator hedgerow buffer	
10	Soil management or restoration	

** see Healthy Soils Report

NbS Template#	Nature-based Solution Description	Heald Orchard/ Heald Pond
	Built Environment Restructuring	
11	Stormwater treatment wetlands	
12	Daylighting of streams	
13	Upstream BMPs rain-garden, bio-swale, etc.	
14	Shade-habitat/ Infiltration tree plantings	
15	MSCS culvert improvement	
17	Pervious parking walking areas	
19	Lighting modifications / upgrades	
20	Species crossing protections	
21	Beaver deceiver / promoter	
22	High-performance soil specifications	
23	PV Parking Awnings + Rooftops	

Nature-based Solutions Opportunity Table Pepperell: Heald Orchard/Heald 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

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Feasibility is based on property ownership or technical access

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

NbS Template#	Nature-based Solution Description	Heald Orchard/ Heald Pond
	Value Added Features on Projects	
50	Analysis and study projects	
52	Educational Interpretation	**high**
53	Furnishings / gathering space	
55	Advocacy group/ Stewards	**mid**
56	Volunteer opportunities	**mid**
58	Invasive species management	**high**
59	Species monitoring protocol	
60	Habitat enhancements	**high**

MVP site visit to Heald Orchard/Heald Pond

Photos by Ralph Baker and Sherry Anders

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