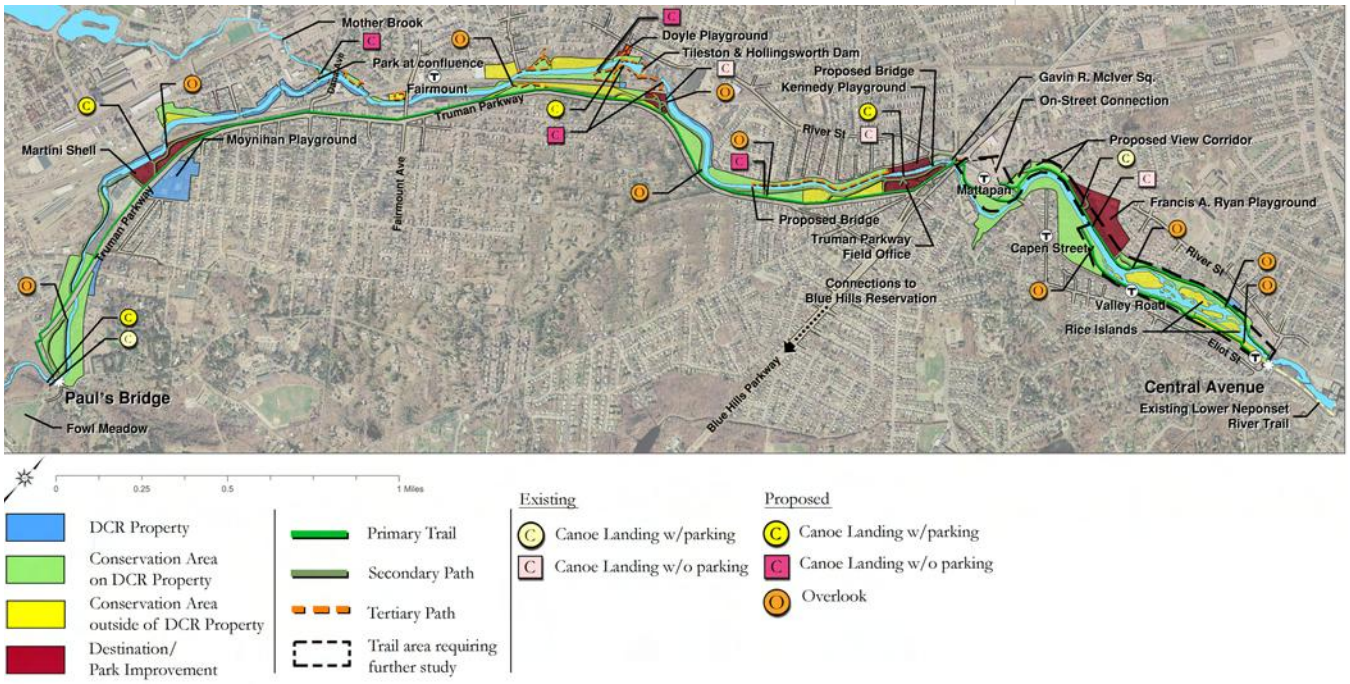
CHAPTER III: THE PLAN

Through the public meeting process, the goals described in Chapter I were distilled into the following priorities that guided the development of the Master Plan.

- A continuous River corridor path system, including a multi-use path along Truman Parkway
- A balance between recreation resources (including increased access to the River and the Reservation) and conservation actions to protect important natural resources
- Numerous access points (both visual and physical) from both sides of the River
- Safety and security
- Enhanced views of the River and the Reservation land for pedestrians, drivers, and MBTA riders
- Connections from the Reservation both to the adjacent communities and to other recreational corridors including the Blue Hills Reservation, Stony Brook Reservation, Mother Brook, Pine Tree Brook, Reservation Road Park and The Fowl Meadow
- Signage for activities as well as interpretive signage noting unique or unwanted (poison ivy) vegetation and other natural features, as well as historic/cultural features
- Clean-up of the riverfront
- Provision of facilities for canoe/kayak rental, benches and picnic tables



Proposed Master Plan

Continuous River Corridor Trail System

The key element of the Plan is a continuous River corridor trail system from Paul's Bridge to Central Avenue. This trail system would provide access to the full length of the Reservation and the River within the project area, and would connect to the existing Lower Neponset trail from Port Norfolk in Boston to Central Avenue in Milton, eventually connecting to a system of trails which lead to Boston Harbor. The trail system would link all of the destinations, overlooks and canoe/kayak landings described in more detail later in this chapter. The alignment of the trail and other proposed improvements to the Reservation are shown on the diagram on page 28.

A trail on the south side of the river could connect to the Valley Road Station.

The trail system would respond to many of the priorities listed above and was designed to:

- Provide access to the MBTA Red Line stations (Mattapan Square, Central Avenue and Valley Road) and commuter rail stations (Fairmount and Readville)
- Connect to local pedestrian pathways and bicycle trails
- Provide loop trails wherever feasible
- Connect destinations including:

Public Parks

- The Martini Shell and connections to Moynihan Playground
- Kennedy Playground
- McIver Square
- Ryan Park
- Doyle Playground
- DCR parcel downstream of the Tileston and Hollingsworth Dam (adjacent to former Bay State Paper site)

Bridges where trail users see and experience long views of the River

- Paul's Bridge
- Footbridge to Glenwood Avenue
- Dana Avenue Bridge
- Fairmount Avenue Bridge
- Central Avenue Bridge

Conservation areas for limited use

- Fowl Meadow Area
- Rice Islands

The Glenwood Avenue footbridge provides access across the Neponset River and the MBTA tracks

- Urban wild at confluence with Mother Brook

Commercial Areas

- Central Avenue
- Mattapan Square
- Fairmount Avenue

Sites proposed for new development with public access to the River

- Milton Falls at former Bay State Paper Company site: proposed private development includes 72 to 80 new residential units in two buildings and public riverfront access
- Lewis Chemical: future use of this contaminated riverfront parcel owned by the City of Boston has not been determined at this time
- Neponset Fields: proposed private development includes 99 new residential units and possible public riverfront access
- Potential connections to other public and privately owned parcels will continue to be identified throughout the final design of the trail system

The Central Avenue commercial district in Milton

Other factors that guided the trail alignment and design included:

- Available, continuous DCR property for trail construction
- Physical opportunities (view sheds) and constraints (slopes, geography, and other environmental factors)
- Conservation / protection of natural areas

Trail Descriptions:

Three levels of trail development are proposed. The design of each of these trails is described below and illustrated on the sections on pages 29 through 33.

Primary Trail

The primary trail would be the main, continuous riverway connector. It would be a paved bituminous concrete path striped for two-way travel to match the Lower Neponset Trail. The trail will be designed to be 10 feet wide where feasible. The section of trail which is within the Truman Parkway right of way would be a minimum of 8 feet wide; 10 feet may not be feasible in certain sections given the location of existing mature trees, steep slopes and property issues. Trail details such as railings, intersections with roadways and street markers would match those of the existing Lower Neponset Trail.

The existing Lower Neponset Trail at Central Avenue

If the primary trail is located on the north side of the River between Central Avenue and Mattapan Square, a retaining wall and cantilevered boardwalk constructed off of the Riverway Plaza building will be necessary (**see Appendix B**). There are other sections of the trail where steep abutting slopes may require the use of bioengineered slopes, segmented retaining wall structures or boardwalks. The least obtrusive method of slope should be used for each condition.

Secondary Paths

In many locations, particularly adjacent to Truman Parkway, the secondary path would be an opportunity for trail users to access the River edge or wooded areas. It would be as important as the primary trail and has been labeled "secondary" because it may not be able to run continuously through Reservation land due to property issues or physical constraints. The secondary path also would be 10 feet wide but would be paved with stabilized soil surfacing as it would be within the buffer zone of the River for much of its length. The secondary path would not be striped and would not intersect with major roadways.

Tertiary Paths

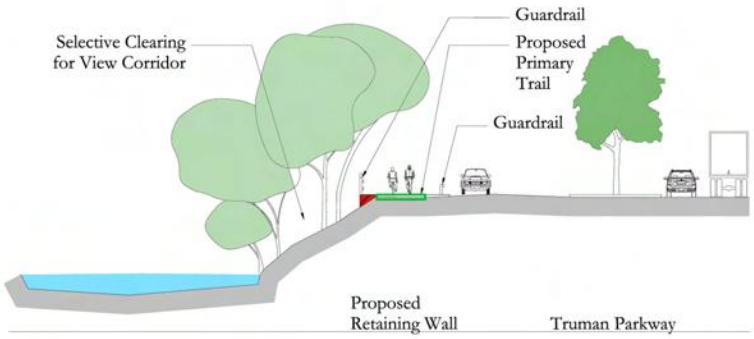
The tertiary paths would be foot paths which are intended for informal, neighborhood use. The paths would not be all essential as part of the continuous trail system but would offer opportunities for residents to access the water's edge in more locations. The tertiary paths would be four to five feet wide and are stabilized soil or wood chips, depending upon specific site conditions.

Overlooks and Views

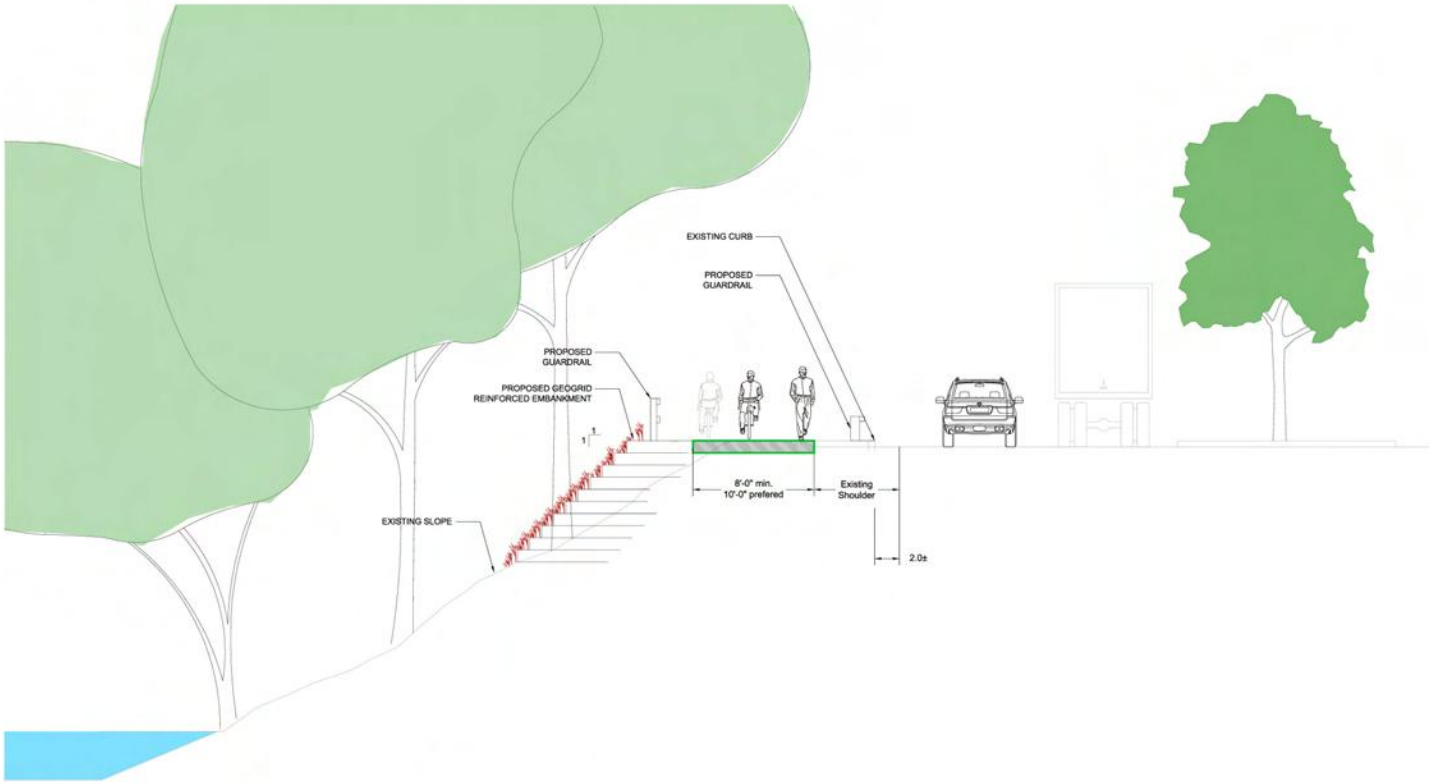
Limited clearing of lower brush and trees would open up this view to the River along River Street at Fremont Street and Mamelon Circle

Although there are beautiful views of the River from the bridges, as described earlier, there are many areas throughout the Reservation where the River is not visible from adjacent roads, and, due to vegetation, grade changes and trail location, it is not always visible from the primary trail or parks. A series of ten proposed overlooks would provide scenic views of the River. In some cases the overlooks would be in parks, in others they would be along the trail. In all cases, they would be sited in locations where the trail is located adjacent to the River. In many cases, the overlooks would be located where long views up or down the River are possible. Some sites would be easily accessible from the adjacent road while others would be accessible only from the path system.

Representative Sections



SECTION H - TRUMAN PARKWAY EMBANKMENT EDGE



MULTI-USE TRAIL DETAILED SECTION

Recommendations for selected clearing are designed to provide greater visual access to the River. Recommended locations include:

- Along River Street at Fremont Street and Mamelon Circle
- Along Truman Parkway by Concord Avenue where the proposed Osceola Street pedestrian bridge would touch down
- Along Truman Parkway just downstream from the MBTA railroad crossing and the Bay State Paper Company parcel

Water Trail

View through more natural area

The multi-use trail would provide greater appreciation and enjoyment of the River from the land side. Canoeing or kayaking down the River provides a very different river experience from that of a foot or bicycle trail, as well as a recreation experience not frequently available in an urban environment. In some locations canoeists have long views of the River and its banks with only occasional glimpses of the urban environment. In other locations, by MBTA railroad crossings or more densely developed areas such as Mattapan Square, the experience is much more urban. These contrasts highlight the unique juxtaposition of the natural River and the urban environment.

View looking downriver to to Mattapan Square

The River is well-suited to canoeing and kayaking; the entire length from Paul's Bridge to Central Avenue can be canoed in a couple of hours, although it is necessary to portage around the Tileston and Hollingsworth Dam. The proposed "Water Trail" would include a series of nine new canoe landings along the River that would allow canoeists and kayakers to pull-out, enjoy the view and perhaps have a small picnic. Parking areas at eight locations would provide opportunities to begin and end at various points for trips of different lengths. The introduction of a seasonal canoe/kayak rental facility at the Truman Parkway Field Office would allow much broader access to the water trail. The rental facility, as well as other new canoe landings, are described in more detail below under **Destinations**. Canoe landings are as follows:

Existing canoe landing near Paul's Bridge

With Parking:

- Truman Parkway Field Office
- Martini Shell Park
- Doyle Playground
- *Ryan Playground (existing)*

- *Paul's Bridge (existing)*
- *Kennedy Playground (existing)*

Without Parking:

- By proposed Osceola Street Bridge
- At the proposed Milton Falls development on the former Bay State Paper Company parcel (two proposed by developer)
- Confluence with Mother Brook
- Upstream of the Tileston and Hollingsworth Dam
- *Downstream of Tileston and Hollingsworth Dam (existing)*
- *Ryan Playground (existing)*

All canoe landings where parking is provided should be made accessible (if feasible) in accordance with ADA guidelines. This will include upgrades to existing landings as well as providing access to new landings.

Construction of new landings should be from natural materials. Granite or stone is preferred for terracing/stepping slopes. Stabilized soil is recommended for accessible routes. Boat slides, where feasible, would improve the ease with which boaters can get to the water's edge, and using natural, flat stones would facilitate launching and landing from canoe landings.

Signage and Interpretive Elements

A signage system would help to "announce" the River and the Reservation and would encourage passersby to use the trails and other resources. Entry signs at the destinations described above would include a list of facilities at each destination, Reservation rules, a map of the Reservation and a map showing connections to other DCR resources. Interpretive signage would highlight important cultural and natural resources along the trail. The signage system would match the system currently in place at the Lower Neponset Reservation.

Interpretive signage provides a way to make visitors more aware of the uniqueness of their surroundings. As described in Chapter II, the project area includes a number of historic resources as well as important natural resources. The signage system developed for the Lower Neponset River Reservation should be continued to used throughout this project area. Interpretive signage should include trailside signs explaining both locations with historical significance and important natural resources. For example, the "rice islands" represent a unique natural environment while the Bay State Paper Company parcel has historic significance.

Existing Lower Neponset Trail signage and street markers

Other signs at key locations such as Paul's Bridge, the Truman Parkway Field Office and the beginning of the trail at Central Avenue could show the entire trail system, highlighting key destinations, overlooks, canoe landings, and connections to other trails. Information on facilities available at key locations as well as the length of individual trail segments also should be provided.

Fencing Strategy

The existing fence along River Street creates a visual barrier between drivers or pedestrians and the Neponset River

In 1949, the Massachusetts legislature passed Chapter 398, "An Act providing for the acquiring of land and constructing a fence along a portion of the bank of the Neponset River in the Hyde Park district of the City of Boston". The extent of the fencing was expanded by Chapter 505 in 1949.

The goal of this plan is to connect the River with the communities through which it passes and to provide improved visual access from roads as well as from the proposed trail system. The existing six foot high chain link fence forms an effective barrier between visitors and this natural resource. Many community residents have asked for the removal of the fences while others are concerned for the safety of children. Most DCR rivers are not fenced. The recommended strategy is based on opening access to the River in those locations where it is possible to do so while posing only minimal risk. This strategy is consistent with DCR's policies at other river reservations. Removal of fencing would require an act of the state legislature.

The Master Plan recommends that existing fences be replaced with lower four foot fences in public parks or places where there may be an issue with supervising children. This type of fencing is consistent with that used in tot lots to help prevent children from running out into busy streets; it allows parents and teachers to more easily supervise groups of children.

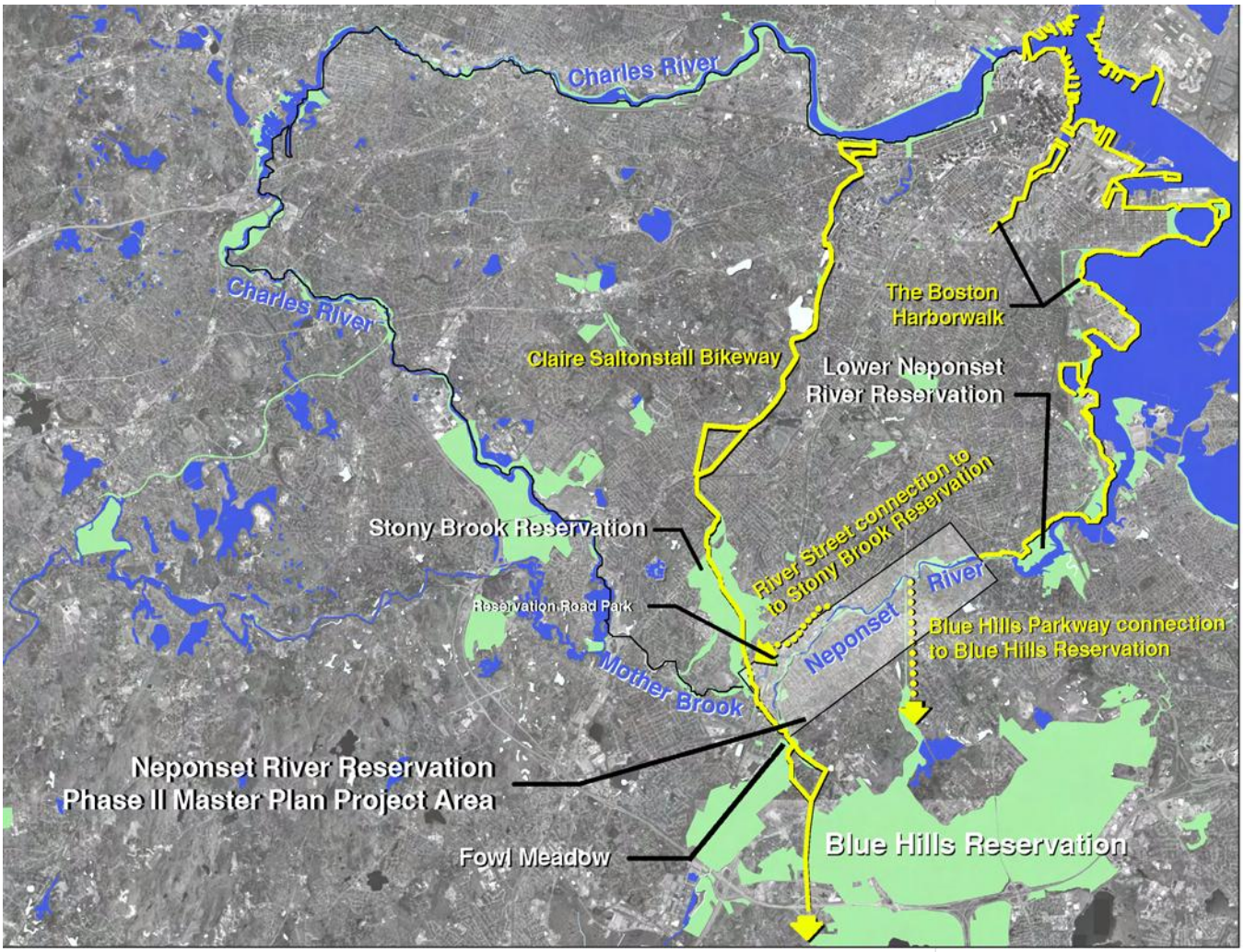
Locations recommended for low fencing (to replace the existing higher fencing) along the River include:

- Martini Shell
- Kennedy Playground
- McIver Square
- Ryan Playground
- Doyle Playground
- DCR Parcel downstream of the Tileston & Hollingsworth Dam

It is recommended that low fences replace high fences in areas where the River is turbulent. Locations with swifter current include the area around Paul's Bridge, the area around the Tileston and Hollingsworth Dam and the area around Mattapan Square. Fencing is recommended in areas where unwanted riverfront activity is occurring and where there are environmental issues. It is recommended that fencing be removed in other locations (at the time that this master plan and the proposed trail system is implemented).

The need for fencing along specific areas of trail will be evaluated during the trail design. No fencing will be removed until the trail is constructed.

Access/Connections



Regional open space connections

The Neponset River Reservation is both a regional and a local resource. Ensuring that the Reservation connects to the regional open space system as well as to the adjacent neighborhoods and community resources was an important consideration in developing the Master Plan.

Regional Open Space Connections

From a regional perspective, it is important that the Reservation connect to the regional open space system. The River corridor path system connects downstream to the east to the existing Lower Neponset River trail which runs to Port Norfolk. It also connects upstream to the south to Fowl Meadow Reservation at Paul's Bridge. These links help to fill in some of the gaps in a continuous path system linking Dorchester Bay at Pope John Paul II Park to Mother Brook and then to the Charles River and back to Boston Harbor at the mouth of the Charles River in Boston. From Dorchester Bay a path system links to a continuous path north along the harbor to Pleasure Bay in South Boston, continuing along Boston's Harborwalk to the mouth of the Charles River. At Paul's Bridge, the path would connect to the Claire Saltonstall Bikeway which runs from Boston to Cape Cod, following the Neponset River Parkway through Milton.

The Town of Milton is currently working, in cooperation with DCR, on a plan for a bikeway along the Blue Hills Parkway to the Blue Hills Reservation and a bikeway along Central Avenue south to Brook Road, and then along Pine Tree Brook to Pope's Pond in the Blue Hills. The Neponset River corridor path system will connect to both the Blue Hills Parkway (at Mattapan Square) and Milton's proposed Central Avenue path to Pope's Pond.

A future connection to Stony Brook Reservation could be made via a path along Mother Brook. In the short-term, cyclists and pedestrians could reach the Reservation by continuing along River Street west to Enneking Parkway. A path along Mother Brook would also connect people to Boston Parks and Recreation Department's new Reservation Road Park.

Local Connections

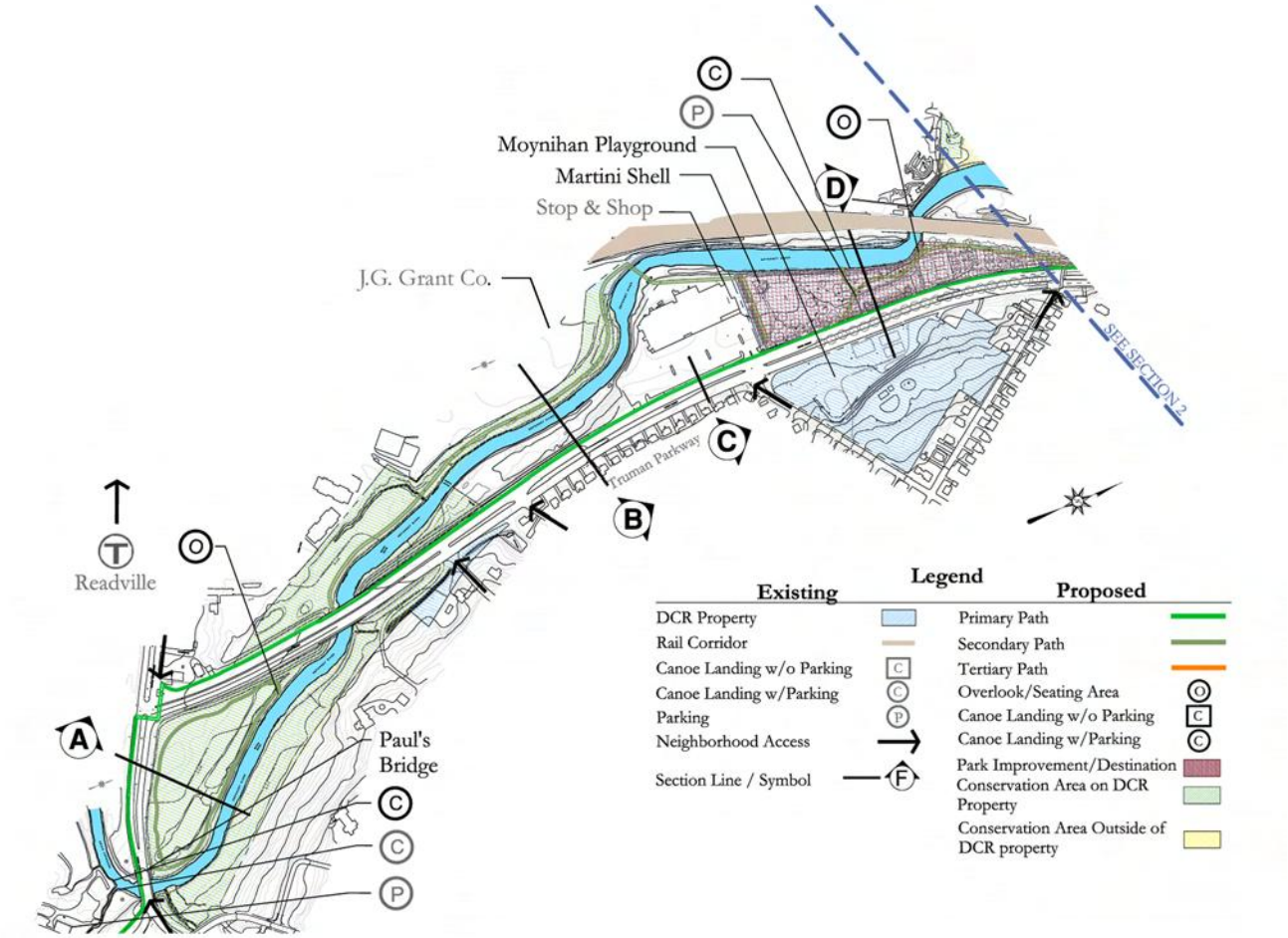
Regional connections are important to the adjacent communities, but equally important are frequent connections to the path system from neighborhood streets and from the MBTA Red Line stations at Central Avenue, Valley Road, Capen Street and Mattapan Square, and the MBTA Commuter Rail stations at Fairmount Avenue and Readville. It is recommended that, wherever possible, primary and secondary paths connect to adjacent streets. Tertiary loop paths would provide opportunities for local residents to take short walks through the Reservation adjacent to their neighborhood or to connect to primary trails and secondary paths for longer trips throughout the regional open space system.

The trail would connect to the MBTA Red Line Station at Central Avenue where the Lower Neponset Trail begins

Specific Recommendations by Area

Trail location and a general description of recommendations for each of five project areas is described below. More detailed descriptions of recommendations for destinations and conservation areas are described later beginning on pages 51 and 68, respectively.

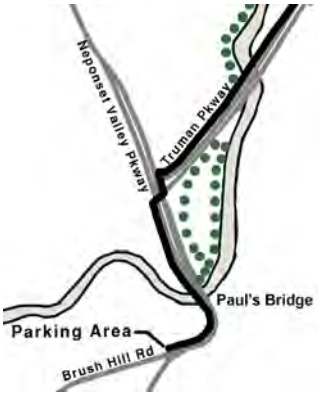
Section 1: Paul's Bridge to the Martini Shell



This southernmost section of the project area has several large conservation areas. It is bounded by two important landmarks, Paul's Bridge and the Martini Shell.

Trail Location

From the Paul's Bridge parking area on Brush Hill Road, the primary trail would follow Brush Hill Road to the Neponset Valley Parkway and then continue along the Parkway until it intersects with



The primary trail, beginning at the Paul's Bridge parking area is shown in black. The secondary path is shown as a dotted line.

Truman Parkway (see diagram at right). The trail would then cross over to the west side of Truman Parkway using existing crosswalks and continue north along Truman Parkway. A secondary path would loop around a proposed conservation area on the north side of the Neponset Valley Parkway. At Paul's Bridge the trail could connect to the Fowl Meadow path system and the Claire Saltonstall Bike Path.

From the Neponset River Parkway to Mattapan Square, the primary trail would be located along Truman Parkway. Although this location does not allow for maximum direct visual access to the River, it would provide for a continuous route on DCR property. Loop paths could then be created off of the primary trail to provide visual access the River. Development of the primary trail could be an Early Action Project, constructed as a parkway sidewalk improvement; construction of riverfront "loops" could occur later as funding and property are available.

Truman parkway has a 100 foot right of way with a seven foot shoulder within its current roadway configuration in most locations. The DCR is currently developing "Historic Parkway Preservation Treatment Guidelines" which provides guidance for the design of pedestrian and bicycle paths and bicycle lanes and encourages the use of the parkways by non-vehicular users while preserving the character of the historic parkways. Although the current width of the roadway allows for shared use by bicyclists, the roadway is less desirable for multi-aged recreational trail users. A shared multi-use trail a minimum of 8 feet wide (10 feet preferred), as recommended by the "Historic Parkway Preservation Treatment Guidelines," is feasible in most locations and would serve as a direct, safe and comfortable means of making trail connections from Paul's Bridge to the Truman Parkway Field Office.

The trail from Paul's Bridge to the Martini Shell appears to have widespread community support. The trail would pass by and through Martini Shell Park and could be linked to restored Reservation land at the J. G. Grant Company site (see below). Using part of the parkway shoulder for the construction of the trail would minimize impacts to the Stop & Shop site. There are several mature trees and other obstacles which would need to be taken into consideration when determining the precise location of the trail.

Aerial view of Stop and Shop parcel with the J. G. Grant Company parcel in the background

A secondary path would run through the Martini Shell Park, pass behind the Stop and Shop property and cross on a proposed new bridge to the J. G. Grant Company property on the north side of the River (see diagram on preceding page and **Acquisitions and Easements**). Alternatively, the proposed bridge could cross the River to the north of the Stop and Shop parking lot. The secondary path would continue along the river's north edge until it reconnects with the primary trail at the point where Truman Parkway crosses the River.

Canoe/Kayak Landings

It is recommended that the canoe landing at Paul's Bridge be relocated slightly upstream of the existing landing. The existing landing is both within the Area of Critical Environmental Concern and at a point where the current becomes stronger. Relocating the landing upstream would place it at a point where canoes can be maneuvered more easily. A second canoe landing is recommended for the Martini Shell park.

Destinations

Martini Shell Park

Recommendations include:

- New canoe launch convenient to parking
- New scenic overlook
- Replacement of benches and drinking fountains
- Rehabilitation of the Martini shell

Unresolved Issues

Across the River, and slightly upstream from the Martini Shell is the J. G. Grant Company. The property owner is currently developing a plan for mitigation of impacts to the riverbank. As part of the mitigation, it is proposed that the owner develop a path that would cross the River and tie into the path along Truman Parkway. The exact location of this path, and its connection to DCR property will be determined through ongoing discussions with the J. G. Grant Company (see p. 64).

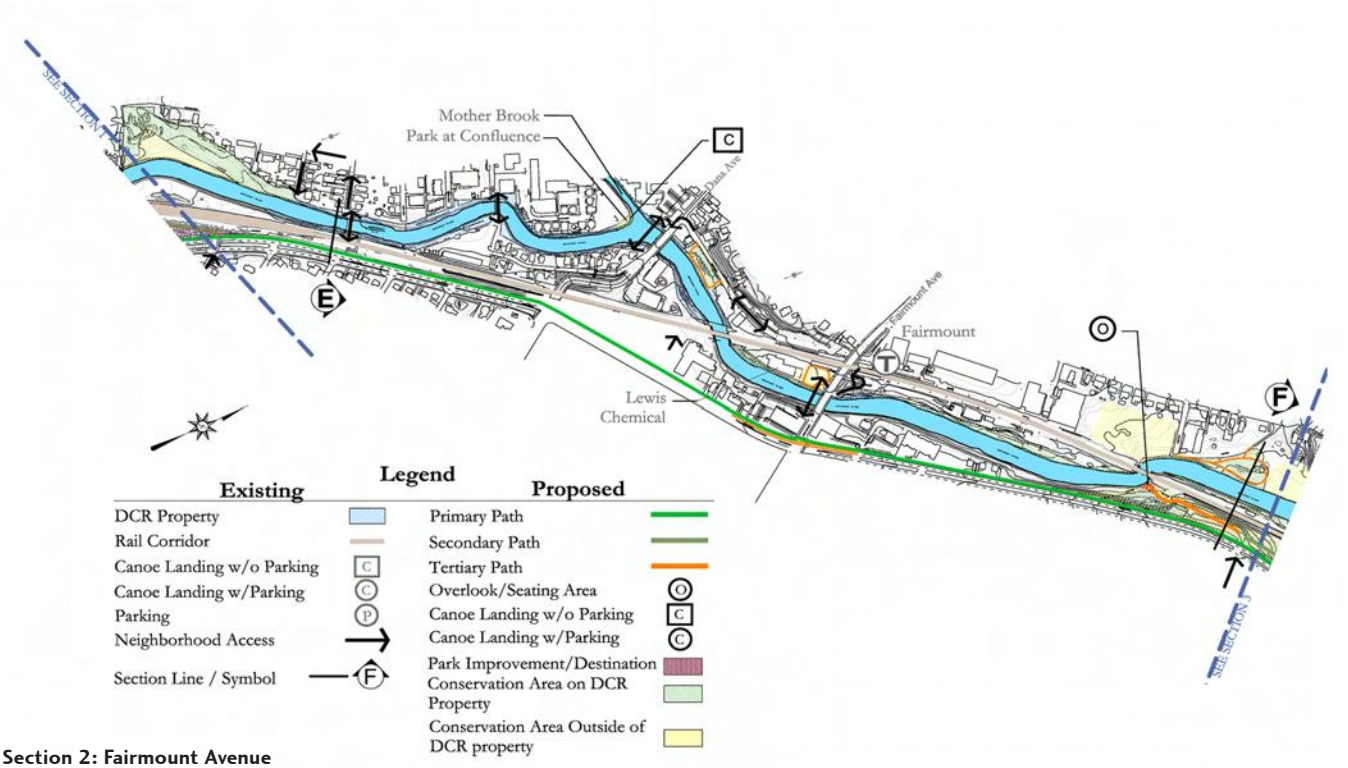
Section 2: Fairmount Avenue

The land along both banks of the River in this area is heavily developed, leaving little room for secondary and tertiary paths. On the west bank, a large parcel at the southern end of this section would be designated as a conservation area.

The Fairmount Avenue Bridge over the commuter rail tracks and the river connects the neighborhood west of the Neponset River to Truman Parkway

Trail Location

Through much of this section the railroad and riverfront development separate the primary trail along Truman Parkway from the River, and would prohibit development of a secondary path. Two short discontinuous tertiary paths are shown on proposed conservation parcels just north of Dana



Section 2: Fairmount Avenue

Avenue and just south of Fairmount Avenue. Both of these paths would be on the west side of the River.

The primary trail would pass in front of a number of residences and businesses from north of Fairmount Avenue to Dana Avenue. Although the use of the Truman Parkway shoulder would lessen impacts to these properties, there are likely to be community concerns regarding the transition from what is now a city sidewalk to a multi-use trail. There is likely to be greater pedestrian use through this zone. The design of the trail will need to address ways to minimize the speed of bicyclists. In part, the number of curb cuts at drives and entrances would serve this purpose but other elements such as material changes should be considered during later design phases.

Canoe/Kayak Landings

A new canoe/kayak landing (without parking) is proposed at the confluence of the Neponset River and Mother Brook.

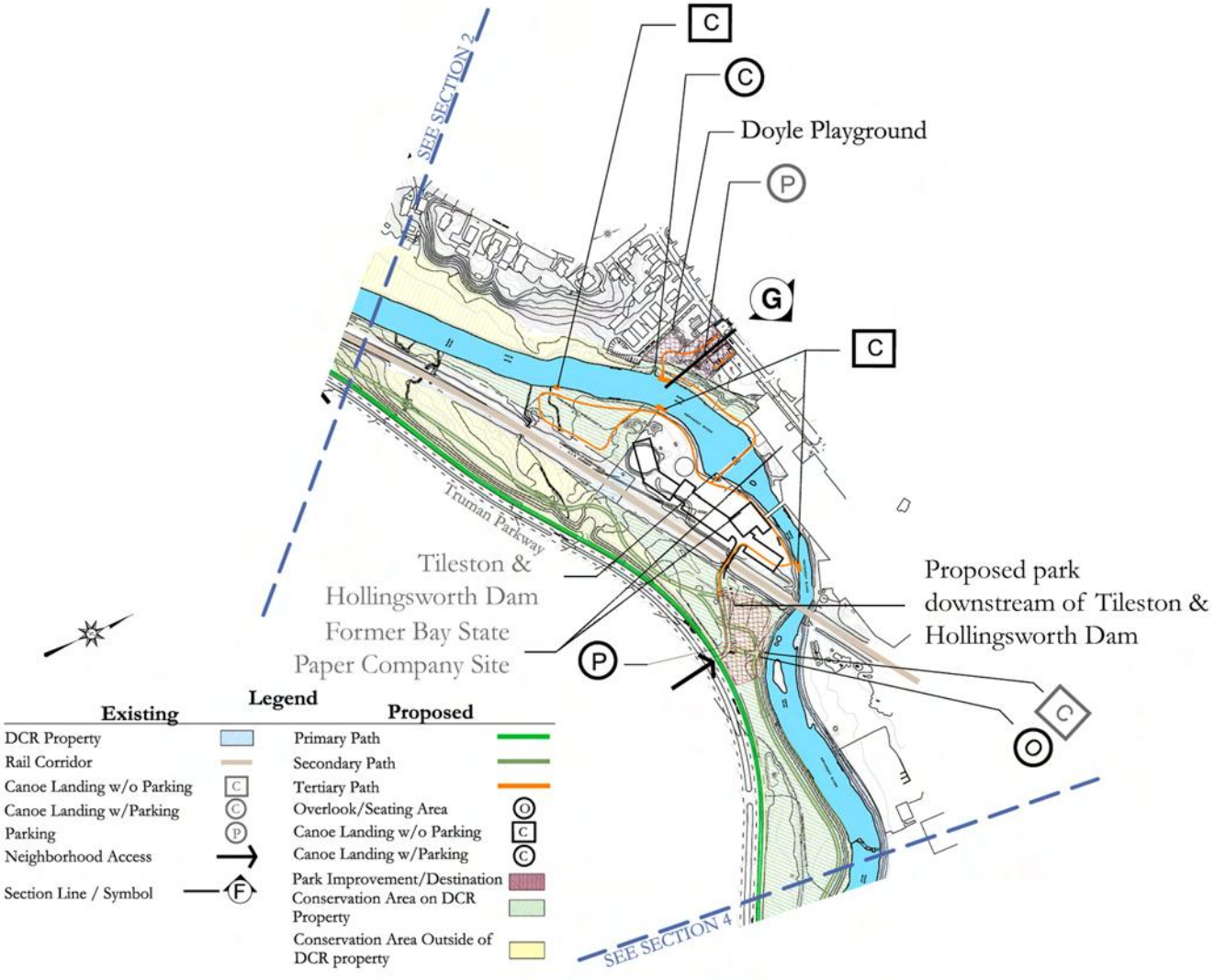
Destinations

There are no destinations in this section of the project area.

Unresolved Issues

The Lewis Chemical parcel, adjacent to the Fairmount MBTA Station, is currently owned by the City of Boston. The parcel requires environmental clean-up and the city has undertaken a public process to determine the future use of the parcel. Public access to the River could be provided from this site.

Section 3: Former Bay State Paper Co./Tileston and Hollingsworth Dam



Before and after image of primary trail along Truman Parkway

This section includes several large proposed conservation parcels as well as the former Bay State Paper Company site at a large bend in the River. There is an opportunity for a public/private partnership to develop and maintain new open space on the DCR parcel downstream of the Tileston & Hollingsworth Dam.

Trail Location

The primary trail in this area would continue to follow Truman Parkway. A secondary path is shown between the Parkway and the River for almost the entire length of this area. South of the railroad crossing, this secondary path would be separated from the River by the railroad. A tertiary path would cross under the railroad through the existing underpass, connecting to the River and the proposed Milton Falls residential development at the former Bay State Paper Company site (see below). A potential River crossing at the Tileston and Hollingsworth Dam could connect this path to Doyle Playground on the west side of the River. A second tertiary path would lead to an overlook just downstream of the railroad crossing. Both the primary and secondary path could connect to proposed new park uses at the proposed Milton Falls development.

As in Section 2, the railroad separates the parkway from the River for much of this section. Through this section, the secondary path would pass through wooded areas that access an overlook at the railroad crossing where path users would once again have visual access to the River.

Canoe/Kayak Landings

A new canoe/kayak landing with parking is proposed for Doyle Playground, and new landings without parking are proposed for the east and west ends of the proposed Milton Falls development at the former Bay State Paper Company site, and just upstream on DCR property. Together with an existing canoe landing with parking just downstream of the proposed Milton Falls development and the railroad crossing, these landings would accommodate the need for canoeists and kayakers to portage around the Tileston & Hollingsworth Dam.

Destinations

Improvements at Doyle Playground include:

- A new canoe launch and parking
- An overlook
- A small play area and picnic tables
- Plantings

The proposed overlook would have a view of this portion of the Neponset River

Improvements on the DCR property downstream of the Tileston and Hollingsworth Dam provide the opportunity for a public/private partnership with the developer of the proposed Milton Falls project. Proposed improvements on the DC property include:

- A canoe landing with parking
- A picnic area
- A multi-use field
- An overlook

Unresolved Issues

The Milton Falls development project is still in the proposal stage. Development of public access improvements on that site, and the adjacent DCR property, are contingent on that project receiving necessary approvals from the Town of Milton and state agencies and moving forward.

Section 4: Belnel Neighborhood to Mattapan Square

DCR has significant land holdings on both sides of the River, providing large opportunities for secondary path development and conservation, as well as important park destinations.

Trail Location

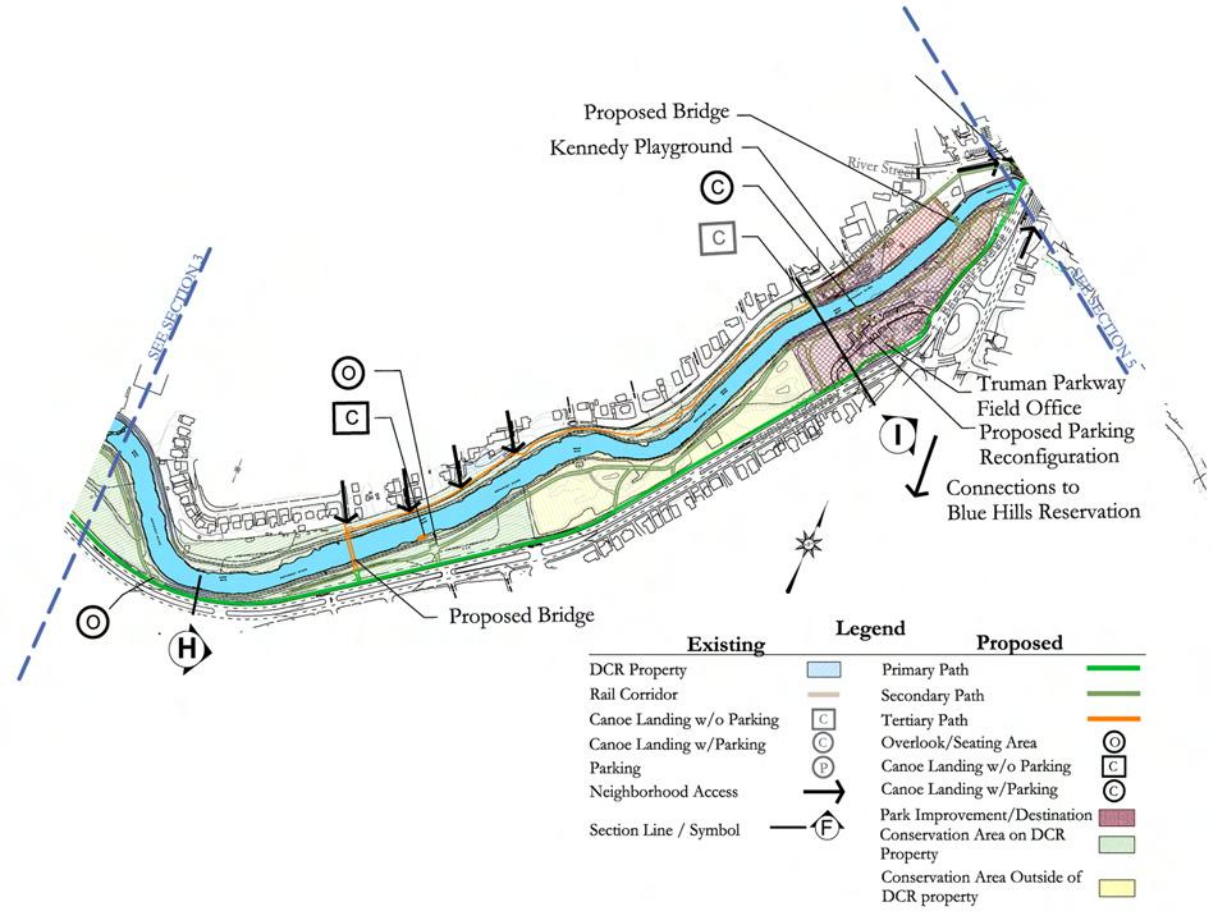
South Side of the River

The primary trail would continue north along Truman Parkway to Mattapan Square. A secondary path is shown between the Parkway and the River on a wide swath of land owned by DCR and the Town of Milton. A new pedestrian bridge from this secondary path would connect the Truman Parkway Field Office parcel with Kennedy Playground on the north side of the River.

Together with the DCR, the Town of Milton is currently studying bicycle lanes along the Blue Hills Parkway that will connect to the Blue Hills Reservation. The primary trail could connect with the Blue Hills Parkway bicycle lane.

North Side of the River

A tertiary path on the north side of the River would run from Kennedy Playground downstream to approximately Osceola Street. The trail is shown inside the historic stone wall from Kennedy Playground to approximately Holmfield Avenue. At that point, because the steepness and narrowness of the bank prohibit development of a trail inside the wall, the trail would run along



the outside of the wall, with connections to Massasoit, Wachusett and Osceola Streets. A pedestrian bridge at Osceola Street would connect the path and a new canoe/kayak landing on the north side of the River to the secondary path on the south side of the River at a point between Concord and Cheever Streets. Breaks in the stone wall would be required at the bridge crossing and at the point where the trail crosses from the inside to the outside of the wall. The bridge would connect the adjacent neighborhoods north of the River with the primary trail system. The two pedestrian bridges would create a loop path, allowing users to follow both sides of the River, and to access Kennedy Playground and the Truman Parkway Field Office without having to negotiate the street crossings in Mattapan Square. The tertiary path could be upgraded to a secondary path when the bridge and connection to the main trail system is completed.

Canoe/Kayak Landings

New canoe/kayak landings are proposed at the Osceola Street bridge (on the north side of the River) and at the Truman Parkway Field Office. An existing canoe/kayak landing with parking at Kennedy Playground would be made accessible.

Destinations

Improvements to Kennedy Playground include:

- A new playground and seating area
- New ball courts
- Pathway improvements
- Expansion of the Park

Improvements to the Truman Parkway Field Office include:

- A new canoe landing with parking
- Renovation of the building to accommodate canoe/kayak rentals and an ice cream stand
- Changes to the entrance drive and parking to improve circulation

Unresolved Issues

There are no unresolved issues in this section.

Section 5: Mattapan Square to Central Avenue

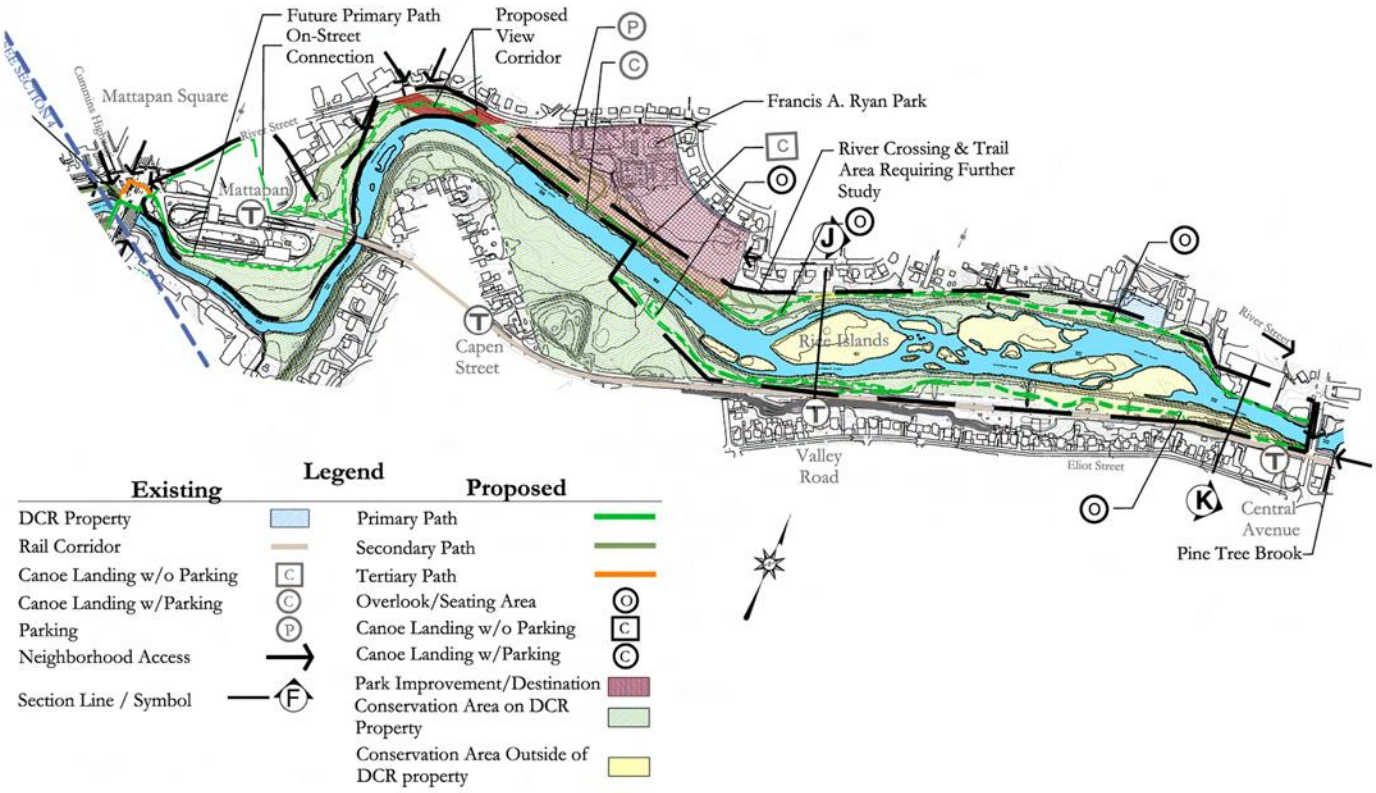
This section of the River includes a number of large areas proposed for conservation, including the "Rice Islands" at the east end of the project area. Property ownership, neighborhood concerns regarding security, and difficult pedestrian access around Mattapan Square create a number of unresolved issues in this section.

Trail Location

The trail would connect to the Lower Neponset Trail at the south side of Central Avenue. There are a number of unresolved issues concerning trail location through this section and further study is needed to confirm the path location (see **Recommendations for Further Study** on p. 51). Because of the unresolved issues, potential primary trail locations are shown on both the north and south sides of the River. Trail location issues are as follows:

North of the River

The route connecting the primary trail from Truman Parkway through Mattapan Square is circuitous, particularly for bicyclists. The DCR, City of Boston, Town of Milton and the MBTA will



need to discuss options for more direct routes for pedestrian and bicycle travel through Mattapan Square. In the short term, trail users would use the existing sidewalk and pedestrian street crossing system. The route through Mattapan Square will be studied further when the path through and around the station is determined (see **Unresolved Issues/Areas for Further Study** on page 51).

The MBTA's current plan for bicycle access is for the new trail to connect through MBTA property and the proposed transit oriented development (TOD) at the former station parking lot and for users continuing on to use the City sidewalk and River Street into Mattapan Square. An alternative route along the River side of the MBTA property will require further study, as described below. There is DCR property available for much of the route but a means of crossing the railroad track at the Mattapan Square Station as well as an easement for the trail would be required. The DCR is currently discussing this option with the MBTA. From the Mattapan Square Station, it is recommended that the primary trail continue on the north side of the River to connect to the to existing riverfront footpath at Ryan Playground which will be expanded to a 10 foot wide multi-use trail.

A path could be cantilevered from the Riverway Plaza building along the north bank of the Neponset River

The primary trail could then cross the River at some point, or continue on the north side of the River to Central Avenue. If the primary trail between Mattapan Square and Central Avenue is located entirely on the north side of the River, the trail would need to be cantilevered off of the Riverway Plaza building and adjacent retaining wall. Although a further structural analysis will be needed to confirm the feasibility of a cantilevered walkway, a review of the building design drawings and a visual inspection indicate that the walkway is feasible. This alignment would also necessitate a boardwalk built over sloped riverbanks (see **Appendix B**).

Bridge Location

The location of a potential River crossing also would need to be determined through further study. Earlier planning efforts suggested that the crossing occur at the eastern end of the "Rice Islands". Environmental and cost issues may suggest a location to the west of the Rice Islands where the span is shorter and the bridge footings do not require excavation in the "Rice Islands". Issues raised with moving the bridge location to the west include lack of visibility from the Central Avenue bridge and proximity to residences on the south side.

South of the River

Along the south side of the River, DCR owns a substantial amount of land where trail construction would be feasible between Central Avenue and the Mattapan Square MBTA Station. The Town of Milton owns a parcel which interrupts the continuous DCR property; a trail could be constructed on the Town of Milton property but an easement for the trail would be required. The DCR property on the south side of the River is valuable property for conservation as well as recreational uses but is large enough to accommodate both conservation areas and a trail. Spectacular views of the "Rice Islands" make it a particularly attractive location for path users to enjoy the River.

There is neighborhood concern that the trail location on both sides of the River may pose security issues for nearby residents. On the south side there is particular concern that the trail may be too isolated for the safety of trail users. Both proposed trail routes could connect to Ryan Playground on the north side of the River. (A secondary path south of the River could connect to the Valley Road MBTA station.)

Canoe/Kayak Landings

There are two existing canoe/kayak landings at Ryan Park. An improved path from the parking area is proposed to serve the downstream landing; accessibility improvements are also recommended for this landing.

Destinations

Recommended improvements at Ryan Playground include:

- Updated play equipment
- Path and signage improvements
- Improved security for the park entry
- Canoe/kayak landing improvements

Unresolved Issues/Areas for Further Study

There are a number of issues related to the location of the path and potential River crossings between Central Avenue and Ryan Park that could not be resolved within the time frame of this Master Plan process. It is recommended that funding be provided to further study the location of the trail and bridge locations. The study would take into account community concerns related to safety and security, as well as issues related to wetlands and environmental constraints for bridge approaches and length, accessibility and cost. The final location of the path in this area, as well as the resolution of issues related to getting into and out of Mattapan Square, will be determined during this study.

Destinations

Key destinations (both existing and proposed) were identified throughout the project area, and conceptual plans were developed for each one. These destinations, in addition to being linked by the River corridor path system and the water trail, provide a variety of active recreation opportunities including play equipment, basketball and tennis courts, and little league/soccer fields, as well as passive recreation opportunities such as seating, picnic areas, lawns and scenic overlooks for viewing the River.

Proposed improvements to destinations include new plantings, seating, play equipment, signage, parking, picnic tables, scenic overlooks, canoe landings and general maintenance activities. Highlighted destinations are:

- Martini Shell
- Doyle Playground
- DCR Parcel downstream of the Tileston and Hollingsworth Dam
- Truman Parkway Field Office

- Kennedy Park
- McIver Square
- Ryan Playground

Martini Shell

Existing Conditions at the Martini Shell Park

The Martini Shell

Paved and foot-worn paths along Truman Parkway

Aerial view of Martini Shell Park facing north

Martini Shell with closeup of mural

The park around the Martini Shell includes a grass amphitheater surrounded by attractive tree plantings, two tennis courts, a basketball court and a parking lot, all in relatively good condition. Although the park has a long River frontage, there is no access to the River and views are limited. The Martini Shell is currently used on Friday nights to show movies to audiences who sit outdoors on the open grass field.

The plan for the park would continue the existing uses, and introduce a new accessible canoe/kayak landing with parking. The canoe/kayak landing would allow canoeists to pull-out or put-in and take advantage of the existing picnic area. A secondary path would give people on the path along Truman Parkway the option of going through the park and getting closer to the River. A new overlook near the tennis courts would provide long views upstream. Other improvements

Older benches and light fixtures near the grass amphiteater

Newer DCR standard benches and court facilities

Proposed Improvements at the Martini Shell Park

would include rehabilitating the lawn, replacing older benches, improving and extending some of the existing park paths, and rehabilitating the Martini Shell (see discussion on opposite page).

Building Condition

The Martini Shell is a cast in place concrete form, with an elevated, concrete stage and enclosed rooms to the rear. Electrical work has been completed recently to provide power to the stage. Several years ago, students painted a colorful mural on the lower twelve to fifteen feet of the shell. The paint is peeling badly, likely as a result of an improper choice of paint and leaks in the structure. The paint on the upper portion of the shell is in good condition.

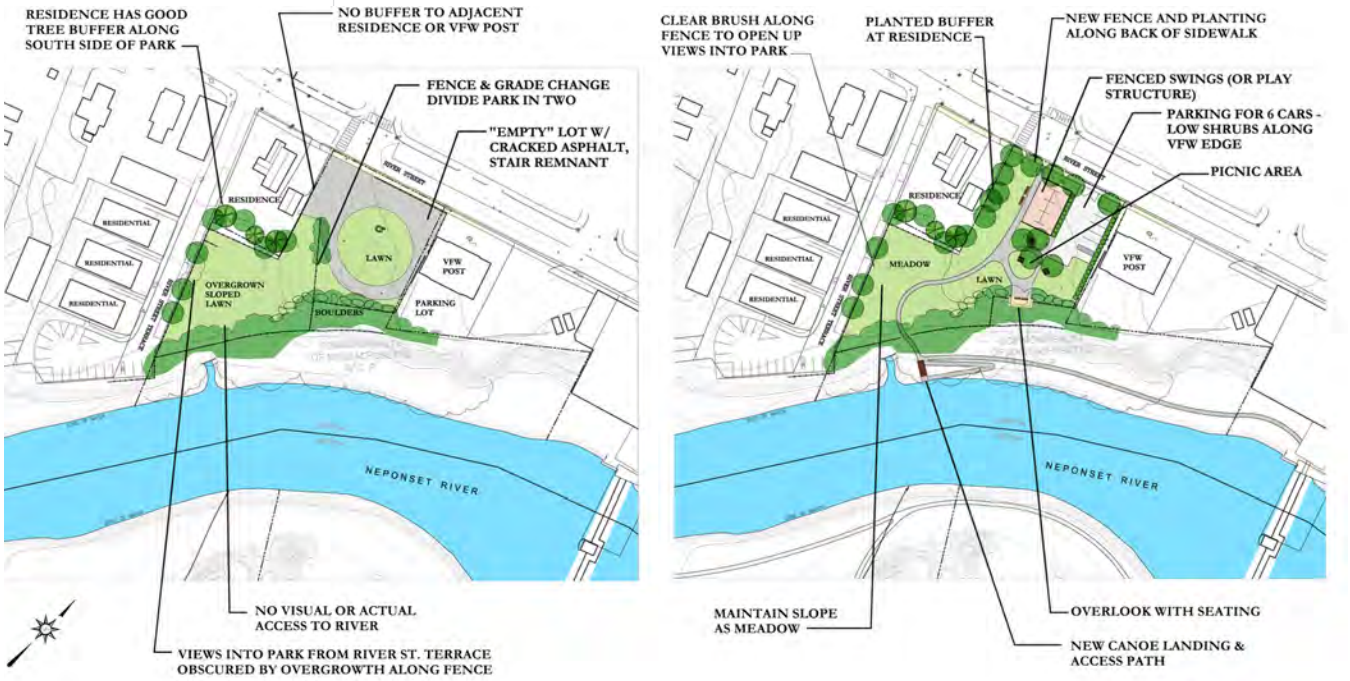
The rooms behind the shell/stage have concrete floors at the same raised elevation as the stage and have concrete block wall supporting flat roofs with a built-up roofing system. It appears that a crawl space exists under the floor of the entire structure. The stage is the only portion of the facility in use, as the back rooms are locked off and in disrepair.

Interior and exterior water damage at the Martini Shell

Recommended Building Improvements

In the short-term, the structure can continue to be used to show outdoor movies with the rooms to the rear remaining locked, but steps should be taken to prevent further deterioration of the facility. The shell itself should be cleaned and repainted. The roof over the back rooms should be replaced as extensive water penetration is visible on the interior, and flashings/copings should be repaired in spots.

A longer-range full rehabilitation of the building to provide public restrooms and a venue for live productions is recommended. A more detailed evaluation of the rear rooms will be required to determine the required improvements for long-term reuse. Although there is plumbing to an



Aerial view of park site

Fence and overgrown shrubs divide park in two

Most of the site at street level is paved and empty

Large trees form a buffer for residential neighbor to the south

Doyle Plaground: Existing Conditions (on left) and Proposed Improvements (on right)

abandoned bathroom, the bathroom has not been used in over a decade. If it were to be reactivated, it is likely that all of the plumbing would have to be replaced.

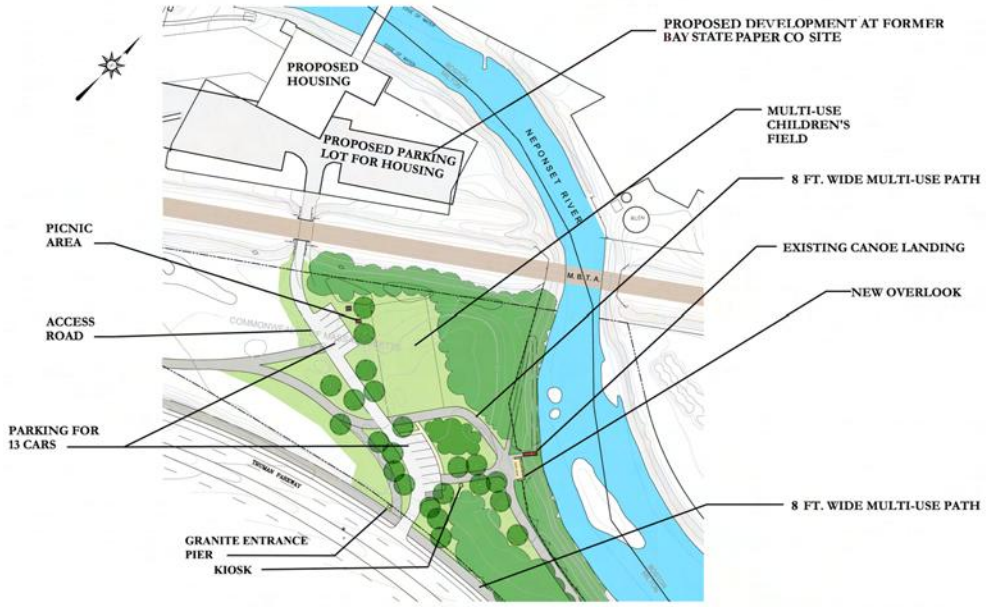
Doyle Playground

Doyle Playground is a former playground that was razed several years ago at the request of the community because of its poor condition. The parcel is now vacant.

The parcel provides an opportunity for a new accessible canoe landing with parking at the point where canoeists have to pull-out just upstream from the Tileston and Hollingsworth dam. The plan for this parcel includes a picnic area and play structure that can serve both canoeists and the adjacent residential community. A new overlook would provide a view downstream of the dam and pool and upstream along a long, straight stretch of River. Views into the park from the residences across River Street Terrace as well as from River Street would improve park security. A planted buffer between the park and the immediately adjacent residence would provide privacy for the residents.

It is also recommended that a new round of public meetings be held to complete the programming and design process for this park. The playground needs special attention as an earlier playground on this site was unsuccessful.

Downstream from the Tileston and Hollingsworth Dam

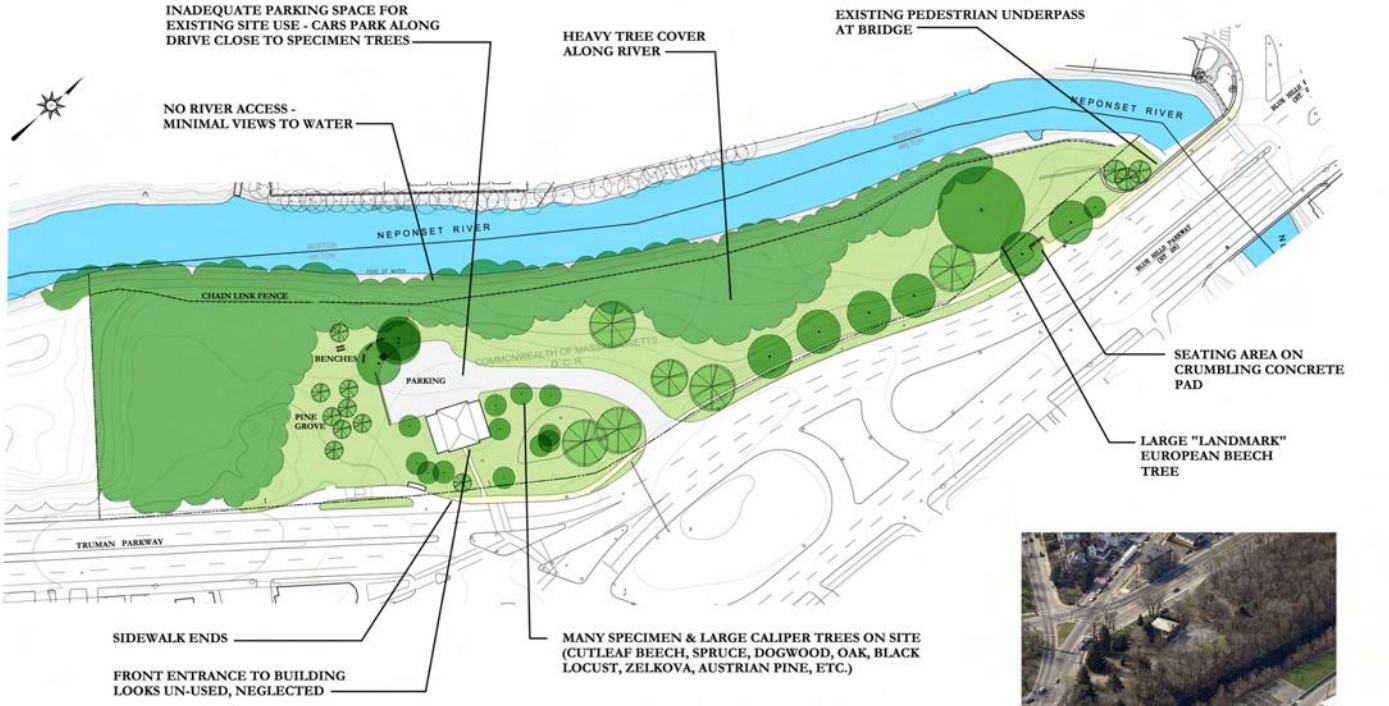


Proposed Improvements on the DCR Parcel Downstream from the T & H Dam

Entrance to the existing canoe landing from Truman Parkway

This DCR parcel just downstream from the Tileston and Hollingsworth Dam and the former Bay State Paper Company site has an existing canoe landing that can be reached via a gated driveway from Truman Parkway. Currently, the gate is kept locked most of the time. The plan for this parcel includes providing a small parking lot to serve the canoe landing and adding a picnic area, multi-use field and a secondary path system that would connect to other secondary paths along this stretch of the River. There is the potential for improvements on this parcel to be funded by the owner of the proposed Milton Falls development as part of the mitigation for that project. The project provides the opportunity for a public/private partnership between DCR and the developer to enhance recreation and access on DCR property as well as to create an amenity on the private development parcel. The developer could also provide long-term maintenance of the new DCR open space as part of the public/private partnership.

The proposed plan for the Milton Falls project (a private development proposal) on the former Bay State Paper Company property in Milton includes two canoe landings and a waterfront trail. The proposed canoe landing downstream of the Tileston & Hollingsworth Dam, when paired with



Aerial view of site facing south

View of park with Parkway Field Office on the right

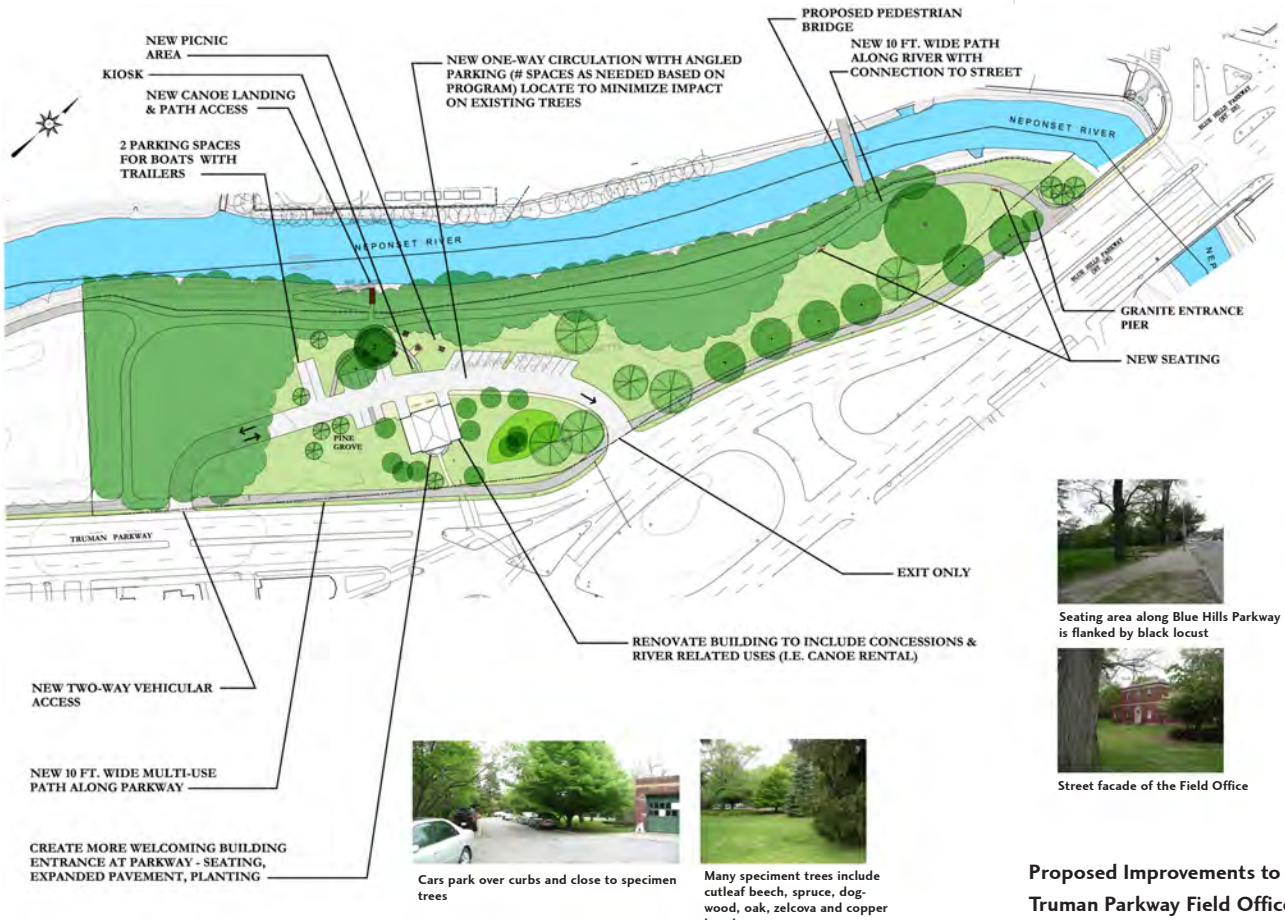
Existing Conditions at Truman Parkway Field Office

the recommended landing on DCR property upstream of the dam, would allow canoeists and kayakers to take their canoes and kayaks out at the DCR landing and portage on the trail downstream to the landing at Milton Falls. The proposed trail Milton Falls would link to the trail on DCR property.

Truman Parkway Field Office

This large parcel includes the existing Truman Parkway Field Office building and parking lot. A small seating area along the sidewalk is located at the northern end of the site. The site has no visual or physical access to the River. It does, however, have magnificent existing specimen and large caliper trees including cutleaf beech, European beech, spruce, dogwood, oak, black locust, Austrian pine and zelkova.

Because of the parcel's large size, adjacency to Mattapan Square, high visibility from Truman Parkway, and existing building, it provides an excellent location for bringing people to the River



Cars park over curbs and close to specimen trees

Many speciment trees include cutleaf beech, spruce, dog-wood, oak, zelcova and copper beech

Seating area along Blue Hills Parkway is flanked by black locust

Street facade of the Field Office

Proposed Improvements to the Truman Parkway Field Office

and for providing some opportunities for vendor services. The plan for this parcel focuses on bringing people closer to the River. A new accessible canoe/kayak landing is proposed, and it is recommended that the existing building be rehabilitated to accommodate kayak/canoe rentals on one side and perhaps an ice cream vendor on the other side. A picnic area would provide outdoor seating space for the ice cream vendor as well as for canoeists and hikers. Benches along the path would provide rest stops for people walking along the path.

The existing parking lot would be modestly expanded to accommodate additional cars; two oversized spaces would allow trailers that could be used to shuttle canoes between this location and other canoe landings so that canoeists could put-in at one location, row to another location, and be shuttled back to their cars at the original location. The existing vehicular circulation pattern is modified to provide a new entrance/exit drive from Truman Parkway south of the building; the existing entrance would become an exit only drive. This circulation pattern would provide a clearer and easier entrance point further away from the confusing intersection of Eliot Street, Truman Parkway, Blue Hill Avenue and Brush Hill Road. A break in the median at the new entrance would allow visitors arriving from the south to turn left into the parking lot. Further traffic study would be needed to determine if introduction of this break in the median would require closing the next break to the south.

A proposed bridge at the north end of the park would connect to the secondary path on the north side of the River (see **Kennedy Playground**).The bridge would allow people to access Kennedy Playground and the trail on the north side of the River without going through Mattapan Square.

Field Office Building Condition

Waterside view of existing Truman Parkway Field Office building

The first floor of the brick Field Office building is currently used for tool and equipment storage and repair, with a small meeting area and office on the second floor. The structure has three main sections. The main central building rises two full stories with a hip roof. Two bays on either side of this central area are single-story with flat roofs. The entire structure is finished in face brick with brick and concrete block backup. The main roof is finished with slate shingles on the sloping surfaces. The flat roofs on the two side bays are finished with a light gravel ballasted, built-up roofing system and approximately two foot high brick parapet walls with internal roof drains located in two corners.

The entire structure is supported on a slab on grade foundation with a formal entrance facing Truman Parkway. On the rear of the building, three overhead garage doors open to vehicle bays. The center section of the building has an entrance hall in the front, with a wood stair to the second floor. The rear half of the central section is divided into a vehicle bay to one side and a

Before and after images of the park and building at the Truman Parkway Field Office

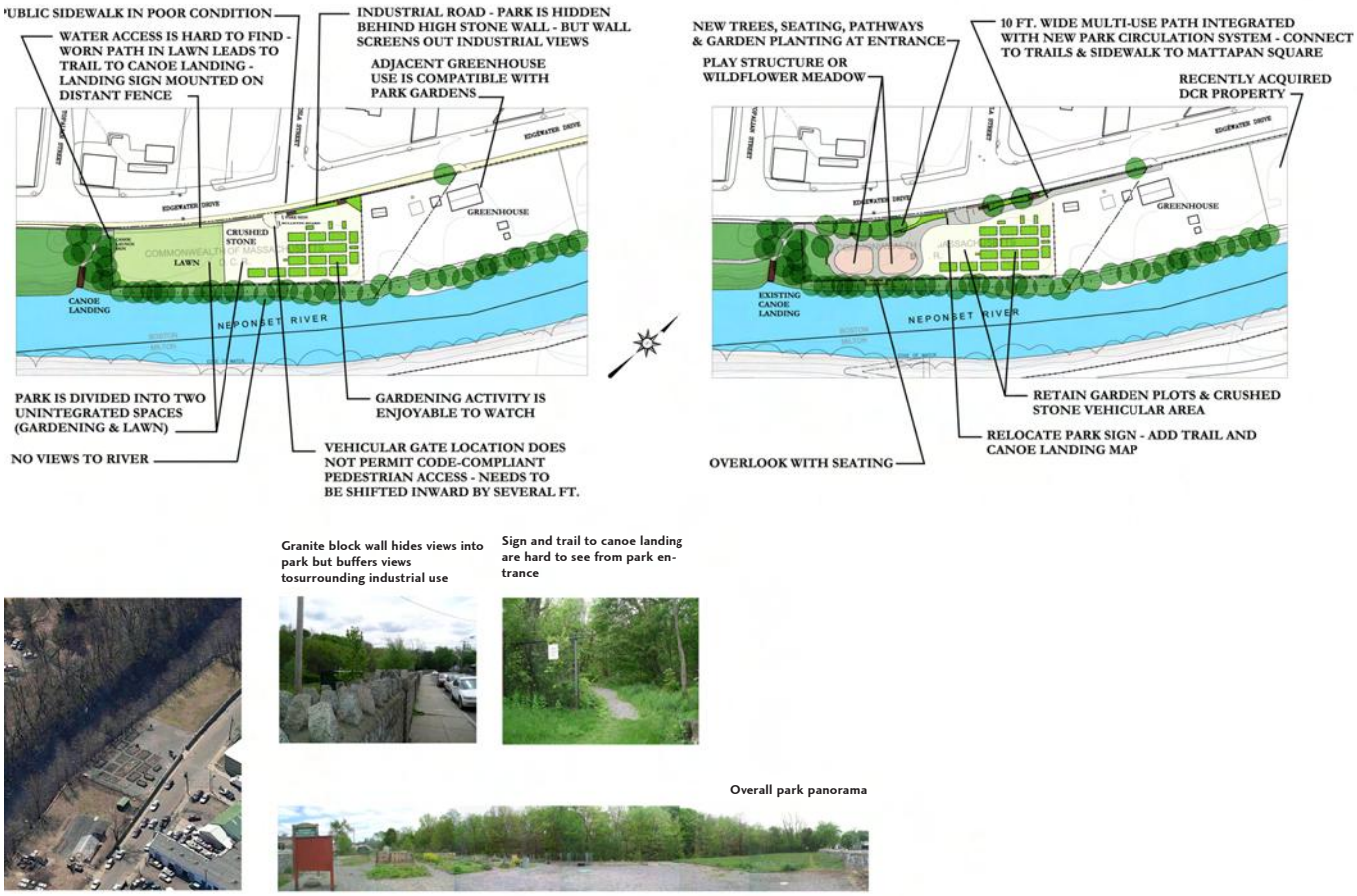
mechanical room to the other. The two side sections are used for vehicle bays with adjacent tool storage rooms.

Building Reuse

The ground floor of the building could readily be adapted to the proposed vendor uses. A seasonal canoe/kayak vendor and ice cream vendor should work within the existing building, although further study would be required to determine the extent of necessary building modification. The existence of the building's mechanical room to the rear of the building would restrict usage of that portion of the floor, as relocating the plumbing and mechanical services from that location would likely prove prohibitively expensive, particularly given the seasonal nature of the proposed reuse.

The three vehicle bays located at the rear of the building provide unobstructed spaces and should serve to support the vendor functions well. The two bays flanking the central section are uninsulated/unheated and therefore could not support active plumbing in the colder months. It is not clear whether the vehicle bay located within the central structure is heated or insulated.

Kennedy Playground



Kennedy Playground: Existing Conditions (on left) and Proposed Short-Term Improvements (on right)

Kennedy Playground is located on Edgewater Drive, just west of Mattapan Square. The linear park is separated from the street by a stone wall built by the Works Progress Administration during the 1930s; the wall limits views into the park from the street, but also minimizes the intrusion on the park of the adjacent industrial uses.

The park has an existing canoe landing, a large lawn, two benches and community gardens; there are no views to the River. A portion of the site is devoted to the City Natives Nursery through a partnership with the Boston Natural Areas Network (BNAN). City Natives is a native plant nursery and horticultural learning center that provides services to the citizens of Boston and beyond. The nursery site, roughly half an acre, holds a modest greenhouse, native plant display beds, a small orchard, a wildflower meadow, and the Learning Garden. The greenhouse is used to raise plants for community garden common areas and for revegetation projects in natural areas in Boston. The greenhouse is also used as an educational tool in horticultural programming. DCR recently

acquired the parcel to the northeast of the Nursery after all the buildings were demolished and the site was remediated, but has not yet developed the site for open space.

The Master Plan illustrates short-term recommendations designed to provide a more attractive park that could serve both the adjacent residential neighborhood and regional visitors to the area. The City Natives Nursery and community gardens, valuable community assets that attract a number of visitors, would remain in their existing location, and a new play structure area is shown to the left of the entrance (alternatively, this play area could be planted as a wildflower meadow). A new landscaped, seating area near the entrance would allow parents to watch their children on the play equipment or to observe gardening activity. An overlook on the south side of the play area would provide views of the River; the River is hidden from view from most of the park because of trees and the retaining wall bank. A new entrance sign would direct visitors both to the canoe landing and the trail leading from the park upstream along the River.

For the long-term, it is recommended that the community gardens be moved to the recently acquired parcel north of the greenhouse, so that half courts could be developed for active recreation on the existing community gardens location. Locating the courts adjacent to the play area would allow older children to move between the play equipment and the courts, and would allow parents to watch children in both locations. Additionally, putting the courts close to the driveway/park entrance would facilitate police surveillance of the courts for security. A pedestrian bridge from this parcel would link to the Truman Parkway Field Office parcel across the River, allowing people to access Kennedy Playground and the trail on the north side of the River without going through Mattapan Square. These recommendations are consistent with the recommendations from the community meetings held several years ago.

It is also recommended that a new round of public meetings be held to complete the programming and design process for this park. The playground needs special attention as an earlier playground on this site was unsuccessful.

Stone wall along Edgewater Drive at Kennedy Playground

Gavin R. McIver Square

McIver Square is a small plaza at the southwest corner of River Street and Blue Hills Parkway. The Plaza is currently in poor condition with overgrown plantings, a chain link fence along the River edge and uncollected trash.

The small plaza provides an opportunity to introduce people to the River in Mattapan Square. The plaza location affords long views down the River to the south, and also views of the Blue Hill Avenue bridge. A plan for this square has been developed by the Mattapan Community Development Corporation; the CDC has received a grant for implementation of the plan.

Gavin R. McIver Square

View of Neponset River and Truman Parkway from McIver Square

Monsignor Francis A. Ryan Playground

Proposed Improvements to Ryan Playground

Ryan Park's location along an attractive stretch of the River in a heavily-populated area, in addition to its accessibility from Mattapan Square and its varied facilities, make it an important resource. The existing park is attractive and well-designed with facilities including play structures, a pool and pool house, two basketball courts, two tennis courts, a little league and soccer field, two canoe landings, a riverfront trail and a parking lot. The park is well used, and serves the adjacent residential neighborhoods, as well as the larger Mattapan/Hyde Park area.

Recommended improvements are minor. The welcoming entry gate, intended for pedestrian use only, is wide enough to allow unwanted vehicular access. New removable bollards are proposed to allow access by DCR maintenance vehicles, while preventing entry by other vehicles.

The existing parking lot connects to a path to one of the two canoe landings. Recommendations include regrading the path to make it less steep, and providing an accessible ramp at the canoe landing. A new sign at the parking lot would direct visitors to the canoe landing.

The corridor wide multi-use trail would follow the river's edge through the park, and would connect to other park facilities via the path to the canoe landing described above and two additional connecting paths that join the park's existing pathway. Recommendations also include replacing trees in the picnic area and evaluating the existing play structures to determine the need for updating or replacement.

Ongoing neighborhood concerns regarding security issues at the park need to be addressed in the Reservation's Safety and Security Plan. It is recommended that community meetings be held to provide a greater understanding of the issues.

Acquisition/Easement Recommendations

In most cases, this master plan confines recommendations to property owned by DCR. However, there are several locations where recommendations have been developed for land owned by other public agencies or by private entities. These locations include places where:

- Development of a continuous River corridor path would require use of property owned by other public entities
- Development of a continuous River corridor path require a small portion of a privately-owned property
- riverfront access can be incorporated into private development plans

Where development of a continuous River corridor path would require use of property owned by other public entities.

- This may include Town of Milton land just east of Central Avenue and just west of the Truman Parkway Field Office and MBTA land at Mattapan Square. Where the land is publicly owned, it is recommended that DCR negotiate an easement across the necessary parcels.

Where development of the path requires a small portion of privately owned property or private entities. These are opportunities for public /private partnerships where open space brings value to private land and private development helps to support this open space. (*It is important to note that the privately-owned property is being used for commercial purposes; none of the privately-owned property is in residential use.*)

- The existing Riverway Plaza building at the corner of Central Avenue and River Street extends all the way to the river's edge, precluding the opportunity to develop a path in this location. One option that will be examined during the future Path Location Study includes the potential development of a walkway cantilevered off the back of the building and then continuing along

the back edge of the property to Central Avenue (discussed earlier on page 49). This would allow a path on the north side of the River to connect directly to Central Avenue where users could connect either to the existing path on the south side of the River, or to the Baker Square Trail extension being developed on the north side of the River. If the primary trail is located on the south side of the River, and a restaurant is located with the Riverway Plaza building, a deck on the back of the building could provide patrons with a view of the River. Alternatively, a vending area on a deck could be developed to serve trail users. (Development of the deck would be by the property owner and would require no action on the part of the DCR.)

- See discussion of Stop and Shop below.

Where riverfront access can be incorporated into private development plans, either to meet permitting requirements, as mitigation, or to provide additional amenity to the development. These are opportunities for public /private partnerships where open space brings value and private development helps to support this open space.

- The proposed private development plan for the **Milton Falls** project on the former Bay State Paper Company property in Milton includes a canoe/kayak landing and a waterfront trail. The proposed canoe/kayak landing downstream of the Tileston & Hollingsworth Dam would work well when paired with the recommended landing on DCR property upstream of the dam. Canoeists/kayakers could pull out at the DCR landing and portage on the trail to the downstream landing at the former Bay State Paper Company site. The proposed trail by the developers of the Milton Falls project could link to the trail on DCR property.

- Across the River, and slightly upstream from the Martini Shell is the **J. G. Grant Company**. The property owner is currently developing a plan for mitigation of contamination and fill impacts to the riverbank. As part of the mitigation, it is proposed that the owner develop a path which could then connect to a bridge across the River and tie into the path along Truman Parkway (see diagram on p. 39). The plan shows the bridge touching down on the **Stop and Shop** and parcel, with the path continuing along the back side of the parcel to the edge of the Martini Shell parcel. It then follows the tree line along the boundary between the Stop and Shop parcel and the park, to join the path along Truman Parkway. Alternatively, the path could be constructed as a boardwalk along the back of the Stop and Shop parcel with a bridge crossing further upstream. A third option would have the bridge touch down at the northern end of the Stop and Shop parking lot, where a path would follow the edge of the parking lot and connect to Truman Parkway. All of these options would require an easement on Stop and Shop property. The DCR should look to one or both of these private property owners for funding to construct the bridge. If Stop and Shop should redevelop their site, their future plans may impact the location of the bridge and path on Stop and Shop property.

- The Mattapan Community Development Corporation is developing the **Neponset Fields** residential development at Poydras Street and Tchapitoulas Street. The project plans include a riverfront open space that could provide another location for public access to the River.
- The **Lewis Chemical** parcel, adjacent to the Fairmount MBTA Station is currently owned by the City of Boston. The parcel requires environmental clean-up and the city has undertaken a public process to determine the future use of the parcel. Development of a riverfront open space on a portion of the parcel would create additional River access on the north side of the River, adjacent to land designated for conservation.

Early Action Items

This Master Plan is a long-term plan that will be funded and implemented incrementally over a ten to fifteen year period. However, there are several early action items that can begin to be implemented in the near future, as funding becomes available.

The Phasing Strategy is based on funding strategies and construction feasibility. There are a number of planning and design issues that will need to be resolved, and design development work that will need to be completed prior to master plan implementation. The phasing plan includes both planning and design work as well as project construction.

The master plan includes trail construction, conservation area improvements and park improvements (including canoe/kayak landings). To the extent that conservation area and park improvements are adjacent to, and necessary for, the construction of the trail, funding for these elements will be sought, and improvements will be implemented, with trail construction. Other improvements will be identified as proposed projects on the DCR's Capital Spending Plan.

Early Actions (2006)

Action 1: Truman Parkway Bike Lane

The Master Plan includes trail construction adjacent to Truman Parkway from the Neponset River Valley Parkway to Mattapan Square. In 2006 the DCR will begin the process of implementing five foot bicycle lanes within the existing seven foot shoulders of Truman Parkway and parts of the Neponset Valley Parkway. This early action will provide better bicycle access along the Parkway in the immediate future and will help drivers to adjust to a narrower shoulder - some of the existing shoulder is likely to be used in the future for trail construction.

Action 2: Path on J. G. Grant Company Parcel

As described earlier in this report, across the River and slightly upstream from the Martini Shell, the J. G. Grant Company is currently developing a plan for mitigation of impacts to the riverbank. As part of the mitigation, it is proposed that the company develop a path that crosses the River and ties into the path along Truman Parkway. The southern end of this path would link to the bike lane on Truman Parkway in the near future and the Truman Parkway primary trail in the future. The northern end of this path would include a pedestrian bridge across the River to the Stop and Shop property and would continue through the Stop and Shop property or the Martini Shell Park to the primary trail along Truman Parkway. Negotiations and planning efforts involving Stop and Shop should begin immediately to ensure that the path along the Grant property will be connected with the primary trail along Truman Parkway trail at the earliest possible time.

Action 3: Transit Oriented Development (TOD) Grant for Trail Design

DCR should meet with the managers of the Massachusetts Transit Oriented Development Infrastructure and Housing Support Program (administered by the Executive Office of Transportation in cooperation with the Office for Commonwealth Development and the Department of Housing and Community Development) to understand how to best prepare and package a grant application for further study to resolve issues related to the path alignment through Mattapan Square, and connections to the Mattapan Square MBTA Station. The state's TOD Bond Program provides financing for pedestrian improvements and bicycle facilities within 1/4 mile of a commuter rail station, subway station, bus station or ferry terminal (in some cases, projects that extend further than the 1/4 mile radius can be funded).

DCR should work with the City of Boston and the MBTA to better define the scope of the work for which TOD funding will be sought. Community support will be an important component of the grant application and the scope will need to be defined during the summer of 2006.

Action 4: Coordination with Private Development Projects

DCR should continue to work with the City of Boston and Town of Milton and private developers, including the owners of the Milton Falls, Riverway Plaza and Star Market sites, to identify and provide guidelines for the sections of trail and other improvements that can be constructed as part of new development projects.

Further Implementation Phasing (Following 2006)

Trail Construction

The phasing of the trail construction will be addressed when design and community issues are further resolved and opportunities with new developments are better realized. Potential funding sources include a second TOD grant, the Federal TEA-21 Program administered by the Massachusetts Highway Department and the DCR's proposed sidewalk replacement program.

Parks, Canoe Landings and Conservation Areas

To the extent that these improvements are needed for trail construction, they will be included with trail design and construction funding applications. Improvements that are not needed for trail construction will be defined as separate proposed projects as part of DCR's Capital Spending Plan. Priority should be given to parks and conservation areas which are adjacent to the new trail and may therefore serve a larger regional constituency.

Conservation Plan

Overview

This section provides a description of the existing conditions for the conservation areas within the Project Area. This section also discusses recommendations for improvements to the natural environment that may be made in order to improve wildlife habitat, restore an impacted area, and/or mitigate increased human activity.

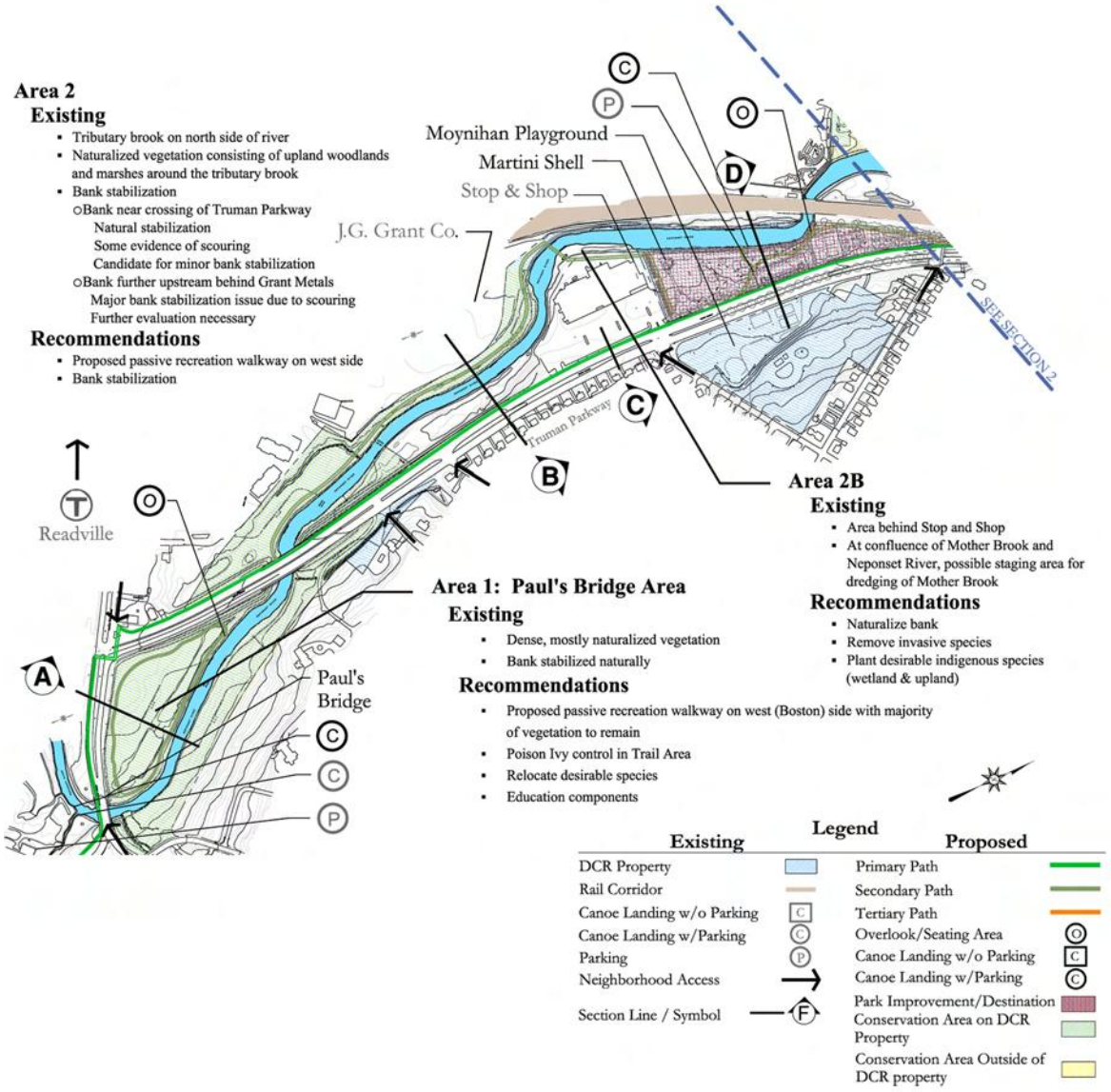
Conservation efforts will focus on the following objectives:

- Management of forested areas
- Plantings and improvements in areas where recreational trails or potential impact from humans exists
- Maintaining and controlling the spread of invasive and undesirable plant species
- River bank stabilization
- Enhancing and expanding aquatic and riparian habitat for birds and mammals

The Project Area has been broken down into nine study areas. These areas include large upland forested areas, narrow strips of wooded uplands, wetland marsh and meadow areas, forested wetland areas, and recreation areas such as playgrounds and parks. The diversity in land type and

stages of the forest development along the River provide a range of differing habitat values, such as food and shelter, for a variety of wildlife. Through additional conservation and environmental measures, the goal is to improve the forest diversity and wildlife habitat, while simultaneously integrating public recreation in an environmentally friendly manner, and preserving the natural areas for the future.

Section 1: Paul's Bridge to Martini Shell



Area 1: Paul's Bridge

Area 1 is located in the southwest corner of Hyde Park on the Milton and Boston line, on the north side of the Neponset Valley Parkway. An unnamed perennial stream flows from the south to the north, through Area 1 into the Neponset River. The banks along this portion of the River appear stable, are gradually sloping towards the River and are moderately vegetated with trees and shrubs. The dominant tree species in this area include River Birch (*Betula nigra*), Black Cherry (*Prunus serotina*), and Red Maple (*Acer rubrum*).

Within Area 1, bordering along the north and south sides of the Neponset River is a vegetated wetland system. The wetland areas on both sides of the River are representative of a wooded deciduous swamp. The wetland system on the north side of the River appears to capture seasonal floodwaters.

The area along the south side of the Neponset River is a relatively young forest area with some mature trees in the overstory. The understory is dominated by shrubs and herbaceous plants. There are no proposed improvements to the area along the south side of the River, thus allowing the natural growth to remain unaltered.

Proposed recreational trails along the north side should be carefully located in order to avoid large trees and concentrated areas of herbaceous vegetation such as Lily of the Valley (*Convallaria majalis*). The trails should be located in upland areas in order to avoid impacts to the surrounding wetlands. If necessary, footbridges or boardwalks should span the wetland areas to avoid impacting these areas and to permit safe passage. To accommodate public access to this area and improve the use of the path, Poison Ivy (*Toxicodendron radicans*) will need to be controlled and maintained (refer to the Maintenance section in Chapter IV for additional information on Poison Ivy control). Areas where the proposed pathway will disturb the existing vegetation should be reviewed and new vegetation may need to be added along the path to promote stability and limit growth of nuisance species.

Where feasible, and in conjunction with the construction of a new trail, invasive species should be removed (see **Appendix C)** for information on management of invasive species). Glossy Buckthorn (*Rhamnus frangula*) is the dominant invasive plant that was located along the route of the proposed trail. Eradication of this species is very difficult. However, individual plants can be pulled during establishment of the trail, and native vegetation may be planted to deter further growth. Examples of desirable species that would provide wildlife habitat improvements and buffers between the path or roadway and wetland areas include Sweet Pepperbush (*Clethra alnifolia*) and Highbush Blueberry (*Vaccinium corymbosum*). The area along the north side of the River should be maintained in accordance with the maintenance plan proposed for this area.

In addition to vegetation improvements through new planting, invasive species removal, and poison ivy control, public use can be improved through mosquito reduction. Since Area 1 has a considerable area for potential floodwater capture, there is a high potential for mosquito larvae to develop. In order to reduce the mosquito population both natural and chemical methods could be applied. A potential natural solution would include the use of bat boxes placed throughout the site and around the wetland areas. These boxes could provide a long-term solution in mosquito control. Chemical treatment options include *Bacillus thuringienis*, which is a fast acting bacterium that can be used in almost any aquatic habitat with no restrictions, and S-methprene which is a synthetic mimic of an insect hormone. Chemical treatments are not permanent and must be repeated in order to effectively reduce the mosquito population.

The following is a list of some of the plant species observed within Area 1:

- Multiflora Rose - (*Rosa multiflora*)
- Black Cherry - (*Prunus serotina*)
- River Birch - (*Betula nigra*)
- Tamarack - (*Larix laricina*)
- Pignut Hickory - (*Carya glabra*)
- Crab Apple - (*Malus spp.*)
- Buckthorn - (*Frangula alnus*)
- American Elm - (*Ulmus americana*)
- Lily of the Valley - (*Convallaria majalis*)
- Cedar - (*Juniperus virginiana*)
- Poison Ivy - (*Toxicodendron radicans*)
- Skunk Cabbage - (*Symporicarpus foetidus*)

Areas 2 and 2B: Near the Stop & Shop and J. G. Grant Company Parcels

Areas 2 and 2B are located north of Area 1 and the Truman Parkway and southwest of the Stop & Shop Plaza. An unnamed intermittent stream flows into the Neponset River from the north. Vegetated wetlands representative of a wooded deciduous swamp extend along the northern side of the River.

The current proposal for the location of a secondary path follows along the east side of the Stop and Shop shopping center, crosses the River on a footbridge, and follows along the north bank of the River to Area 1.

In this area, the River is bordered by a strip of wooded upland. The path should be placed along the upland strip. Dominant vegetation in this area consists of Red Maple trees, Buckthorn and Poison Ivy. Poison Ivy is an undesirable species in areas of high human contact and should be eradicated in areas along and near the proposed path.

An informal footpath is currently in place along a portion of the River on the upland edge. In order to minimize disturbance to the native vegetation, the proposed trail should follow the existing informal trail to the extent possible. During construction, attempts to remove Buckthorn and Poison Ivy bordering the path should be considered. Native vegetation may be added along the trail to inhibit the regrowth of Poison Ivy and Buckthorn, and to add wildlife habitat benefits.

The proposed trail along the north side of the River in Areas 2 and 2B could require bank stabilization in order to accommodate the construction of a path. Sections of the bank within these areas consist of several problem areas, including undercut and eroded banks, and a paved section of bank near the Stop & Shop. In addition, the banks along this portion of the River are relatively steep, thereby potentially requiring some stabilization to accommodate the grading for a new trail.

Options for riverbank stabilization include the use of live plantings, a combination of structural components and plant material, and hard armoring including rock riprap and gabions (see **Appendix D**). Site-specific analysis is needed to determine an appropriate solution for stabilization, and the selection should account for the factors leading to the current condition of the bank as well as the current or proposed use of the area upgradient from the riverbank.

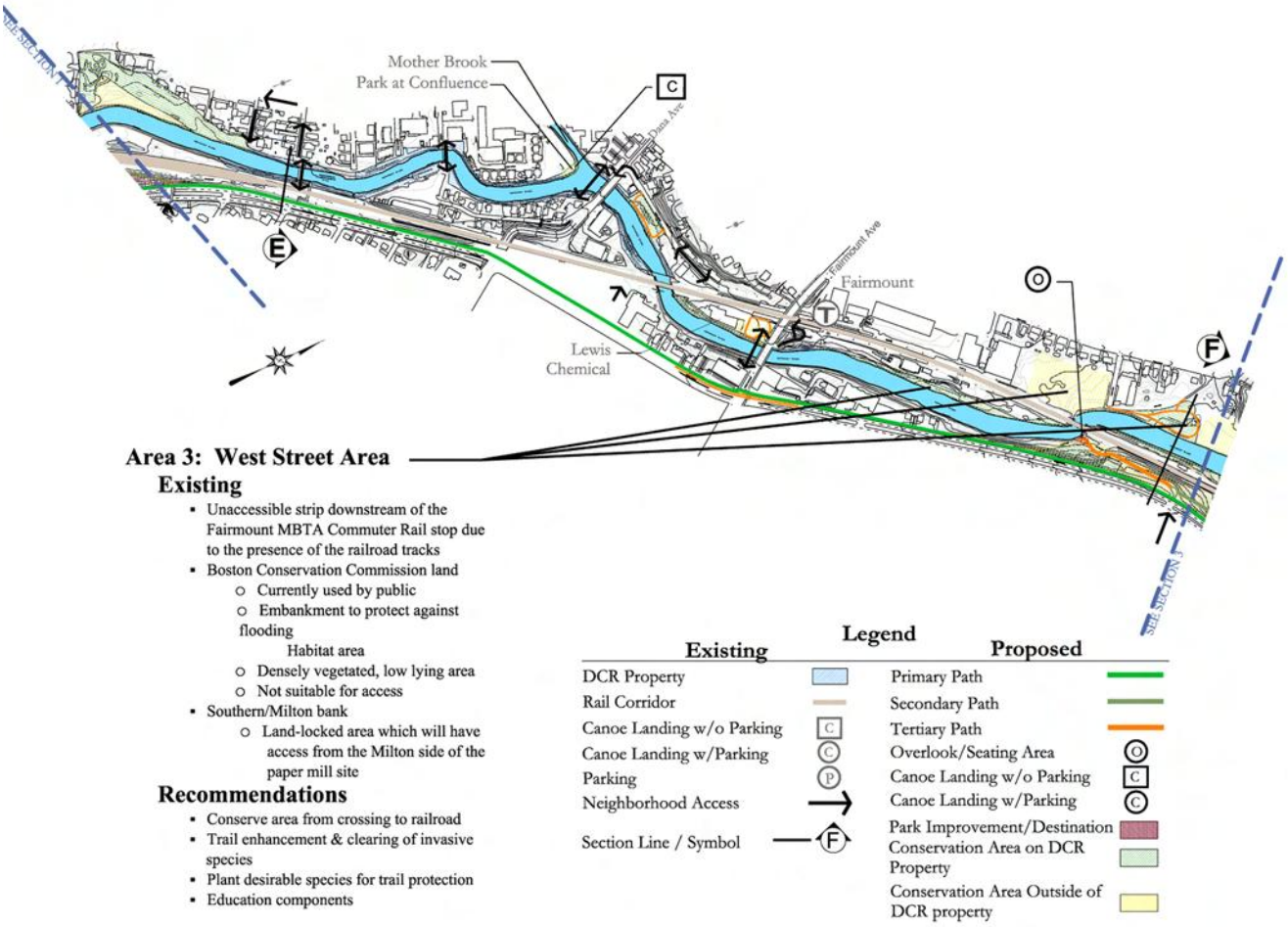
Additional recommended improvements for Area 2B (behind the Stop & Shop Plaza) include the removal of trash, wetland restoration/plantings, and bank restoration.

The trash and debris, including paper trash, metal shopping carts, and old tires, should be removed from the site. Trash removal should be continued as specified in the maintenance section of this report.

Low flow velocity and sediment transportation has caused the deposition of fine sediments along the inner (southern) bank of the River. These areas of sediment accumulation have developed into mounds that are dominated by the invasive purple loosestrife (*Lythrum salicaria*) plant. In addition, small pocket wetlands along the inner bank can be improved through the removal of

several another invasive species: Japanese knotweed (*Polygonum cuspidatum*) and common reed (Phragmites australis). Planting of native wetland and riverbank species may allow for a reduction in the presence of the invasives and improve the habitat values of the vegetative community.

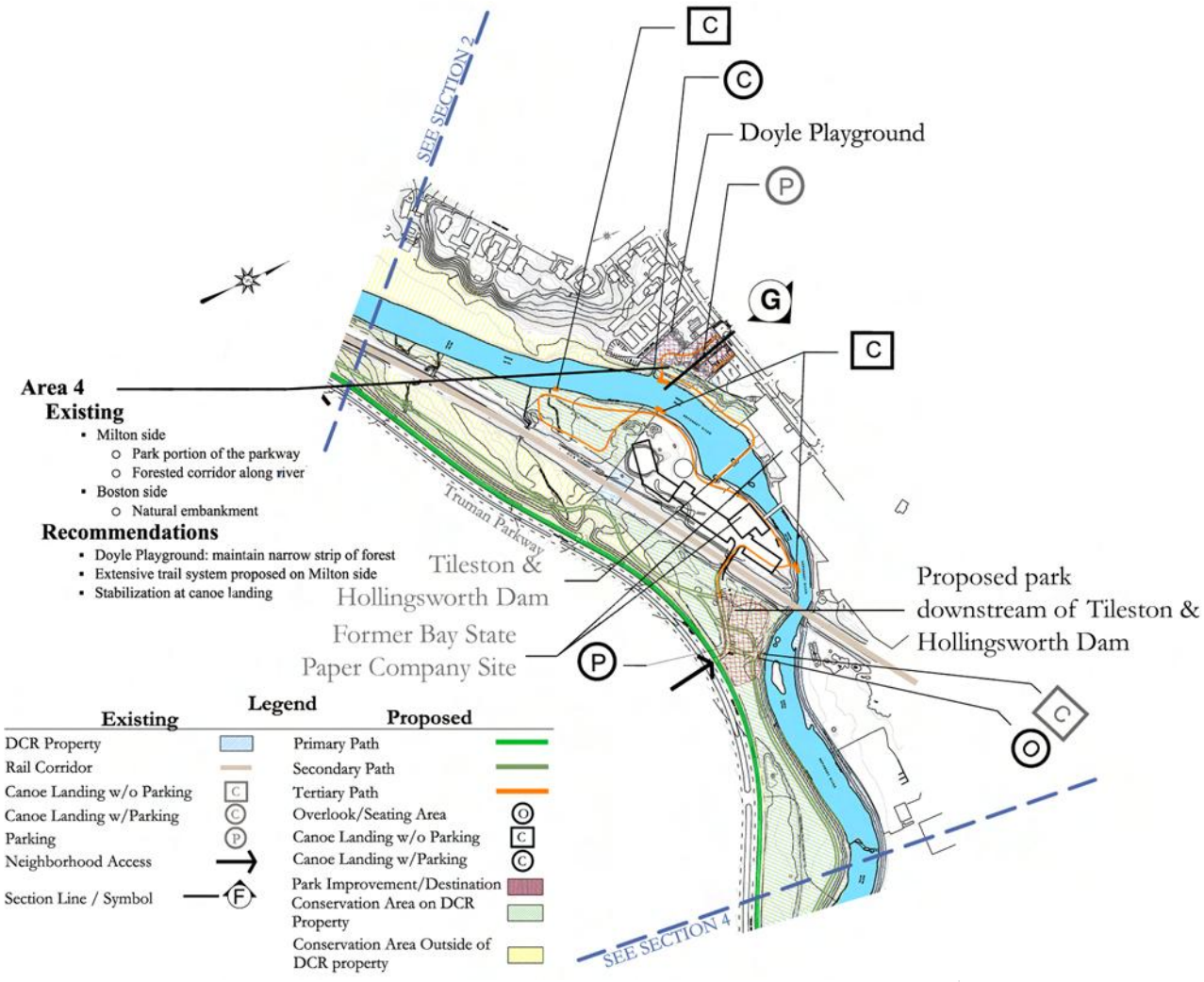
Section 2: Fairmount Avenue



Area 3: West Street Area

This area is located east of Fairmount Avenue along the north side of the River. This narrow strip of land is relatively inaccessible and should be allowed to develop and exist in a natural state. Trash removal is recommended. However, vegetation management or additional plantings are not recommended.

Section 3: Bay State Paper Company/Tileston and Hollingsworth Dam



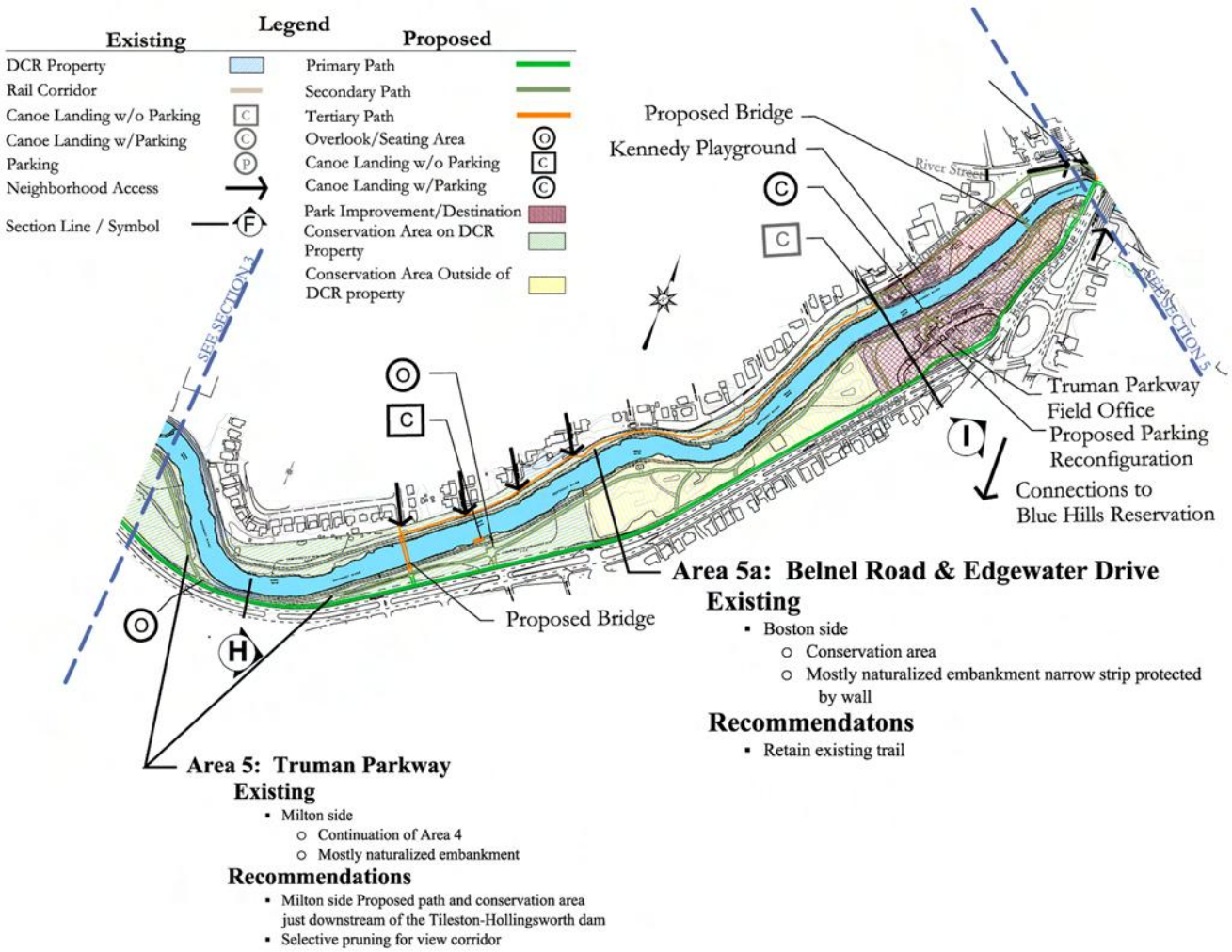
Area 4: Upstream of the Tileston and Hollingsworth Dam

Area 4 is located east of Area 3 and west of Doyle Playground. This area consists of a natural wooded and young forest area bordered by residential neighborhoods. Area 4 has high potential for public use and is an asset to the neighborhood. This area is in several different stages of forest succession and this in turn provides a variety of wildlife habitat values. The eastern portion of this area is composed of shrub stage vegetation, while portions of the area to the west are composed of a more mature forested community. The shrub stage areas are dominated by Staghorn Sumac (*Rhus typhina*), Greenbrier (*Smilax rotundifolia*), and Multiflora Rose, while the young forest is dominated by black cherry and Norway maple.

An informal trail extends from the public road to the River. This path could be improved upon to establish a more formal trail. Vegetation along the sides of the informal path should be trimmed and invasive species such as Muliflora Rose and Japanese Knotweed should be removed. Again, where feasible, the addition of native species along the trail may be beneficial to reduce the regrowth of these invasives.

The shrub stage forested and field area to the east should remain unaltered. The banks along this area are vegetated and appear stable. Some sections of the riverbank have been reinforced using hard armoring techniques such as rip rap and granite blocks.

Section 4: Belnel Neighborhood to Mattapan Square



Area 5: Truman Parkway

Area 5 is located along the Truman Parkway in Milton. This area consists of wooded and grassed areas and steep banks down to the River. The "look" of the Parkway should remain as a true parkway with the existing mature trees - mostly Red Maple and Black Walnut - and understory to remain. The proposed primary trail would be constructed along this side of the River. The trail and parkway can coexist, but care should be taken during construction by pre-tagging trees to distinguish those to be protected versus those to be removed for the path. If possible, construction access should be strategically located to create a view corridor. Some portions of the trail may need to be cantilevered along the slope or along the bank of the River. In order to protect the existing River bank and the proposed walkway, the bank should be stabilized utilizing either hard armoring or a combination of hard and soft armoring techniques. Wherever possible existing vegetation should be left to grow naturally and function as natural bank stabilization.

Invasive and undesirable species should be controlled and kept to a minimum. Overlook areas should have interpretive signage, encouraging "carry in/carry out" of trash, and signs pointing to various species and vegetation, including educational signage describing invasive and undesirable species.

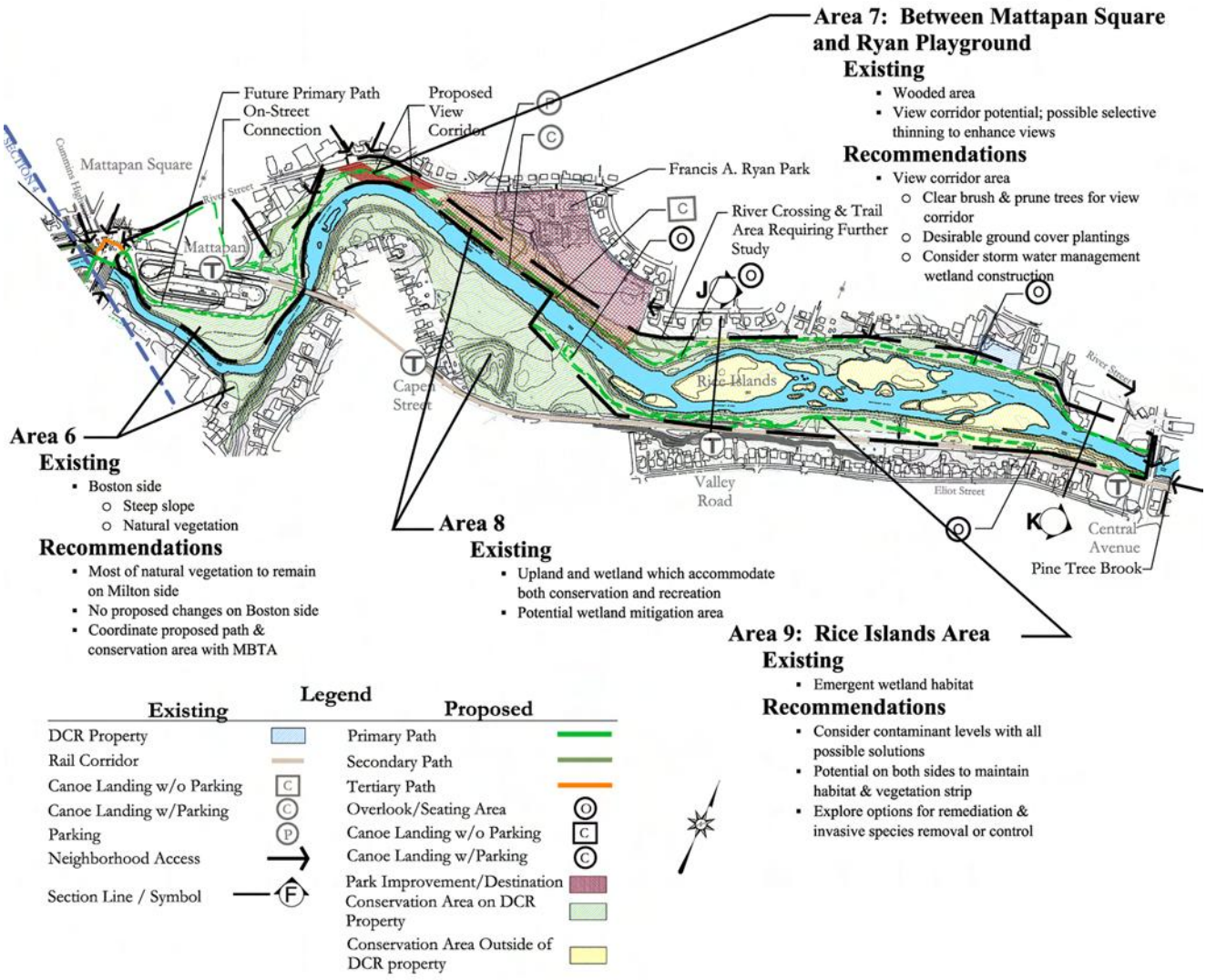
Areas disturbed during the construction of the path should be replanted with native and desirable plant species, which act as a buffer and provide an improvement to the wildlife habitat functions and values.

Area 5A: Belnel Road & Edgewater Drive

This area of land is a narrow strip of land between the Neponset River and Belnel Road/ Edgewater Drive. The Kennedy Playground is located on the eastern portion of this narrow strip of wooded land. This area has steep, well-vegetated banks. The site is dominated by young to mature forests consisting of Red Maple and Black Walnut (*Juglans nigra*) trees. A wall separates the road and residential area from the natural wooded strip and the Neponset River. Kennedy Playground area is currently an open space with lawn and gardens. A trail extends from the playground area west along the narrow strip of land and the River. This portion of the River is relatively straight. The banks appear to be stable with various sizes and types of vegetation.

The existing path is well established. Minimal impacts to the surrounding vegetation should be required in order to formalize the path along this section of the River. Debris and trash accumulating along the wall should be removed. Signage forbidding dumping and littering should be placed in areas where debris and trash is most common.

Section 5: Mattapan Square to Central Avenue



Area 6: Mattapan MBTA Station

This area is situated south of the MBTA station. Currently access to this area is restricted due to the railroad tracks. Additional review of this area is required and coordination with various state and local officials and the MBTA will be necessary in order to improve public access to the River in this area. Ideally, this area could offer a natural respite adjacent to one of the most congested urban areas within the Master Plan boundaries. A pathway here would allow for trail users to enjoy traveling along the River rather than through an extended section of City streets. Should the access constraints to this area be resolved, the pathway should have minimal impact on the ecological functions of the larger remaining vegetated section. Slope stabilization should remain a priority for any possible trail.

If access is not possible, the area should remain as a conservation area. Vegetation should grow naturally. Trash should be removed from the area and if invasive species are present or become an issue, the vegetation should be removed and desirable species should be replanted. As an isolated natural area between the River and the railroad tracks this location has the potential to provide wildlife habitat and safety for animals that utilize the River and forested areas.

Area 7: Between Mattapan Square and Ryan Playground

Area 7 is located between Mattapan Square and Ryan Playground. This section is a forested section of the River with areas of both dense and sparse vegetation throughout. The banks along this area are vegetated with trees, shrubs, and saplings of various sizes. In addition, this section of the River has a large bend in it and it is important to maintain the outer banks along this section of River. The dominant vegetation in this section is Glossy Buckthorn, Tree-of-Heaven (*Ailanthus altissima*), and Norway Maple (*Acer platanoides*). Informal paths extend from Ryan Playground along the banks of the Neponset River. These paths are well established; any proposed path improvements should follow the existing path location.

Conservation and environmental improvements for this area should include the removal of trash and debris, control of Poison Ivy, and the removal of invasive species including Tree of Heaven and Buckthorn. Selective planting of desirable species along the pathway should be considered throughout this area. Currently the bank within this area is relatively stable. The vegetation along the banks varies in size and is well established. If vista pruning is required along the banks in order to create a view corridor, additional soft and hard bank stabilization methods should be implemented.

View Corridors

One proposed improvement in Area 7 is the establishment of view corridors to the River for motorists and pedestrians traveling on River Street. The creation of view corridors should be approached in small gradual steps in order to achieve the final view, while balancing the environmental integrity of the riverbank. The existing young forest along the River has moderately thick overstory with areas of thin and dense understory and shrubs. In order to establish a view and maintain the forest, the following steps should be taken within the desired viewing area:

- Remove dead limbs, trees, saplings, and shrubs throughout (leave root systems intact along the banks).
- Remove invasive species: Tree of Heaven and Buckthorn.
- Selectively thin other shrubs and saplings within the view corridor.

- Remove only a small amount of vegetation from areas directly on the riverbank (this will aid in maintaining bank stabilization).
- Plant herbaceous vegetation such as wildflowers and native grasses to enhance the ground cover.

Upon completion of the above steps, the site should be revisited during various times of the year and evaluated to determine if enough vegetation has been cleared or if additional vegetation should be cleared to enhance the view. If clearing additional vegetation is recommended, a plan to stabilize the bank should be developed prior to any additional clearing (**see Appendix D**). The following steps to improve the view corridor should then be considered:

- Remove and clear enough vegetation to achieve the desired view.
- Aggressively plant and establish an herbaceous layer of gasses and wildflowers. This is essential in reducing the chance for invasive species to establish in the cleared areas.
- Monitor the bank and ensure stabilization methods have been effective in stabilizing the bank.

Area 8: Ryan Playground and Capen Street

Area 8 along the Boston side of the River is located adjacent to Ryan Playground. This strip of wooded land acts as a natural buffer between the playground, developed areas and the River. A well-defined path currently exists along the north bank of the River. The proposed primary trail should be constructed within the existing pathway location. The River bank along the north side is currently stabilized with vegetation consisting of shrubs and trees. This vegetation should not be disturbed. Areas where vegetation has been disturbed, and informal paths lead to the River from the main path, should be revegetated and planted with shrubs and herbaceous plants. Signage should be placed in heavily-traveled areas, informing people to stay on the trail and utilize only designated access points and overlook/seating areas to access the River.

Undesirable species, particularly poison ivy, should be managed in this area. This is especially important since the area is located next to the Ryan Playground where young children and adults gather on a daily basis. Poison ivy is also found throughout the Reservation on the south side of the River.

The Milton (south) side presents the largest segment of natural habitat within the Master Plan boundaries in terms of width from riverbank to road. Dense woods dominate this section. The topography varies with mounds, slopes and dips, including some isolated wet areas. The space available, and the local desire to exclude the pathway system, leaves this area for conservation and as a potential location for wetland creation or replication.

The downstream end of this area is suggested as one potential location for a River crossing. If a River crossing is developed at the downstream end, such a crossing poses a potential for ecological impact. Care should be taken during the design stage to minimize impacts to the riverbed, the marshes, habitat along the shore and the slopes leading to the crossing. Further care and monitoring is recommended during construction of the crossing and the connecting pathway.

Area 9: "Rice Islands"

The "Rice Islands" are located west of Central Avenue and east of Ryan Playground. The "Rice Islands" area is a broad stretch of the River with numerous islands throughout. The islands are low-lying and occasionally flooded. Vegetation on the islands is dominated by purple loosestrife. There is a possibility that soil contamination in this area may make any restoration or clean up project potentially costly and time consuming. The following high and low cost options should be considered for this area.

- Allow the site to exist as it does today with minimal changes. This option would include cleaning any trash and debris from the River and leaving the vegetation alone to develop and grow naturally. It is a low cost option and arguably maintains a naturally sustaining community, although one without significant ecological diversity.
- Minor planting of shrubs and pilot studies to determine effectiveness of purple loosestrife removal methods for this area. This option would include planting desirable and native shrubs and herbaceous plants such as wild rice, or other wetland sedges and grasses on the island. This would improve species diversity and increase the number of plant species that play an important role for wildlife and habitat values. In addition, a number of small pilot project areas could be established to evaluate the effectiveness of hand pulling and competitive plantings to combat the purple loosestrife.
- Control purple loosestrife through the release of *Galerucella* beetles. This option would include planting new herbaceous and shrub vegetation to improve wildlife habitat values, and releasing the *Galerucella* beetle to manage and "out compete" the purple loosestrife. This option is reasonably effective and should allow the majority of the site to remain undisturbed, leaving the contaminated soils in place below the water and within the Islands where they can remain isolated.
- Remediation of contaminated soils and restoring the "Rice Islands". This option is most costly and time consuming. It would require major permitting efforts, removal and disposal of contaminated soils, restoration and replication of the Islands, and monitoring to ensure that

Views of the "Rice Islands"

the islands are re-established. This option is not recommended and should only be considered if the cost is financially feasible.

Conservation and Environmental Management Through Education

Creating and providing programs and information to the public would give them the tools necessary to help develop a sustainable, healthy, clean, and safe conservation and recreation area. Outreach to the community, utilizing current environmental advocacy organizations and non-profit groups, can play an essential role in preserving the Neponset River and its surrounding natural areas.

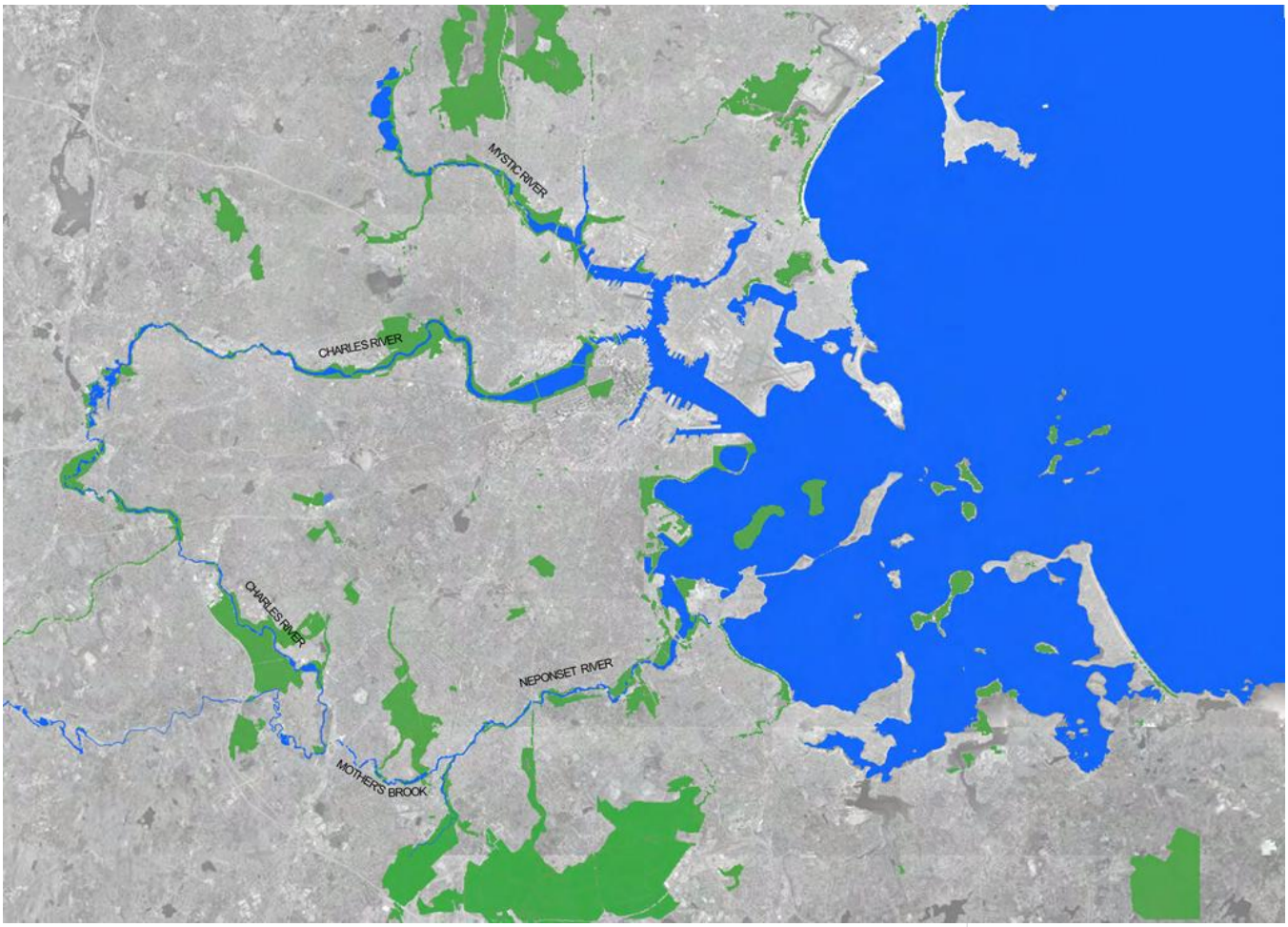
Informative signage placed in areas of high human contact can be an effective means of communication to the public. Signage can vary from information kiosks located in parking areas and near canoe landings to small signs along the primary and secondary paths. Information kiosks can provide information ranging from maps of the trail system and natural features, pictures of invasive and undesirable plant species, information on River clean up days and other recreational activities occurring along the River, to signage emphasizing carry in/carry out, removal of dog waste, and fines for littering.

Signage along the paths may be used to point out interesting or unique vegetation, historical points, invasive and undesirable vegetation, and areas of bank stabilization projects, and to remind people to carry in /carry out.

Coordination with local organizations and the community will play an important role in the success of any education and community outreach programs.

Environmental Contamination and Possible Remediation Options

Surrounding the core of the Boston metropolitan area is an extraordinary system of two rivers—the Neponset and Charles—and a canal, Mother Brook, that make it hypothetically possible to circumnavigate Boston on water. These urban waterways have historically played a significant role in the life of the urban areas that line them. They provided fresh water to the inland communities along their shores, and also a conduit for releasing waste water out to Boston Harbor and the ocean. The change in elevation that occurs along their length invited the extraction of hydropower, with the construction of dams to power industry starting 350 years ago. In the 1950s, as part of flood control measures following a series of flood events, dredging, realignment, and shore armoring operations occurred along the Neponset River, resulting in the river's current configuration. As industry migrated away from the Neponset River basin, inflows into the River transformed yet again, and in 1965 the last industrial use along the Neponset River



Map of Neponset, Charles and Mystic Rivers

was abandoned.[1] It is the close relationship of historic industrial uses and ongoing urban pollution that led to environmental contamination of the River.

As part of ongoing studies by the Massachusetts Riverways Program, an entity of the Massachusetts Department of Fisheries, Wildlife, and Environmental Law Enforcement, preliminary environmental investigation of the River water and its sediment has been undertaken. The primary goal of these studies focused on allowing fish passage upstream around or over existing structures in the River, and restoration of fish habitat. This investigation is described more fully in the Riverways Study of Fish Passage and Habitat Restoration section on page 87.

Most of the environmental information that is available for the Neponset River from the Walter Baker Dam (located upstream from Dorchester Avenue) to Fowl Meadow is from the various

Riverways Program studies. This information is beginning to provide an understanding of where contamination is located within the River bed, and the concentrations at which it exists. As the Master Plan initiatives in this report develop, more land-based environmental analysis will be needed to determine if any contamination exists on the River banks and to what extent this will impact construction practices for expanding bikeway, trail and canoe landing facilities.

Sediment Quality Issues

Early studies of the River bottom sediments by the Army Corps of Engineers discovered a high concentration of polychlorinated biphenyls (PCBs). Subsequent research performed by Robert Breault, et al. of the United States Geologic Survey (USGS) looked broadly at possible contamination but focused on evidence of PCBs. Their study took 20 sediment grab samples (top 4" of sediment) at fairly regular intervals between Paul's Bridge and Baker Dam, and 31 sediment core samples were taken in the impoundment areas directly upstream of existing and pre-existing dams. Analysis of these samples determined that while non-PCB contaminants exist in the sediment, concentrations of most were found to be generally equal to or less than concentrations found in urban, free-flowing rivers across the United States. It was also determined that many contaminant concentrations are lower than in both the Charles and Mystic Rivers in the Boston area. This study did find high concentrations of polychlorinated biphenyls (PCBs), especially in the sediment in areas behind current or previously existing dams (impoundment areas).[2]

Water Quality Issues

In concert with the sediment studies the USGS study also looked at water quality. The research team took 12 measurements of PCB concentrations at regular intervals within the same project area, and included one sample from the Mother Brook. The conclusion of the water quality tests is that no new sources of contamination seem to be present on the Neponset; rather, the detected contamination is released from the River sediment downstream of Fairmount Avenue. Further study is required to determine the exact location of sources of contamination to the water.[3]

Environmental Risk

Primary to this master plan's goals and objectives is the desire to make the Neponset River and its riparian corridor more accessible to the public. Facilitating how and where this interaction occurs, particularly when environmental contamination is detected, becomes an important component of the master plan. As most of the detected contamination occurs in the River sediment behind dams, the greatest potential for human health effects occurs when people are in contact with the

"Neponset River at "Rice Islands"

sediment or possibly ingest it. Guidelines exist for similar exposures of humans to soil on land, but none exist for water-based or sediment contamination. In the conclusion to their study, Breault et al. suggest looking to upland-based soil standards as a means to consider risk on the Neponset River. They note that upland standards exist for many of the contaminants found in their analysis, and very few contaminants were detected at concentrations equal to or greater than the soil standards.[4] Some elements, such as beryllium, chromium, lead, and nickel at approximately 40 percent of the testing sites, were in excess of the standards. However, they also noted that at 67 percent of the sites the presence of PCBs and polyaromatic hydrocarbons (PAHs) exceeded the soil standard. They note that comparing sediment concentrations to soil-based standards likely overestimates the human health risk. In water, human contact with contaminants is lessened by material being washed from skin, whereas soil has contact with skin for a longer period of time and therefore increases the chances that contaminants can enter the body.[5]

Impacts of Environmental Contamination on the Project Area

As these studies show, most of the known contamination of the Neponset River resides foremost in the sediment in the dam impoundment, and to a lesser degree in up- and downstream sediment or the water column of the River itself. Prior to beginning final design for work in

conservation areas and on new trail segments, further study and analysis should be undertaken. To date, on-land, known, contamination is limited to PCBs in the area of the "Rice Islands" that is the impoundment area of the former Jenkins Dam just upstream from Central Avenue, and petroleum contamination adjacent to the Grant Property on the left bank across from the Stop and Shop property.

Phytoremediation Options

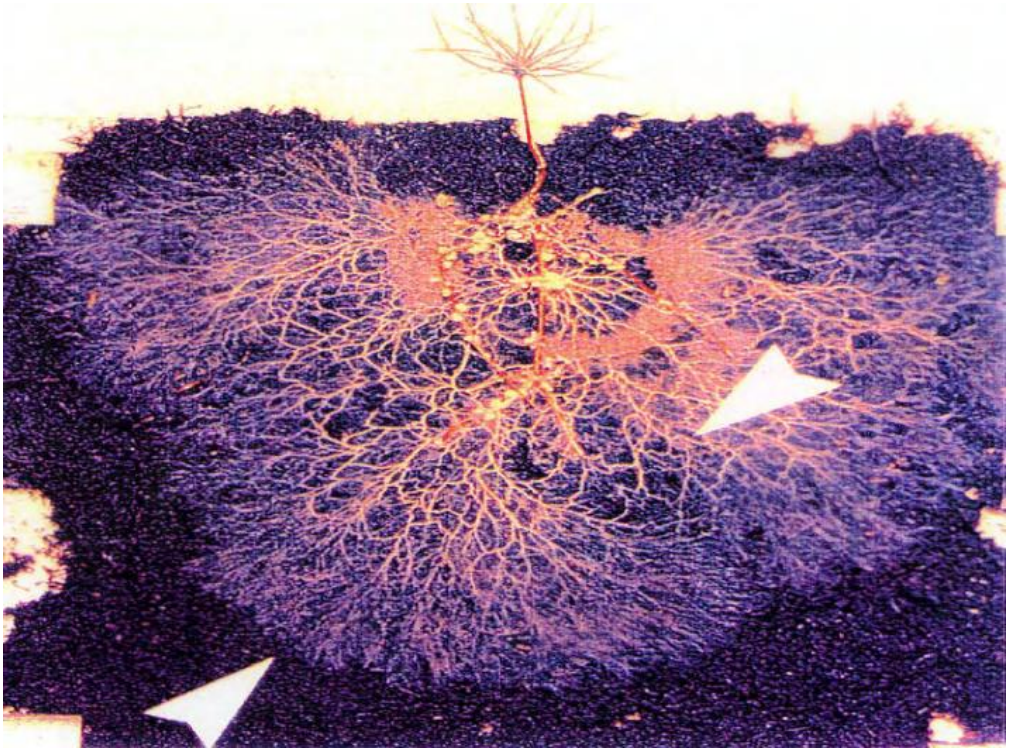
Phytoremediation is a type of bioengineering where the degradation, immobilization, and/or removal of pollutants from a contaminated medium is caused or assisted by vegetation or plant enzymes. More simply, phytoremediation is remediation using green plants. This type of remediation is usually undertaken on-site and involves minimal site disturbance, especially when compared with mechanical or engineered remediation processes that require extensive earth moving whether consolidating material under a cap, removing the material and placing in a

Wetland phytoremediation test plot in Ontario, Canada, 1999

contaminated material landfill, or processing the material on-site and replacing, depending on the contaminant and its concentration. Ongoing research has shown phytoremediation to be effective with many types of contamination including metals, PCBs and PAHs.

The mechanisms of phytoremediation are classified by how remediation occurs either within the plant, by the plant enzymes, or by microbes introduced into the soil by plant roots. Each of these processes has varying degrees of efficacy dependent on contaminant type. The processes fall into four groups:

- Phytodegradation - light organic contaminants taken up by plant through metabolic processes and/or breakdown of contaminants in root zones by exuded plant enzymes
- Phytovolatilization – uptake and transpiration to the atmosphere of a contaminant



Root mass of a single rye plant

- Rhizodegradation – augmented, plant-mediated biodegradation of organics in rhizospheres due to microbial activity
- Phytoextraction – uptake of inorganic contaminants by plant roots and their subsequent translocation with the plants

It is within the root zone that most phytoremediation processes occur, drawing on the large root mass of individual plants. The range of plants used in phytoremediation is broad and includes many common and native plants, most of which are available in the nursery trade. Examples include:

Woody Plants:

- Hybrid Poplar
- Willow
- Aspen
- Mulberry
- Crabapple

Upland Grasses:

- Fescues
- Perennial rye grass
- Switchgrass
- Bluestem
- Indian grass
- Side Oats
- Foxtail

Wetland Macrophytes:

- Cattails
- Reeds
- Bulrush

Vegetables & Herbs:

- Carrots
- Tomatoes
- Spinach
- Pumpkins

Flowering Plants:

- Annual & Perennial Sunflowers
- Mustard
- Coneflowers
- Ragweed
- Bergamot

Legumes:

- Alfalfa
- White clover
- Red clover
- Soybeans

Within the project area of this master plan, PCBs represent the most significant contamination. PCBs were used in the production of adhesives, flame retardants, paints, and dielectric fluids in electrical transformers and capacitors. Because they had widespread use and are persistent in the environment, they have become a common environmental issue. The benefits of employing a strategy of phytoremediation include significantly reduced cost and only minor disruption of the site when compared with physical means, and lower operation and maintenance costs.

It is recommended that phytoremediation be explored as a potential remediation option as the final results of environmental studies become available.

(Footnotes)

[1] *Breault, Robert, and Cooke, Matthew. "Restoring an Urban River."*

20

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Annual International Conference on Soils, Sediments, and Water, UMass-Amherst.

"Workshop #13: Exploring Innovative and Cost-Effective Solutions to Contaminated Sediments to Achieve Ecological Restoration of the Lower Neponset River." Co-directors: Paul Kosteki, Edward J. Calabrese. University of Massachusetts-Amherst, 2004. p. 346.

[2] *Breault, Robert F., Cooke, Matthew G, and Merrill, Michael.*

Sediment Quality and Polychlorinated Biphenyls in the Lower Neponset River, Massachusetts, and Implications for Urban River Restoration.

U.S. Geological Survey: Reston, Virginia, 2004. pp. 6-7, 25.

[3] *Ibid, Breault, et al., pp. 32, 36-37.*

[4] *Ibid. Breault, et al. p. 28.*

[5] *Ibid. Breault, et al. p. 29.*

Riverways Study of Fish Passage and Habitat Restoration

There are two dams on the Neponset River which restrict fish passage: the Walter Baker Dam located outside of the current master plan project area on Dorchester Avenue/Adams Street and the Tileston & Hollingsworth Dam, located just upstream from the MBTA railroad bridge at the former Bay State Paper Company property. Another important feature that affects fish habitat - although not specifically a dam - is the MWRA sewer crossing located just below the bridge at Mattapan Square. A flood in the late 1950s destroyed the Jenkins Dam and the vestige of its impoundment, the area of water behind the dam, is what is now known as the Braided Channel or "Rice Islands" located just upstream of the Central Avenue Bridge. These four areas are the focus of an on-going investigation by the Commonwealth of Massachusetts to increase upstream fish habitat on the Neponset River. With the exception of the MWRA crossing, the remaining dams no longer serve the industrial purposes for which they were built, but are used for flood control and have been proposed for energy production.

Since 1996 the Massachusetts Riverways Program, an entity of the Department of Fisheries, Wildlife, and Environmental Law Enforcement, has been studying alternatives for increasing fish habitat for shad and river herring in the Neponset River.

The current phase in which the Riverways Program is engaged is focused on technical analysis of the dams and MWRA crossing, and is guided by a Technical Advisory Committee comprised of technical experts, regulatory agencies, and representation from Milton and Boston. This phase of work is expected to be completed by the end of June 2006 with technical review occurring over the following three months.

The technical review process to occur during the summer of 2006 is anticipated to reduce the number of solutions advanced to the next stage of development. Most of the proposed solutions would have no adverse affect on the proposed trail alignments.

The following permits have been identified as permits which could potentially be required, depending on final design of the project elements.

Permitting

MEPA Review

Massachusetts Environmental Policy Act (MEPA) review is a formal administrative process intended to involve any interested agency or person on the potential environmental impacts of projects for which agency action is required. MEPA applies to projects of a certain size that require a permit, financial assistance, or land transfer from state agencies.

Preparation of an Environmental Notification Form (ENF) will be required for any projects that will alter 5,000 square feet or more of bordering or isolated vegetated wetlands or alteration of one-half or more acres of any other wetlands. An ENF and Environmental Impact Report (EIR) will be required for alteration of one or more acres of bordering vegetated wetlands or ten or more acres of any other wetlands. Implementation of the Central Avenue to Paul's Bridge Masterplan will require the filing of an Environmental Notification Form, because it exceeds the review threshold of impacts to over one half acre of wetland resource areas 301 CMR 11.03(b)1f.

Water Quality Certification (DEP Division of Wetlands and Waterways)

A Water Quality Certification is required under Section 401 of the federal Clean Water Act for certain activities in wetlands and waters under federal jurisdiction. The Massachusetts Department of Environmental Protection (DEP) reviews projects that must obtain federal permits and that result in discharge to state waters to ensure that a project will comply with Massachusetts Surface Water Quality Standards. The Water Quality Certificate (WQC) is necessary for the federal permit to be valid, and any certification conditions become conditions of the federal permit.

Wetland impacts of less than 5,000 square feet of wetlands, for which an Order of Conditions has been issued, are generally excluded from state review and are certified under the Massachusetts Programmatic General Permit by the U.S. Army Corps of Engineers. If this threshold is exceeded, a Water Quality Certification from DEP will be required. Dredging over 100 cubic yards of material is also a trigger for a WQC. When a final design for the pedestrian crossing is prepared, if the volume of material to be removed for the bridge footings in the River or in vegetated wetlands exceeds 100 cubic yards, then the a WQC would be necessary.

Chapter 91 Waterways License (DEP Division of Waterways)

Chapter 91 and its regulations require a license or permit for activities located in, under, or over flowed tidelands, filled tidelands, Great Ponds, and certain non-tidal rivers and streams.

A Chapter 91 License is required for any work conducted below the ordinary high water mark. Work such as in-water footings for river crossings will require a license; bank stabilization, and canoe ramps will require further analysis to determine whether a license is needed.

Order of Conditions (Boston and Milton Conservation Commissions)

The Massachusetts Wetlands Protection Act (General Law Chapter 131, Section 40) and Regulations (310 CMR 10.00) were established to protect the Commonwealth's wetland resources. Any removal, dredging, filling, or altering of wetland resource areas requires the filing of a Notice of Intent with the municipal conservation commission. Any activity, other than minor activities defined in 310 CRM 10.02 (2)(b)(1), conducted within 100-feet of a resource area also requires a permit. Wetland permitting differs in Boston and Milton under both state and municipal regulation. The Massachusetts Riverfront Protection Act establishes a 25-foot riverfront protection area in Boston and a 200 foot riverfront protection area in Milton. Furthermore, Milton Wetlands Bylaw establishes a "no touch" zone from the edge of the resource area. The conservation commission holds a public hearing to review the proposed activities subject to jurisdiction of the Wetlands Protection Act and issues a permit via a document called an Order of Conditions. An order of Conditions will most likely be required for construction of the path system in both Milton and Boston.

Zoning Approvals

Approvals may be required from the local Building Inspector for work such as paving or regrading within the floodplain and outside of Commonwealth property. This appears to apply to the area just west of Central Avenue and just south of the Truman Parkway Field Office in Milton, as well as on the back side of the Stop and Shop parcel in Boston. Further review of the need for flood

hazard approval will depend upon further analysis of more detailed plans as the Master Plan is implemented.

NPDES Construction General Permit

The National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Coverage under the Construction General Permit (CGP) is required for construction projects that disturb one or more acres, including smaller areas of disturbance when part of a larger common plan for development.

To comply with the CGP, a Storm Water Pollution Prevention Plan (SWPPP) is required and a Notice of Intent (NOI) must be submitted to the Environmental Protection Agency at least 48 hours prior to the start of construction. The purpose of the SWPPP is to establish requirements and instructions for the management of construction-related storm water discharges. Best Management Practices (BMPs) are identified and incorporated into the SWPPP.

A permit would be required only if construction disturbs more than one acre at any one time. More detailed phasing plans will be required to determine the necessity for a permit.

U.S. Army Corps of Engineers Permit (Section 10 and/or Section 404)

The Army Corps of Engineers (the Corp) regulates structures or work in or affecting navigable waters of the United States (under Section 10 of the Rivers and Harbors Act) and the discharge of dredged or fill material into waters of the United States (under Section 404 of the Clean Water Act). The Corp has issued a Programmatic General Permit (PGP) for expedited review of minimal impact work in waters and wetlands of Massachusetts. There are three permit categories under the PGP: Category I, II, and III. Projects that impact less than 5,000 square feet of a federally-defined wetland or waterbody qualify as Category I and do not require reporting to the Corps. A Category II permit application must be filed if impacts to wetlands are greater than 5,000 square feet but less than 1 acre. Projects submitted under Category II will be reviewed through inter-agency screening (including U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, and National Marine Fisheries Service) to determine whether such activities may be authorized under the PGP. After review of the application, the Corps will determine if: (1) more information is required before making a decision; (2) the project meets the criteria of the PGP; or (3) the project does not meet PGP criteria and requires an Individual Permit.

Category III, or an Individual Permit, is typically required for projects which exceed the criteria for Category II. Note, however, that the Corps has discretionary authority to require an Individual Permit and/or Environmental Impact Statement even if PGP criteria are met.

The Programmatic General Permit will most likely cover most activities related to implementation of this master plan as long as an Order of Conditions is issued. Bridge crossings may require a Category II filing under the Programmatic General Permit.

Historical and Archaeological Resources

Additional State approvals may be required from the Massachusetts Historical Commission for any work in areas of historic or archaeological significance.

Anticipated Permits for Early Action Items

Implementation of the overall project is expected to alter over 6 acres of Riverfront Area thus triggering a need for an Environmental Notification Form under MEPA. The MEPA regulations contain an anti segmentation clause, which states that the Secretary of Environmental Affairs shall consider the entirety of the project, and that the proponent can not segment the project to avoid or defer MEPA review.

Construction of a path will occur within the Riverfront Area, Bordering Vegetated Wetlands, Bordering Land Subject to Flooding, and the Buffer Zone to resource areas. In addition, the 25-feet zone of non-disturbance exists under the Milton Wetlands Bylaw and its regulations.

Permit	Regulatory Agency Review Time
Order of Conditions – Boston Conservation Commission	2 - 4 weeks
Order of Conditions – Milton Conservation Commission	2 - 4 weeks

Cost Estimates

Construction cost estimates are shown on the following page. Estimates do not include the following items:

- Permitting/Survey/Design Costs
- Possible required easements (e.g., property owned by Riverway Plaza (if path is on north side of River), Town of Milton (if path is on south side of River), MBTA (at Mattapan Square), and Stop and Shop).
- Improvements to conservation areas except those made as part of trail or park improvements construction
- Environmental remediation

- Cutting/harvesting aquatic vegetation in the River
- Bridge modifications/repairs
- Upgrading of public sidewalks that provide pedestrian connections to or between pathways
- Clean up of the River embankment
- Land acquisition

Cost Estimates*

Element	Subtotal	General Requirements (10%)	Contractor Markup (10%)	Contingency (20%)	Total
Primary Trail					
Paul's Bridge to Blue Hill Avenue	$2,731,349	$273,135	$600,897	$721,076	**$4,326,456**
Blue Hill Ave. to Central Ave. (Boston Side)	$997,352	$99,735	$109,709	$241,359	**$1,448,156**
Blue Hill Ave. to Central Ave. (Milton Side w/bridge)	$1,213,625	$121,362	$133,499	$293,697	**$1,762,183**
Secondary Path					
Paul's Bridge to Blue Hill Avenue	$21,122,728	$212,273	$233,500	$513,700	**$3,082,201**
Blue Hill Ave. to Central Ave.	$51,062	$5,106	$5,617	$12,357	**$74,142**
Parks					
Martini Shell Park	$202,125	$20,213	$44,468	$53,361	**$320,166**
Martini Shell Building					**$176,000**
Doyle Playground	$176,939	$17,694	$38,927	$46,712	**$280,272**
Downstream of T& H Dam	$232,261	$14,663	$32,258	$38,710	**$232,261**
Truman Parkway Field Office	$269,611	$26,961	$59,314	$71,177	**$427,063**
Truman Parkway FO Building					**$590,000**
Kennedy Playground	$310,043	$31,004	$68,209	$81,851	**$491,108**
Ryan Playground	$171,439	$17,144	$37,717	$45,260	**$271,559**
TOTAL					$13,481,567

*Estimates are given in $2006.