JUNE 2024

Pepperell Site Visits NbS Action Recommendations

The following recommendations are the result of the FY24-25 MVP Nature-based Solutions Project and will help set the stage for obtaining follow-on grants to design and implement the priority NbS projects, whether they are pursued by the municipalities themselves, or through the coordination of the NRWA with the municipalities.

NASHUA RIVER WATERSHED ASSOCIATION

With contributions from Regenerative Design Group and BSC Group

Sherry Anders' photo of the Pepperell Site Walk

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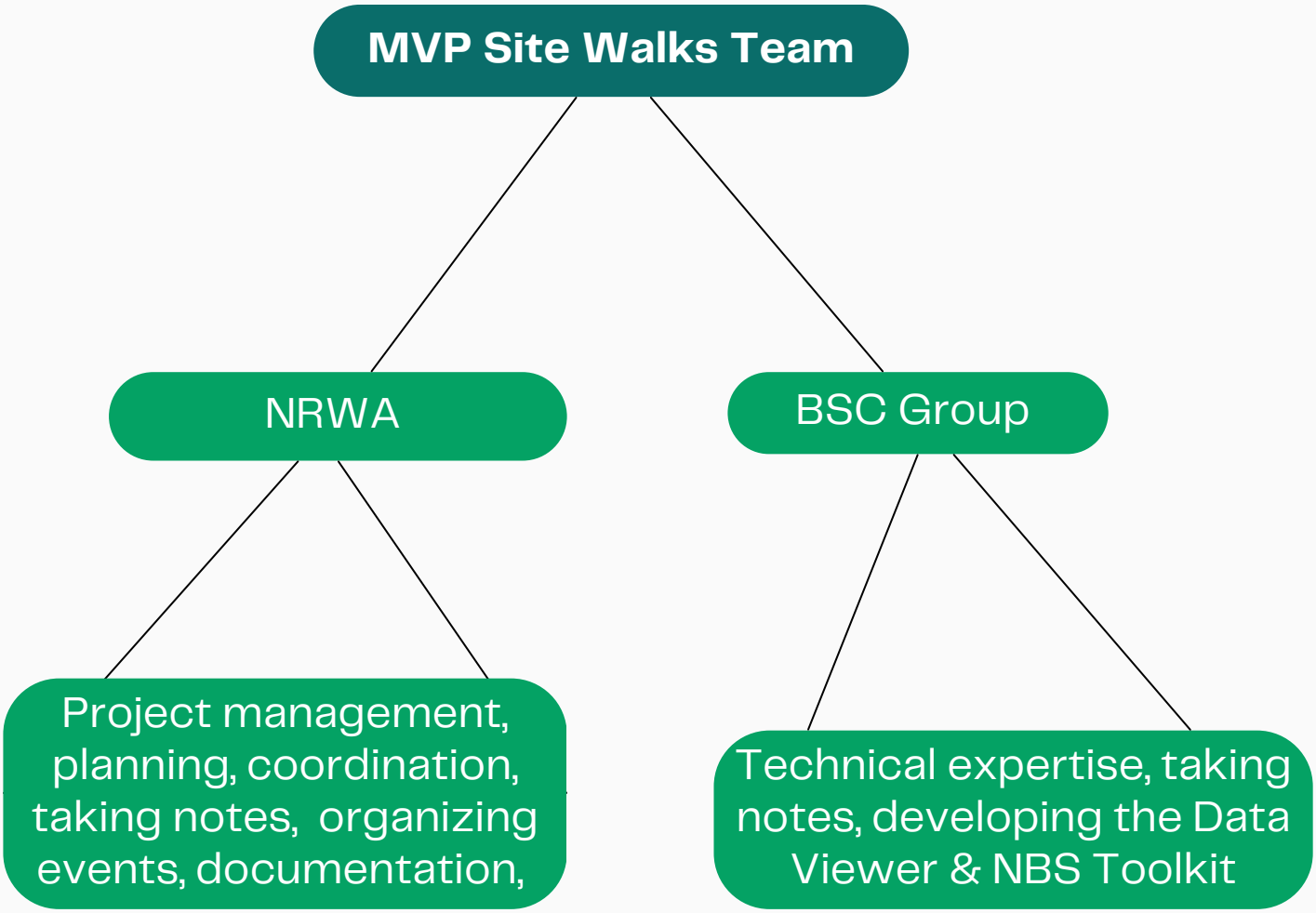
Following the Municipal Kickoff Meetings, Community Meeting 1, & Community Meeting 2 -- residents and officials in each community were invited to participate in the Site Walks during March and April. We captured the resulting discussions in our notes, taking into account considerations such as feasibility, potential impact, and parcel ownership to narrow down the list of "problem areas" to an actionable shortlist.



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Priority Sites 1 - 2

33 Memoranda work orders for NBS interventions, including Food Production & Foraging, Nature Play, Species Monitoring Protocols, Soil Protection Puncheon Boardwalks, Species Crossing Protections, Invasive Species Management, Culvert Improvements, & Beaver Deceivers

Fitzpatrick Collaborative

In the parking lot of the former Fitzpatrick School, now known as the Fitzpatrick Collaborative, there is a need for pervious parking and walking areas. In the field, there is an opportunity to offer outdoor classroom instruction (nature-play), increase management of the grassland meadow, and grow forageable foods (like berries and mushrooms). In the adjacent forest, there are opportunities for a soft trail, soil protection (another puncheon boardwalk), a beaver deceiver, and invasive species management. Outside the former Fitzpatrick School, it would be a good idea to add photovoltaic elements to the parking awnings and rooftops.

A large amount of acreage out back is currently being mowed; it could be used for community garden space and linked to the community kitchen space. Invasive species removal is needed in Green's Brook; there is a very high density of phragmites. Restoration of the existing trail would enhance public access to the wetland area. The boardwalk there needs to be restored. Behind the former Fitzpatrick School is Green's Brook. The buffer zone between the school and the brook is 65% invasives; this should be addressed. The soils around Fitzpatrick Collaborative are highly degraded; the interventions described in the Healthy Soils Report would restore soil health.

Railroad Square

The Pepperell Garden Club is believed to have planted some non-native species; these ought to be replaced with edible native species. The signage at Railroad Square should also be updated with native planting information, and the seating revamped to include mature shade trees. Shade is needed to combat the heat island effect, which is exacerbated by the presence of an excessive amount of pavement. On Main St. along the storefronts, there is a need for more shade trees to provide habitat and enhance water infiltration. There is an existing rain garden in Railroad Square. Reducing the heat island effect is the top priority.

We identified a need for invasive species removal, more interpretive signs for public education, and signage encouraging volunteer recruitment. Also, pervious parking and walking areas, lighting upgrades, and pollinator hedgerow buffers would be useful additions. Along the Rail Trail that runs along the Nashua River, there is a need to install stormwater treatment wetlands. Pocket parks would be beneficial along Main St.

From Fitzpatrick Collaborative through Main St. – utility companies routinely come in and take down trees. The removed trees should be replaced. A street tree survey is needed to assess what trees should be protected, starting in the downtown area. The soils in the Railroad Square area are highly degraded; the interventions described in the Healthy Soils Report would restore soil health.

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Priority Sites 3 - 4

Bemis Wellhead Protection / Gulf Brook

The unused building structure behind the Bemis Wellhead should be removed, and the impervious areas replaced with a permeable variety to the degree possible. Habitat enhancements and native plantings would be impactful here, and there are some opportunities for land acquisition. Groundwater pumping is reducing flow in this area of the stream. The Gulf Brook area west of the old pump building dries out in the summer, which results in fish kills. We recommend planning a volunteer day in collaboration with Trout Unlimited; if water flow is maintained in strategic locations through changes to the pumping system, this would assist fish movement upstream or downstream.

Gulf Brook and Stewart Brook are important ecosystems, surrounded by private properties. A 21-lot subdivision was proposed in Zone 2 – adjacent to the Bemis Road Conservation Area. There are five town wells; due to contamination, only two are operational. This the cleanest well, with negligible PFAS levels, but it is insufficient in times of drought. The health of the forest needs to be restored, along with the shrubland along Bemis Road. We recommend planting a pollinator hedgerow buffer, adopting a tree protection bylaw, and conducting a study & analysis project in this area. In the driveway, there is a need for pervious parking and walking areas.

Heald Orchard / Heald Pond

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 St., pedestrian safety and bike access improvements are needed. Also, 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.

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Priority Sites 5 - 6

Unkety Brook

This area is prone to frequent flooding; there is an opportunity here to increase flood storage. Reedy Meadow Brook, a cold water fishery, tends to flood the road during heavy rains. There was a blow out here a few months ago and a gas main was exposed.

This is a Natural Heritage and Endangered Species Program (NHESP) site. At the Pepperell / Dunstable line, there are beaver dams and minor elevation changes. Verification is needed regarding the success of the installed beaver deceivers and if more are needed. Water is not flowing well under the roads. A culvert was recently installed on Sucker Brook. Lowell Road (Route 113) along this stretch would need to be raised.

Numerous invasive plant species are present around the waterway, especially near Herbert Drive and Lowell Road. Within Unkety Brook, habitat enhancements, river/pond revegetation, and wetlands restoration would be impactful interventions. Near Unkety Brook under Lowell Road, a culvert improvement is needed, along with species crossing protections. On Lowell Road, there is a need for improved pedestrian safety and bike access.

Mill Street / Varnum Brook

At the site of the former Pepperell Paper Co. mill, there is a large amount of acreage covered in concrete right alongside the Nashua River. If possible, the concrete should be removed for safety reasons and the floodplain restored. It is understood that vast mill basements here were simply covered over rather than being removed, which is why the site is fenced off. We recommend the daylighting of Varnum Brook where it is buried under Mill St. The brook is primarily underground so it will be challenging to daylight it.

Tighe and Bond looked at the condition of this Varnum Brook culvert and they concluded that it will last a while. Within this area, there is also a need to revegetate the banks of this water body, and implement species crossing protections. In the area around the floodplain, there is an opportunity to expand the wetlands or floodplain. There is also a need for soil restoration, habitat enhancements, and invasive species removal. In the Mill St. parking lot, there should be some pervious walking areas.

On the opposite side of the road, the area around Green’s Brook (east of Kirin Crossing) is now within FEMA’s flood zone and needs careful excavating. It would be good to include educational programs and outreach about flooding. A new flood bylaw is expected next year.

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Priority Site 7

Reedy Meadow off Lowell Rd

In this location there is an undersized culvert that is causing flooding on the roadway, as well as an influx of invasive species which must be removed. Verification is needed regarding the success of the installed beaver deceivers. In the pond itself, another beaver deceiver may be needed. In the area of Reedy Meadow Brook, culverts under Lowell Rd. and Leighton St. need improvements to facilitate species protection and stream crossing. In the brook itself, there is a need for more wetlands and floodplain area, stream flow alteration, and upstream best management practices like bioswales and rain gardens.

Sherry Anders' scenic photos of Pepperell

Sherry Anders' photo of the Site Walk: Heald Pond

Dr. Ralph Baker's photo of the Site Walk: Heald Orchard

Sherry Anders' photo of the Site Walk: Railroad Square & Mill Street / Varnum Brook culvert

Dr. Ralph Baker’s photos of the Site Walk: Beamis Wellhead & Fitzpatrick Collaborative

MVP RESOURCES

- Site Visits NbS Action Recommendations
- NBS Toolkit (memos, site maps, matrix)
- Data Viewer
- Healthy Soils Report
- NRWA’s MVP City/Town Webpages
- Comprehensive Report (coming soon)

Sherry Anders' photo of the Pepperell Site Walk

Now you are ready to begin putting these insights into practice with the accompanying MVP tools

Reach out to us if you have any questions.

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