Regional Naugatuck River Greenway Routing Study

Town of Watertown, Connecticut

DECEMBER 2010

PREPARED BY:
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IN ASSOCIATION WITH:
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PREPARED FOR:
Council of Governments of the Central Naugatuck Valley

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The preparation of the study was financed through grants from the U.S. Department of Transportation, Federal Highway Administration and Federal Transit Administration; a grant from the Connecticut Department of Transportation; and by the contributions from member municipalities of the Central Naugatuck Valley Region.

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Cover image: Future greenway trail crossing Frost Bridge Road

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1. Overview

The Regional Naugatuck River Greenway Routing Study report recommends routing for the Naugatuck River Greenway trail through the Town of Watertown, Connecticut. The routing is the product of a year-long effort to study, analyze and develop routing recommendations for a Naugatuck River Greenway trail along the Naugatuck River in Western Connecticut. As part of this project, greenway routing reports were also created for Thomaston, Naugatuck, and Beacon Falls. A routing report was also created for Waterbury, as part of a separate process. The overall goal of these reports is to identify a route for a 22-mile long regional greenway trail in the Central Naugatuck Valley Region. It is envisioned that this greenway will ultimately extend 44 miles from Torrington in the north to Derby in the south.

The two primary goals of the Naugatuck River Greenway (NRG) are:

1) To develop a non-motorized transportation facility for walkers and cyclists.
2) To provide public access to the Naugatuck River.

The NRG will provide Watertown residents with a safe pedestrian and bicycle path that will connect to neighboring municipalities. The NRG will facilitate river access for fishing and small boat launches. The recommended alignment in Watertown remains within viewing distance of the river for almost the entire proposed route. This allows users to appreciate the beauty of the Naugatuck River, even when being directly alongside of it is not possible or practical.

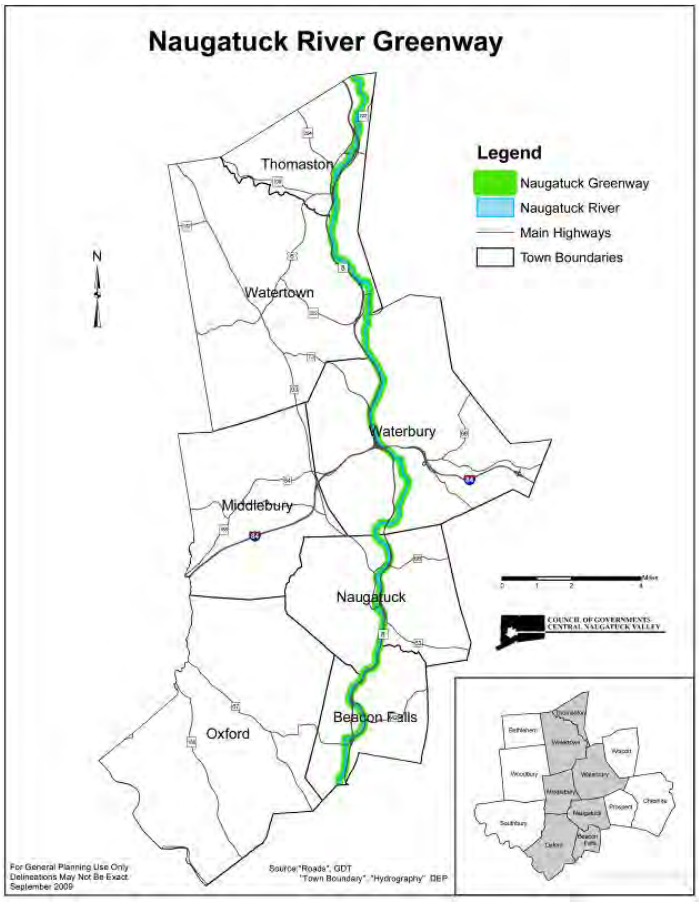


Figure 1: Map showing the five municipalities affected by this Study, though the alignment through Waterbury was determined separately.

In most areas along the length of the alignment, the preferred greenway route was apparent due to the relative ease of developing a trail along one side of the river versus the opposite bank. In a handful of locations, however, routing options were presented and narrowed down after input from the general public, the Regional Naugatuck River Greenway Committee, town officials and Council of Governments of the Central Naugatuck Valley (COGCNV) staff.

For the Study, a greenway is defined as "*a corridor of land that connects people and nature together,"* and a trail is defined as "*a linear facility for non-motorized transportation and recreation*." The future trail's design will be context sensitive; in some sections it may be a paved, shared-use path for pedestrians and bicyclists, while in others, the trail may be a rustic, natural-surface path that is more amenable to equestrians. The Study also makes recommendations for the trail and related improvements such as trailheads, parking areas, canoe/kayak landings, on-street bike improvements and other spur connections.

The scenic quality of some sections of the Naugatuck River rivals that of rivers nearly anywhere in New England.

Throughout the planning process, care was taken to ensure that recommendations coming from this Study fully considered recommendations from the Waterbury Naugatuck River Greenway Routing/ Feasibility Study as well as the various greenway-planning efforts occurring separately in all four municipalities. The Regional Naugatuck River Greenway Routing Study also recommends connections to nearby parks, schools, state forests and town centers along the route.

The Naugatuck River is the Central Naugatuck Valley Region's primary natural resource. While in many stretches the river has an industrial nature, in others it takes on the traits of a wild river running through far less developed areas, such as northern New England or the Berkshires.

Today, there is a new appreciation of the value of this resource in the heart of Western Connecticut. COGCNV recognizes this portion of the Naugatuck River Greenway as the core of an inter-connected greenway system that will eventually connect to Oxford, Middlebury and Southbury via Larkin State Park Trail and to Connecticut Forest and Park's Blue-Blazed hiking trail network. When complete, the Naugatuck River Greenway will:

- Serve as an alternative green transportation facility
- Provide recreation opportunities for residents and visitors
- Improve the quality of life in local communities
- Increase property values adjoining the greenway
- Help retain and attract new businesses and residents
- Raise awareness and help build appreciation of the value of the Naugatuck River

Greenway-oriented economic development adjacent to the Sue Grossman Still River Greenway in Torrington. (*photo: Peter Kisselburgh*)

2. Mission and Goals

The following Mission and Goals provide a measurable set of guidelines for the development of the Naugatuck River Greenway.

Mission: Develop an interconnected greenway trail along the Naugatuck River corridor from Thomaston to Beacon Falls that incorporates existing and planned trails and open spaces, and connects to nearby parks, schools, downtowns, public transportation and other destinations in order to create opportunities for non-motorized transportation and for communities to reconnect with the natural environment along the river.

Goal 1: Connect Thomaston, Watertown, Waterbury, Naugatuck and Beacon Falls with a contiguous multiuse greenway trail. Furthermore, access points and connectivity to commuter and tourist train stations and bus routes are necessary for the proposed trail to be a successful transportation and recreational facility.

Goal 2: Increase the number of people walking and bicycling for transportation and recreation and the number of children walking and bicycling to school in the Central Naugatuck Valley Region, helping to reduce traffic congestion, greenhouse-gas emissions and sedentary lifestyles.

Goal 3: Support each community's economic development efforts by routing the greenway to serve their downtown areas.

Goal 4: Incorporate context-sensitive design in the planning and development of the greenway trail. The trail will be sensitive to local conditions. Individual sections of the trail may be designed as a rustic, natural-surface trail or as a paved, shared-use path based on local conditions. Some stretches could be designed to encourage equestrians, depending on local conditions. Interpretive elements will reflect each community's unique heritage and culture, while a greenway logo will establish a consistent identity along the entire greenway trail.

Goal 5: Reconnect the communities of the Central Naugatuck Valley Region to the Naugatuck River. Provide access to the river for recreational, educational and public safety purposes. Encourage municipalities and residents to better protect the river corridor.

3. Study Methodology

Watertown Town Manager Chuck Frigone addresses greenway workshop attendees.

The Regional Naugatuck River Greenway Routing Study followed a methodology that included community workshops, site walks, stakeholder meetings, reviews of relevant planning documents and field observations to identify short-term and long-term alternatives for development of the regional greenway. Planning tools such as GIS-based data analysis and review of aerial photography were employed as well. The mission and goals outlined in the previous section guided the planning process. A series of site walks and meetings with stakeholders in each of the communities occurred in the fall of 2009 and continued on an as-needed basis through the summer of 2010. Public workshops for the data-gathering stage were held on November 17 and 18, 2009 in Naugatuck and Thomaston, respectively and on March 23 and 24, 2010 in Beacon Falls and Watertown, respectively. Additionally, the project website (http://www.cogcnv.org/greenway) was maintained throughout the duration of the study.

A core element of the Routing Study was to identify gaps in the current greenway system and propose short- and long-term alternatives for closing the gaps and connecting existing or planned sections of the greenway. Gaps were evaluated for:

- Land ownership issues
- User accessibility
- Environmental concerns
- Physical barriers such as topography, major roads and rail lines, etc.
- Permitability, constructability and cost
- Adjacent planned development
- Community support or opposition
- Overall character, including view opportunities
- Adjacency to points of interest
- Potential or lack of access points

After the Gap Evaluation, an analysis of opportunities and challenges within the project corridor was conducted to refine the routing alternatives. Working with COGCNV planners and the Naugatuck River Greenway Committee, the alternatives were narrowed down to a recommended greenway alignment that had the community's support. In conjunction with the routing recommendations, a phasing plan for implementation, along with cost estimates for each phase were developed. The phasing recommendations take into account that greenway planning, design and development often occur over extended periods of time and early successes can help to maintain overall project support, funding and momentum.

The planning and conceptual design of the trail follows appropriate trail-related design guidelines. For example, the typical cross-section for the NRG is based on the AASHTO 1999 *Guide for the Development of Bicycle Facilities,* which recommends a ten foot-wide shared-use path with two-foot soft shoulders (fourteen feet total) with a minimum dimension of eight feet to clear pinch points. This does not preclude, however, the possibility that some sections of the trail may include stretches that are narrower and made of permeable surfaces due to local conditions and other constraints.

4. Study Area

The study area is a 22-mile corridor along the Naugatuck River within the municipalities of Thomaston, Watertown, Waterbury, Naugatuck and Beacon Falls. The corridor is approximately one-half to one mile in width but can vary to allow for a full range of opportunities for consideration, including the potential for trails on both sides of the river or along roads, highways and rail corridors. At the north end, recommendations for the greenway alignment extend from the Thomaston Dam in Thomaston to Toby's Pond and Recreational Park in Beacon Falls at the south end. Connections further north to Torrington and south to Derby are being coordinated by the Litchfield Hills Council of Elected Officials and the Valley Council of Governments, respectively.

View of the rail line through the wooded area north of Frost Bridge Road.

Within the river corridor in Watertown, the study area for a potential greenway trail was limited to an approximately half-mile wide corridor between Route 8 on the west to Waterbury Road (in Thomaston) on the east. Additionally, on-road bicycle improvements were studied along roadways perpendicular to the river corridor, extending west to the center of Watertown. The more-than-three mile length of this corridor is relatively consistent and comprised primarily of wooded areas cut by the rail line, the Route 8 corridor and a dirt access road. Downriver from the Thomaston-Watertown Town Line along Branch Brook, the Naugatuck River cuts a channel into the hills of the Mattatuck State Forest. In this section, with Watertown fronting the west bank and Thomaston the east, there is very limited development because of the steep slopes and the presence of the rail line and Route 8. The state highway is at a much higher grade than the river in most places and its visual and auditory impact is relatively minimal. The beautiful scenery continues until the Waterbury line, where the Waterbury Industrial Commons flood wall dominates the riverscape.

5. Potential Greenway Routing Analysis

The analysis of Potential Greenway Routes is based on meetings and walking tours with stakeholders, field observations and the examinations of aerial photos and GIS-based maps. This analysis is based on the long-term desire to incorporate a 8-12' wide stone dust or paved trail in close proximity to the Naugatuck River, but a narrower dirt hiking trail or on-street bike lanes in the short term are not precluded. These may be necessary to avoid difficult stretches where property ownership issues, engineering challenges or environmental constraints exist.

The Town of Watertown's Greenway Routing Analysis Map (Figure 2 on page 10) includes:

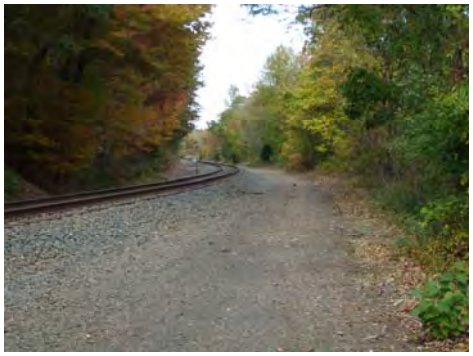
- Identification of cultural and historic destinations and scenic areas that should be connected to the greenway.
- Existing, planned or proposed local greenways.
- Portions of the corridor for which no apparent routing options currently exist, i.e. gaps.
- Identification of potential spurs and loops that connect to other greenways, amenities and destinations.

For the latter two bullets points, the map features elements along the river that present existing and potential conditions along the Naugatuck River. Potential conditions and example situations from the region are presented below:

- **No apparent routing option along the river** – typically due to the placement of Waterbury Road on the Thomaston side of the river or very steep slopes that may present significant challenges (note that this does not preclude the possibility of a narrow, short-term path as mentioned above).

Example: North of the Prospect Street Bridge in Naugatuck where Route 8 runs very close to the river's edge.

- **Potential 'rail with trail' along active rail line** – an active rail line with an adjacent level shelf, unutilized spur or maintenance way that is potentially wide enough to accommodate the greenway trail with an appropriate setback (ideally 20-25' but potentially as low as 10') from the rail line.



Example: The rail corridor through parts of Naugatuck may offer an opportunity for a rail-with-trail greenway section.

- **Potential trail adjacent to the river** – portions of the riverbank where spatial and topographical constraints do not prevent the routing of the trail close to the river's edge.

Example: Portions of the greenway trail within Toby's Pond and Recreational Park are likely to run adjacent to the river.

- **Potential connection along existing access road or street rights of way (ROW)** – areas where the greenway may be able to use an adjacent access road or the portion of an adjacent road ROW with sufficient width to accommodate a trail.

Example: A dirt maintenance roadway that runs between the rail line and Route 8 in Watertown is an opportunity for the trail.

- **Potential spur trail/street improvements** – these are on-road improvements that may involve creating bicycle lanes and improved pedestrian facilities such as sidewalks. These on-road improvements can help to connect the greenway to other trails, schools, cultural destinations and downtown areas.

Example: Streetscape enhancements along Elm Street in Thomaston will improve connections between the future Naugatuck River Greenway and the Clock Walk.

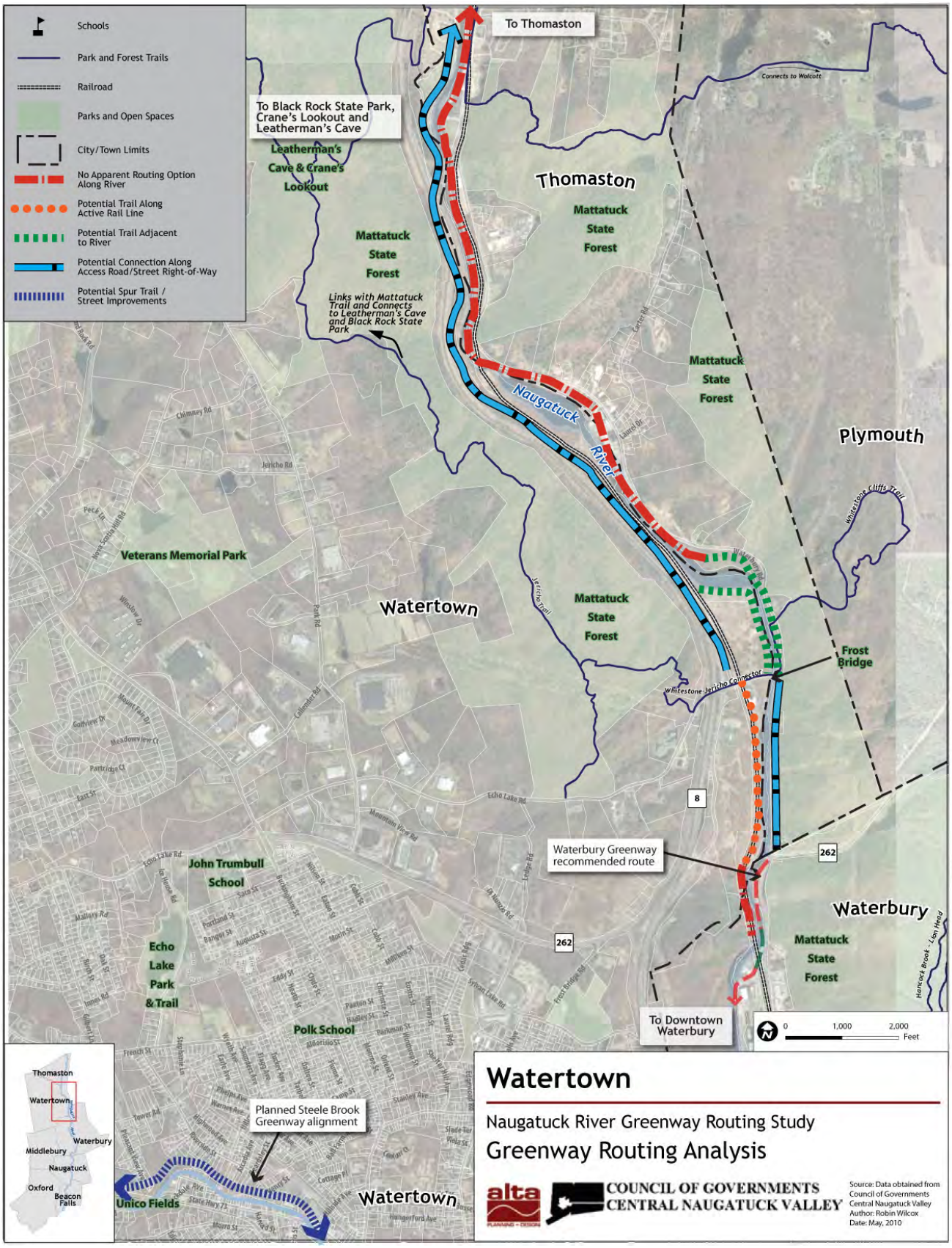


Figure 2: Greenway Routing Analysis in Watertown.

6. Obstacles to Access and Connectivity (Gap Analysis)

Throughout the more-than-three mile corridor in Watertown, there are a handful of obstacles to access and connectivity for a seamless Naugatuck River Greenway (NRG) trail. The obstacles include Branch Brook at the Town Line, busy traffic along Frost Bridge Road (Route 262) and the need to cross the river to connect to the recommended alignment of the greenway in Waterbury. The future trail will also run for nearly a two mile stretch from Reynolds Bridge Road to Frost Bridge Road without access to an adjacent or intersecting public street. This may create a safety perception problem as potential greenway users could feel anxious about the lack of access points in and out of the trail in the case of an emergency.

Additional obstacles exist for those wishing to access the NRG corridor by car or transit, since no parking or trail head currently exist. Only one access point is recommended in Watertown proper, a primary trailhead and parking area to be incorporated into the planned CT Transit Waterbury Bus Maintenance Garage along Frost Bridge Road. Trailheads located just north of Branch Brook (at the Thomaston Sewer Plant) and adjacent to the railroad bridge over the Naugatuck River in Thomaston, will also provide access to the trail.

Site of the future CT Transit Waterbury Bus Maintenance Garage off of Frost Bridge Road.

The recommended NRG trail route will follow an existing unpaved access road that runs between Route 8 and the Naugatuck River for over two miles. Currently, the access road is used occasionally by dirt bikes and all-terrain vehicles, so decisions will need to be made in the future with regards to which users—motorized, non-motorized or both—have the right to use the greenway trail. This dirt access road terminates at Frost Bridge Road and the rail line continues south to Waterbury in a right of way with an adjacent shoulder that could potentially accommodate a trail. While this corridor works well for a linear greenway trail, the presence of Route 8 to the west and the topographical conditions make connections to adjacent neighborhoods difficult, except along Route 262. At the south end of this section, a pedestrian-bike bridge will be needed to connect to the future NRG trail in Waterbury.

On the east side of the river from Reynolds Bridge to Frost Bridge (Town of Thomaston property), potential access for non-motorized users is also significantly constrained. For much of this stretch, either Waterbury Road or the rail line (or both) lie very close to the river's east bank. In some spots, the road pulls away from the river and provides access for those on foot, particularly the blue blazed Whitestone Cliff Trail as it passes over Frost Bridge and turns north before passing under Waterbury Road. South of Frost Bridge, Waterbury Road runs in a relatively narrow corridor with some pinch points, but nothing so extreme as to completely preclude a trail route along Waterbury Road.

7. Affected Property Data

The parcels falling within or adjacent to the study area boundary described earlier have been identified and shown on the figures provided in Appendix B. A table with parcel size and property-owner information is also provided in Appendix B. The parcel inventory is intended to facilitate future correspondence between the municipality and affected property owners. The parcel table was developed with the assistance of the Watertown Town Assessor, but in some instances the information has been found to be incomplete.

In Watertown, a total of four parcels have been identified within the study corridor, not including public rights of way. Key parcels of public land within the corridor include:

- Former drive-in theater site, home to the proposed CT Transit Waterbury Bus Maintenance Garage along Frost Bridge Road.
- The Connecticut Department of Transportation's (CTDOT) Route 8 and rail corridor property from the Thomaston-Watertown Town Line to Frost Bridge Road. South of Frost Bridge Road, the Route 8 right of way diverts to the west and is not relevant to the NRG alignment but the rail corridor continues to run alongside the river is owned by the state. The rail line is leased by the Naugatuck Railroad from the CTDOT.

8. General Construction Feasibility and Cost

Experience on other greenway projects can be used to infer a planning level estimate of expected construction cost for the Naugatuck River Greenway in Watertown. For a typical greenway with conventional structure types in a rural setting, expected greenway construction costs for either a 10-12' paved or stone dust path range from $0.75 to $1.25 million per mile. Many factors will affect final cost including construction materials, commodity prices, property impacts of the selected alignment and other undetermined issues.

Costs for a greenway trail along the Naugatuck River corridor, as with most greenway projects, will be largely driven by the requirements of structural components (e.g., bridges, pile-supported walkways, etc.). Completing the main stem of the greenway within the Watertown town limits will require one new river crossing over Branch Brook. Up to three additional bridges (spanning the Naugatuck River or the existing rail line) will be required to complete optional connections within Watertown as well as to connect to the Waterbury portion of the trail system. Off-setting the costs of this bridge are long stretches of comparatively inexpensive trail that can be constructed at the existing grade of the dirt access road between Branch Brook and Frost Bridge Road.

Another expensive component is anticipated to be a potential elevated rail crossing at the northern end of the former drive-in movie site. Here, construction of a trail as part of the CT Transit bus maintenance facility and the approved, but yet un-built, material processing facility is expected, but current plans have the trail dead end at the northern end of the site. Combined with the primary greenway trail along the unpaved access road, a bridge over the tracks could create a short walking/biking loop and eliminate the need for pedestrians and bicyclists to use the existing at-grade railroad crossing on Frost Bridge Road for those wishing to walk or bike closer to the river.

9. Brownfields and Environmental Constraints

Land use within Watertown's greenway corridor is a sparsely-developed rural area of undeveloped forestland, primarily dedicated to transportation and utility corridors. There is one small factory currently located south of Frost Bridge Road and a proposal for a new bus maintenance garage and material processing facility to the north of Frost Bridge Road. Former use of this area has likely brought some level of environmental challenges. Historically, development along the Naugatuck in Watertown frequently included use of urban fill materials (e.g., brick, block and asphalt within a soil and ash matrix). Due to the presence of ash and asphalt within the urban fill, it is common to find pollutants such as heavy metals and polycyclic aromatic hydrocarbons (compounds commonly found in petroleum and combustion by-products) within urban fill materials. These concerns will likely complicate the acquisition of parcels for greenway development. As definitive designs for the various greenway segments are developed, the designer should identify parcels with known or potential historic releases of contaminants. This will allow trail designs to incorporate appropriate mitigation measures.

A first order assessment of potential contamination can be made by reviewing the Connecticut Department of Environmental Protection's (CTDEP) "List of Contaminated or Potentially Contaminated Sites in Connecticut" and "List of Significant Environmental Hazards Reported to the DEP." As of September 2009 and February 2010, respectively, no sites along the greenway corridor in Watertown were listed by the CTDEP as contaminated. However, these lists are not exhaustive and only provide information about sites that the CTDEP is aware of. If warranted, a more detailed evaluation in the form of a Phase I/II Environmental Site Assessment may need to be undertaken.

Constructing portions of the greenway may require disturbing polluted soil. In these cases, special consideration should be given to the following:

- *Soil disposal:* If excess soil is generated during the construction of the trail, it may require special handling and disposal due to the presence of pollutants. We recommend that the trail be designed in a manner to reduce the amount of excess soil generated during the project to mitigate the potential for excessive costs associated with polluted soil disposal.

- *Potential for exposure:* Although the greenway may be paved, thereby mitigating the potential for users to come into contact with pollutants directly beneath the trail, soil located along the shoulders of the trail could provide a potential exposure pathway. Surficial soil quality testing may reveal these conditions and permit the designer to incorporate mitigating measures (e.g., separation fabrics, clean fill, etc.).

In less developed areas, environmental constraints relate less to mitigating man-made contamination and more to protecting and managing natural resources. Sensitive resources include: wetlands, flood plains, endangered or threatened species habitat, steep slopes or erosive soils and archeological resources. In these resource areas, a special effort should be made to maintain and/or re-establish riparian buffers adjacent to the river or wetlands. These buffers help protect water quality, lower water temperatures and provide wildlife corridors. Where the greenway is proposed to cross an area identified as a potential endangered or threatened species habitat, a review by the CTDEP should be sought early in the design process. The CTDEP will advise the municipality on appropriate measures to protect the critical habitat. If the CTDEP determines that the proposed project is likely to impact a listed threatened or endangered species, or significant natural communities, department staff will provide recommendations to avoid or minimize impacts to these species and habitats. The CTDEP permit analysts reviewing the project environmental permit applications will consider these recommendations during their review and typically incorporate appropriate conditions as part of the permit.

Where appropriate, municipalities are encouraged to work with their design professionals to incorporate low-impact design (LID) principles into the greenway. LID allows for more natural stormwater drainage patterns and promotes groundwater recharge. It helps to decrease the adverse effects of development upon our water resources. Common LID measures include permeable pavement, rain gardens, bio-filtration swales, etc. These measures may not be appropriate, however, in areas where underlying soils are polluted.

In Watertown, a key environmental constraint will be the traversing of a potential endangered species habitat area. Portions of the trail are also likely to lie within the designated floodplain. The primary site of concern for contamination is the former drive-in theater site along Frost Bridge Road where construction debris and oil tanks were illegally dumped. No determination of contamination was made by the town or the CTDEP.

10. Safety and Security

Trail safety is a major concern of both trail users and those whose property is adjacent to a greenway trail. Emergency vehicles access to the NRG is paramount and the alignment and access point locations were planned with this in mind. The Town of Watertown should plan for regular security patrols for the section of the trail within its jurisdiction and develop an emergency response plan for police, fire and ambulance service. Creating a safe trail environment goes beyond design and law enforcement, however and should involve the entire community. The most effective and most visible deterrent to illegal activity on the NRG will be the presence of legitimate trail users. Getting as many "eyes on the trail" as possible is the most effective deterrent to undesirable activity. There are several components to accomplish this:

Provide good access to the trail

Access ranges from providing conveniently-located trailheads along the Greenway, to encouraging the development of sidewalks and bike facilities along public roadways that connect to, or intersect, the NRG. Access points should be inviting and signed to welcome the public onto the trail. The reality in Watertown is that direct access to the NRG will be intermittent with parking areas or trailheads located at the Thomaston Town Line and at Frost Bridge Road, a gap of approximately two miles.

Good visibility from adjacent neighbors

Although their numbers are limited, neighbors adjacent to the trail can potentially provide 24-hour surveillance of the trail and can become an ally to Watertown's police department. Though some screening and setback of the trail may be needed for privacy of adjacent neighbors, complete blocking out of the trail from view of adjacent businesses should be discouraged. This eliminates the potential of neighbors' "eyes on the trail," and could result in a tunnel effect along the trail.

High level of maintenance

A well maintained trail sends a message that the community cares about the public space. This message alone will discourage undesirable activity along the trail.

Programmed events

Community events along the NRG will help increase public awareness and thereby attract more people to use the trail. Various civic organizations can help organize public events along the trail which will increase support. Events might include a day-long trail cleanup or a series of short interpretive walks led by knowledgeable residents or a naturalist. These events could be coordinated with Connecticut Forest and Park Trail Manager for the adjacent Jericho and Mattatuck Blue-Blazed Trails.

Community projects

The support generated for the NRG could be further capitalized by involving neighbors and friends of the trail in a community project. Ideas for community projects include volunteer planting events, art projects and interpretive research projects. These community projects create a sense of ownership along the greenway and serve as a deterrent to undesirable activity along the trail.

Adopt-a-Trail Program

Nearby businesses, community institutions and residential neighbors often see the benefit of their involvement in trail development and maintenance. Businesses and developers may view the trail as an integral piece of their site planning and may be willing to take on some level of responsibility for the trail as well. Creation of an adopt-a-trail program should be explored to capitalize on this opportunity and build civic pride in the greenway.

11. Permitting Issues

The construction of the greenway along the Naugatuck River will require permits from various agencies. A brief description of each anticipated permit is provided below. It should be noted that each permit may not be required for each individual section of the greenway trail.

Municipal Inland Wetlands and Watercourses Permit for Regulated Activities

Basis: Delegated authority from the State based on Connecticut General Statutes.

Threshold: Any regulated activity within a State regulated wetland or upland review area. Can also be required if the activity is in an upland area, drains to a regulated wetland area and/or is deemed to have a potential impact on the wetland.

Process: Application must be made to the Municipality and most include a Connecticut Department of Environmental Protection Reporting Form. At the first meeting after application is received, it is formally accepted by the Commission. This begins the time periods as defined in the State Statutes. If the proposed activity is deemed to be a potentially significant activity, then a public hearing must be held before a decision can be made by the Commission. If the activity is found to have no significant impact, then the Commission may hold a public hearing, if it is found to be in the public good, or may render a decision without holding a hearing. Following the formal publication of the decision, there is a 15-day appeal period.

Time Line: Normally takes three to six months, depending on whether a public hearing is required. Application must be submitted prior to or concurrent with the Planning and Zoning Permit, if required.

Municipal Planning and Zoning or Municipal Zoning Department Permit (Site Plan Approval)

Basis: Local authority granted under Connecticut General Statutes, but based on local bylaws and regulations.

Threshold: Any significant earthwork or work requiring a building permit. A Zoning permit may not be required for basic greenway trail projects. This should be discussed with each municipality's Planning and Zoning staff once the corridor and proposed construction methods are sufficiently defined.

Process: Application is made to the Municipality. At the first meeting after the application is received, it is formally accepted by the Commission. This begins the time periods as defined in the State Statues and local bylaws. Certain activities require a special permit which requires a public hearing and must be held before a decision can be made by the Commission. Also, the Commission cannot make a decision until the Inland Wetlands Commission has made a decision. Following the formal publication of the decision, there is a 15-day appeal period. Plans must normally be approximately 70% construction document level in order to contain sufficient information to gain approvals.

Time Line: Normally takes three to six months, following submission, depending on whether a public hearing is required. The permit application cannot be submitted prior to the application for Inland Wetlands, although they can be submitted on the same day.

FEMA Floodplain Development and Conditional Letter of Map Revision

Basis: Federal law with some review authority delegated to the municipality.

Threshold: Any earthwork or construction within a designated flood plain; work over, or in a designated floodway.

Process: A floodplain permit is required before construction begins within any Special Flood Hazard Area (SFHA), or any flood-prone areas if no SFHA has been defined. Permits are required to ensure that the proposed development project meets the requirements of the National Flood Insurance Program and the community's floodplain management ordinance. In Connecticut, this review is usually performed by the Planning and Zoning or Wetlands Commissions. Generally, passive recreation, such as bicycle and pedestrian trails, are allowed as permitted use in flood-prone areas. However, if the proposed construction affects the elevation or horizontal spread of flood waters, the applicant may need to apply for a Conditional Letter of Map Change (CLOMR). Application is made to FEMA with the concurrence of the municipality. The application must demonstrate that the water surface elevation will not increase by more than one foot (cumulatively with other developments) in the flood plain or by any amount in the regulatory floodway through use of hydraulic modeling software. It should be noted that some municipalities have floodplain-management regulation more restrictive than these requirements. Following construction, an application must be made for a Letter of Map Revision (LOMR) depicting actual "as-built" conditions and modeling demonstrating that the data presented in the application is valid.

Time Line: Normally takes twelve to eighteen months for CLOMR.

Connecticut Flood Management Certification (FMC)

Basis: Connecticut General Statutes and CTDEP Regulations.

Threshold: All State of Connecticut actions in or affecting floodplains or natural or man-made storm drainage facilities, including projects undertaken by municipalities with funding provided by the State.

Process: Application is made to the Connecticut Department of Environmental Protection (CTDEP). Upon receipt of a request for CTDEP approval of a state agency's flood management certification, the application is assigned to a project manager and is reviewed for sufficiency. If the application is sufficient, a detailed technical review is initiated. These reviews consist of an evaluation of the technical documentation provided in the

application as well as an independent assessment of the site and of the project's consistency with the flood management standards and criteria.

Time Line: Normally processed within three months. If other CTDEP approvals are required, the FMC will be processed concurrently with the other applications.

Stream Channel Encroachment Permit

Basis: State regulation of specific stream channels as defined by Connecticut General Statutes and CTDEP Regulations.

Threshold: Any earthwork within the stream channel encroachment line.

Process: Application is made to the CTDEP. Application must include hydrologic analysis proving that activity does not negatively impact flood water or impede flow within the channel.

Time Line: Normally takes six to twelve months depending upon the nature of the proposed construction.

Connecticut Department of Environmental Protection General Permit for the Discharge of Stormwater and Dewatering Wastewater from Construction Activities

Basis: Connecticut General Statutes and CTDEP Regulations.

Threshold: Compliance with the General Permit is required for all projects that disturb one or more acres of total land area. Projects with five or more total acres of disturbance, regardless of phase must also file a registration with the CTDEP. Projects exceeding 10 acres of total disturbance must obtain an approval of registration, including a detailed review of the required Stormwater Pollution Control Plan.

Process: Application is made to the CTDEP.

Time Line: Must be submitted at least sixty days prior to the start of construction.

Army Corps of Engineers (ACOE) Permit

Basis: Section 404 of the Clean Water Act

Threshold: There are three categories of ACOE permits based on the total area of disturbance of federally regulated wetlands. The federal definition of wetland is different from the Connecticut definition. Although the limits of both federal and state wetland tend to be the same, there are sometimes differences. ACOE jurisdiction is triggered by any fill-in, or secondary impact to, a federally regulated wetland. If the ACOE has jurisdiction, then the category of permit is decided based on the total direct and secondary impacts to wetlands. Direct impacts include earthwork operations. Secondary impacts can include changes in drainage patterns or groundwater hydrology, clearing/cutting of vegetation, or alteration of shade patterns.

Category I General Permit (less than 5,000 square feet of disturbance)

Category II Programmatic General Permit (PGP) (5,000 square feet to 1 acre of disturbance)

Category III Individual Permit (one acre, or more, of disturbance)

Process: For Category I, there is no application required. For Category II and III permits, application is made to the ACOE. Review is conducted jointly by the ACOE and the Connecticut DEP (see CT 401 Water Quality Permit). Additional review by the U.S. Fish and Wildlife and other federal agencies is conducted for Category II and III permits. Category II permits can be changed to Category III if requested by reviewing agencies based on potential impacts of the wetlands or wildlife habitat.

Time Line: Category II permits normally take six to nine months depending on complexity, quality/function of wetlands, and surrounding habitats. Category III can take one year or more. Category II and III permits cannot be granted until the CT DEP issues a 401 Water Quality Permit.

Connecticut Section 401 Water Quality Certification

Basis: Federal authority, under the Clean Waters Act, delegated to the State of Connecticut.

Threshold: Category II or III ACOE Permit, or any State of Connecticut Project.

Process: Application to the ACOE is jointly reviewed by the Connecticut Department of Environmental Protection (CTDEP). The CTDEP often requires additional information to be submitted which is not required by the ACOE.

Time Line: Normally takes four to six months. This certification must be granted before the ACOE can issue a Category II or III permit.

12. Coordination with Other Studies

Along with the Regional Naugatuck River Greenway Routing Study, other relevant studies have recently been completed or are occurring concurrently. In some cases, some of these studies have had an impact on the routing decisions for the NRG and recommendations from this Study have led to proposal alterations to the other studies. The other studies include:

- The **Waterbury Naugatuck River Greenway Routing and Feasibility Study** recommends a hybrid greenway alignment through the city that utilizes public and private property along the east and west banks of the river, numerous bridges, and a handful of roadway corridors to link difficult-to-bridge gaps along the river. The Study includes numerous loops and spur connections to important nearby destinations, as well as nature trails that run adjacent to the wider, paved greenway trail. At the north end, the Waterbury Greenway is proposed to terminate at the City Line adjacent to Thomaston Avenue with a long-term recommendation for a new bridge to span the river at this location, connecting with the trail running north to Watertown.
- The **Connecticut Bicycle and Pedestrian Transportation Plan** was updated by the Connecticut Department of Transportation in 2009. The effort includes a state-wide plan and detailed map that illustrates the state's policies, existing facilities and future needs for safe and efficient travel by bike or by foot.

13. Community Input

The Council of Governments of the Central Naugatuck Valley (COGCNV) hosted two pairs of public workshops for the Naugatuck River Greenway Routing Study. A workshop was held in each of the four greenway study municipalities.

The first public workshops were held on November 17 and 18, 2009 in Naugatuck and Thomaston, respectively. The purpose of the first set of workshops was to gather input from all four communities to assist in determining opportunities and challenges along the corridor and potential routing options for the greenway trail. The meeting on the 17th was focused on the issues and routing in both Naugatuck and Beacon Falls, while the next night, discussion focused on the issues and routing in Watertown and Thomaston.

The second of the two pairs of public workshops were held on March 23 and 24, 2010 in Beacon Falls and Watertown, respectively. The purpose of these meetings was to gather input from the four communities on the proposed preliminary routing as well as areas where they would like to see additional amenities along the Naugatuck River Greenway.

Phil Goff from Alta Planning + Design addresses greenway workshop attendees in Watertown.

Overall, the four community meetings, combined with other stakeholder meetings and site walks, provided the COGCNV and the consultant team with valuable input on routing recommendations, design options and property-ownership issues. The team also learned of the important local connections to adjacent neighborhoods and commercial areas outside of the corridor. Additional trail spurs and other connections were added to the recommendations as a result. One attendee even suggested the clever idea of using the 22-mile greenway, plus some spurs, as the route for the Naugatuck River Marathon in the future.

Draft routing maps were also posted on the project website. Comments on the greenway routing maps were received at the workshops, via e-mail and by U.S. Mail.

Press releases were published for both sets of workshops in the Republican American and other town newspapers. Articles were written and published on the workshops, including references to the project website. Video of the Thomaston workshop was posted to the Republican American website.

Subsequent to the community meetings, members of the Connecticut Horse Council and the Connecticut Equine Advisory Council investigated key trail connections that currently exist in the Naugatuck River corridor area. They provided a detailed memo to the COGCNV and mapped the connections in a GIS database, some of which helped the consultant team recommend spur-trail links important to equestrians.

A final public meeting was held on September 14, 2010 at the COGCNV's offices in Waterbury. The completed draft study was presented to the Regional Planning Commission and members of the public in attendance. Members of the public and RPC commissions voiced support for the greenway study. One member of the public emphasized the importance of designing the greenway to not take away from the beauty of the Naugatuck River.

14. Opportunities and Challenges

Part of the community and stakeholder meetings, field work and analysis during the easy stages of this Study included the documentation and analysis of existing opportunities and challenges to the development of a greenway trail within the Naugatuck River corridor in Watertown. This analysis is shown in the diagrammatic map, Figure 3, on the following page.

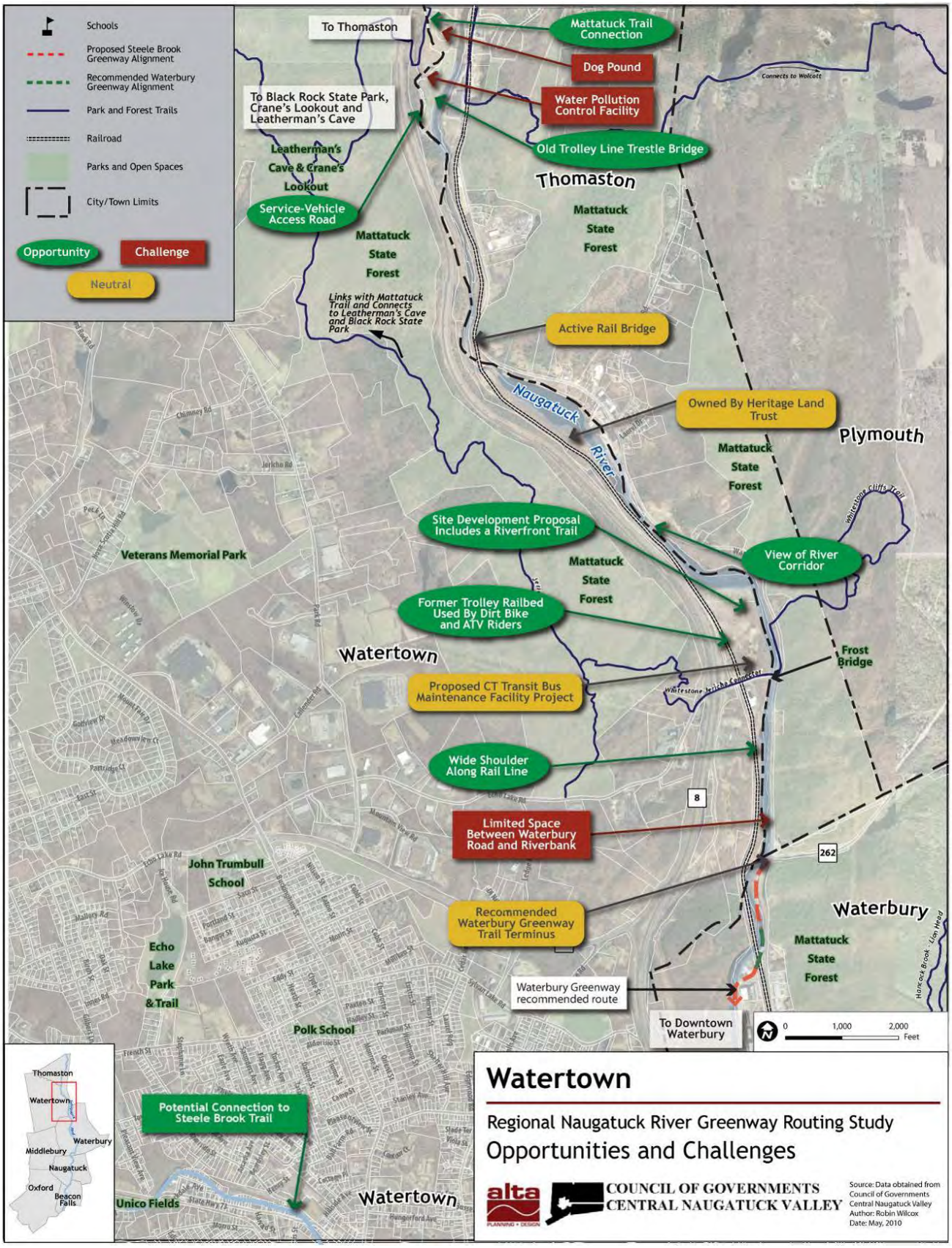
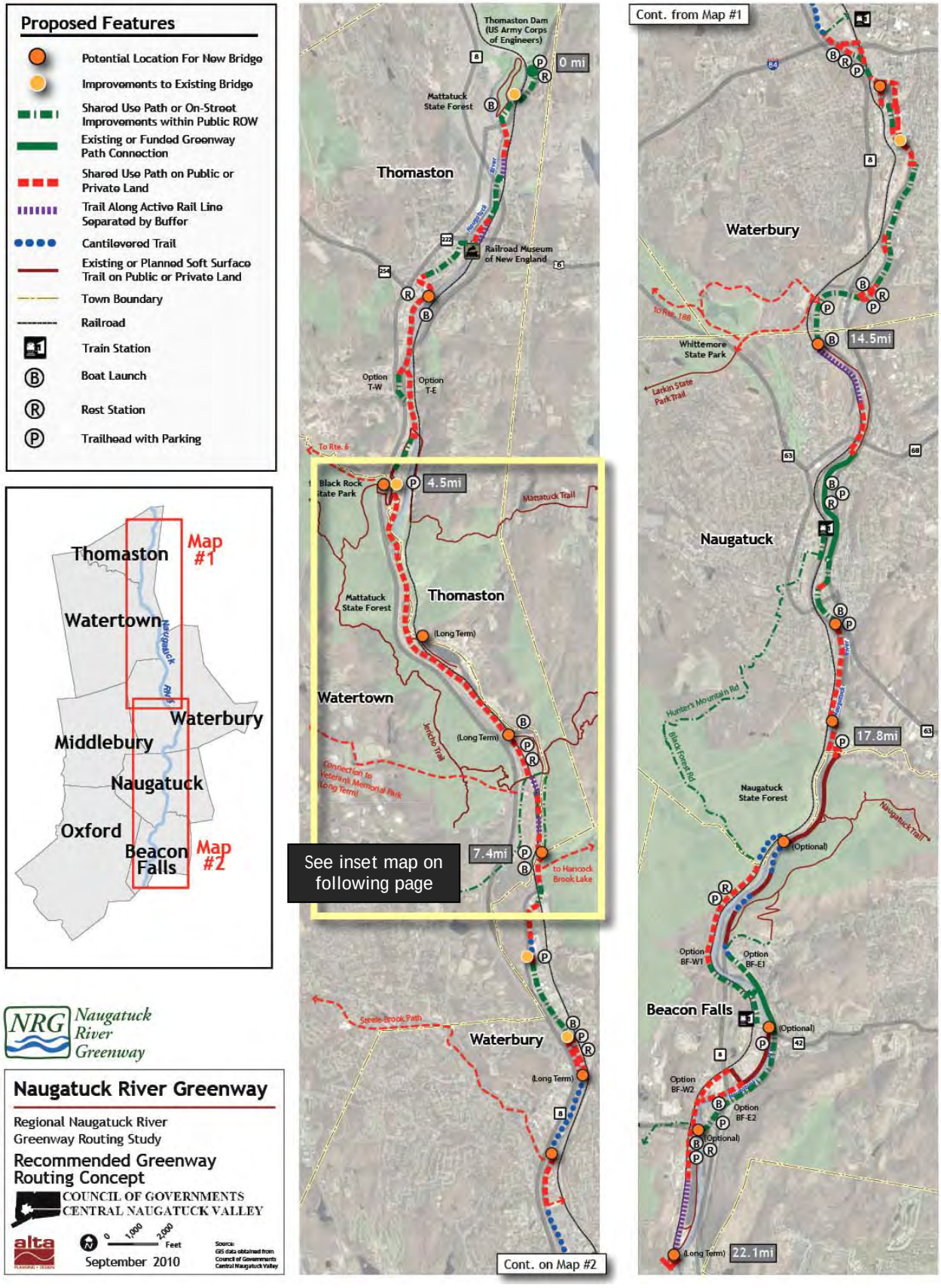


Figure 3: Opportunities and Challenges for Potential Greenway Route in Watertown.

15. Recommended Greenway Routing



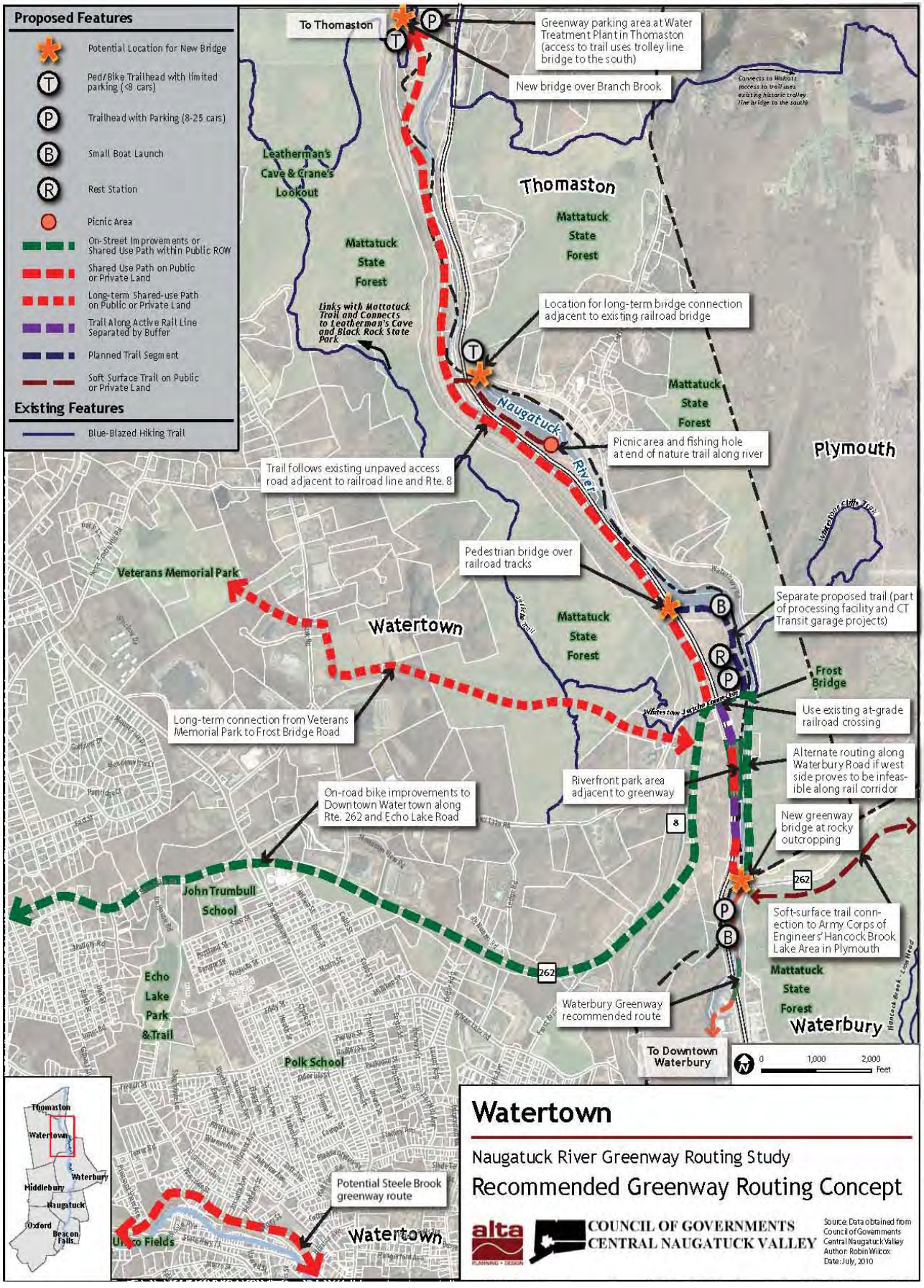


Figure 4: Recommended Greenway Routing Concept in Watertown.

The recommended Naugatuck River Greenway (NRG) trail within the Town of Watertown will run for 2.9 miles and consist primarily of a multi-use path that runs in between Route 8 and the rail line adjacent to the west bank of the Naugatuck River. In some locations, the trail alignment is relatively close to the tracks—separated by a buffer of 25'—whereas in others locations, it is separated from the rail line by a wider vegetated buffer. The stretch of greenway between the Thomaston Town Line at Branch Brook and Frost Bridge Road is a two-mile stretch of pathway unbroken by cross streets or roads and runs through a very scenic section of the Naugatuck River Valley. This stretch will be isolated and there may be a need for emergency vehicle access, which could serve both the trail and Route 8 northbound. From Frost Bridge Road to the Waterbury line, the trail will run alongside the rail line with occasional sections affording closer access and views to the river. A new pedestrian/bike bridge will connect the trail on the west bank to the northern terminus of Waterbury's portion of the Naugatuck River Greenway just south of the intersection of Thomaston Avenue and Spruce Brook Road. A less desirable, but possible, alternative is to cross Frost Bridge and to run the trail along the west edge of Waterbury Road to the Town Line.

A. Recommended Greenway Trail Alignment

The NRG alignment will connect from Thomaston over a new trail bridge over Branch Brook, the official Town Line. At this location, a trailhead kiosk will orient visitors with maps and other local historical and cultural information. A composting toilet or port-o-potty should be considered at this location as well. This portion of trail is likely to be somewhat narrow as it passes through a relatively dense forested area that is part of the Mattatuck trail, a Blue-Blazed hiking trail managed by Connecticut Forest and Park Association volunteers. Drivers wishing to enter the NRG at the north end of Watertown will have the opportunity to park at a recommended parking lot for up to 25 cars at the

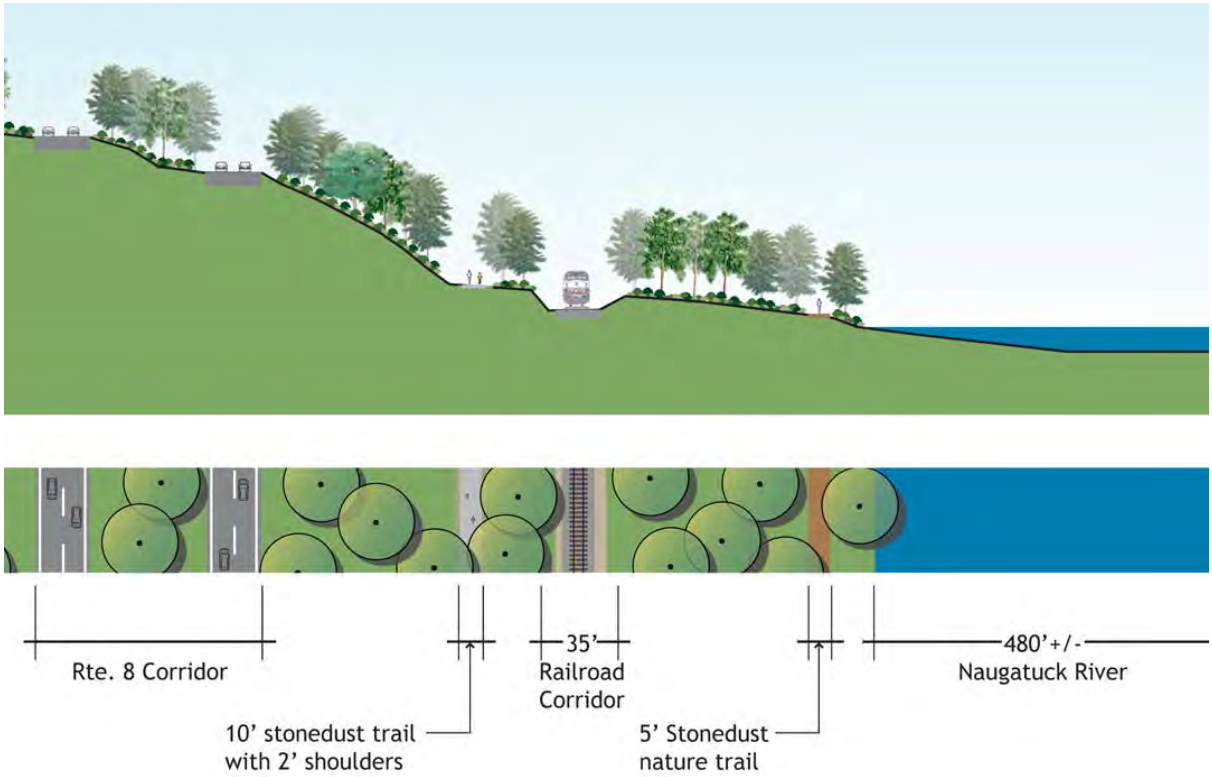


Figure 5: Trail cross-section north of Frost Bridge Road (Route 262) showing the greenway trail's relationship to the Naugatuck River, the Naugatuck Railroad and Route 8.

Thomaston Sewer Plant. From there, walkers and cyclists will access the greenway using the historic trolley line bridge at the south end of the Sewer Plant. The York Road/Old Trolley Bridge connection can also serve as the main greenway route in the event that the proposed new bridge over Branch Brook along the Mattauck Trail is not able to be funded or permitted.

The new bridge over Branch Brook could look similar to some of the rustic examples in Central Park.

Continuing south from Branch Brook, the alignment will connect with an existing, unpaved access road that runs for nearly two miles to Frost Bridge Road, in between Route 8 and the river. Along one short stretch, the access road/greenway trail will run within the grassy shoulder area of the state highway to avoid pinch points and steep slopes between the right-of-way and the river. In this area, a security fence will keep trail users from wandering too close to the highway. Formalizing a trail in these areas will displace illegal ATV use of the existing unpaved access road. To discourage trail use by ATVs and other motorized vehicles, signs and bollards will be needed at all trailheads. Neither are a panacea however and enforcement will be needed as well to ensure that only non-motorized users will enjoy the NRG.

Approximately a mile south of the Town Line, the active rail line that runs on the east bank of the Naugatuck crosses to the west and remains in Watertown until it crosses back to the east bank near the Waterbury Industrial Commons site in Waterbury. The existing rail trestle bridge between Watertown and Thomaston has been used illegally as a pedestrian crossing of the river. While rail traffic is quite low, crossing on the rail trestle is extremely dangerous and should be discouraged. In the long term, however, the plan recommends a companion bridge adjacent or attached to the existing trestle. This will eventually provide access to the NRG trail from a small parking area on the east bank off Waterbury Road in Thomaston. At this location, there is a bend in the river, creating a beautiful spot that could provide fishing and river access on both riverbanks. On the west bank, a narrower nature trail is planned to split off from the main greenway route, pass under the existing trestle and run along the west river bank for a few hundred feet. The spur will dead-end at a spit of land at the south end of a large dredging hole, downriver from the rail trestle. A picnic area and access to a fishing hole could be located here.

Figure 6: Greenway trail intersection with Frost Bridge Road (Route 262) and the Naugatuck Railroad. Improvements include: a greenway-user activated traffic signal and railroad crossing warning lights, signage and gates.

South of the rail trestle, the NRG trail will run between the rail line and Route 8 at a grade that is 8'-12' higher than the rail line, but considerably lower than Route 8. Along with the natural buffer of trees, this creates a significant separation between the trail and the railroad tracks. As it approaches the former drive-in movie theater site on Frost Bridge Road, the access road/future trail returns to the same grade as the railroad tracks and rows of trees and mature shrubs no longer separate the two. Although rail traffic is light along the corridor—primarily Naugatuck Railroad trains operated by the Railroad Museum of New England—in locations such as this, a security fence is recommended to discourage access on to the tracks. The Greenway Routing Concept map on page 23 (Figure 4) includes the proposed trail segment that is anticipated to come in conjunction with the redevelopment of the old drive-in site. A new trail will run immediately adjacent to the river along the edge of a future processing facility and CT Transit Waterbury Division's bus maintenance garage. To form a walking and biking loop in this area, a new bridge over the tracks at the north end of the redevelopment parcel is recommended in the long term. Parking for trail users and other amenities (restrooms and water fountain) could be provided at the CT Transit garage.

At Frost Bridge Road, the trail crosses both the road and the existing rail line. To facilitate safe crossing of the busy roadway, a new push-button traffic signal is recommended (in conjunction with the CTDOT). In addition, the railroad crossing gate arm (along with signs warning trail users that the rail line remains active) should include an extension that prohibits trail users from crossing into the rail right-of-way when in use. At this location, a highly-visible crosswalk will also be striped and removable bollards will keep automobiles off of the trail, but allow access for emergency vehicles. As shown in the photo-simulation on the previous page (Figure 6), a small new embankment is needed to provide space for the trail adjacent to an existing culvert below the tracks.

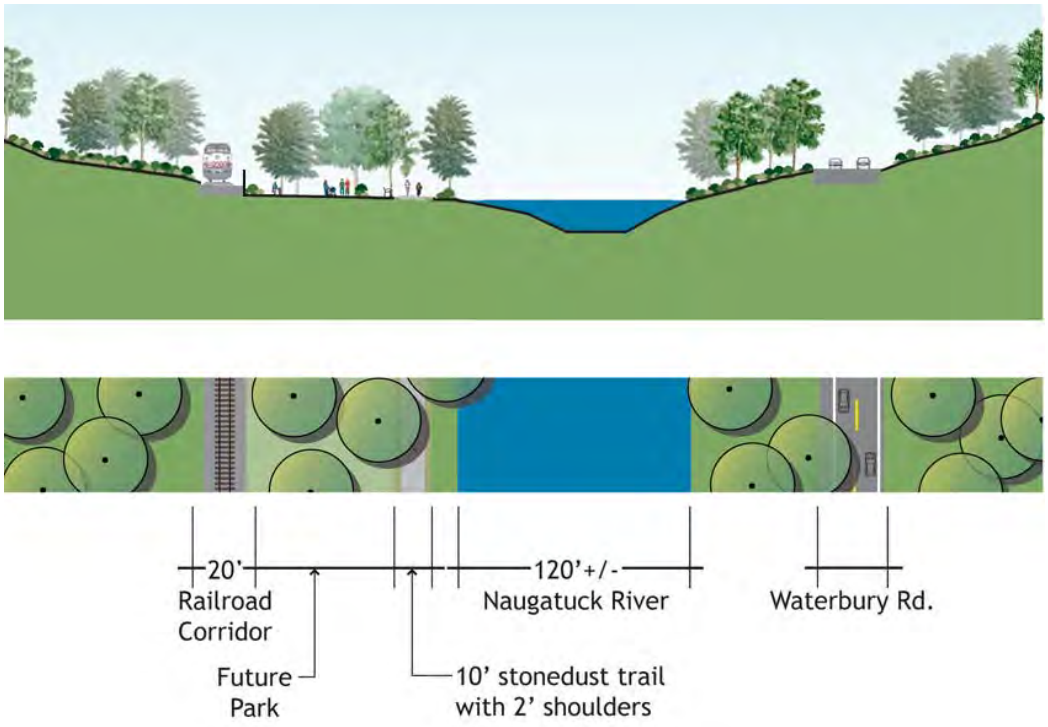


Figure 7: Trail cross-section south of Frost Bridge Road (Route 262) and potential new park space along the west bank of the Naugatuck River.

Heading south, the NRG trail runs for a few hundred feet alongside the east edge of the rail line and is separated by a 25' buffer and a security fence. To accommodate the 25' spatial buffer, an easement through the adjacent industrial property to the east will be needed. Where possible, the trail splits off

from the rail corridor and will run through the lower-lying area east of the tracks, a potential new Watertown park. This section of trail will need to be designed to accommodate occasional flooding, preferably a porous material such as stone dust or stabilized aggregate. Where the river curves west and comes close to the tracks, the trail will again need to utilize the state-owned railroad corridor. Opposite Spruce Brook Road on the east bank, the trail will turn to the east and cross the river on a new bridge. The bridge takes advantage of a rocky outcropping on the east bank—used for abutments—that juts out into the water enough to make for a modest pinch point in the river, requiring a shorter span for the new bridge. The new bridge will connect the Watertown portion of the trail to the planned northern endpoint for the Waterbury Greenway, a location anticipated to include a trailhead and a small number of parking stalls. On the opposite side of Waterbury Road/Thomaston Avenue, a soft-surface trail will connect to the U.S. Army Corps of Engineer's Hancock Brook Lake area in Plymouth.

Figure 8: Potential greenway bridge between Watertown and Waterbury utilizing a rocky outcropping at the bend in the river adjacent to the intersection of Thomaston Avenue and Spruce Brook Road (not seen at right).

B. Greenway Trail Alignment Options

South of Frost Bridge Road, an alignment along the east bank is possible as an alternative to using the west bank. This stretch of Waterbury Road in Thomaston has a significant shoulder on the river side that could be utilized for the greenway trail. In most places, a flat shelf of land adjacent to the shoulder could incorporate a portion of a 10' trail segment. A crash barrier will be needed to separate the trail from the roadway. Along an approximate 200' stretch, significant regrading of the river bank or a trestle section of trail may be required because of a narrower shoulder and steep slope down to the river. The primary benefit of the east-bank option along Waterbury Road is that it avoids the need for a new bridge. Despite this, the trail is recommended to remain on the Watertown side of the river south of Frost Bridge Road. This alignment affords a more aesthetically-pleasing experience for trail users because of the greater distance from a busy roadway and the opportunity to include significant stretches within a park-like setting. A new three- to four-acre park could be established along the trail and would likely be passive in character include riparian areas, meadows, secondary walking paths and seating.

View north along Waterbury Road toward Frost Bridge Road.

C. Greenway Trail Characteristics

The ultimate goal of the NRG is to provide a continuous pathway that is accessible to pedestrians, cyclists and, where possible, people using wheelchairs or other accessibility devices. In limited areas, access to equestrians is anticipated as well. The dawn-to-dusk pathway will be designed for use as both a transportation corridor (commuting, errands, etc.) and for recreational purposes. Ideally, the trail will be separated from nearby roadways by a 5-10' landscaped buffer or, at a minimum, a crash barrier set within a 3'-wide grassy shoulder. This Study recommends the accommodation of all of these users for the maximum length of the trail as practicable. Some discrete locations may not accommodate ADA requirements and bicycles, at least for the short term. Ultimately, these narrow pinch points and other spots requiring significant engineering solutions should be designed to accommodate all users in a safe and comfortable environment. In some sections, "single track" natural trail surfaces for hiking, mountain biking and/or equestrian use may be the best available options.

Portions of the NRG that incorporate the Mattatuck Trail may look like this stone dust trail in Keene, New Hampshire.

Water trail or 'blueway' options are also an important consideration so the Naugatuck River can be accessed by canoe or kayak. A paddlecraft boat launch and take-out area is recommended for a location along the greenway trail spur that runs along the edge of the CT Transit bus maintenance facility site. The recommended parking lot nearby will provide convenient access to the boat launch.

In addition, a planned boat launch in Waterbury at the Watertown line will provide convenient access for some Watertown residents.

Within Watertown, most of the greenway is intended to be a 10' wide, shared-use path made of either asphalt or a semi-permeable surface such as stone dust or stabilized aggregate (aggregate material with a resin binder). A semi-permeable surface will reduce storm-water runoff and may be more appropriate where the trail runs close to the edge of the Naugatuck River. In some constrained areas—such as the section within the Mattatuck State Forest—an 8' wide, semi-permeable trail may be more appropriate. Two-foot-wide soft-surface shoulders of dirt or grass will flank the trail in the typical paved condition. If conditions permit, a four-to-six foot shoulder should be considered on one side of the trail to facilitate equestrians and runners looking for a more comfortable surface.

Equestrians along the Airline Trail in Eastern Connecticut. (*Photo: Clare Haney via Flickr*)

D. Access Points and Amenities

Within the Watertown portion of the NRG trail, one greenway parking area for up to 25 cars is planned along Frost Bridge Road and should be incorporated into the CT Transit bus maintenance garage facility at the old drive-in theater site. Easily accessible from Route 8 and Route 262, the parking area and trailhead will also include a small boat launch for canoes and kayaks. The riverfront trail loop will also provide fishing access to a deep dredge hole just north of the former drive-in site.

This will be the primary trailhead for Watertown residents accessing the greenway by car. To encourage non-motorized access to this trailhead, on-street bike improvements—wider shoulder, bike lanes and/or signage—are recommended along Route 262 and further west on Echo Lake Road to encourage bicycling to the trailhead. Additionally, a long-term trail connection is recommended along the powerline easement that runs through portions of the Mattatuck State Forest from Frost Bridge Road to Veteran's Memorial Park (see Figure 4, Recommended Greenway Routing Concept Map).

The other planned parking areas and trailheads are immediately adjacent but just outside Watertown. These include trailheads and parking at the Thomaston Sewer Plant in Thomaston, near the City Limits Café at the Spruce Brook Road and Thomaston Avenue in Waterbury, and at the small pull-off from Waterbury Road near the rail trestle that crosses the river in Thomaston. This latter parking area at the north end of the rail trestle will be relevant only after the long-term bridge connection adjacent to the trestle is built and provides safe greenway access across the river from the parking area/trailhead to the greenway on the west bank. Until this occurs, signs warning people of the dangers of attempting to cross the trestle should be prominently displayed. All parking lots and trailheads will include kiosks that feature maps, safety information, dog waste bag dispensers and environmental and historical interpretive materials.

Other trail-related amenities in Watertown will be determined on a case-by-case basis and could include:

Rest Stations
Rest stations that include bathrooms and water fountains are important amenities that provide a more comfortable environment for greenway users, especially those with young children. A rest station is

proposed adjacent to the parking area at the redevelopment site along Frost Bridge Road, adjacent to the river. It could be incorporated as part of the CT Transit bus maintenance garage.

Interpretive Installations
Interpretive installations and signs enhance the trail experience by providing information about the history of the community. Installations can also discuss local ecology, environmental concerns and other educational information. Public health can be integrated with 'calorie counter' maps that encourage physical activity along the trail.

Pedestrian-scale Lighting
Pedestrian-scale lighting improves safety at key intersections along the NRG route and at trailheads. In Watertown, the trail crossing at Frost Bridge Road and the adjacent parking area, rest station and trailhead should have a modest level of lighting for safety reasons. Lighting fixtures should be consistent with other design elements, possibly emulating a historic or cultural theme.

Seating
Providing benches and seating at key rest areas and viewpoints encourages people of all ages to use the trail by ensuring that they have a place to rest along the way. Benches can be simple (e.g., wood timbers) or more ornate (e.g., stone, wrought iron, concrete, or Adirondack chairs).

Maps and Signage
A comprehensive signing system that is consistent along the entire length of the Naugatuck River Greenway will make the trail network much easier to use. Informational kiosks with maps at trailheads and other key destinations will provide enough information for someone to use the trail system with little introduction – perfect for bike commuters, tourists and local residents alike.

Public Art
Local artists should be commissioned to provide art for the trail system, making the trail unique to the community. Many trail art installations are functional as well as aesthetic, as they may serve as mile markers and places to sit and play. In Watertown, public art should be considered at the primary parking lot/trailhead/boat launch area along Frost Bridge Road.

16. Use of the Rail Corridor

Throughout discrete portions of the 22-mile Naugatuck River Greenway (NRG), the recommended trail route runs within the state-owned, active rail corridor. In Watertown, the tracks are used by the Naugatuck Railroad, which is operated by the Railroad Museum of New England. The Naugatuck Railroad leases the railroad between Torrington and Waterbury from the state and runs tourist and freight service on the line. This service is run by volunteers from with the Railroad Museum of New England. The NRG trail in Watertown will run within the rail corridor for intermittent stretches from Frost Bridge Road to the proposed river crossing (see Figure 9 below).

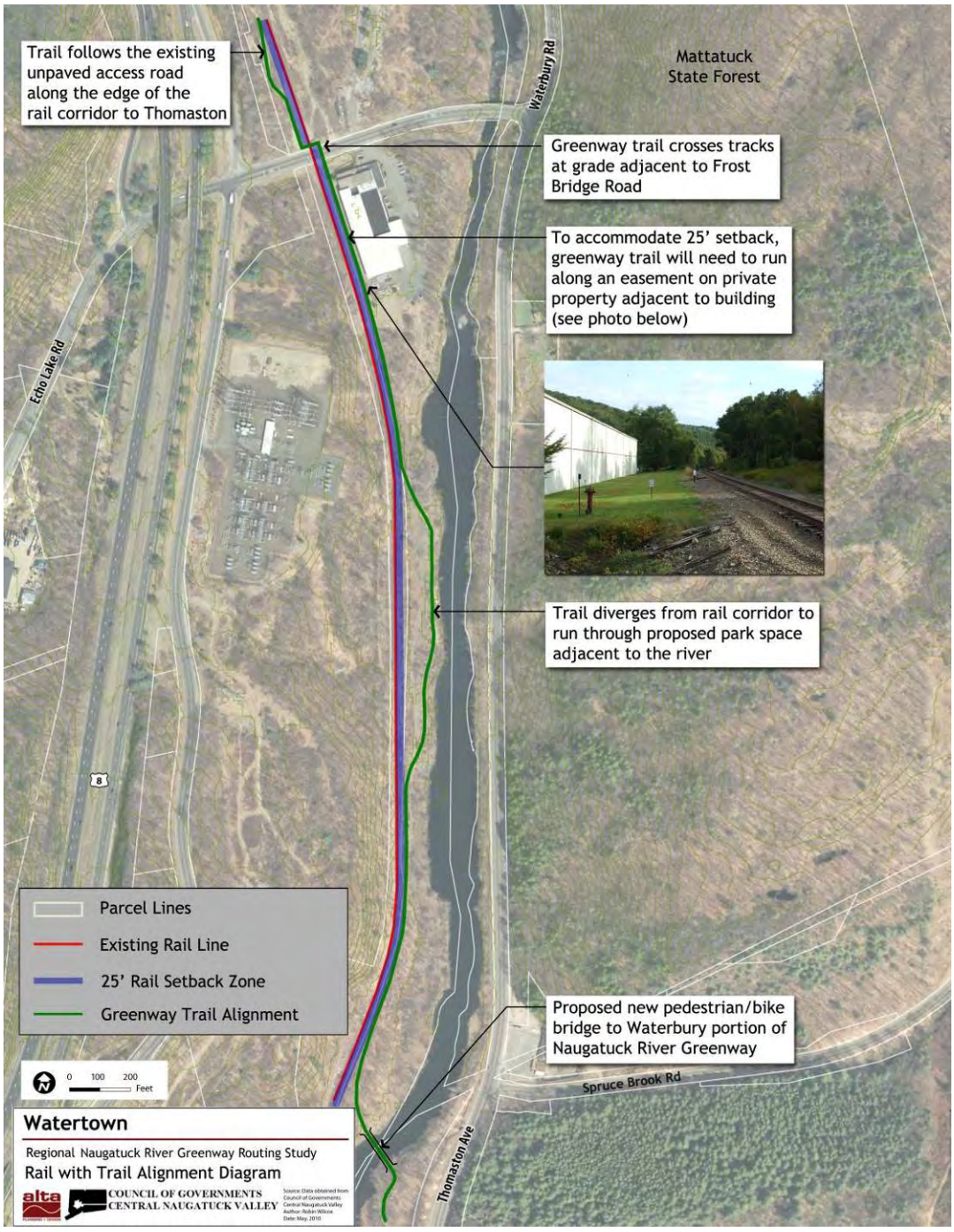


Figure 9: Rail with Trail Alignment Diagram.

Because of the use patterns of the rail line adjacent to the river, the NRG's alignment will need to be carefully designed so as not to disrupt train service. Early on in the planning process, members of the project team met with rail operations officials from the Connecticut Department of Transportation (CTDOT) in New Haven to better understand their needs for the corridor. According to the CTDOT, the agency is open to considering having a greenway trail as long as operations are not disrupted and the following conditions are met:

- A 25' setback/buffer from the centerline of the tracks to the edge of the trail.
- Unencumbered access for service and emergency vehicles.
- A security fence with intermittent gates for maintenance access.
- Any maintenance of the railroad corridor should be coordinated with future greenway construction for maximum efficiency of time and funding.

The project team met with members of the Railroad Museum of New England (RMNE), the operator of the Naugatuck Railroad. The Executive Director of the RMNE also submitted written comments. The RMNE is a strong supporter of the NRG Greenway and endorses the planning efforts. They understand that there is a potential synergy between the trail and the museum and that some visitors to the RMNE may arrive by foot or bike after the NRG is built. Additionally, it is hoped that some greenway users may use the Naugatuck Railroad as a shuttle service and take the train one way and walk or bike back to their original destination.

The RMNE expressed strong concerns regarding safety of pedestrians and bicyclists around active railroads and at grade crossings. The RMNE also found a routing proposal to move an existing railroad siding at the museum to allow for a greenway trail east of the railroad just north of the East Main Street Bridge incompatible with the RMNE's future explanation plans. Furthermore, the RMNE expressed the need for access to portions of the NRG adjacent to the rail line for railroad maintenance and to clear obstructions such as fallen trees that may result from a storm or other damage.

Many of the CTDOT and the RMNE's conditions are consistent with research conducted for the U.S. DOT's *Rail-with-Trails: Lessons Learned* document by Alta Planning + Design (see: http://www.fhwa.dot.gov/ environment/rectrails/rwt/toc.htm). This document showed that well-designed rail-with-trail projects typically meet the operational needs of railroads. In some locations, the setback/buffer can be as low as 10' in constrained areas within rail corridors that have a low frequency and low-speed train service. Regardless of setback distance, some recommended NRG rail-with-trail portions in Watertown may not fit neatly on to the existing rail bed used by maintenance vehicles. In some cases, achieving the 25' setback may require the cutting of adjacent trees, re-grading of a portion of the bed and, in some cases, potentially building small retaining walls to accommodate the additional width. In extreme pinch points, the bare minimum setback will need to be at least 12' to accommodate maintenance vehicles and other machinery.

Greenway trail in Portland, Oregon that runs within 10-15' of the centerline of the adjacent active rail line.

It is also important to recognize, according to the U.S. DOT's report, that the rail-with-trail portions of the greenway can provide benefits to the rail-corridor owner and operator. This includes providing them with a new, well-maintained service corridor adjacent to the tracks (in the form of a greenway trail), and a reduction of illegal track crossings, dumping and trespassing by ATV's, dirt bikes and those on foot. In addition, towns and cities have seen benefits with increased adjacent property values and enhanced access to the rail corridor by law enforcement and emergency vehicles.

17. Recommended Trail Section Limits

Two separate, but related, questions must be answered in order to develop a recommended sequence of greenway construction. What are the limits of each individual construction phase? What is the best sequence in which to complete these sections? Section limits were determined with an eye toward the following characteristics:

- Connectivity – Individual phases should be useful as stand-alone projects and connect to existing public rights-of-way adjacent to residential neighborhoods or an employment area.
- Funding Availability – The complete greenway program should be broken into reasonably-sized projects likely to attract funding.
- Logical Termini – Since several years may pass between the completion of one section and the beginning of the next, each section should have a logical terminus, such as at an existing public road or park.
- Momentum Building – Greenway sections likely to generate the greatest excitement and enthusiasm in the community should be built first.
- Consistency of Character – Areas in which the character remains consistent from one end to the other.

Using these criteria as a guide, recommended section limits for the Naugatuck River Greenway in Watertown were created and shown in Figure 10.

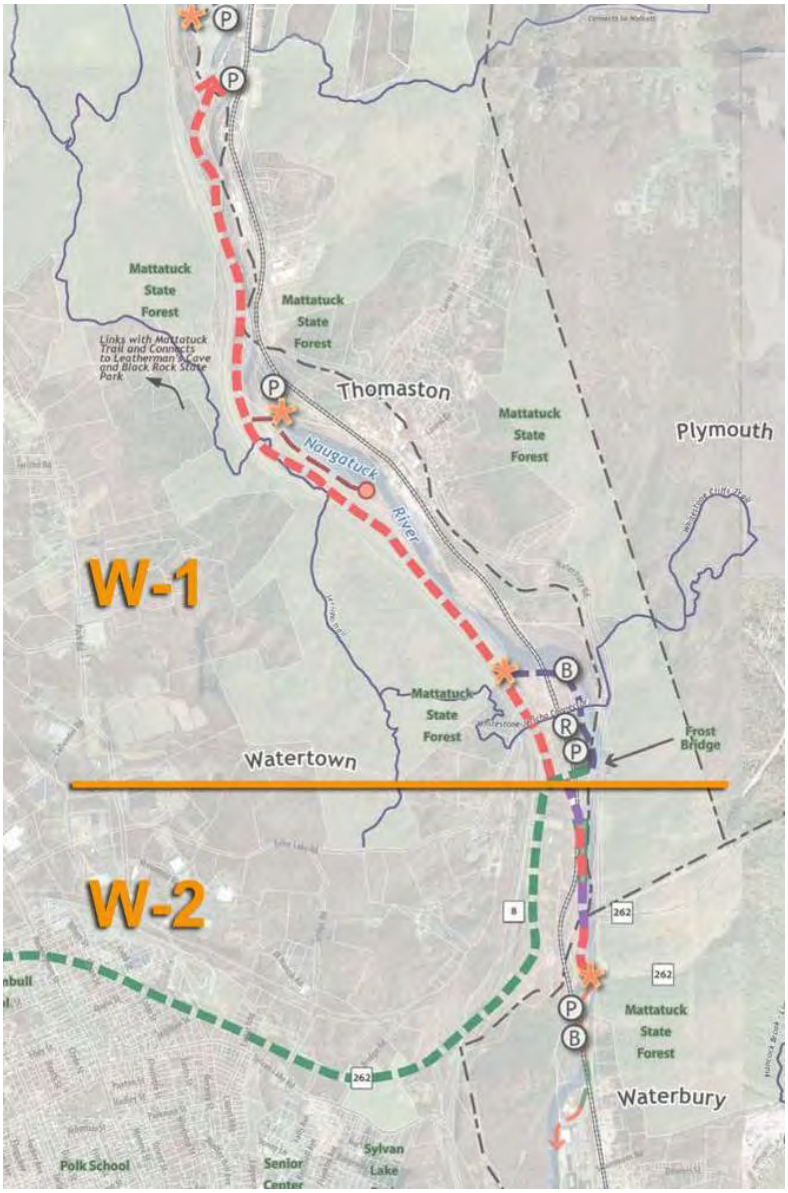


Figure 10: Watertown Greenway Sections.

Section	Description	Length (miles)
W-1	Thomaston Line to Frost Bridge Road	2.7
W-2	Frost Bridge Road to Waterbury Line	0.7
TOTAL LENGTH		3.4

18. Trail Section Prioritization

Whenever possible, greenway facilities should be developed as single construction projects or using as few phases as possible. This allows project proponents—elected officials, business interests, community groups, etc.—to realize significant cost savings by performing the design, permitting and construction administration more efficiently. However, it is quite likely that financial constraints will require the various sections of the Naugatuck River Greenway to be completed in several phases. For Watertown, a recommended phasing plan was created by weighing seven criteria (relative weighting of each criterion shown in parentheses) with the prioritization matrix shown in Table 1 at bottom:

1. Connectivity (25%) – Does the phase connect to existing portions of the greenway, destinations, or amenities?
2. Permitting Requirements (15%) - Will the phase be easy to permit?
3. Construction Cost (10%) – Will the phase be economical to construct?
4. Ease of Construction (10%) – Will the phase create fewer disturbances to the community?
5. Private Property Impacts (15%) – Does the phase avoid private property or adversely impacting adjacent property owners?
6. Momentum Building (15%) – Will the phase generate excitement and enthusiasm within the community for the overall greenway?
7. Cultural Benefits (10%) – Are there natural, historical, environmental, recreational, or educational resources that will be accessed or protected by the phase?

Criteria	% of Evaluation	Scoring	W-1	W-2
Connectivity *Prioritize phases that will build the greatest connectivity*	25%	Connects to at least two existing or funded greenway facilities: **25** Connects to one existing or funded greenway facility or downtown area: **10-15** Long-term link needed to build regional network: **0**	**10**	**15**
Permitting Requirements *Favor phases that involve fewer regulatory hurdles*	15%	Can be constructed with only Local Approval: **15** Requires only "General Permits" at the state or federal level: **10** Extensive individual state and federal permits required: **0**	**10**	**10**
Construction Cost *Prefer phases with a lower cost per linear foot of completed trail*	10%	Per Linear Foot cost less than $150: **10** Per Linear Foot cost is between $150 and $250: **5** Per Linear Foot cost exceeds $250: **0**	**10**	**5**
Ease of Construction *Select phases with less disturbance to local community over more invasive projects*	10%	Can be built with little or no inconvenience to the community: **10** Construction will create only minor inconvenience: **5** Construction will entail significant inconvenience or temporary closure of road/rails: **0**	**10**	**5**
Property Impacts *Favor projects that require fewer Rights-of-Way on private property*	15%	Phase entails no impacts to private landowners: **15** Phase requires easements or acquisition across 1-3 private properties: **10** Phase requires easements or acquisition across >3 private properties: **0**	**15**	**10**
Momentum Building *Prioritize phases that will generate the greatest excitement and enthusiasm within the community*	15%	Completion is likely to create significant enthusiasm within the community: **15** Completion is likely to create some enthusiasm within the community: **10** Phase serves will serve most users only after adjacent connections are made: **0**	**15**	**15**
Cultural Benefits *Select phases that provide greater access to natural, historical, recreational, archeological or educational resources*	10%	This section contains significant cultural resources: **10** This section contains some cultural resources: **5** This section contains few cultural resources: **0**	**5**	**5**
Total Score	100%		**75**	**65**

Table 1: Watertown Trail Section Prioritization Matrix.

19. Cost Estimate

Right-of-Way Acquisition Costs

Payments to owners for the easements and parcels required to construct the greenway vary widely depending up existing land use, size and utility of the portion of a parcel acquired, development potential of the area, and a host of other factors. Based upon recent greenway projects within Connecticut, these costs may range between $40,000 and $100,000 per parcel. In addition to the payments to property owners, the services of a licensed surveyor will be needed during the ROW process. The survey firm will perform boundary surveys and prepare easement maps that must be recorded in the town's land records. These services typically cost $3,000 to $5,000 per easement. Note: this range assumes that easement maps are prepared after survey base maps of the proposed corridor are developed. Finally, legal services will be needed to perform the property transactions. A relatively simple easement transaction will typically cost on the order of $1,500 per transaction if performed by outside counsel.

Engineering Costs

Engineering costs cover a variety of professional services, including:

- Survey (including preparation of easement maps as described above)
- Preliminary, Semi-Final and Final Design
- Public Participation
- Permitting (Local, State and Federal as required)
- Preparation of Construction Documents
- Bid Assistance
- Construction Observation and Contract Administration

Based upon similar project experience and the proposed greenway features, the engineering costs for the greenway are expected to be in the range of 8-12% of the estimated construction cost. However, the actual cost of these services will vary widely depending on project phasing. To a large extent, the cost of permitting, preparing bid documents and administering the construction for a single phase is the same as the cost for the entire project. Similarly, survey and design are more cost effective if done at one time. For this reason, significant cost savings can be realized by developing the greenway as a single project.

Construction Costs

Preliminary estimates of construction costs based upon the recommended greenway sections are described in this report. Important assumptions used to arrive at these estimates include:

- All costs are in 2010 dollars (no adjustments for inflation).
- Costs do not include property acquisition.
- Peripheral roadway intersection improvements are not included (e.g. replacing a poorly functioning intersection with a round-about).
- Standard construction methods and materials are used.

These estimates were prepared using the latest revisions to the CTDOT's **Preliminary Cost Estimating Guidelines,** dated January 2010. In keeping with the CTDOT's cost estimating guidelines, the costs include a number of miscellaneous items that are based on a percentage of construction costs (e.g., maintenance and protection of traffic (4%), minor items (25%) and incidentals (21%)). These percentages tend to be conservative estimates of actual cost. Cost estimates can also be impacted when a local public

works department carries out the work. In these cases, some of the CTDOT's estimated add-ons would not apply. Where appropriate, adjustments to the typical unit prices were made to reflect current market conditions and the consultant team's experience with other greenway construction projects. The guidelines were supplemented where necessary for atypical items (e.g., pre-fabricated pedestrian bridges, boat launches, etc.).

Since these preliminary estimates are based on a planning-level understanding of trail components, rather than a detailed design, they should be considered "order of magnitude" estimates. ASTM Standard E2620 defines order of magnitude as being accurate to within plus 50% or minus 30% of actual cost. This broad range of potential costs is appropriate given the level of uncertainty in the design at this point in the process. Many factors can affect final construction costs, including:

- Revisions to the design as required by local, state and federal permitting agencies.
- Additional requirements imposed by property owners as a condition of granting property rights (e.g., fencing, vegetated buffers, etc.).
- Fluctuations in commodity prices during the design and permitting processes.
- Selected construction materials.
- Type, quality, and quantity of amenities (e.g., benches, lighting, bike racks, etc.).
- Extent of landscaping desired.

As the project progresses through preliminary, semi-final, and final design phases, these uncertainties will begin to diminish. With each round of refinement, the range of expected construction costs will become more accurately known.

20. Community Phasing Plans

The following table provides a description of phase limits, phase lengths, recommended construction priority, and estimated cost for each of the two greenway trail phases in Watertown. (The detailed cost estimation tables and location map are provided in Appendix C.) The table and appendix are also broken down into "Primary" and "Secondary" portions, i.e. trail elements that are necessary for the completion of the primary portion of the NRG trail vs. secondary elements such as spurs, loops and streetscape improvements that are not integral to the full completion of the trail within the town limits.

Section	Description	Length (miles)	Phase	Total Cost
W-1	Thomaston Line to Frost Bridge Road	2.7	1	$1,847,000
W-2	Frost Bridge Road to Waterbury Line	0.7	2	$917,000
	Total Construction Cost - Primary	**3.4**		$2,764,000
	Total Construction Cost – Secondary*			$1,970,000

** These secondary items are highlighted on the trail segment cost estimate table on the second page of Appendix C.*

21. Greenway Zoning

Greenway/River Overlay Zoning

A greenway/river overlay zone is a land use regulation established by a municipality for the purpose of protecting a linear corridor for recreational and conservation purposes. These zones have also demonstrated ancillary benefits such as spurring economic development, facilitating redevelopment of underutilized parcels, improving flood management and water quality and preserving critical habitats.

When incorporated into municipal zoning regulations, overlay zones modify the underlying zone's bulk standards and uses. This tool can be used to encourage or dissuade various development scenarios. Relevant to greenway development, overlay zones may be used to:

- Alter setback requirements.
- Provide incentives in the form of higher development density in exchange for public access to a greenway or river corridor.
- Provide incentives for granting easements or providing related amenities for the greenway.
- Stipulate landscaping requirements.
- Require construction of greenway segments as a condition of site development.

Excellent examples of the greenway overlay zoning that have served as model ordinances for communities across the nation include:

- Portland, OR - http://www.portlandonline.com/bds/index.cfm?a=53351 (Chapter 33.440 of the Portland Zoning Regulations).
- Davidson, NC - http://www.ci.davidson.nc.us/DocumentView.aspx?DID=1304 (Section 11 of the Town of Davidson Planning Ordinance).

Riparian Habitat Zones

A riparian habitat ordinance is narrowly focused on protecting the unique habitat present along stream channels and wetland areas. Unlike the Greenway and River Overlay zones described above, a riparian habitat zone does not contain specific requirements for public access or accommodation of a greenway and can be used in areas adjacent to the NRG or along tributaries of the Naugatuck River. Elements of effective riparian habitat ordinances include:

- Defines a protected buffer.
- Requires a written plan for the protection of the resource.
- Requires approval of mitigation measures as a condition of project approval.

An example riparian habitat ordinance from Napa, California can be found at the National Center for Appropriate Technology's (NCAT) Smart Communities Network website: www.smartcommunities.ncat.org/codes/napaord.shtml. This site is a clearinghouse for sustainable development and energy conservation ideas.

Complete Streets

Complete streets are designed and operated to enable safe access for all users.[1] The State of Connecticut enacted Public Act 09-154 in June of 2009, "An Act Improving Bicycle and Pedestrian Access". This law requires transportation planners to accommodate all users as "a routine part of the planning, design construction and operating activities of all highways…" This change in focus from car-centric to user-centric planning helps create safer, healthier, greener and more livable communities. The law also mandates that at least 1% of highway funding be spent on pedestrian and bicycle facilitates.

Many municipalities are choosing to formalize their commitment to include all users in the transportation planning process by adopting Complete Streets ordinances. Whereas the overlay zoning regulations described above focus on protecting undeveloped or underdeveloped corridors, Complete Streets ordinances focus on improving facilities within public rights-of-way. Several excellent examples of successful municipal ordinances can be found at www.completestreets.org/webdocs/policy/cs-chart-samplepolicy.pdf

An ideal complete streets policy

- Includes a vision for the community's complete streets.
- Defines 'all users.'
- Encourages street connectivity for all modes.
- Is adoptable by all agencies to cover all roads.
- Applies to both new and retrofit projects.
- Makes exceptions specific and requires approval of exceptions.
- Directs the use of the latest and best design standards.
- Complements the context of the community.
- Establishes performance standards with measurable outcomes.
- Includes specific next steps for implementation of the policy.

Adopted from National Complete Streets Coalition

22. Funding Sources

Generally, greenways are funded through a combination of local, state, and federal sources. Many funding programs require a minimum local match (e.g., 80% federal funds, 20% local). In some instances, communities have successfully leveraged grant money from private foundations or state programs as a match for other funding sources. Land donations or town public works crew's labor may be counted as local match under some funding programs.

Community leaders and elected officials from Watertown should pursue a variety of funding sources for land acquisition and greenway construction. Reliance on a single funding source can lead to a boom/bust cycle of construction as funding levels shift with the political winds. The following list gives overview of the major funding programs:

Municipal Bonds

Municipalities have access to the commercial financial markets via bonds. Use of this funding mechanism is dependent upon strong community support in order to pass the required bond referendum. This is frequently used to obtain the required local match for state and federal funding program.

[1] National Complete Streets Coalition, "Complete Streets FAQ." 2009.http://www.completestreets.org/complete-streets-fundamentals/complete-streets-faq/ (accessed May 19, 2010).

Greenway Trust Fund

A strategy used by some communities is the creation of a trust fund for land acquisition and facility operation. These are typically administered by a non-profit group or by a local greenway commission. These trusts can perform a variety of functions such as property acquisition, fund raising, volunteer organization, community outreach and advocacy. Money may be contributed to the trust fund from a variety of sources, including the municipal general funds, private grants and gifts.

Adopt-A-Trail Programs

These programs are often administered by a local greenway commission and used to fund new construction, renovation, trail brochures, informational kiosks, and other amenities. These programs can also be extended to include sponsorship of trail segments for housekeeping needs.

Federal Transportation Bill

The Congress appropriates funding for federal transportation projects every five years. The federal transportation bill has been the primary source for greenways construction money in recent years. Various funding programs within the legislation relate to greenway development, including the High Priority Projects (commonly referred to as "earmarks"), Recreational Trails, and Safe Routes to Schools programs. These funds are administered through the Connecticut DOT and the Connecticut DEP. The current iteration of the federal Transportation Bill, the 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) expired on September 30, 2009. Funding has been continued by continuing resolutions until the next federal transportation bill is approved. The next transportation bill is currently being developed by Congress. This presents an opportunity for municipalities to discuss greenway funding under the High Priority Projects program with their representatives in Congress.

Recreational Trails Program

These annual grants are available to government and non-profit agencies, for amounts ranging from $5,000 to $50,000 or more, for the building of trails. It is a reimbursement grant program (sponsor must fund 100% of the project up front) and requires a 20% local match. These grants are authorized by the SAFETEA-LU (reauthorization in progress, see above), and in Connecticut they are administered by the Department of Environmental Protection.

Design Arts Program

The National Endowment for the Arts provides grants to states and local agencies, individuals and nonprofit organizations for projects that incorporate urban design, historic preservation, planning, architecture, landscape architecture and other community improvement activities, including greenway development. Grants to organizations and agencies must be matched by a 50-percent local contribution. Agencies can receive up to $50,000.

23. Next Steps

The Regional Naugatuck River Greenway Routing Study is just the first step in the development of the Naugatuck River Greenway (NRG) in Watertown. The NRG will be a long-term, multi-phase project led by all of the municipalities in the corridor, in cooperation with state and federal agencies. It will require the continued involvement of members of the public, elected officials at all levels of government and community groups in order to support and guide the implementation effort. The following 'next steps' are recommended in order to move the effort forward in a sustainable fashion:

- **Adopt the Study:** The City of Waterbury has recently adopted its plan for the portion of the NRG that runs through the city. Watertown could do the same and amend their Plan of Conservation and Development to incorporate the greenway alignment. The Town could also pursue endorsement of the Study by their Planning and Zoning Commission, Recreation Commission, Economic Development Commission and Conservation Commission.
- **Create the Right-of-Way**: This will ensure that the proposed alignment for the trail is gradually assembled and made available for public access. This can be accomplished by using:
    - New zoning regulations to ensure that the greenway is accommodated into redevelopment proposals along the alignment (see Greenway Zoning section of the report for more detail). A greenway overlay district, in particular, can be an effective tool for a municipality to require that trail facilities are integrated into redevelopment projects.
    - Solicitations of easement or outright ownership should also be considered when key privately-owned parcels are on the market.
    - Begin negotiations with public agencies to ensure that all necessary approvals and permits are completed in order to create an easement across public lands. This can be a lengthy process, especially in areas of environmental sensitivity or at brownfield sites. Due to the recommended changes in the Mattatuck State Forest, Connecticut DEP, in particular, will be a major stakeholder in the next round of design. Stretches of the NRG that permit access to equestrians will need to be considered by the Town as well.
- **Find Project "Champions" to Raise Awareness and Money**: The Town should identify an individual, commission or committee to oversee subsequent steps in the design, funding and implementation process for the greenway. (The involvement of the local business community and/or Chamber of Commerce will be critical as well.) This will ensure continuity of effort even as elected officials change. Fundraising, in particular, is an important component that should begin immediately. Available funding opportunities including: federal transportation funds, regional TIP (Transportation Improvement Program) funding (via COGCNV), economic stimulus/TIGER grants, national recreational trails grants, and state open space grants should be pursued on an annual basis to ensure success (see Funding Sources section of the report for more detail).
- **Establish a Public-Private-Non-Profit Partnership**: Establishment of a "Friends of the NRG" non-profit organization can be an effective advocate for the project. In conjunction with the project "Champion", this non-profit organization can coordinate volunteers, develop an 'adopt-a-mile' program and raise funds through the sale of trail elements including benches, bridges, trailheads, public art, bike racks and trees.
- **Find "Early Win" Projects**: Support for continued action at the local level will grow out of small successes that move the project or individual pieces of the project forward. Neighborhood cleanups and 'adoption' of future trail sections can help build long-term

support. Frequent ribbon cuttings, festivals and events create long-term visibility for the project. Development of maps and other NRG promotional material will help to publicize the future trail and build excitement. Celebrating every opportunity, no matter how small, can be just as important as a major ribbon cutting for the finished project.

- **Negotiate with the CTDOT**: Town planners and future design consultants will need to work closely with the Connecticut Department of Transportation to:
    - Ensure that the needs of the railroad corridor are met. In particular, coordination with the CTDOT on the federally-mandated Positive Train Control (PTC) to ensure that this plan does not preclude the greenway's routing and incorporates the trail's recommended alignment.
    - Coordinate with the Highway Division on the use of state highway rights of way. The NRG alignment utilizes a portion of the shoulder of Route 8 between exits 37 and 38 and the CTDOT will need assurance that greenway users will be prevented from accessing the highway. Additionally, bicycle improvements such as shoulder striping and signage are recommended on Route 262 and will require the agency's input.

With these actions moving forward, the Naugatuck River Greenway will be a significant asset for the Watertown's residents, businesses and visitors. The trail will enhance non-motorized transportation opportunities and bring a recreational amenity that rivals any within the state of Connecticut.

Appendices

Appendix A – Public Involvement Process

A key component of the greenway routing study was engaging each of the four communities in the planning process and seeking their input on the identification of a feasible greenway route.

Community involvement was important to the COGCNV and the consultant team's efforts of seeking input on the identification of a feasible greenway routing.

After a number of years of inactivity, the Regional Naugatuck River Greenway Committee (RNRGC) was reconvened to help steer the routing study. Representatives on the RNRGC included officials from Thomaston, Watertown, Waterbury, Naugatuck and Beacon Falls as well as representatives from state and federal agencies, such as the Connecticut DOT and DEP, National Parks Service and the Army Corps of Engineers. Staff members of two U.S. Representatives that represent the Naugatuck River Valley were also on the committee. The committee met every six to eight weeks and all meetings were open to the public. The RNRGC played an important role in guiding the direction of the routing study and in keeping municipalities, government agencies and U.S. Representatives informed about study progress.

Supplementing the RNRGC input was a series of public workshops. One workshop was held in each of the four study communities. The first two public workshops were held on November 17 and 18, 2009 in Naugatuck and Thomaston, respectively. The purpose of the first set of workshops was to gather input from all four communities to assist in determining opportunities and challenges along the corridor and potential routing options for the greenway trail. The meeting on the 17th was focused on the issues and routing in both Naugatuck and Beacon Falls, while the next night, discussion focused on the issues and routing in Watertown and Thomaston.

The second two public workshops were held on March 23 and 24, 2010 in Beacon Falls and Watertown, respectively. The purpose of the meeting was to gather input from the four communities on the proposed preliminary routing as well as areas where they would like to see additional amenities along the Naugatuck River Greenway.

Overall, these four community workshops, combined with other stakeholder meetings and site walks, provided the COGCNV and the consultant team with valuable input on routing recommendations, design options and property-ownership issues. The team also learned of the important local connections to adjacent neighborhoods and commercial areas outside of the corridor. Additional trail spurs and other connections were added to the recommendations as a result. One attendee even suggested the clever idea of using the 22-mile greenway, plus some spurs, as the route for the Naugatuck River Marathon in the future.

Draft routing maps and study reports were also posted on the project website which was established at the beginning of the process and maintained until the very end of the process. Comments on the greenway routing maps were received at the workshops, via e-mail, and by U.S. Mail.

Press releases were published for both sets of workshops in the Republican American and weekly town newspapers. Articles were written and published on the workshops, including references to the project website. Video of the Thomaston workshop was posted to the Republican American website.

The second half of each workshop featured a small-group exercise. Using large maps as references, community members were asked to discuss the following questions and mark up the maps with their suggestions, ideas and concerns.

1. What are the key places/destinations that the Greenway trail should connect to?
2. Where are the critical gaps between these places and the Naugatuck River?
3. Where along the river are the best places for amenities *besides* a trail, such as a small boat launch, a picnic area, parking, rest station, etc.?
4. What are your comments on the draft recommended routing?
5. Where along the proposed greenway are the best places for amenities besides a trail, such as a small boat launch, a picnic area, parking, rest station, etc.?

Each meeting wrapped up after the smaller groups reported back to the entire group with their comments on local conditions as well as recommendations for potential routing options and the placement and nature of greenway amenities.

Subsequent to the four community workshops, members of the Connecticut Horse Council and the Connecticut Equine Advisory Council investigated key trail connections that currently exist in the Naugatuck River corridor area. They provided a detailed memo to the COGCNV and mapped the connections in a GIS database, some of which helped the consultant team recommend spur-trail links important to equestrians.

A meeting was also held with representatives of the Railroad Museum of New England, the operator of the Naugatuck Railroad. They explained their future plans for the museum and support for the greenway project. The museum representatives also explained their safety concerns and maintenance requirements for the rail with trails sections of the greenway route.

After comments were gathered from the workshops and other key stakeholders, draft reports for the four municipalities and the overall region were written and made available for public comment. Printed copies were available at public libraries and town clerks' offices in Thomaston, Watertown, Naugatuck and Beacon Falls. The project website included links to electronic copies of the draft reports.

A fifth and final public meeting was held in Waterbury on September 14, 2010, in conjunction with the monthly meeting of the Regional Planning Commission. This provided a final opportunity for the public to weigh-in on the final draft recommendations of the Greenway Routing Study. During the month of October, public presentations of the final recommendations were made in Thomaston, Watertown, Naugatuck and Beacon Falls. (The alignment for the Naugatuck River Greenway in Waterbury had been determined in an earlier study and adopted in early 2010.) These gave their respective communities and elected officials the opportunity to see the final recommendations in a Powerpoint slideshow format. Simultaneously, electronic copies of the final reports for the individual municipalities as well as the Regional Report and Executive Summary were made available on the project website.

Appendix B – Land Parcel Inventory and Maps

Parcel ID	Owner's Name	Parcel Location	Land Use	Map/ Block/ Lot	Parcel Area (Acres)
1	STATE OF CONNECTICUT		Right of Way		259.610
2	CITY OF WATERBURY	0 OLD COLONIAL RD	Forest	127 99 2	100.020
2	CITY OF WATERBURY			136 99 2A	2.820
6	Unknown			113B 164 1	22.062
7	Unknown			113B 164 1	
8	Frost Bridge Realty, LLC	2 FROST BRIDGE RD	Industrial	113B 164 1	45.649
9	Unknown (Railroad)		Right of Way	113B 164 1	
10	Unknown			113B 164 1	
11	STATE OF CONNECTICUT	6 FROST BRIDGE RD	Industrial	113B 164 1	20.293
12	Baile Co LLC	7 FROST BRIDGE RD	Industrial	113B 164 1	17.930

Table 2: Land Parcel Inventory (see maps on following pages).

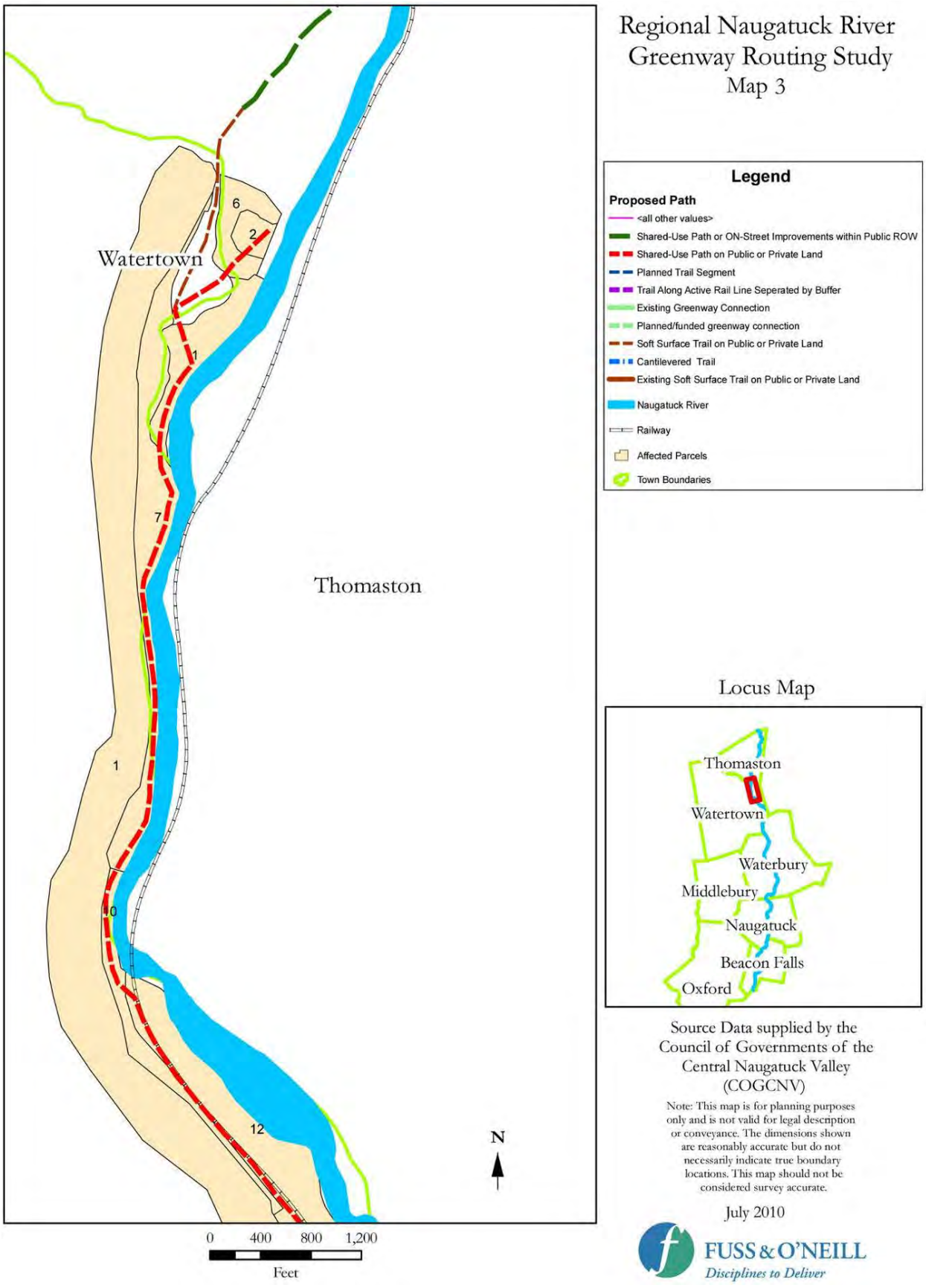


Figure 11: Land Parcel Inventory Map 3 for Thomaston/Watertown

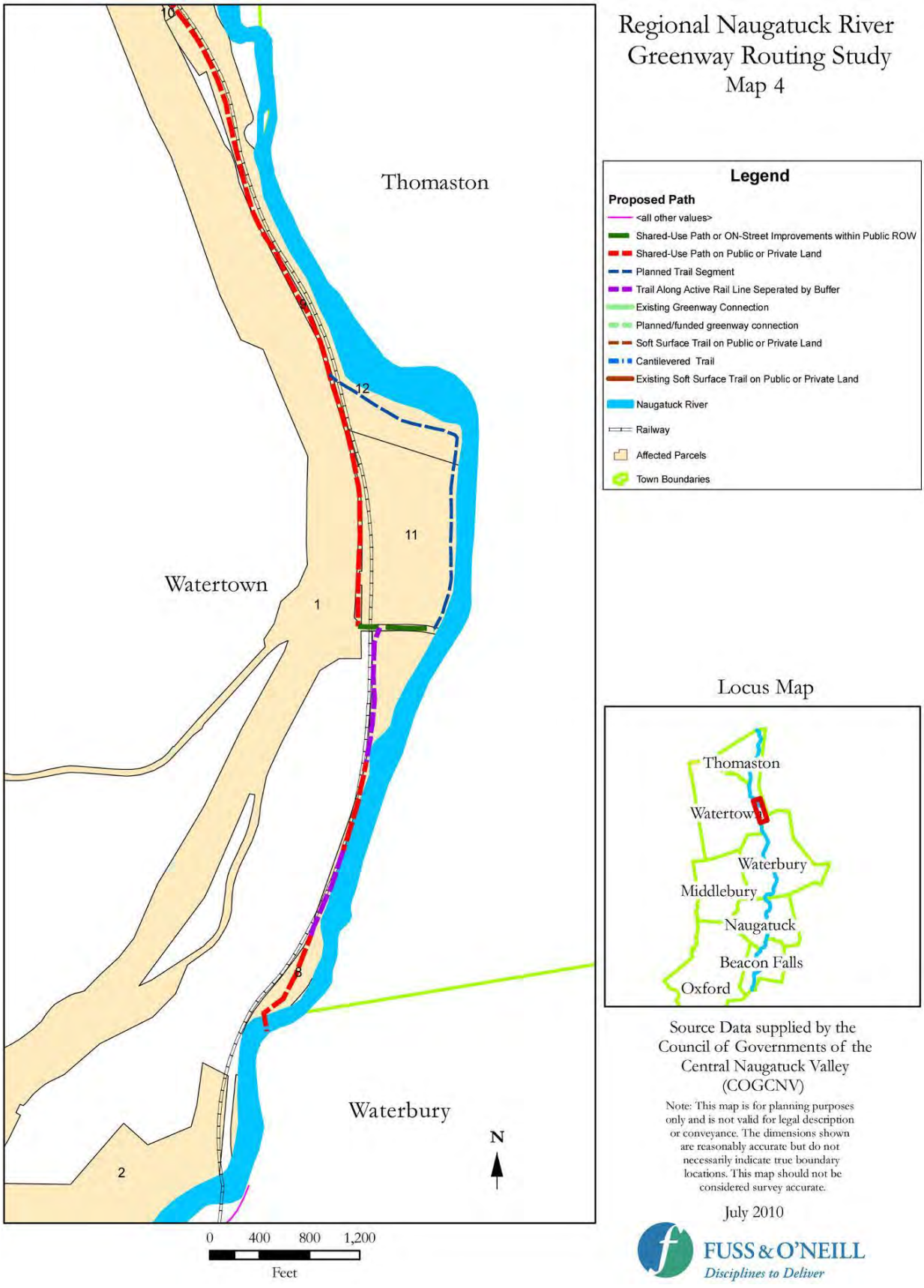


Figure 12: Land Parcel Inventory Map 4 for Thomaston/Watertown

Appendix C – Detailed Cost Estimate Tables

Preliminary estimates of construction costs based upon the recommended greenway sections are described in this appendix. Important assumptions used to arrive at these estimates include:

- All costs are in 2010 dollars (no adjustments for inflation).
- Costs do not include property acquisition.
- Peripheral roadway intersection improvements are not included (e.g. replacing a poorly functioning intersection with a round-about).
- Standard construction methods and materials are used.

These estimates were prepared using the latest revisions to the CTDOT's **Preliminary Cost Estimating Guidelines**, dated January 2010. In keeping with the CTDOT's cost estimating guidelines, the costs include a number of miscellaneous items that are based on a percentage of construction costs (e.g., maintenance and protection of traffic [4%], minor items [25%] and incidentals [21%]). These percentages tend to be conservative estimates of actual cost. Cost estimates can also be impacted when a local public works department carries out the work. In these cases, some of the CTDOT's estimated add-ons would not apply. Where appropriate, adjustments to the typical unit prices were made to reflect current market conditions and the consultant team's experience with other greenway construction projects. The guidelines were supplemented where necessary for atypical items (e.g., pre-fabricated pedestrian bridges, boat launches, etc.).

Regional Naugatuck River Greenway

Routing And Feasibility Study

Town of Watertown, Connecticut

Trail Descriptions of Each Trail Segment
North to South

#	SECTION	SEGMENT	APPROX LENGTH	SEGMENT DESCRIPTION	COST
Watertown - Start (North)					
1	W-1	Mattatuck Trail	1090	Widen and pave existing trail to 8' - Watertown portion of Mattatuck Trail to Branch Brook	$ 91,700
2	W-1	New Bridge	45	10' width - new bridge over Branch Brook	$ 157,200
3	W-1	Shared-Use Off-Street	13300	10' width - long segment from Branch Brook to Echo Lake Rd / Rt.8 crossing - trail between Rt.8 and River/RR (approx 1700' will need barriers due to proximity to Rt.8 and RR)	$ 1,598,200
4		Surface Trail	2150	10' width - trail spurs off of #3 towards Picnic area at end of nature trail - at wide portion of River (SECONDARY)	$ 196,500
5		New Bridge	75	10' width - part of #4 - long term bridge conneciton adjacent to exisitng RR bridge (SECONDARY)	$ 222,700
6		New Bridge	25	10' width - pedestrian bridge over RR - spurs off of #3 towards proposed trail part of transfer station project (SECONDARY)	$ 104,800
7		Planned Trail Segment	2500	10' width - new structure supported on River bank - proposed trail part of transfer station and CT transit bus depot projects - (no cost, paid for by others)	$ -
8	W-2	Shared-Use in ROW	230	10' width - use existing access at grade RR crossing - along 262 Frost Rd Bridge	$ 131,000
8(b)		Shared-Use in ROW	400	10' width - use existing access at grade RR crossing - along 262 Frost Rd Bridge (connects planned segment to trail) (SECONDARY)	$ 183,400
9	W-2	Trail Along Active Rail	790	10' wide - south of 262 - between tracks and bldg	$ 117,900
9(b)		Shared-Use in ROW	3260	10- wide - from Frost Bridge Rd to Townline - East of River along Waterbury Road (OPTION 2)	$ 1,034,900
10	W-2	Shared-Use Off-Street	830	10' width - potential riverfront park area adjacent to greenway areano barrier - S. of at grade rail crossing (Atwood site)	$ 78,600
11	W-2	Trail Along Active Rail	680	10' wide -north Waterbury border	$ 288,200
12	W-2	Shared-Use Off-Street	880	10' wide - ends at bridge at Waterbury townline, connects to Waterbury Greenway	$ 78,600
13	W-2	New Bridge	80	10' wide - pedestrian bridge over river at rocky outcrop - connects to Waterbury Greenway	$ 222,700
14		Shared-Use Off-Street	8640	10' width - Watertown portion of Steele Brook path (no cost)	$ -
15		Shared-Use in ROW	15000	10' width - spur to the Rt. 262, branches off main greenway (cost range of $5,000-$50,000 for signage) (SECONDARY)	$ 5,000
16		Shared-Use Off-Street	9200	10' width - long term trail connection from Veterans Memorial Park to Frost Bridge Road (SECONDARY)	$ 812,200
Watertown - End (South)					
		TOTAL LENGTH:	17925	ft	
		(grey segments are not included)	3.39	mi	

	MISC ITEMS	NUMBER REQ	DESCRIPTION	COST
T	Ped / Bike Trailhead	2	Informational Kiosk with maps/branding/parkling	$ 65,500
B	Small Boat Launch	1	Walk-in / Walk-out launch for canoes and kayaks	$ 13,100
R	Rest Area	1		$ 13,100
P(L)	Parking (Large)	1	10 Stalls and larger	$ 131,000
Park(L)	Park / Open Space (Large)	1	Potential park area along river front	$ 222,700

Note:
1) Items highlighted in Gray represent optional routing of the trail. These items are not included in the cost summary.
2) Items highlighted in Blue represent "Seconday Loops and Connections" that are not critical to completing the greenway route.

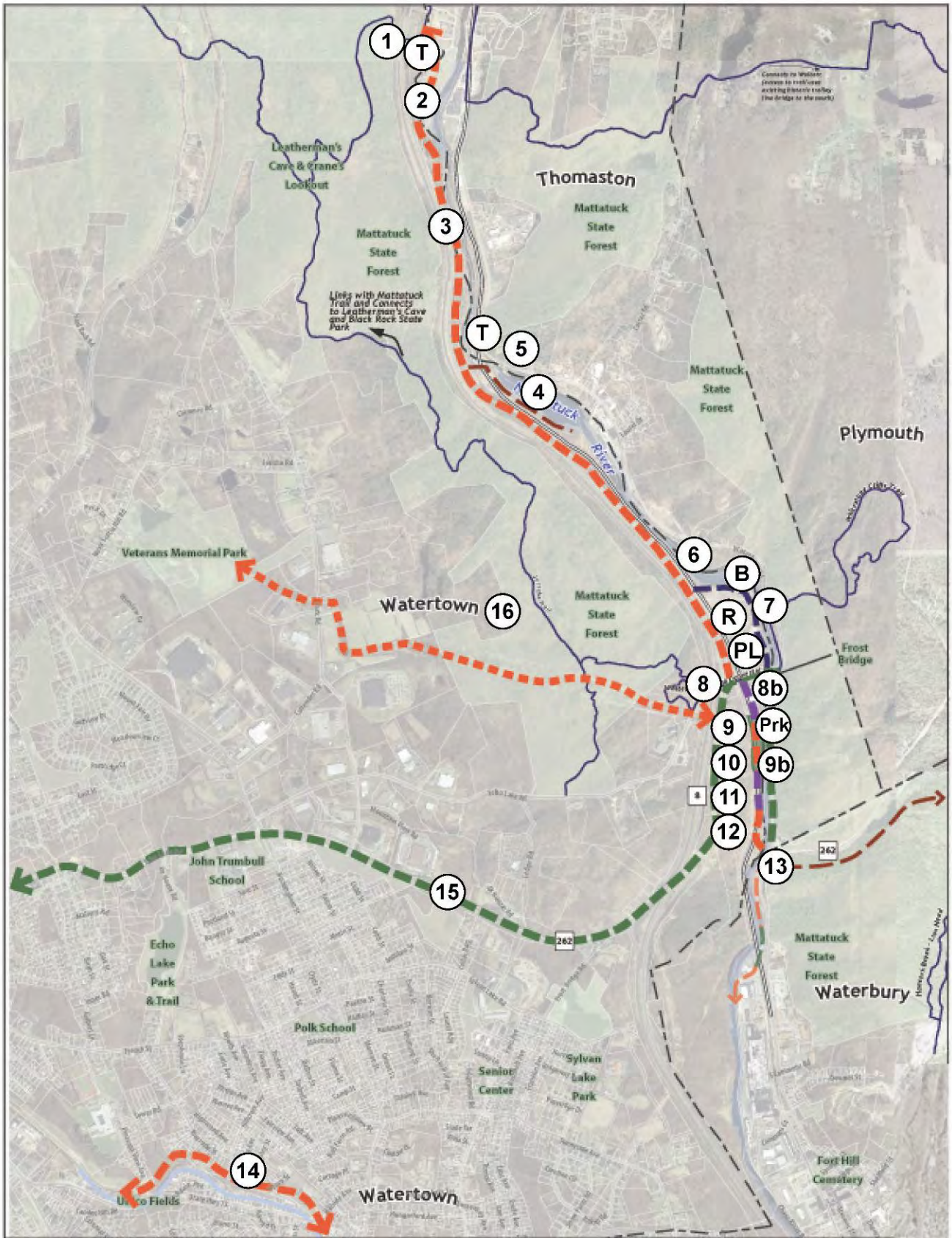


Figure 13: Trail segment Cost Estimate Location Diagram.

FUSS & O'NEILL

Regional Naugatuck River Greenway

Routing And Feasibility Study

Town of Watertown, Connecticut

Engineer's Order of Magnitude Opinion of Probable Construction Cost
Summary by Recommended Section

Section	Description	Legth (miles)	Total Cost
W-1	Thomaston Line to Frost Bridge Road	2.7	$1,847,000
W-2	Frost Bridge Road to Waterbury Line	0.7	$917,000
	Total Construction Cost Primary Greenway	3.4	$2,764,000
	Total Construction Cost Secondary Loops and Connections		$1,970,000

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Watertown**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth: **12"**
Type: **Mattatuck Trail**
From Sta:
To Sta:
A length of **1,090** Feet as shown on the plans

Segment No.	Segment Description
#1	Widen and pave existing trail to 8' - Watertown portion of Mattatuck Trail to Branch Brook

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
earth excavation	1,090	LF	$14.00	$15,260
processed aggregate	1,090	LF	$17.00	$18,530
superpave	1,090	LF	$20.00	$21,800
Contract Items			**SUBTOTAL**	$55,600
Clearing and Grubbing Roadway		2.0%		$1,100
M & P of Traffic		4.0%		$2,200
Mobilization		7.5%		$4,200
Construction Staking		1.0%		$600
Minor Items (Applied to Roadway Items only)		25.0%		$10,100
Contingencies & Incidentals			**CONSTRUCTION TOTAL**	$70,000
INCIDENTALS		21.0%		$14,700
CONTINGENCIES		10%		$7,000
			TOTAL ESTIMATED COST	**$91,700**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Watertown**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth:
Type: **New Bridge**
From Sta:
To Sta:
A length of **45** Feet as shown on the plans

Segment No.	Segment Description
#2	10' width - new bridge over Branch Brook

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
Class A Conc (attach to ex. piers / abutt)	2	EA	$5,000.00	$10,000
pre-fabricated ped steel truss bridge	45	LF	$1,500.00	$67,500
water handling	1	LS	$20,000.00	$20,000
Crane	1	LS	$8,000.00	$8,000
Contract Items			**SUBTOTAL**	$105,500
Clearing and Grubbing Roadway		2.0%		$2,100
M & P of Traffic		0.0%		$0
Mobilization		7.5%		$7,900
Construction Staking		1.0%		$1,100
Minor Items (Applied to Roadway Items only)		0.0%		$0
Contingencies & Incidentals			**CONSTRUCTION TOTAL**	$120,000
INCIDENTALS		21.0%		$25,200
CONTINGENCIES		10%		$12,000
			TOTAL ESTIMATED COST	**$157,200**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

Notes:

1) Cost for bridge may vary widely based on selected materials, structure width, span between supports, etc. This estimate assumes a 10' clear width pre-fabricated truss bridge,with synthetic lumber decking and a single clear span of 40 feet.

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Watertown**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth: **12"**
Type: **Shared-Use Off-Street**
From Sta:
To Sta:
A length of **13,300** Feet as shown on the plans

Segment No.	Segment Description
#3	10' width - long segment from Branch Brook to Echo Lake Rd / Rt.8 crossing - trail between Rt.8 and River/RR (approx 1700' will need barriers due to proximity to Rt.8 and RR)

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
earth excavation	13,300	LF	$14.00	$186,200
processed aggregate	13,300	LF	$17.00	$226,100
superpave	13,300	LF	$20.00	$266,000
Steel-Backed Timber Guide Rail	1,700	LF	$125.00	$212,500
Contract Items			**SUBTOTAL**	$890,800
Clearing and Grubbing Roadway		5.0%		$44,500
M & P of Traffic		4.0%		$35,600
Mobilization		7.5%		$66,800
Construction Staking		1.0%		$8,900
Minor Items (Applied to Roadway Items only)		25.0%		$176,200
Contingencies & Incidentals			**CONSTRUCTION TOTAL**	$1,220,000
INCIDENTALS		21.0%		$256,200
CONTINGENCIES		10%		$122,000
			TOTAL ESTIMATED COST	**$1,598,200**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Watertown**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth: **12"**
Type: **Surface Trail**
From Sta:
To Sta:
A length of **2,150** Feet as shown on the plans
Price Base Yr **2010**

Segment No.	Segment Description
#4	10' width - trail spurs off of #3 towards Picnic area at end of nature trail - at wide portion of River (SECONDARY)

Roadway Items	Est. Quant.	Unit	Unit Price	Total
earth excavation	2,150	LF	$14.00	$30,100
processed aggregate	2,150	LF	$17.00	$36,550
superpave	2,150	LF	$20.00	$43,000
Contract Items			**SUBTOTAL**	$109,700
Clearing and Grubbing Roadway		2.0%		$2,200
M & P of Traffic		4.0%		$4,400
Mobilization		7.5%		$8,200
Construction Staking		1.0%		$1,100
Minor Items (Applied to Roadway Items only)		25.0%		$19,900
Contingencies & Incidentals		**CONSTRUCTION TOTAL**		$150,000
INCIDENTALS		21.0%		$31,500
CONTINGENCIES		10%		$15,000
		TOTAL ESTIMATED COST		**$196,500**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Watertown**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth:
Type: **New Bridge**
From Sta:
To Sta:
A length of **75** Feet as shown on the plans

Segment No.	Segment Description
#5	10' width - part of #4 - long term bridge conneciton adjacent to exisitng RR bridge (SECONDARY)

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
Class A Conc (attach to ex. piers / abutt)	3	EA	$5,000.00	$15,000
pre-fabricated ped steel truss bridge	75	LF	$1,500.00	$112,500
water handling	1	LS	$20,000.00	$20,000
Crane	1	LS	$8,000.00	$8,000
Contract Items			**SUBTOTAL**	$155,500
Clearing and Grubbing Roadway		2.0%		$3,100
M & P of Traffic		0.0%		$0
Mobilization		7.5%		$11,700
Construction Staking		1.0%		$1,600
Minor Items (Applied to Roadway Items only)		0.0%		$0
Contingencies & Incidentals		**CONSTRUCTION TOTAL**		$170,000
INCIDENTALS		21.0%		$35,700
CONTINGENCIES		10%		$17,000
		TOTAL ESTIMATED COST		**$222,700**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

Notes:

1) Cost for bridge may vary widely based on selected materials, structure width, span between supports, etc. This estimate assumes a 10' clear width pre-fabricated truss bridge,with synthetic lumber decking and a single clear span of 75 feet.

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Watertown**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth:
Type: **New Bridge**
From Sta:
To Sta:
A length of **25** Feet as shown on the plans

Segment No.	Segment Description
#6	10' width - pedestrian bridge over RR - spurs off of #3 towards proposed trail part of transfer station project (SECONDARY)

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
Class A Conc (attach to ex. piers / abutt)	2	EA	$5,000.00	$10,000
pre-fabricated ped steel truss bridge	25	LF	$1,500.00	$37,500
water handling	1	LS	$20,000.00	$20,000
Crane	1	LS	$8,000.00	$8,000
Contract Items			**SUBTOTAL**	$75,500
Clearing and Grubbing Roadway		2.0%		$1,500
M & P of Traffic		0.0%		$0
Mobilization		7.5%		$5,700
Construction Staking		1.0%		$800
Minor Items (Applied to Roadway Items only)		0.0%		$0
Contingencies & Incidentals			**CONSTRUCTION TOTAL**	$80,000
INCIDENTALS		21.0%		$16,800
CONTINGENCIES		10%		$8,000
			TOTAL ESTIMATED COST	**$104,800**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

Notes:

1) Cost for bridge may vary widely based on selected materials, structure width, span between supports, etc. This estimate assumes a 10' clear width pre-fabricated truss bridge,with synthetic lumber decking and a single clear span of 25 feet.

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Watertown**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth:
Type: **Planned Trail Segment**
From Sta:
To Sta:
A length of **2,500** Feet as shown on the plans
Price Base Yr **2010**

Segment No.	Segment Description
#7	10' width - new structure supported on River bank - proposed trail part of transfer station and CT transit bus depot projects - (no cost, paid for by others)

Roadway Items	Est. Quant.	Unit	Unit Price	Total
earth excavation	800	LF	$14.00	$11,200
processed aggregate	800	LF	$17.00	$13,600
superpave	800	LF	$20.00	$16,000
Class A Conc Slab	1,700	LF	$225.00	$382,500
Class A Conc (new piers / abutt)	40	EA	$1,000.00	$40,000
Metal Beam Rail	2,500	LF	$35.00	$87,500
Driving Steel Piles	1,700	LF	$25.00	$42,500
Crane	1	LS	$8,000.00	$8,000
water handling	1	LS	$20,000.00	$20,000
Contract Items			**SUBTOTAL**	$0
Clearing and Grubbing Roadway		5.0%		$0
M & P of Traffic		4.0%		$0
Mobilization		7.5%		$0
Construction Staking		1.0%		$0
Minor Items (Applied to Roadway Items only)		25.0%		$152,500
Contingencies & Incidentals			**CONSTRUCTION TOTAL**	$0
INCIDENTALS		21.0%		$0
CONTINGENCIES		10%		$0
			TOTAL ESTIMATED COST	**$0**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Watertown**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth: **12"**
Type: **Shared-Use in ROW**
From Sta:
To Sta:
A length of **230** Feet as shown on the plans

Segment No.	Segment Description
#8	10' width - use existing access at grade RR crossing - along 262 Frost Rd Bridge

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
earth excavation	230	LF	$14.00	$3,220
processed aggregate	230	LF	$17.00	$3,910
superpave	230	LF	$20.00	$4,600
Steel-Backed Timber Guide Rail	230	LF	$125.00	$28,750
Minor Intersection Modification	1	EA	$30,000.00	$30,000
Contract Items			**SUBTOTAL**	$70,500
Clearing and Grubbing Roadway		2.0%		$1,400
M & P of Traffic		4.0%		$2,800
Mobilization		7.5%		$5,300
Construction Staking		1.0%		$700
Minor Items (Applied to Roadway Items only)		25.0%		$16,800
Contingencies & Incidentals		**CONSTRUCTION TOTAL**		$100,000
INCIDENTALS		21.0%		$21,000
CONTINGENCIES		10%		$10,000
		TOTAL ESTIMATED COST		**$131,000**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Watertown**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth: **12"**
Type: **Shared-Use in ROW**
From Sta:
To Sta:
A length of **400** Feet as shown on the plans

Segment No.	Segment Description
#8(b)	10' width - use existing access at grade RR crossing - along 262 Frost Rd Bridge (connects planned segment to trail) (SECONDARY)

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
earth excavation	400	LF	$14.00	$5,600
processed aggregate	400	LF	$17.00	$6,800
superpave	400	LF	$20.00	$8,000
Steel-Backed Timber Guide Rail	400	LF	$125.00	$50,000
Minor Intersection Modification	1	EA	$30,000.00	$30,000
Contract Items			**SUBTOTAL**	$100,400
Clearing and Grubbing Roadway		2.0%		$2,000
M & P of Traffic		4.0%		$4,000
Mobilization		7.5%		$7,500
Construction Staking		1.0%		$1,000
Minor Items (Applied to Roadway Items only)		25.0%		$23,700
Contingencies & Incidentals		**CONSTRUCTION TOTAL**		$140,000
INCIDENTALS		21.0%		$29,400
CONTINGENCIES		10%		$14,000
		TOTAL ESTIMATED COST		**$183,400**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Watertown**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth: **12"**
Type: **Trail Along Active Rail**
From Sta:
To Sta:
A length of **790** Feet as shown on the plans
Price Base Yr **2010**

Segment No.	Segment Description
#9	10' wide - south of 262 - between tracks and bldg

Roadway Items	Est. Quant.	Unit	Unit Price	Total
earth excavation	790	LF	$14.00	$11,060
processed aggregate	790	LF	$17.00	$13,430
superpave	790	LF	$20.00	$15,800
black vinyl chain link fence	790	LF	$30.00	$23,700
Contract Items			**SUBTOTAL**	$64,000
Clearing and Grubbing Roadway		5.0%		$3,200
M & P of Traffic		4.0%		$2,600
Mobilization		7.5%		$4,800
Construction Staking		1.0%		$600
Minor Items (Applied to Roadway Items only)		25.0%		$13,200
Contingencies & Incidentals		**CONSTRUCTION TOTAL**		$90,000
INCIDENTALS		21.0%		$18,900
CONTINGENCIES		10%		$9,000
		TOTAL ESTIMATED COST		**$117,900**

Estimated By VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Watertown**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth: **12"**
Type: **Shared-Use in ROW**
From Sta:
To Sta:
A length of **3,260** Feet as shown on the plans
Price Base Yr **2010**

Segment No.	Segment Description
#9(b)	10- wide - from Frost Bridge Rd to Townline - East of River along Waterbury Road (OPTION 2)

Roadway Items	Est. Quant.	Unit	Unit Price	Total
earth excavation	3,260	LF	$14.00	$45,640
processed aggregate	3,260	LF	$17.00	$55,420
superpave	3,260	LF	$20.00	$65,200
Steel-Backed Timber Guide Rail	3,260	LF	$125.00	$407,500
Contract Items			**SUBTOTAL**	$573,800
Clearing and Grubbing Roadway		2.0%		$11,500
M & P of Traffic		4.0%		$23,000
Mobilization		7.5%		$43,000
Construction Staking		1.0%		$5,700
Minor Items (Applied to Roadway Items only)		25.0%		$132,000
Contingencies & Incidentals		**CONSTRUCTION TOTAL**		$790,000
INCIDENTALS		21.0%		$165,900
CONTINGENCIES		10%		$79,000
		TOTAL ESTIMATED COST		**$1,034,900**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Watertown**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth: **12"**
Type: **Shared-Use Off-Street**
From Sta:
To Sta:
A length of **830** Feet as shown on the plans

Segment No.	Segment Description
#10	10' width - potential riverfront park area adjacent to greenway areano barrier - S. of at grade rail crossing (Atwood site)

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
earth excavation	830	LF	$14.00	$11,620
processed aggregate	830	LF	$17.00	$14,110
superpave	830	LF	$20.00	$16,600
Contract Items			**SUBTOTAL**	$42,300
Clearing and Grubbing Roadway		5.0%		$2,100
M & P of Traffic		4.0%		$1,700
Mobilization		7.5%		$3,200
Construction Staking		1.0%		$400
Minor Items (Applied to Roadway Items only)		25.0%		$7,700
Contingencies & Incidentals			**CONSTRUCTION TOTAL**	$60,000
INCIDENTALS		21.0%		$12,600
CONTINGENCIES		10%		$6,000
			TOTAL ESTIMATED COST	**$78,600**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Watertown**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth: **12"**
Type: **Trail Along Active Rail**
From Sta:
To Sta:
A length of **680** Feet as shown on the plans
Price Base Yr **2010**

Segment No.	Segment Description
#11	10' wide -north Waterbury border

Roadway Items	Est. Quant.	Unit	Unit Price	Total
earth excavation	680	LF	$14.00	$9,520
processed aggregate	680	LF	$17.00	$11,560
superpave	680	LF	$20.00	$13,600
Railroad/Ped Crossing Warning Devices	1	EA	$100,000.00	$100,000
black vinyl chain link fence	680	LF	$30.00	$20,400
Contract Items			**SUBTOTAL**	$155,100
Clearing and Grubbing Roadway		5.0%		$7,800
M & P of Traffic		4.0%		$6,200
Mobilization		7.5%		$11,600
Construction Staking		1.0%		$1,600
Minor Items (Applied to Roadway Items only)		25.0%		$36,400
Contingencies & Incidentals			**CONSTRUCTION TOTAL**	$220,000
INCIDENTALS		21.0%		$46,200
CONTINGENCIES		10%		$22,000
			TOTAL ESTIMATED COST	**$288,200**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Watertown**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth: **12"**
Type: **Shared-Use Off-Street**
From Sta:
To Sta:
A length of **880** Feet as shown on the plans
Price Base Yr **2010**

Segment No.	Segment Description
#12	10' wide - ends at bridge at Waterbury townline, connects to Waterbury Greenway

Roadway Items	Est. Quant.	Unit	Unit Price	Total
earth excavation	880	LF	$14.00	$12,320
processed aggregate	880	LF	$17.00	$14,960
superpave	880	LF	$20.00	$17,600
Contract Items			**SUBTOTAL**	$44,900
Clearing and Grubbing Roadway		5.0%		$2,200
M & P of Traffic		4.0%		$1,800
Mobilization		7.5%		$3,400
Construction Staking		1.0%		$400
Minor Items (Applied to Roadway Items only)		25.0%		$8,100
Contingencies & Incidentals			**CONSTRUCTION TOTAL**	$60,000
INCIDENTALS		21.0%		$12,600
CONTINGENCIES		10%		$6,000
			TOTAL ESTIMATED COST	**$78,600**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Watertown**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth:
Type: **New Bridge**
From Sta:
To Sta:
A length of **80** Feet as shown on the plans

Segment No.	Segment Description
#13	10' wide - pedestrian bridge over river at rocky outcrop - connects to Waterbury Greenway

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
Class A Conc (attach to ex. piers / abutt)	2	EA	$5,000.00	$10,000
pre-fabricated ped steel truss bridge	80	LF	$1,500.00	$120,000
water handling	1	LS	$20,000.00	$20,000
Crane	1	LS	$8,000.00	$8,000
Contract Items			**SUBTOTAL**	$158,000
Clearing and Grubbing Roadway		2.0%		$3,200
M & P of Traffic		0.0%		$0
Mobilization		7.5%		$11,900
Construction Staking		1.0%		$1,600
Minor Items (Applied to Roadway Items only)		0.0%		$0
Contingencies & Incidentals			**CONSTRUCTION TOTAL**	$170,000
INCIDENTALS		21.0%		$35,700
CONTINGENCIES		10%		$17,000
			TOTAL ESTIMATED COST	**$222,700**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

Notes:

1) Cost for bridge may vary widely based on selected materials, structure width, span between supports, etc. This estimate assumes a 10' clear width pre-fabricated truss bridge,with synthetic lumber decking and a single clear span of 80 feet.

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Watertown**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth: **12"**
Type: **Shared-Use Off-Street**
From Sta:
To Sta:
A length of **8,640** Feet as shown on the plans
Price Base Yr **2010**

Segment No.	Segment Description
#14	10' width - Watertown portion of Steele Brook path (no cost)

Roadway Items	Est. Quant.	Unit	Unit Price	Total
earth excavation	8,640	LF	$14.00	$120,960
processed aggregate	8,640	LF	$17.00	$146,880
superpave	8,640	LF	$20.00	$172,800
Contract Items			**SUBTOTAL**	$440,600
Clearing and Grubbing Roadway		5.0%		$22,000
M & P of Traffic		4.0%		$17,600
Mobilization		7.5%		$33,000
Construction Staking		1.0%		$4,400
Minor Items (Applied to Roadway Items only)		25.0%		$79,900
Contingencies & Incidentals		**CONSTRUCTION TOTAL**		$600,000
INCIDENTALS		21.0%		$126,000
CONTINGENCIES		10%		$60,000
		TOTAL ESTIMATED COST		**$786,000**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Watertown**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth: **12"**
Type: **Shared-Use in ROW**
From Sta:
To Sta:
A length of **19,500** Feet as shown on the plans

Segment No.	Segment Description
#15	10' width - spur to the Rt. 262, branches off main greenway (cost range of $5,000-$50,000 for signage) (SECONDARY)

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
Cost for Path Signage (include this cost only)	1	LS	$5,000.00	$5,000
earth excavation	19,500	LF	$14.00	$273,000
processed aggregate	19,500	LF	$17.00	$331,500
superpave	19,500	LF	$20.00	$390,000
Contract Items			**SUBTOTAL**	$994,500
Clearing and Grubbing Roadway		2.0%		$19,900
M & P of Traffic		4.0%		$39,800
Mobilization		7.5%		$74,600
Construction Staking		1.0%		$9,900
Minor Items (Applied to Roadway Items only)		25.0%		$180,400
Contingencies & Incidentals			**CONSTRUCTION TOTAL**	$1,320,000
INCIDENTALS		21.0%		$277,200
CONTINGENCIES		10%		$132,000
			TOTAL ESTIMATED COST	**$5,000**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

Note:
1) The cost for new signage for this segment may vary between $5,000 and $50,000.

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Watertown**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth: **12"**
Type: **Shared-Use Off-Street**
From Sta:
To Sta:
A length of **9,200** Feet as shown on the plans

Segment No.	Segment Description
#16	10' width - long term trail connection from Veterans Memorial Park to Frost Bridge Road (SECONDARY)

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
earth excavation	9,200	LF	$14.00	$128,800
processed aggregate	9,200	LF	$17.00	$156,400
superpave	9,200	LF	$20.00	$184,000
Contract Items			**SUBTOTAL**	$469,200
Clearing and Grubbing Roadway		2.0%		$9,400
M & P of Traffic		4.0%		$18,800
Mobilization		7.5%		$35,200
Construction Staking		1.0%		$4,700
Minor Items (Applied to Roadway Items only)		25.0%		$85,100
Contingencies & Incidentals			**CONSTRUCTION TOTAL**	$620,000
INCIDENTALS		21.0%		$130,200
CONTINGENCIES		10%		$62,000
			TOTAL ESTIMATED COST	**$812,200**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

Note:
1) The cost for new signage for this segment may vary between $5,000 and $50,000.

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Watertown**
Funding:
Project #: **2009303.A10**
Width:
Depth:
Type: **Ped / Bike Trailhead**
From Sta:
To Sta:
A length of

T

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
7 stall parking lot	1	EA	$20,000.00	$20,000
Ped / Bike Trailhead	2	EA	$8,000.00	$16,000
Contract Items			**SUBTOTAL**	$36,000
Clearing and Grubbing Roadway		5.0%		$1,800
M & P of Traffic		4.0%		$1,400
Mobilization		7.5%		$2,700
Construction Staking		1.0%		$400
Minor Items (Applied to Roadway Items only)		25.0%		$9,000
Contingencies & Incidentals		**CONSTRUCTION TOTAL**		$50,000
INCIDENTALS		21.0%		$10,500
CONTINGENCIES		10%		$5,000
		TOTAL ESTIMATED COST		**$65,500**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Watertown**
Funding:
Project #: **2009303.A10**
Width:
Depth:
Type: **Small Boat Launch**
From Sta:
To Sta:
A length of

B

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
Small Boat Launch	1	EA	$5,000.00	$5,000
Contract Items			**SUBTOTAL**	$5,000
Clearing and Grubbing Roadway		5.0%		$300
M & P of Traffic		4.0%		$200
Mobilization		7.5%		$400
Construction Staking		1.0%		$100
Minor Items (Applied to Roadway Items only)		25.0%		$1,300
Contingencies & Incidentals			**CONSTRUCTION TOTAL**	$10,000
INCIDENTALS		21.0%		$2,100
CONTINGENCIES		10%		$1,000
			TOTAL ESTIMATED COST	**$13,100**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Watertown**
Funding:
Project #: **2009303.A10**
Width:
Depth:
Type: **Rest Area**
From Sta:
To Sta:
A length of

R

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
Rest Area	1	EA	$5,000.00	$5,000
Contract Items			**SUBTOTAL**	$5,000
Clearing and Grubbing Roadway		5.0%		$300
M & P of Traffic		4.0%		$200
Mobilization		7.5%		$400
Construction Staking		1.0%		$100
Minor Items (Applied to Roadway Items only)		25.0%		$1,300
Contingencies & Incidentals			**CONSTRUCTION TOTAL**	$10,000
INCIDENTALS		21.0%		$2,100
CONTINGENCIES		10%		$1,000
			TOTAL ESTIMATED COST	**$13,100**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Watertown**
Funding:
Project #: **2009303.A10**
Width:
Depth:
Type: **Parking (Large)**
From Sta:
To Sta:
A length of

P(L)

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
25 stall parking lot	1	EA	$70,000.00	$70,000
Contract Items			**SUBTOTAL**	$70,000
Clearing and Grubbing Roadway		5.0%		$3,500
M & P of Traffic		4.0%		$2,800
Mobilization		7.5%		$5,300
Construction Staking		1.0%		$700
Minor Items (Applied to Roadway Items only)		25.0%		$17,500
Contingencies & Incidentals			**CONSTRUCTION TOTAL**	$100,000
INCIDENTALS		21.0%		$21,000
CONTINGENCIES		10%		$10,000
			TOTAL ESTIMATED COST	**$131,000**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Watertown**
Funding:
Project #: **2009303.A10**
Width:
Depth:
Type: **Park / Open Space (Large)**
From Sta:
To Sta:
A length of

Park(L)

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
Large Park Development	1	EA	$120,000.00	$120,000
Contract Items			**SUBTOTAL**	$120,000
Clearing and Grubbing Roadway		5.0%		$6,000
M & P of Traffic		4.0%		$4,800
Mobilization		7.5%		$9,000
Construction Staking		1.0%		$1,200
Minor Items (Applied to Roadway Items only)		25.0%		$30,000
Contingencies & Incidentals			**CONSTRUCTION TOTAL**	$170,000
INCIDENTALS		21.0%		$35,700
CONTINGENCIES		10%		$17,000
			TOTAL ESTIMATED COST	**$222,700**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

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Most of the trail's alignment in Watertown offers wonderful views of the surrounding hills.

alta PLANNING + DESIGN

COUNCIL OF GOVERNMENTS CENTRAL NAUGATUCK VALLEY

TOWN OF WATERTOWN, CONNECTICUT 1780 Working for you

For more information, contact: Council of Governments of the Central Naugatuck Valley

60 North Main Street, 3rd Floor, Waterbury, Connecticut 06702-1403 • 203-757-0535 • www.cogcnv.org

COUNCIL OF GOVERNMENTS
CENTRAL NAUGATUCK VALLEY

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PLANNING + DESIGN