

Enhancing our River Environment

A Proposed Plan For the Management of the Winooski Riverbank Vegetation In Montpelier



July 2002

Montpelier River Corridor Restoration Committee

Acknowledgments

This plan grew out of recognition by many people that the Winooski River and its tributaries require a long-range vision and consistent attention. Implementation of these recommendations should help to reduce riverbank erosion, mitigate threats of flooding and fulfill the rivers' potential as Montpelier's most outstanding natural resource. The following people helped create the plan:

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Bruce Chapell, USDA Natural Resources Conservation Service
Freddie Cousins, Friends of the Winooski River
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Patrick Healy, Superintendent, Green Mount Cemetery
Kim Kendall, Board Member, Friends of the Winooski River
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Sara Moulton, Department of Planning and Development
Carole Naquin, Tree Board
Anne Sarcka, Conservation Commission
John Snell, Tree Board
Meredith Sumner, Tree Board
Stephan Syz, Conservation Commission
Ray Toolan, Tree Warden
Jean Vissering, Tree Board

Photos:

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River segments: Stephan Syz, Ray Toolan

Vision

A healthy and dynamic river and riparian shoreline where the waterway and the river banks are ecologically healthy and physically stable, and where the vegetation contributes prominently to an aesthetic environment that the public can enjoy. At certain locations there will be greater opportunity to gain access to the water than others.

Introduction

The Winooski River and its shorelines form a centerpiece of Montpelier's landscape. Over the past 30 years, measures have been taken to greatly improve the quality of the waters. Improvements along the banks have been undertaken as well, and others have been proposed. Stone Cutters Way is an example of an important community accomplishment, and the development of the Carr Lot for open space and other built uses are underway.

There remains a thin margin along the river, ranging from a few feet to 100 feet, that has not yet been planned. For the most part it is unsuitable for further building because of slope or flooding considerations, yet it can be, and in part already is, a tremendous asset to the visual aspect of the city and its enjoyment by residents and tourists. This Vegetation Management Plan puts in place a practical vision to be implemented by various arms of City government such as the Tree Board and the Conservation Commission along with volunteer organizations and individuals. After review by the City and the public, the plan will focus on implementation efforts as opportunities arise.

The plan has several goals. These include: 1) enhancing the beauty of the river corridor; 2) stabilizing the Winooski's banks with vegetation to mitigate erosion; 3) identifying areas where selection of species of planted trees and shrubs corresponds with the type of soil present; and 4) taking advantage of small pockets of open space to be used for public enjoyment.

The plan recognizes that some of the land along the river is privately held, and that it is up to individual landowners to decide whether the recommendations are appropriate for their land.

Some public land segments are recommended for the creation of small areas of open space, especially where this would not disrupt present and foreseeable uses of the land.

The plan recognizes that vegetation, especially large trees on the tops of the banks, can be a stabilizing force for the riverbanks. Trees that have fallen into the river, although in many cases providing excellent fish habitat, should be removed where they cause eddies that erode and undermine the banks.

The cutting of living vegetation should be kept to an absolute minimum. Selected trees may be removed to provide vistas of the river and of various aspects of Montpelier. In the past, river bank cutting was done without an agreed-upon plan or a comprehensive view for the long-term needs of the river bank. Cutting may increase root growth in some instances, but not in all; nor does it address the need for tall growth that can provide shade and beauty. Several segments of

the river are devoid of stabilizing woody vegetation. They are without an array of natural, young trees from which to select appropriate trees to add beauty to the riverbanks. In these areas a careful planting plan must be developed.

Individual trees are not as stable and resistant to blow-down or as important in controlling erosion as groups of trees. Mutual support among trees is an important principle in the management of vegetation along the Winooski River.

Natural vegetation should be favored wherever possible. There is a constant flow of seeds down the river and from nearby upland vegetation. This gives rise to “volunteer” (natural) woody vegetation growth on the river banks that needs nothing more than selection and protection to form the basis of a vegetation corridor along the river. Where new planting is undertaken, native species are preferable

As development projects are proposed along the river, an obvious first step is to require setbacks to provide space for vegetation and to protect the structures from ice damage and floods. In many cases, the vegetation buffer adjacent to such developments may be sparse. The adoption of this plan will provide the Planning Commission the opportunity to include specific principles and recommendations in its permit conditions. Conditions for preserving existing vegetation could be required as well as for the planting of shrubs, trees and other materials that would buffer the projects from the river.

Lastly, river vegetation management by volunteers is providing the City with a great asset. The Tree Warden planted trees some years ago that now beautify Berlin Street from Granite Street to Main. The Credit Union has preserved some very large trees on its shores (Figure 1); the Peace Park is a valuable asset as is the well-kept shore of the high school (Figure 2).



Figure 1. Large trees preserved on the banks of the Winooski adjacent to the Credit Union.

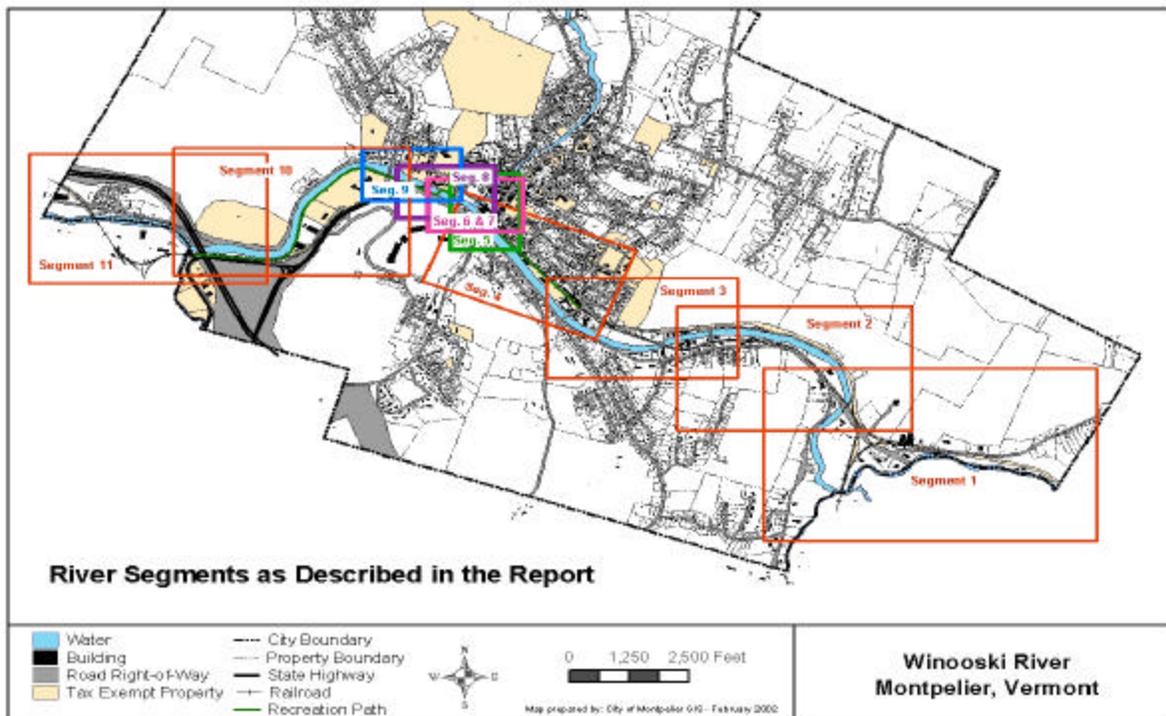


Figure 2. The diverse vegetation along the high school property on the left provides a buffer and roots from trees and shrubs that give the bank good stability.

The list goes on. These actions provided satisfaction to the property owners and project sponsors. The same will be true for actions taken in the future. Voluntary action in combination with the work of City commissions and boards, the Public Works Department, Tree Warden, Natural Resources Conservation Service, riverbank property owners, and private sector organizations and individuals are the ingredients envisioned to implement this plan over time. To acknowledge any outstanding contributions made by City employees, river shore land owners and volunteers, it is proposed that, from time to time, the City give special public recognition and awards to such demonstration of excellence. This will help foster the strong conservation ethic already in the hearts and minds of the citizens of Montpelier.

The Segments of the River

The plan breaks the river’s path through Montpelier into segments, focusing on segments that are the most visible at this time. As it evolves, the plan may add detail to these segments and develop recommendations for other areas of river shore that are along the tributaries and other less visible segments of the Winooski mainstream.



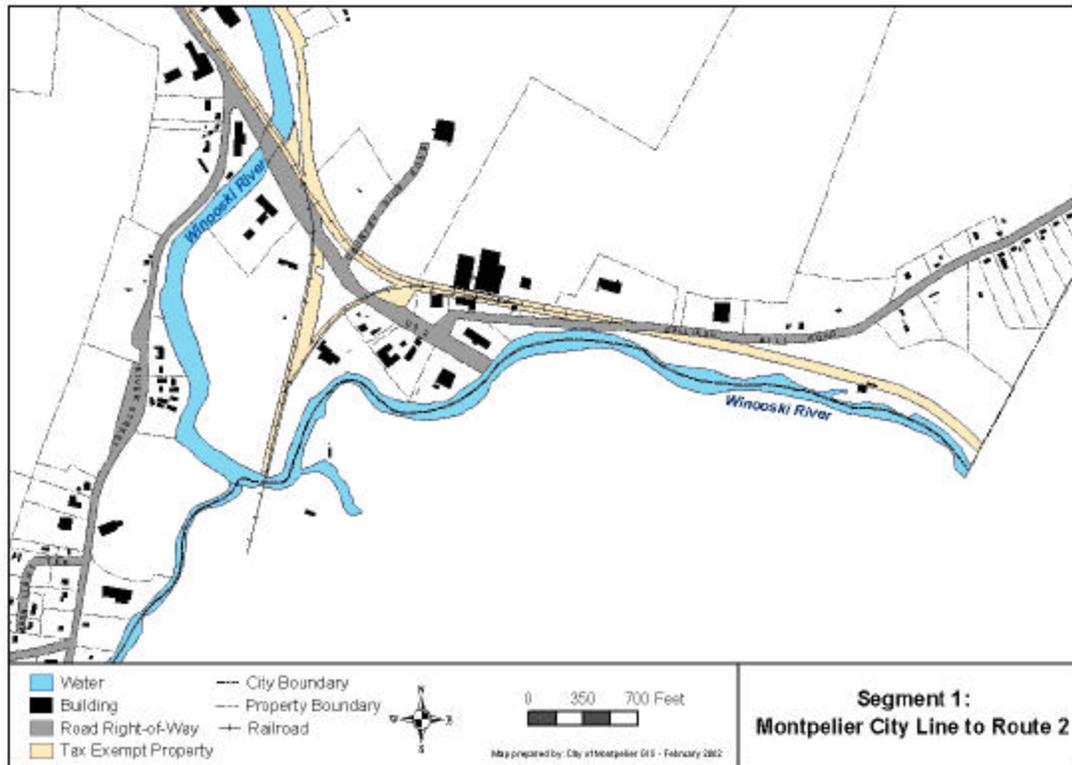
Existing situations, problems and opportunities by river segment, starting upstream

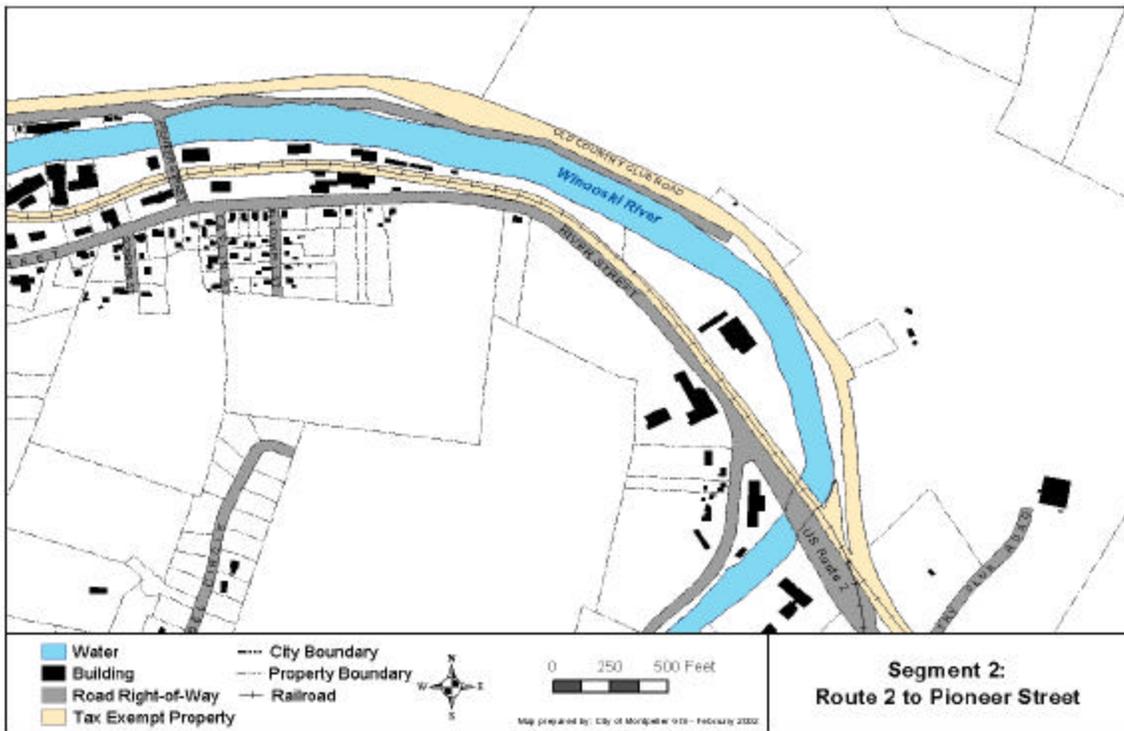
1. Montpelier City Line to Route 2

This segment begins along the northern shore of the river where it passes beneath Route 2 and continues under the railroad bridge that crosses from Montpelier to Berlin. It continues along Route 302, passing the former Armory to the crossing of Route 2 and a second railroad bridge. The upper portion of this segment is rarely noticed because it is out of view of most travelers, but it is nonetheless important.

Existing Situation: The vegetation serves an important function of providing beauty and stabilizing the banks.

Opportunities: Allow the shores to be vegetated as naturally as possible. Some of this segment is lined with stone riprap. This material should be allowed to continue to be vegetated in accordance with the general guidelines for maintaining vegetation described above.





2. Route 2 to Pioneer Street Bridge

Beginning below the house at the end of the Old Country Club Road, just downstream from the former Grossman's Lumber:

- a. South bank, along the Barre Montpelier Road

Existing situation: Vegetation includes mature pine and spruce (Figure 3). The area is valuable as a natural floodplain into which floodwaters can disperse. The tall evergreens provide a beautiful buffer between the river and Route 2, and the vegetation provides good stability to the bank.



Figure 3. Looking across the Winooski River from the Old Country Club Road toward Route 2 upstream of the Pioneer Street Bridge.

Problem: There are essentially no problems here. Sediment is depositing on this bend, which appears to be growing out into the river. The banks are stabilized by an array of trees and shrubs.

b. North bank along Old Country Club Road

Existing situation: Vegetation includes spirea, sumac, box elder, and apple. The bank is all fill and steep. Some segments are devoid of woody plants.

Opportunities: Red osier may thrive on the bank. Trees or shrubs appropriate to the soil conditions should be planted at the top of the bank.

c. North and south banks

Opportunities: There is space for a mini-park (Figure 4). The spillway and waterfall mask the traffic noise. The vegetation on the north shore could be enhanced with shrubs and trees that are resistant to damage. Considerable natural vegetation has become established on the south shore. In fact, this is one of the most diversely vegetated segments and deserves a careful segment-specific management plan to preserve what is present.



Figure 4. Looking eastward and upstream along the Old Country Club Road. A widened area along the road could provide a site for a small park. Waters flowing over an adjacent falls buffer the sound of traffic.



Figure 5. Old Country Club Road -- a segment of the riverbank lacking trees and shrubs. Grasses are dominant and have little soil binding power. Shrubs should be planted. Red osier dogwood would be a possible choice.

3. Pioneer Street to Granite Street

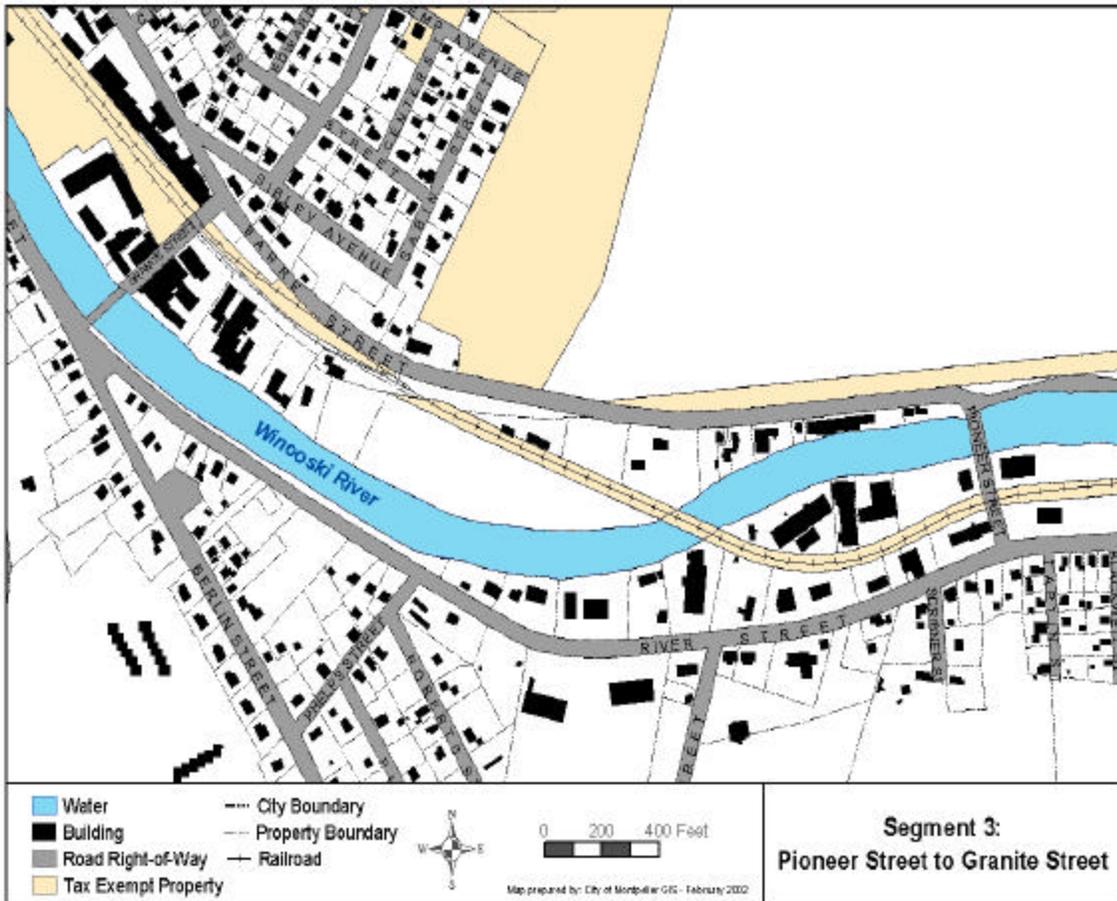


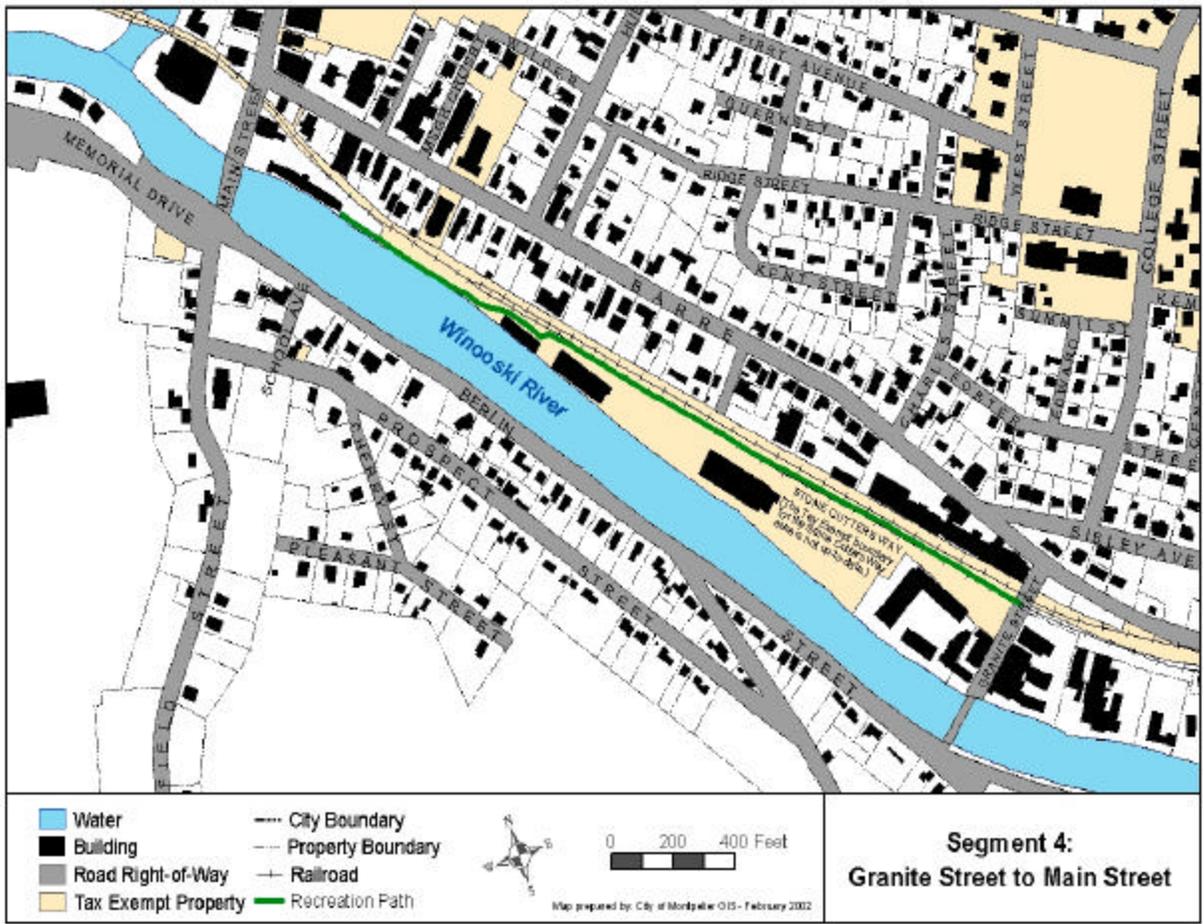


Figure 6. Looking from the Barre Street end of the Pioneer Street Bridge to the south shore of the Winooski River.

Existing situation: Box elder, ash, sumac, spirea, and herbaceous plants grow here.

Problems: Slope is comprised of fill on both sides from here to Granite Street. The area is excessively drained. Limited nutrient value reduces the options for plant materials that could be used in this section.

Opportunities: Maintain the existing trees and woody vegetation. Remove only vegetation that threatens to destabilize the banks.



4. Granite Street to Main Street

a. South bank

Existing situation: The only trees are the existing black locust and honey locust successfully planted during the past two decades by the City Tree Wardens (Figure 7).



Figure 7. Looking westward along the south bank of the Winooski from the Granite Street Bridge. Some locusts have become well established and additional plantings are recommended.

Problems: Salt and unknown soil types are concerns here. Several stormwater outfalls may need work to prevent erosion. There are only small pockets of good soils.

Opportunities: Diverse plantings are needed, both trees and herbaceous materials. It is recommended that the area be vegetated while preserving openings for views across the river, especially of the Capitol building. Views from the north bank, Sarducci's and the new Stone Cutters Way buildings will greatly benefit from plantings done on the south bank (Figure 8). Noise could be moderated with vegetation.



Figure 8. Looking eastward along Berlin Street from Main Street Bridge.

b. North bank, along Stone Cutters Way

Existing situation: The bank is fairly to very steep. The long, broad, flat stretch of water is a visual asset (Figure 8).

Opportunities: Much of this segment has room for improving vegetation. There is space for tall trees between Sarducci's and the building housing Senator Jeffords' office. Scattered trees along the north bank could enhance views across the river. There are scattered red oak near the turntable that should be marked and preserved as the land is developed.



5. Corner of Main Street and Memorial Drive

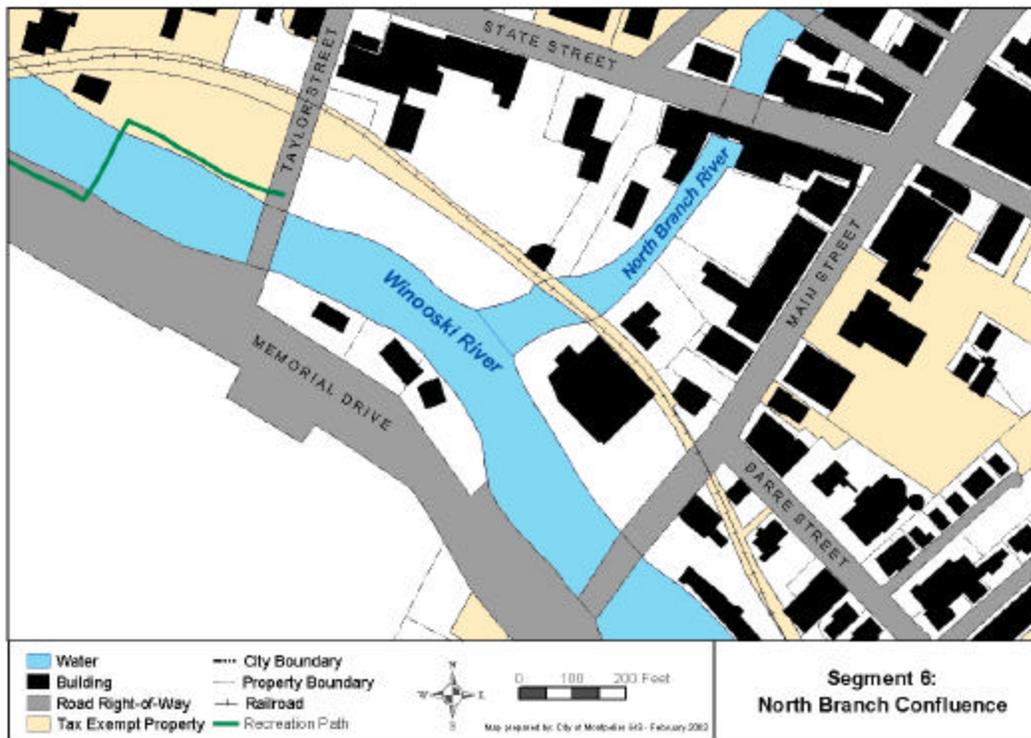
Existing situation: This is prime territory that is underdeveloped from a planting point of view (Figure 9).



Figure 9. Looking southward across Main Street Bridge to a small area of open space.

Problems: Traffic noise, lack of tall woody vegetation.

Opportunities: Establish large trees on the four corners of Main Street Bridge, respecting the site lines for traffic, views and the structural integrity of the bridge. Improve the fishing access below the falls.



6. North Branch Confluence

Existing situation (looking up the North branch): It does not get any more beautiful than this! The “white noise” of the falls obliterates the traffic noise almost entirely.

Problems: There is a lot of poorly controlled parking lot runoff. There are substantial security issues at the confluence. Vegetation is thick but not cared for.

Opportunities: This whole area has incredible potential (Figure 10). Consider siting a picnic area near the old dam. The parking lot could be reconfigured, probably with a minimal loss of spaces, to create a green buffer along the river. Enhance the fishing access. Work with adjacent landowners to develop a master plan for the site, including new plantings along Main Street and the railroad tracks.

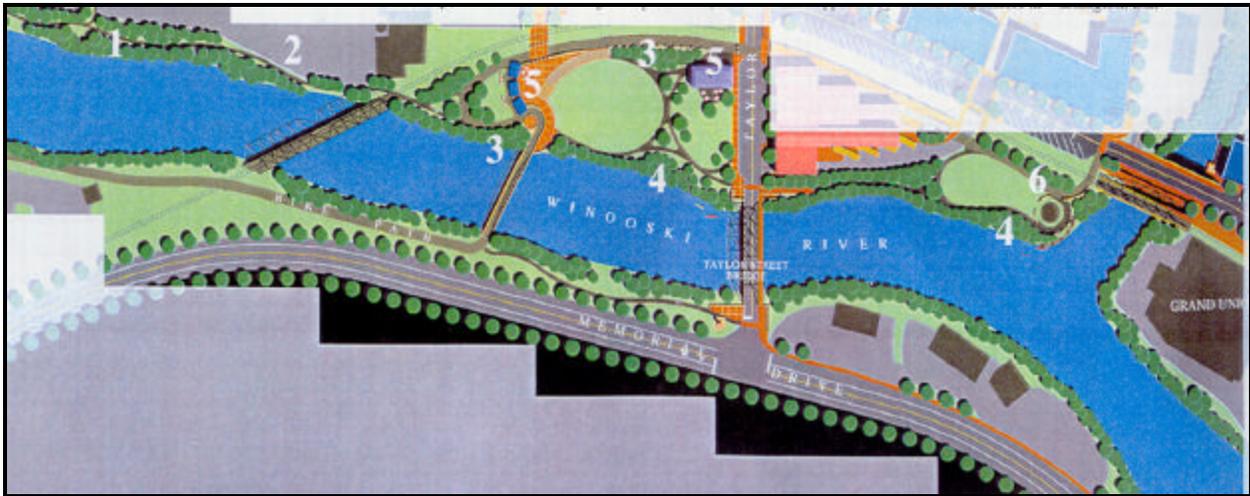
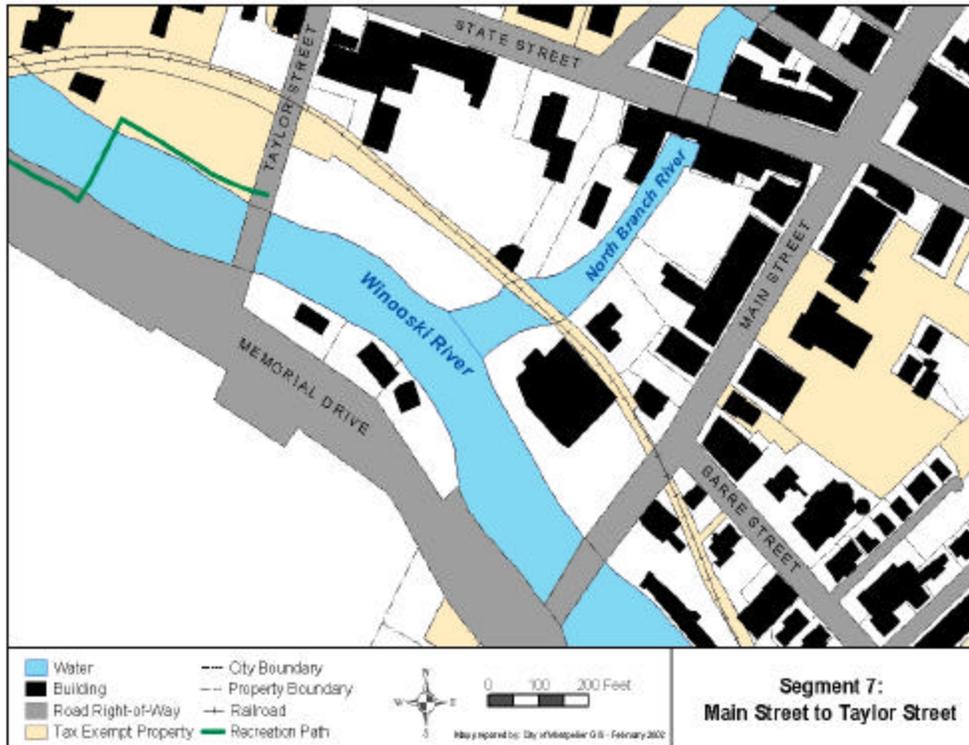


Figure 10. The drawing is from the City-State Master Plan. #1 is an area where increased vegetation can create a linear park if parking is more efficiently configured. #3 - 4 are areas of green space. Immediately across the river, tree planting can transform a grass monoculture to an interesting park buffering the city from the heavy traffic on Memorial Drive. #6 - 4 are areas where a “confluence park” can create a place to enjoy the river at the so-called Carr Lot.



Figure 11. Looking upstream from Taylor Street Bridge to the confluence of the North Branch with the Winooski main stem.



7. Main Street to Taylor Street

a. South side

Existing situation: There are high banks behind the gas stations and auto parts store across from the confluence with the North Branch. The bank behind the Sunoco station has a beautiful 30 year-old American elm.

Problems: There is extensive graffiti on the stone wall that is visible from the Carr lot.

Opportunities: There is room for some vegetation along the foot of the bank; the right kind might help control the graffiti. Establish vines on the large stone wall. Control any runoff from the vast expanses of blacktop. Continue to increase plantings on top of the bank.

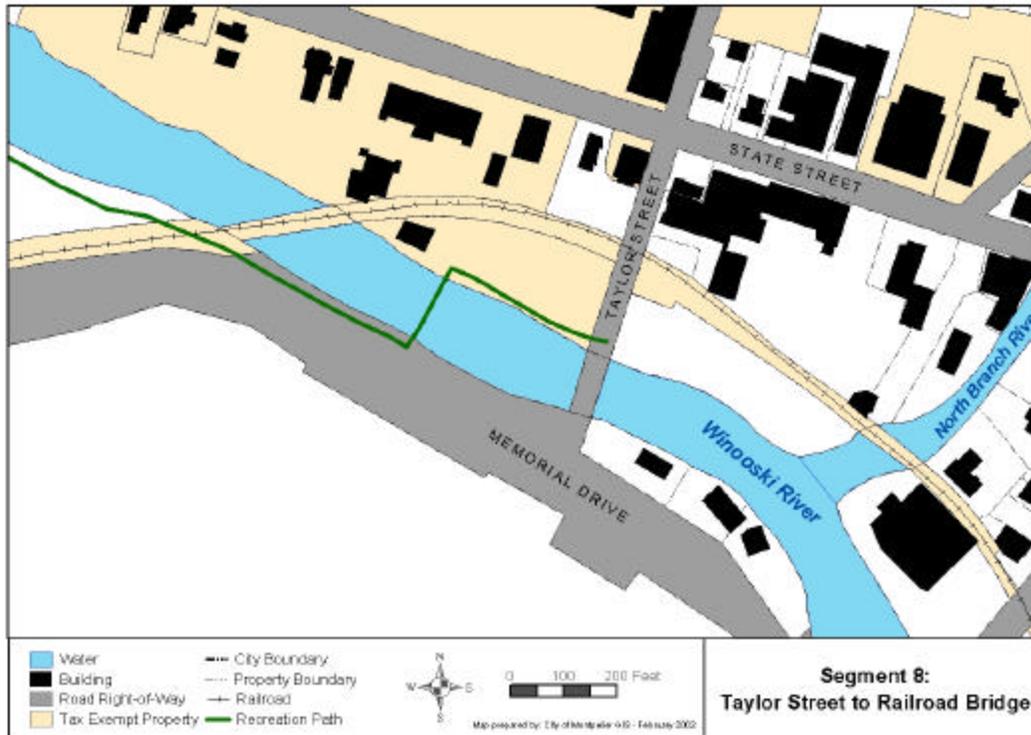
b. North side (Carr lot)

Existing situation: There is a steep bank with some rough vegetation. Access to the river is marginal and not pleasant. Security is an issue.

Problems: Graffiti and a vast expanse of stone wall mar the view across the river.

Opportunities: Any development must enhance the vegetation and improve access to the river. There are plans to continue the bike path to join Stone Cutters Way and add a foot/bike bridge next to the railroad bridge. The City-State Master Plan illustrates a continuation of Barre Street connecting with Taylor Street. In the alternative, a tree-lined pedestrian mall at the location of

the proposed Barre Street extension might better serve Montpelier. Service vehicles could enter the mall from Taylor Street.



8. Taylor Street to Railroad Bridge

a. South side

Existing situation: This is a wonderful wide green space that is currently mowed. The view of the new bike bridge is nice.

Problems: Noise is prevalent and could be buffered.

Opportunities: Create groupings of trees and shrubs, and at the same time preserve the open, long views across the river (Figure 12). There is potential to enhance the area with plantings of widely spaced tall-growing trees, leaving the area partly un-mowed to encourage vegetation growth. This would also create habitat, stabilize the bank, and make it more pleasant for humans. Perhaps the sidewalk could be isolated from the roadway with vegetation (e.g. sumac and high bush cranberry).

b. North side

Existing situation: This side has a steep bank with an old retaining wall.

Opportunities: There is room to plant a few large trees on top of the bank. Also plant climbing materials along the bike path fences. Add more vegetation to the parking lot and along Taylor Street. Plant one or more large-growing trees at each corner of the Taylor Street Bridge.

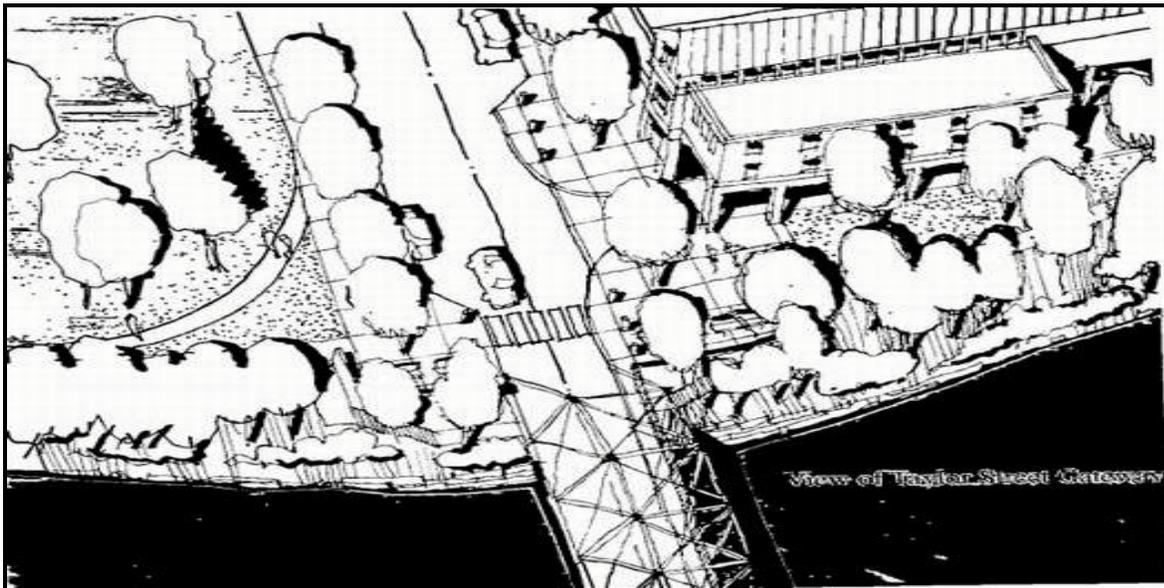
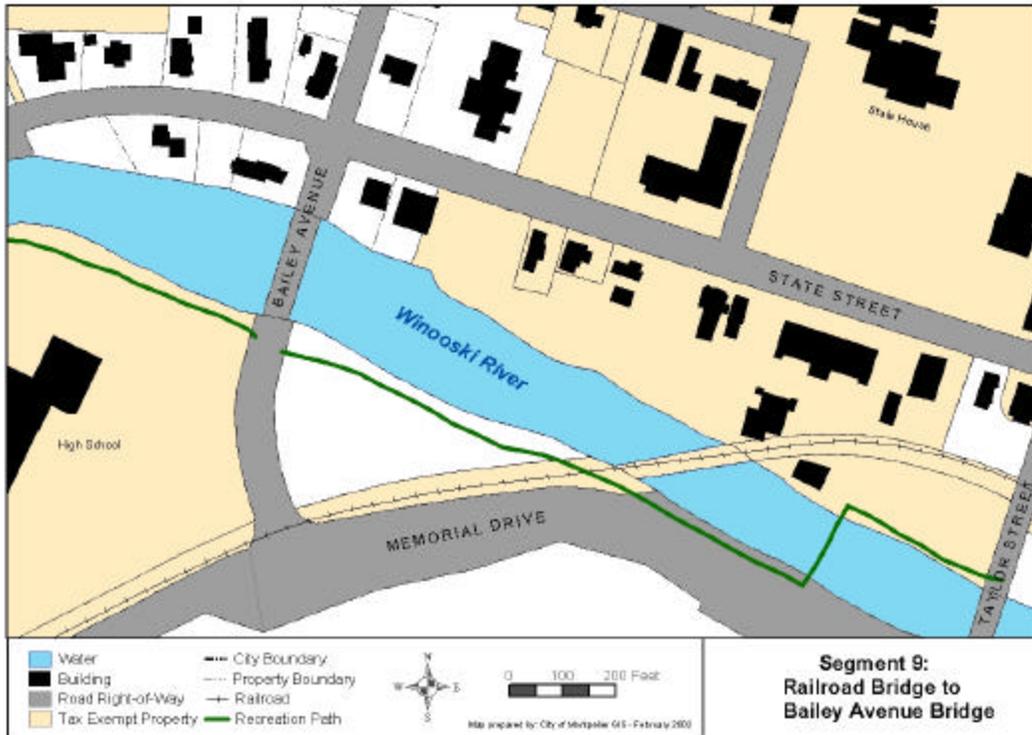


Figure 12. North end of Taylor Street Bridge as proposed and illustrated in the City-State Master Plan. Generous vegetation provides an inviting gateway to the city.



9. Railroad To Bailey Avenue Bridge

a. South side

Existing situation: This is a special, quiet place with tall, valuable and beautiful trees. Quite a bit of Japanese knotweed is present near the bike path on the south side of the river.



Figure 13. The Winooski River as seen looking upstream from Bailey Avenue.

Opportunities: Continue to maintain the black willow stand along the bike path and the new red oak plantings. Plant climbing materials along bike path fences. There is a wonderful little sandy patch near the Bailey Avenue Bridge where a picnic table could be sited on the upper bank during the summer. Establish large trees on all four corners of the Bailey Avenue Bridge while respecting underground utilities, the integrity of the bridge and sight distances at the intersection.

b. North side

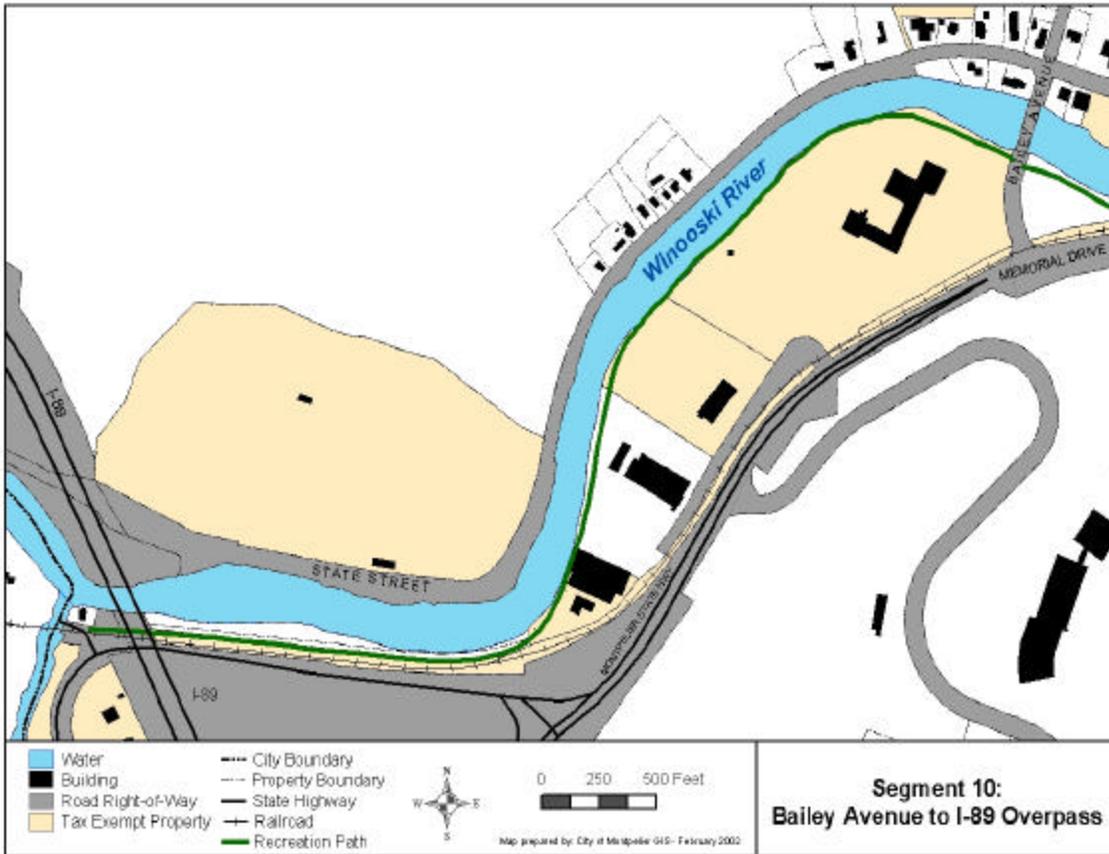
Existing situation: This area has tremendous potential. A well-used picnic area has been created and maintained by the Steam Plant employees. (The Steam Plant may move out of that location.)

Problems: The bank is very vulnerable to flooding and erosion. The dumpsters are an eyesore and the area is not well maintained. The banks are being used as dumps for flowers and other debris from the State House lawn and elsewhere.

Opportunities: A different, positive message is needed about appropriate uses of the riverbank. Remove trash receptacles and dumps from the area. The parking lots could be moved back from the river 20 to 30 feet, with minimal loss of parking spaces, to create a green space along the river that would serve many functions (habitat, runoff absorption, visual softening). Work through the City-State Commission to create a unified traffic flow and planting plan for all these parking lots. This could be continuous with a few picnic tables. Add planting islands in the parking lots. Re-establish large black willow trees.



Figure 14. Looking across the Winooski River from Route 2 at severe erosion along the bike path and Peace Park.



10. Bailey Avenue to I-89

Existing Situation: In general, the river through Montpelier has become overly wide and does not transport sediment well. During high flows the river becomes highly erosive laterally, as it no longer has good access to its floodplains. Near Peace Park there is severe erosion. Trees fallen to the river should be cut up and removed while leaving the root wads in the banks.

The weirs constructed along the high school are diverting the water to the center of the river, making it narrower and much more efficient in transporting sediment. In addition, sediment is building up behind the weirs and vegetation is starting to grow on these deposits. A general narrowing of the river with weirs and other mechanisms is indicated to stop the severe erosion that is occurring, undermining trees with extensive root systems. This method of bank stabilization might be appropriate along the river segment adjacent to Peace Park.

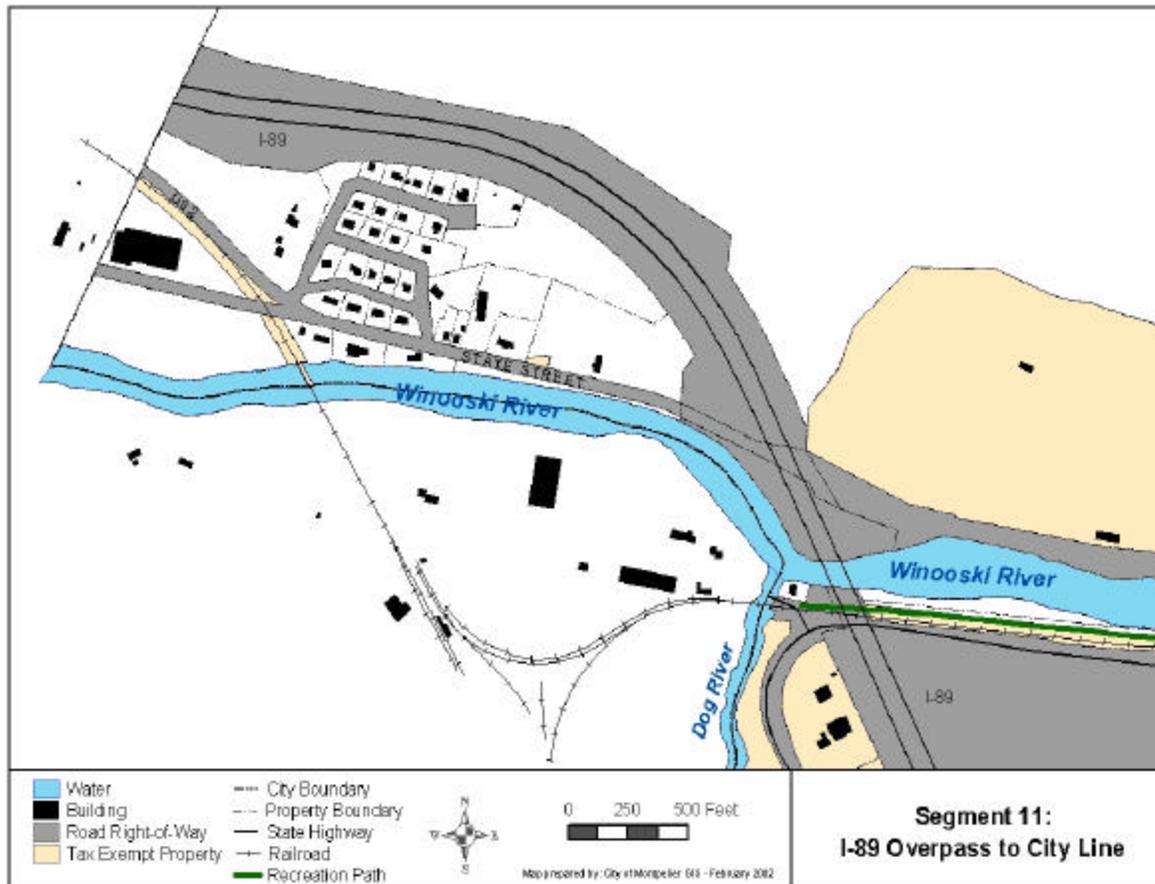
Opportunities: Remove the graffiti from the Interstate supports. Plant trees in the gaps along the entire north side length of the top of the banks. Replace any dead maples and protect them from beavers with hardware cloth. Remove Japanese knotweed.



Figure 15. Looking northwestward along Route 2 toward Gateway Park. A dense stand of Japanese knotweed in the foreground has roots that provide very little soil binding and stimulate riverbank erosion.



Figure 16. Looking southeastward along Route 2 across the river from Green Mountain Power. Trees have been planted along the bank that will be a valuable asset to the city in decades to come. They should be cared for carefully.



11. I-89 Overpass to City Line

Keep vegetation on the banks as natural as possible, with minimal cutting.

Implementation

The implementation of this plan is envisioned to be primarily a volunteer effort to be carried out by the Tree Board, Conservation Commission, and Friends of the Winooski River, with assistance from the Conservation District, City Tree Warden, Cemetery Commission, Public Works Department, state agencies, and riverbank property owners.

It is proposed that an “**adopt a riverbank**” program be organized in which groups, individuals and businesses volunteer to maintain river segments in accordance with a detailed plan. This approach will make it clear where the responsibility lies for vegetation maintenance of each river segment.

Once a plan and list of trees are selected for a segment of the river, a description of each tree or shrub will be listed in an Appendix. It will contain the Latin and common name, picture or drawing, description of the growing characteristics and environmental requirements and a

description of an appropriate management protocol. There will also be a description of unwanted plants on river banks and the best known methods for controlling them.

Many questions remain to be addressed. Some of the next steps include exploring sources of funding to implement the plan, holding annual meetings of interested parties in January of each year to decide the next year's planting and management plans and to enlist the assistance of individual volunteers, groups, and city, state and federal agencies.

The committee will conduct similar river vegetation surveys and prepare addenda to this plan for the North Branch and the Dog River.

Short term priority goals for enhancement. Regarding priorities for implementation of the plan, the committee recommends that planting start first where soils are suitable, where permission can be obtained easily and where success is likely.

The committee favors starting the plantings on the south side of the river between Taylor Street and the railroad bridge. Design work will be needed and security issues must be addressed. The committee is seeking a landscape designer to help with this section.

An area of considerable interest is the southwest corner of the intersection of Main and Memorial Drive where some appropriately located tall growing trees could be planted.

The committee is also interested in the south side of the river between Main and Granite Streets. Here it is desired to restore the locust plantings that were originally there. Poor soil and ice damage have taken their toll on trees before they could become large.

Short term priority goals for remediation. The committee hopes to experiment with the various means to eliminate dense growths of Japanese knotweed that choke out other vegetation. It does not stabilize the banks well because of its short root system.

Erosion is severe near the Peace Park. Trees that have fallen into the river should be cut up while leaving the root wads to stabilize the riverbanks.