

ST. CROIX VALLEY REGIONAL TRAIL MASTER PLAN



WASHINGTON COUNTY PARKS

MAY 2005

METROPOLITAN COUNCIL APPROVAL STATEMENT

OVERVIEW

The following is the official comments and approval of the plan by the Metropolitan Parks and Open Space Commission and Metropolitan Council.

Special Metropolitan Council Meeting

Wednesday, December 7, 2005

Council Chambers

4:00 P.M.

Part I - Narrative

Members present:

Peter Bell, Chair; Roger Scherer, Tony Pistilli, Jules Smith, Mary Hill Smith, Russ Susag, Peggy Leppik, Annette Meeks, Lynette Wittsack, Natalie Steffen, Kris Sanda, Georgeanne Hilker, Chris Georgacas, Rick Aguilar, Song Lo Fawcett, Daniel Wolter

Members absent: Brian McDaniel

Call to Order and Approval of Agenda

A quorum being present, the Chair called the regular meeting of the Metropolitan Council to order at 4:00 p.m. It was moved by Scherer seconded by Pistilli to approve the amended agenda. Motion carried.

Business

Committee Consent List

[2005-327 - St. Croix Valley Regional Trail Master Plan Review, Washington County, Review File 19563-1](#)

It was moved by Steffen and seconded by Susag:

“That the Metropolitan Council:

1. Approve the St. Croix Valley Regional Trail master plan (Referral No. 19563-1). However, only one alignment—not branch alignments that parallel each other—would be eligible for regional funding. As the plan is implemented, a proposal on which branch is the “regional trail” should be submitted for Council review and approval prior to or concurrently with any regional funding to acquire or develop that trail section.
2. Encourage surmountable curbing (Minnesota Department of Transportation Curb and Gutter Design No. S524, or equal) where trail construction requires road curbing.”

Motion carried.

**MEETING OF
METROPOLITAN PARKS AND OPEN SPACE COMMISSION
November 14, 2005**

COMMISSION MEMBERS PRESENT: Barb Schmidt, Glen Skovholt, Gary Botzek, Robert Wicklund, Michael Rainville, Emily Barbeau, Daniel Shlaferman, Lars Erdahl, Richard Jabs

ABSENT: Natalie Steffen, Metropolitan Council Liaison to the Commission

CALL TO ORDER

Chair Skovholt called the Meeting of the Metropolitan Parks and Open Space Commission to order at 4:00 p.m. on November 14, 2005.

BUSINESS:

St. Croix Valley Regional Trail Master Plan Review, Washington County - Arne Stefferud, Planning Analyst-Parks

Jim Luger, Washington County Parks gave a PowerPoint presentation of the St. Croix Valley Regional Trail Master Plan submitted to the Metropolitan Council for review and approval.

Luger discussed talks with the Department of Natural Resources (DNR) that involve running the trail through Afton State Park as an alternate route to St. Croix Trail on County 21.

Shlaferman asked about the abandoned railroad between Quadrant Avenue and the river in Denmark Township. Luger stated that private landowners purchased it by outbidding the DNR.

Schmidt asked if ideas for local trails come from the locals. Luger stated that some did and noted that some landowners were offering right of ways but were not publicly advertising it for fear of being ostracized by neighbors.

Schmidt commented that Afton Alps would benefit with cross country ski trails. Luger stated that they are opposed because of liability issues in the summer due to the Golf Course (balls hitting trail users).

Botzek asked about acquisition costs. Luger explained that there would not be any as the areas are publicly owned with the exception of one small link in southern Denmark Township.

Shlaferman asked if there is conflict with snowmobiles. Luger stated that there are new laws limiting snowmobiles on trails (cannot be on pavement) and noted that they can be within the corridor. He stated that as urbanization comes, rules are becoming stricter.

Skovholt asked if the St. Croix Regional Trails along County Road 21 will happen for sure. Luger stated yes, it will be the primary route, as far as Metropolitan Council dollars are concerned. He stated that they will work with Denmark Township for additional trails funded through grants, etc.

Schmidt asked where will the project start. Luger stated at the south end. He noted that they are working with Trust for Public Land on easements with the two private land owners.

Schmidt commended the planning for additional trails before land in the township is developed.

Commissioner Schmidt moved that the Metropolitan Council:

1. Approve the St. Croix Valley Regional Trail master plan (Referral No. 19563-1). However, only one alignment—not branch alignments that parallel each other—would be eligible for regional funding. As the plan is implemented, a proposal on which branch is the “regional trail” should be submitted for Council review and approval prior to or concurrently with any regional funding to acquire or develop that trail section.
2. Encourage surmountable curbing (Minnesota Department of Transportation Curb and Gutter Design No. S524, or equal) where trail construction requires road curbing.

Commissioner Barbeau seconded the motion. **The motion carried.**

INTRODUCTION / ACKNOWLEDGMENTS

INTRODUCTION



The public process was central to developing the master plan.

In June of 2004, the Washington County Board of Commissioners retained Brauer & Associates, Ltd. to collaborate with county staff and local citizens to complete a comprehensive master plan for St. Croix Valley Regional Trail. This document represents the results of the planning process, which was completed in May of 2005.

PUBLIC AND WASHINGTON COUNTY INVOLVEMENT

Given the notable interest in the development of a regional trail, the general public and special interest groups were invited to participate in the planning process on numerous occasions. Through formal and informal meetings, members of the community had direct access to the consultant team and County staff. The public's input throughout the planning process proved very fruitful and strengthened the final plan.

In addition to general public involvement, the Washington County Parks and Open Space Commission provided oversight of the planning process. Being familiar with local conditions and public demand for trails, Washington County Parks staff also played an instrumental role in the planning process.

TECHNICAL ADVISORY COMMITTEE INVOLVEMENT

An eleven member technical advisory committee was also assembled to provide oversight and input on critical planning issues. The group represented a cross-section of city officials and staff from agencies affected by the master plan. (A listing of committee members is provided under the acknowledgments.)

PUBLIC AGENCY INVOLVEMENT

To ensure congruency between agencies, Washington County invited representatives from the City of Afton and Denmark Township to participate in the planning process. The master plan takes into consideration results of meetings with representatives from these agencies.

ACKNOWLEDGMENTS

The consultant team would like to thank Washington County for undertaking an open and constructive public participation process for the project. This approach allowed many perspectives to be considered and acted upon. Through this process, it is believed that a responsible balance between community and personal values was achieved.

The consultant team would also like to thank the Technical Advisory Committee, Washington County Parks and Open Space Commission, and Washington County Board for participating in this project. Their individual and collective insights were instrumental in drawing conclusions that are reasonable, responsible, and insightful.

The consultant team also extends a heartfelt thank you to the Washington staff, especially Jim Luger, Parks Director, and John Elholm, Senior Parks Planner. The openness with which they approached this project paved the way for a constructive public process that considered all opinions to be of equal merit and worthy of due consideration. Their understanding of the larger regional context and how this trail fits into the larger regional park picture was also of high value as final conclusions were drawn.

Finally, the consultant team extends a thank you to the citizens who took the time to attend meetings, write letters, and make phone calls so that we could understand the issues first hand and find solutions that seemed reasonable and workable.

Sincerely,
 Jeff Schoenbauer
 Principal-in-Charge / Project Manager

PROJECT PARTICIPANTS AND OVERSIGHT

WASHINGTON COUNTY BOARD OF COMMISSIONERS

District 1 - Dennis C. Hegberg
 District 2 - Bill Pulkrabek, Vice Chair
 District 3 - Gary Kriesel
 District 4 - Myra Peterson, Chair
 District 5 - Dick Stafford

PARKS AND RECREATION COMMISSION MEMBERS

District 1 - Margaret Vogel-Martin, Chair / Christopher Ness, Vice-Chair
 District 2 - Charles Burfeind / Kenneth Heuer
 District 3 - Karen Rheinberger / Jackie Ulrich
 District 4 - Janet Norton / Paul Poncin
 District 5 - Don Arnold / Steve Dornfeld

TECHNICAL ADVISORY TEAM

Jim Luger, Parks Director, Washington County Parks
 John Elholm, Senior Planner, Washington County Parks
 Mitch Berg, City Administrator, City of Afton
 Dave Engstrom, Mayor, City of Afton
 Kathy Higgins, Supervisor, Denmark Township
 Jim Fitzpatrick, Executive Director, Carpenter Nature Center
 Cal Kontola, Manager, Afton State Park
 Paul Poncin, Washington County Parks and Open Space Commission
 Randy Thoreson, NPS, Rivers, Trails & Conservation Assistance (RTCA)
 Suzann Willhite, East Metro Area Supervisor, Trails and Waterways, MNDNR
 Arne Stefferud, Metropolitan Council

CONSULTANT

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In cooperation with:
Barr Engineering Company
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 Minneapolis, MN 55435
 (952) 832-2600

(Barr completed the *Maintaining and Enhancing Environmental Quality in Denmark Township* report cited in this master plan.

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APPENDIX A – PUBLIC COMMENTS**APPENDIX B – ST. CROIX BLUFFS STEWARDSHIP PLAN**

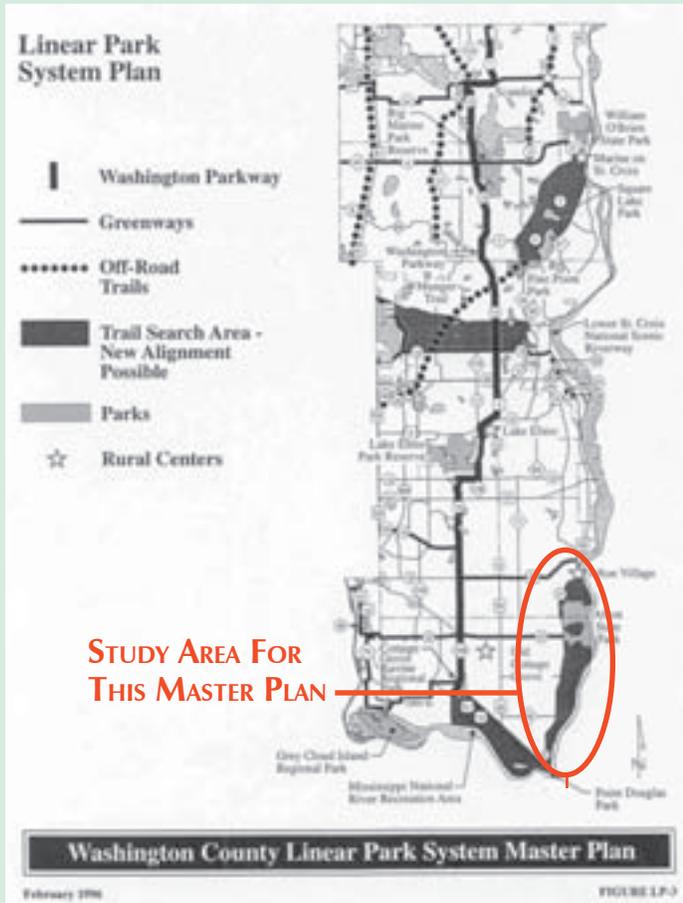
SECTION I PLANNING CONTEXT / GENERAL BACKGROUND

PROJECT SCOPE

The project focused on preparing a comprehensive master plan for the St. Croix Valley Regional Trail. The study area extended from Point Douglas Park on the south to the City of Afton on the north, as illustrated in the following graphic box.

STUDY AREA MAP AND OVERVIEW

STUDY AREA – WASHINGTON COUNTY CONTEXT



STUDY AREA – DETAIL AREA



As the map illustrates, the study area for this master plan is in the far southeast corner of Washington County directly adjacent to the St. Croix River. A regional trail in this area is a major component of the regional parks and trail system in Washington County.

The regional trail serves as a destination unto itself as well as a means to connect a number of major parks and open spaces within the study area, as the map illustrates.

HISTORY AND RATIONALE FOR THE ST. CROIX VALLEY TRAIL

The history of planning for a trail in the study area goes back several decades to the 1970s, when the MNDNR considered the prospect of following the old rail grade along the St. Croix River. That proposal was ultimately not adopted due to local opposition and land ownership issues. Today, much of the old rail grade is privately owned.

In more contemporary times, a study area for the regional trail was established in 1996 as part of Washington County's *Linear Park System Master Plan*. In doing so, the desire for a regional trail was reestablished as part of a larger overall plan for the county. A key distinction in that plan was allowing greater flexibility as to the trail's ultimate location within the study area.

In 2000, the Metropolitan Council passed a resolution urging Washington County to reevaluate the feasibility of a trail and to propose an alignment near the St. Croix River that links public parks and natural areas together. The following box highlights key milestones in the planning process between 1996 and 2001, which set the stage for this master planning process in 2004-2005.

PROJECT MILESTONES AND TIMELINE

| | |
|--|--|
| February, 1996 | <u>Washington County Linear Park System Master Plan</u> was created. It identified a trail search area between County Road 21 and the St. Croix River from downtown Afton to Prescott and Hastings. |
| March 27 th , 2000 | The <u>Metropolitan Council</u> passed a resolution urging Washington County to reevaluate the feasibility of a trail and propose an alignment or alternative alignments near the St. Croix River that links public parks and natural areas through a planning process that balances the perspectives of adjacent landowners, local governments, trail user organizations and the general public. |
| May 12 th , 2000 | Letters were sent to the City of Afton and Denmark Township to make them aware of the Metropolitan Council's resolution, and requested them to comment on this planned study and asked if the communities would support such a plan. Both communities advised the Washington County Parks Division that they would support such a plan. |
| June 6 th , 2000 | The <u>Washington County Board of Commissioners</u> authorized the parks division to proceed in the trail planning process. |
| October 10 th , 2000 | Representatives of the National Park Service, Minnesota DNR, Washington County, City of Afton, Denmark Township, Afton State Park, Trust for Public Land, and Minnesota Trails Council met to discuss the initial feasibility of planning for a trail to connect the natural resource 'nodes' (parks / nature center) contained in this area. Feedback from this group confirmed that there was support for this trail concept. It was decided, however, that plans would not proceed without local support. |
| December, 2000 | Both the City of Afton and Denmark Township passed resolutions urging the Washington County Parks Division, in cooperation with the City of Afton, Denmark Township, their residents and property owners, the Minnesota Department of Natural Resources and the National Park Service to pursue the development of a trail master plan which should focus on the area along the St. Croix River Corridor between Afton, Prescott and Hastings which is identified as the "search area" in Washington County's Linear Park master plan. |
| January 26 th , 2001 | The Washington County Parks Division applied for a <u>Metro Greenways Planning Grant</u> to conduct a Natural Resources Inventory of the trail study area in Denmark Township, in preparation for trail/greenway corridor planning. A similar study is already being completed in the City of Afton. |
| January 30 th , 2001 & March 27 th , 2001 | Meetings were held with the same group as on October 10 th to provide an update on the planning process, and to set dates to solicit preliminary comments from local citizens. |
| April 24 th , 2001 | A public open house will be held at 6:30pm at the Afton City Hall, to discuss the St. Croix Valley Wildlife and Recreation Corridor planning process and to solicit comments from local citizens. |

In 2001, Washington County completed the publication entitled *Maintaining and Enhancing Environmental Quality in Denmark Township*, which included a natural resources inventory and stewardship recommendations. That study paved the way for undertaking this master planning process in 2004-2005.



The scenery of the St. Croix River valley is a compelling setting for a regional trail.

INTERFACE WITH PUBLIC AND PRIVATE PARKS AND NATURAL AREAS WITHIN THE STUDY AREA



Point Douglas Park could become a popular trailhead location given its accessible location.

RATIONALE FOR DEVELOPING A REGIONAL TRAIL CORRIDOR

The rationale for developing a trail in the study area has remained relatively consistent for decades: 1) it would provide high recreational value in a very scenic setting and 2) it would tie together numerous state, regional, and private parks and natural areas into a cohesive, interlinked system.

In recent years, increasing development pressures heightened the importance of establishing a trail corridor through the study area while there was still an opportunity to consider alternative alignments. The potential for missing this opportunity as much as any other reason compelled Washington County Parks to complete the master plan in 2005.

Whereas the rationale for the trail remains compelling, local public attitudes toward it remain decidedly mixed (as Section II documents). The final trail alignment reflects how the planning process responded to the varying opinions of residents and property owners (both for and against the trail) while still addressing the needs of a regional constituency.

As noted, linking together parks and natural areas within the study is a major rationale for the regional trail. These include three public parks and one private nature area, as the following defines.

ST. CROIX BLUFFS REGIONAL PARK

A nearly 700 hundred acre regional park located on bluff land adjacent to the St. Croix River. Extensive hiking, camping, picnicking, and boating opportunities are currently provided in the park. A variety of other unique existing and planned amenities are also provided or envisioned, including the Conference Cottage, beach area, and group use areas. The park also exhibits a broad cross-section of natural systems.

AFTON STATE PARK

The park is 1,695 acres and was established in 1969 to preserve unique natural features and to provide opportunities for nature-oriented recreation. The park is set in a rolling glacial moraine and bluff land. It is cut by deep ravines which drop 300 feet to the river. The ravines display outcrops of sandstone and the rugged terrain affords spectacular views of the St. Croix River Valley. The park also contains a combination of oak openings and woodlands. The forests combine upland hardwoods with some pine plantations. Remnant prairies are being expanded and oak savannas are being restored through an aggressive resource management program that makes extensive use of volunteers. The park offers numerous amenities, including backpacking campsites, picnic grounds, hiking trails, a bike trail, cross-country skiing, visitor center, and group camps.

POINT DOUGLAS COUNTY PARK

This is a small, 9.5 acre county park on the shores of the St. Croix River. The primary amenities include a beach and picnic area. The park is also a popular area to observe the river. Once the trail is developed, it will likely become a popular trailhead given its accessible location.

INTERFACE WITH THE LOWER ST. CROIX RIVER COOPERATIVE MANAGEMENT PLAN

CARPENTER NATURE CENTER (PRIVATE)

A private, non-profit nature preserve and environmental education facility established in 1981 under an endowment from the Thomas E. and Edna D. Carpenter Foundation. The site encompasses 720 acres in Minnesota and Wisconsin, with several miles of self-guided and wheelchair accessible trails. The interpretive center offers several hands-on educational exhibits and serves as a classroom for programs. Carpenter Nature Center has an appointed board that oversees all activities and developments. A regional trail easement through the property would require Board approval.

The Lower St. Croix River National Scenic Riverway, which extends 52 miles from St. Croix Falls/Taylor Falls to Point Douglas Park, is jointly managed by the National Park Service, Minnesota Department of Natural Resources, and Wisconsin Department of Natural Resources. The *Lower St. Croix River Cooperative Management Plan and Environmental Impact Statement* provides general direction for managing the area for the next 15 to 20 years.

Under the plan, management directives common to all alternative uses and management plans include coordination of:

- Public and private uses
- American Indian treaty rights
- Land use management
- Riverway stewardship
- Natural resources management
- Hunting, fishing, and trapping management
- Interpretive and education
- Recreational use and development

The last bullet point relates most directly to the regional trail. Under the cooperative plan, managers would work to promote uses and behaviors that ensure high quality and safe experiences for all users. With regard to trails, existing uses would continue on designated trails of varying types within the riverway. Other than existing state regulations pertaining to trail uses, no additional regulations would be imposed unless they are needed for safety or resource protection.

The riverway managing partners are to work in partnership with user groups, communities, local agencies, and others in development of a comprehensive regional trail network in the study area, as well as links to other areas outside the river corridor. Trail development is to be coordinated with state plans, county comprehensive plans, and other pertinent plans.

Abandoned railroad rights-of-way, if and when available, can be pursued for conversion to trails consistent with the National Rails to Trails Act. Also, when roads along the river are improved, the addition of bicycle lanes is encouraged.

The regional trail master plan as presented here is consistent with the principles and intent of the Lower St. Croix River Management Plan. In early 2005, correspondence with the National Park Service and Minnesota Department of Natural Resources occurred to inform them of the master planning process. As implementation occurs, Washington County Parks will continue to work cooperatively with other managing partners to ensure that actual trail development remains consistent with the larger river corridor management objectives.

NATURAL DESIGNATION ROUTE _____

St. Croix Trail (County Road 21) is designated as a *Natural Preservation Route*. Based on current and anticipated traffic volumes, the route falls under a Type III Route designation, which includes the following design parameters:

- 12 foot drive lanes
- 4 foot shoulders if the roadway is *not* a popular bicycle route
- 6 foot shoulders if the roadway is a popular bicycle route]

Given the popularity of biking along this roadway, Washington County would most likely provide six foot shoulders when the roadway is upgraded. Note also that any and all improvements to St. Croix Trail would have to adhere to any other applicable Washington County transportation engineering standards.

WILLING SELLER PLANNING CONTEXT _____

Washington County, City of Afton, and Denmark Township each take a willing seller approach to land acquisition for parks, trails and greenways. The net affect of this common position is that it can not be assumed that all property owners will be open to selling their properties for a trail corridor any time soon, if at all. Even in the context of setting aside an easement as part of future land development that did not affect current property owners or land uses, many of the attendees at the public meetings that owned property in the study area remained skeptical.

As a result, the regional trail alignment proposed under this master plan minimized the extent to which private property would have to be acquired. The only exceptions to this are the “River Loop” trail north of St. Croix Bluffs, the alignment following Trout Brook on the north end of Afton Alps, and the old rail grade alignment south of Carpenter Nature Center. Even in these cases, alternative alignments are provided under the master plan for the first two of the three alignments.

In these cases where the trail does traverse across private property, acquisition under a willing seller context will require market rate assessment of land values and other assurances to protect the property owner’s interests. This may include providing physical barriers (i.e., fencing, heavy vegetation, grade separations) between the trail and private developments.

LAND USE OR OTHER CONFLICTS _____

Aside from the private property-related issues as defined above, no other conflicts with other land uses or proposed projects are envisioned. As defined in Section III, Afton State Park and Carpenter Nature Center will have to review and adopt the regional trail master plan as part of their own master plans prior to implementation occurring. This process may result in some modifications to the trail’s alignment, along with other potential provisions and use agreements.

The timing of the trail’s development may also be affected by the timing of roadway upgrades in the future. This is especially the case with St. Croix Trail, where any future plans for upgrading the road may impact the location of the trail within the right-of-way. The same holds true of the Quadrant Avenue and 87th Street trail routes, where the trail is situated in the rights-of-way. In all of these cases, the trail could be constructed irrespective of roadway improvements. The key point is that by combining it with roadway upgrades, alignment refinements and cost savings could potentially be realized.

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SECTION II

VISION AND PUBLIC VALUES STATEMENT

OVERVIEW

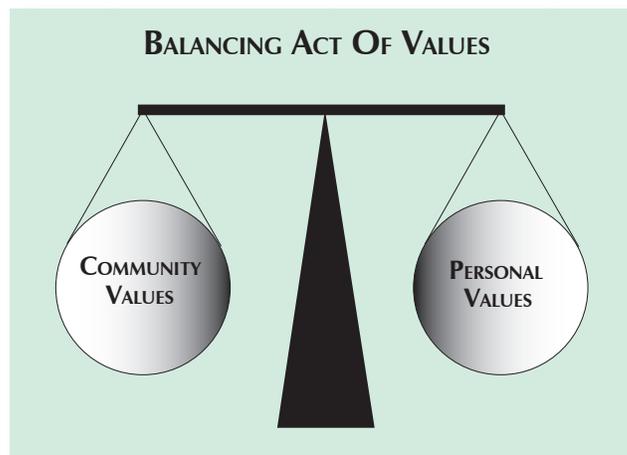
The undertaking of this planning process was based on the presumption that a regional trail through the study area would be of high regional and local value. Conversely, establishing this type of trail corridor through any given area poses both direct and indirect impacts to private properties. It also affects personal values related to residents' perceptions of their community and the quality of life they desire and perceive to exist. Depending on one's perspective, developing a regional trail within the study area may or may not be considered to be of high public value.

To ensure that the perspectives of all interested individuals and stakeholders were considered, Washington County Parks undertook an extensive and inclusive public process. This section defines the findings of that process and how that shaped the vision for the trail corridor and conclusions of the master plan.

PUBLIC PROCESS – BALANCING COMMUNITY AND PERSONAL VALUES

As defined in Section I, recent discussions about a regional trail through the study area goes back to at least 2000, and much further back if the DNR's trail corridor study in the 1970s is considered. Through the passage of time, the issue continues to bring out individual passions both for and against.

Recognizing the challenges of gaining consensus, Washington County Parks and the Technical Advisory Committee (TAC) placed a great deal of emphasis on being flexible and finding a reasonable and responsible balance between community and personal values. The latter of which referring to issues such as direct impact on personal property, perceived loss of privacy, quality of life, and so forth. The following graphic box illustrates this balancing act.



The overarching objective of the public process was to plan for the common good and serve the interests of the broader, regional community within the context of respecting the concerns of individual stakeholders. It is within this spirit that the forthcoming vision and community value statement is presented.

VISION STATEMENT

The vision for the master plan is to establish a regional trail corridor through the study area that offers high recreational value, which is defined as being:

- Visually appealing (i.e., provide scenic values) and located in a pleasant, natural open space or corridor
- Contiguous with limited interruptions and impediments to travel
- Of an acceptable grade (within the context of the setting)
- Safe to use for a family or those with limited skills

The plan also centers around three key principles:

- Providing continuity and linkages between public parks and private open spaces throughout the study area
- Allowing reasonable flexibility on final trail routes and plan implementation strategies as it relates to the public and private parks and natural areas encountered in the study area
- Providing adequate choices for trail users to self-select the trail segments that suit their desires (in terms of level of difficulty, scenery, recreational value, and destinations)

COMMUNITY VALUE OF THE REGIONAL TRAIL

The community value statement defines the benefits that a regional trail would bring to a regional constituency relative to any potential impacts across a number of variables – ranging from safety and crime to property values and loss of privacy. In this context, regional constituency refers to those residing in or traveling to the area for recreational pursuits.

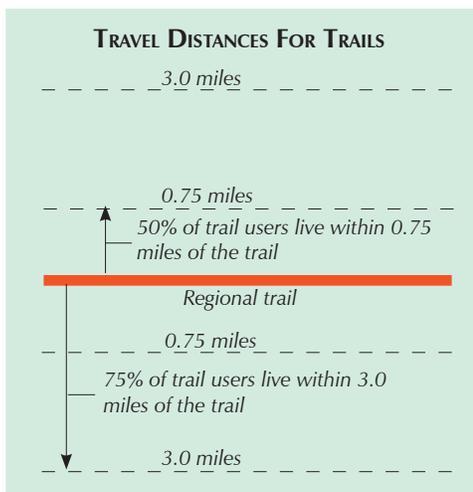
Taken as a whole, the community value statement defines whether or not the perceived benefits of the trail outweigh perceived impacts to justify its development. The following statement summarizes these findings.

COMMUNITY VALUE STATEMENT

With respect to the overall benefits, research indicates that trails offer a very high degree of community value by providing the type of recreational amenity that the majority of the population would actually use and like to have available near their home. As defined in the table on the next page, recreational trends indicate that trail activities are the highest ranked recreational pursuits in this metropolitan region, far outpacing most other forms of recreation.

In addition, the improved safety for pedestrians and bicyclists as they travel along the proposed trail corridor is a value that some would argue is more important than that of the recreational experience. The community value statement is strengthened by evidence that suggests that potential down sides, like crime, trespassing, and littering, generally do not manifest themselves to any great degree.

In terms of actual users of trails, recent research by the Metropolitan Council indicates that majority of trail users live within three miles of the trail, as the graphic box to the left illustrates. The table on the next page provides an overview of the other key research that affected the TAC's perspective on the community values associated with a regional trail within the study area.



COMMUNITY VALUES FROM TRAILS

| VARIABLE | DISCUSSION |
|--|--|
| DEMAND FOR TRAILS | <p>From a regional perspective, trails are the highest ranked recreational activity. Survey results conclude:</p> <ul style="list-style-type: none"> • Walking, especially within the neighborhood, is the #1 ranked recreational activity, with 85% of respondents <u>being interested</u> in this activity.* • Walking in natural areas and large parks is the #2 ranked recreational activity, with 78% of respondents <u>being interested</u> in this activity.* • Leading activity for Minnesota adults is walking/hiking outdoors, with 54% <u>actually participating</u> annually. <p><i>Source: Recreational trends survey conducted by the University of Minnesota Survey Research Center on behalf of the Metropolitan Council* and 2004 Outdoor Recreation Participation Survey (MNDNR)**</i></p> |
| USE OF TRAILS | <p>The following summarizes the dynamics of trail use of the Gateway Trail based on regional trail use surveys:</p> <ul style="list-style-type: none"> • 80% of trail users are adult. • Median age of trail users is 40-44, although youth use is growing. • 80% of trail users live within the county or city where the trail is located. • Proximity of the trail to one's place of residence is very important to discovering it. • Visiting new areas was not all that important to trail users. • 95% use the trail for recreation, 4% for commuting, and 1% for getting to retail stores. • Walking is the most popular use (39%), biking second (31%), and jogging third (18%). • Use of the trail has increased dramatically in the last sixteen years. <p><i>Source: Metropolitan Council – Twin Cities Regional Trail Visitor Study (1999).</i></p> |
| IMPACT OF TRAILS ON ADJACENT PROPERTIES | <p>The following summarizes the results of a survey related to a new trail retrofitted into an area:</p> <ul style="list-style-type: none"> • Usage – 75% of adjacent property owners use the trail (many of which were against the trail being developed). • Problems – over 95% of the adjacent property owners reported no problems with the trail (such as loitering, litter, and trespassing). • Economic impacts – vast majority reported that they believed that the trail would have no negative impact on their property values, with many believing that it could even increase values. • Values – 75% say living near the trail offers distinct advantages, such as ease of access, convenience, exercise, and so forth. <p><i>Source: Lake Wobegon Regional Trail, Stearns County.</i></p> |
| POLICING AND CRIME | <p>Review of policing issues associated with trails within Washington and Ramsey County yields the following:</p> <ul style="list-style-type: none"> • Incidents of crime associated with trails is so low that local police do not keep track of it separately. • The contention that trail users routinely commit crimes to adjacent properties is not supported by crime statistics and evidence. • Biggest area of concern with crime is at parking lots, where occasionally theft from the cars of trail users occurs (Note: Theft from cars in parking lots is not unique to trails, but occurs at parks, shopping centers, and other areas where the opportunity for a quick getaway exists). <p><i>Source: Washington and Ramsey County Sheriffs Department.</i></p> |
| EXISTING USE | <p>Public input and direct observations during the planning process yields the following insights:</p> <ul style="list-style-type: none"> • Clear evidence suggests that St. Croix Trail is already being heavily used by bicyclists (this was commonly acknowledged at all public meetings and observed directly by the planning team). • Virtually all of those that walk or bike the area have a concern about personal safety – especially as it relates to children walking along the roads without trails. • Drivers routinely complain that walkers and bikers are in the way on the roads within the study area. |
| SAFETY OF DEVELOPED TRAILS | <p>Discussions with local cities that have retrofitted trails into similar settings yields the following with respect to safety for the trail user:</p> <ul style="list-style-type: none"> • Actual and perceived pedestrian safety is improved when off-street trails are added along busy roads simply because people are no longer walking along the shoulder of the road where traffic speeds can be up to 55 MPH and shoulder widths are often very narrow. • The incidence of conflict between pedestrians and vehicles at driveway crossings has not been found to be a major issue, with few reported occurrences of accidents (Note, however, that both the driver and the trail user have a responsibility to watch out for each other similar to any crosswalk or sidewalk system common in many cities). • Adhering to accepted design standards and practices for trails, including driveway crossings, is important to maintaining a safe pedestrian environment. |

POPULATION TRENDS AFFECTING THE REGION

One of the more important trends affecting the region is that the population in the metropolitan area is expected to continue to grow substantially over the next 20 and 50 years. As the following table illustrates, the population in Washington County is expected to be near the top in terms of percentage increase in population over that time period.

POPULATION TRENDS

Population forecasts stratified by regional park agency jurisdiction. (Source: Metropolitan Council System Analysis of the Regional Recreation Open Space System)

| County/City | Preliminary Population estimates | | | Total increase from 2000 | | % increase from 2000 | |
|----------------------|----------------------------------|------------------|------------------|--------------------------|------------------|----------------------|------------|
| | 2000 | 2020 | 2050 | 2020 | 2050 | 2020 | 2050 |
| Dakota County | 251,240 | 456,180 | 579,436 | 104,920 | 228,196 | 30% | 63% |
| Suburban Henn County | 646,550 | 737,480 | 837,189 | 90,930 | 190,639 | 14% | 29% |
| Washington County | 203,120 | 268,670 | 377,082 | 65,550 | 173,962 | 42% | 86% |
| Anoka County | 295,910 | 350,410 | 440,572 | 54,500 | 144,662 | 18% | 49% |
| Scott County | 81,990 | 137,910 | 187,452 | 55,920 | 105,462 | 68% | 129% |
| Crowley County | 66,180 | 104,420 | 145,144 | 38,260 | 78,964 | 58% | 119% |
| Suburban Ramsey Co. | 221,020 | 242,240 | 262,914 | 12,220 | 22,894 | 5% | 14% |
| St. Paul | 274,500 | 294,000 | 301,723 | 19,500 | 27,223 | 7% | 10% |
| Minneapolis | 370,000 | 368,000 | 392,656 | 18,000 | 22,656 | 5% | 6% |
| Bloomington | 88,500 | 91,000 | 92,978 | 2,500 | 4,478 | 3% | 5% |
| Total | 2,608,990 | 3,091,290 | 3,618,131 | 482,400 | 1,009,162 | 18% | 39% |

Note: Suburban Hennepin County does not include Bloomington or Minneapolis
Note: Suburban Ramsey County does not include St. Paul

Undoubtedly, this population growth trend will increase pressure for developing regional trails to service an expanding population with a wide range of outdoor recreation pursuits and service expectations.

LOCAL VALUES (PUBLIC INPUT)

The public process for the regional trail has been extensive over the years, with the most recent activities going back to 2002 with the preparation of the natural resources inventory entitled *Maintaining and Enhancing Environmental Quality in Denmark Township*. Other discussions between Washington County, Denmark Township, City of Afton, and Carpenter Nature Center go back to 2000.

The public process directly associated with this master plan began in June of 2004 with the bringing together of the Technical Advisory Committee. The process was structured to allow all interested parties ample opportunity to participate. In addition, formal meetings with the Washington County Parks Commission and Board of Commissioners were also held, each of which being open to the public. Likewise, formal meetings with the City of Afton and Denmark Township were also held. The table on the next page provides a complete list of public meetings held during the process.



The public meetings were all well attended in Afton and Denmark Township.

PUBLIC MEETING SCHEDULE

TAC – five meetings during course of the project, including a field review.

All of the following meetings were open to the public:

- 11-9-04 Afton Open House (general review of routing options)
- 11-16-04 Denmark Township Open House (general review of routing options)
- 12-14-04 Denmark Township Open House (preliminary master plan review)
- 12-15-04 Afton Open House (preliminary master plan review)
- 1-20-05 WC Parks Commission (preliminary master plan review)
- 1-25-05 Washington County Board (preliminary master plan review)
- 3-17-05 WC Parks Commission (final master plan review)
- 4-19-05 Afton City Council (final master plan review)
- 5-2-05 Denmark Township Board (final master plan review)
- May 05 Washington County Board (final master plan review and adoption)

FINDINGS FROM THE PUBLIC PROCESS

Public comment at each of the public meetings was extensive, with each meeting well attended. In general, most of the attendees providing written responses were invited through direct mailings based on Washington County property address listings within the study area. The extent to which the general public attended is uncertain since most of the responses came from those on the mailing list. Washington County Parks consolidated all comments received during the process and made those available to the public. All recorded comments are also included in Appendix “A”. For planning purposes, the following table summarizes the public comments under common themes.

SUMMARY OF PUBLIC COMMENTS

| VARIABLE | KEY SUMMARY COMMENTS |
|------------------------------------|--|
| OVERALL CONSENSUS | Overall, support for the trail was very mixed and wide ranging. In many cases, people were adamantly opposed to it, feeling that the was simply not needed. Others had more personal feelings toward not wanting a trail running across their property, irrespective of the fact that it would not occur unless they were willing sellers and that it would likely occur 10 or more years into the future as part of future land development. On the other end of the spectrum, some participants were strongly in favor of the trail, thinking it showed foresight and would be a great amenity to them and others in the future. Overall, there was much more support for keeping the trail in public rights-of-way and other public lands than going cross country. (Trails that traversed across private property were thought better addressed at a local level.) Refer to Appendix “A” for a complete listing of submitted comments during the public process. |
| PROPERTY ISSUES | Although much effort was made to inform participants that land would only be acquired through a willing seller approach, it was clear that most property owners remained skeptical and preferred that their properties not be shown as a potential route for a trail. Most participants did not appreciate that the trails would likely be developed as part of future subdivision proposals. It was also not appreciated that the whole purpose of the master plan was to establish an optimal route for the regional trail to allow Afton, Denmark Township, and Washington County to coordinate its development as part of local and regional comprehensive planning. |
| PUBLIC RIGHTS-OF-WAY ISSUES | Whether for or against the trail, most participants agreed that the trail is best kept in the public rights-of-way or public parks to the degree possible. Within this context, many expressed concern that development of the trail would take away from the scenic quality of the St. Croix Trail (County Road 21). Preserving the natural vegetation along these corridors was an especially important concern. Adhering to the guidelines Natural Preservation Route for St. Croix Trail was also strongly supported. |
| SAFETY | The one thing that participants could universally agree upon is the St. Croix Trail is narrow and not very safe for bicyclists. They also expressed concern that as motorists they might one day injure someone. The way to remedy this was not necessarily agreed upon, with some thinking that adding a separate trail and a shoulder to the road was justified, while others felt that bikers should simply be prohibited. |
| GRADES | Some participants felt that the grades along St. Croix Trail are simply too steep for most people. Conversely, the road is also very extensively used by bicyclists for that exact reason. Overall, managing trail grades is a substantial and inherent issue in this area. |
| OLD RAIL GRADE | Property owners along the old rail grade adjacent to the St. Croix River were very opposed to the trail running the length of the corridor from Afton to Point Douglas Park. With over 70 properties along this stretch, it is unreasonable to expect that acquisition would be feasible. |

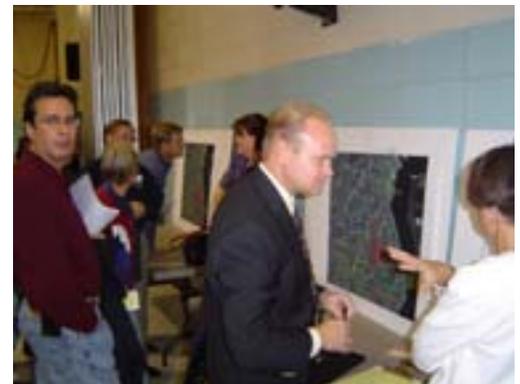
INFLUENCE OF THE PUBLIC PROCESS ON PLANNING OUTCOMES

At a community values level, research indicates that a regional trail through the study area is justified and would undoubtedly be successful. At the same time, local values also have to be accommodated since the trail directly affects local property owners and residents. The master plan presented here is thought to represent a reasonable and responsible balance between these compelling and sometimes competing interests.

By staying within the public realm to the degree possible, the proposed trail alignment poses the least disruption to private property interests while still fulfilling the goals of the project. At the same time, the rationale for traversing through the countryside following local greenways is also compelling given the recreational experience that could be gained. Although none of these routes are part the regional trail master plan, the City of Afton and Denmark Township are encouraged to pursue these possibilities as part of local trail and greenway planning efforts.

IMPRESSIONS FROM THE PUBLIC PROCESS

The following photos provide snapshots of the public process that Washington County Parks undertook for this project.



SECTION III REGIONAL TRAIL MASTER PLAN

OVERVIEW

OVERALL, THE OPTIMAL ROUTE FOR THE REGIONAL TRAIL TOTALS 20.4 MILES, INCLUDING SEGMENTS THROUGH EXISTING PARKS.

REGIONAL TRAIL MASTER PLAN: GENERAL OVERVIEW



Overlooking the St. Croix River is one of many scenic opportunities offered by the St. Croix Valley Regional Trail.

The St. Croix Valley Regional Trail master plan is the end result of an extensive public process. The final plan establishes a regional trail route that fulfills project goals within the context of the local planning environment.

Molded as much by the public process as it is by the physical landscape within the study area, the trail master plan represents a balance between the larger values of the community and the personal values of the many stakeholders. Although route selection at times proved challenging, the regional trail defined under the master plan offers very high recreational value, greatly improves pedestrian safety along the St. Croix Trail, and provides contiguous pedestrian-level access to the many parks and open spaces within the study area. Furthermore, the St. Croix Valley Regional Trail provides a sound basis for local trail systems to build upon as the need for and value of trails takes on greater meaning as development patterns and population growth evolve in this amenity rich, high quality of life area.

The final master plan for the St. Croix Valley Regional Trail is based on many factors. At the local level, general consensus was that the regional trail is best located in existing public rights-of-way, parks, and other natural areas. (Trail corridors that traverse across individual private properties was considered a local planning issue by many participants.) With a few exceptions, the master plan successfully accommodates this perspective, even though in doing so certain trail alignments that would have added value to the regional system were not included in the master plan. As such, these trail opportunities become a local responsibility if they are to occur at all.

The inherent characteristics of the landscape within the study area also factored into the selection of trail routes. The bluff lands and many ravines that dominate the landscape provide a compelling setting for a regional trail, even though these same features pose a host of technical challenges. Most notably of these is trail gradients, which played a significant role in determining which trail routes were most advantageous and acceptable.

Although limiting in some ways, the unique landscape qualities of the study area also makes it possible to accommodate and appeal to a wider cross-section of trail users – ranging from family-oriented groups to fitness enthusiasts and competitive bicyclists that commonly use St. Croix Trail as a premier training ground.

To accommodate public input and all of the technical planning factors, the regional trail master plan is underpinned by three key principles:

- Providing continuity and linkages throughout the study area
- Allowing reasonable flexibility on final trail routes and plan implementation strategies as it relates to the public and private parks and natural areas encountered in the study area
- Providing adequate choices for trail users to self-select the trail segments that suit their desires (in terms of level of difficulty, scenery, recreational value, and destinations)

Based on these three principles, the following provides a general overview of the optimal and alternate regional trail routes, as well as an overview of a complementary bikeway route along St. Croix Trail. The following descriptions correspond to the *Master Plan* map. (Note that each of the trail routes are considered in greater detail later in this section.)

OPTIMAL TRAIL ROUTE

The optimal route for the regional trail represents a balance between scenic and recreational values, trail gradients, and continuity to accommodate a wide range of trail users with varying abilities.

ROUTE HIGHLIGHTS

From north to south, the optimal route starts in the city of Afton at a small local park where the existing regional trail coming into the city from the north ends. The proposed trail follows the east side of St. Croix Trail (County Road 21) from Afton south up the “coulee”, passes 50th Street, and then down to Trout Brook, whereupon it enters Afton State Park following the brook. For grade reasons, the optimal route continues along the brook at the base of Afton Alps ski area, which is a private enterprise. Reentering the state park, the trail follows a series of existing natural surfaced trails until it interconnects with an existing paved trail adjacent to the park entrance drive. This route was selected over the alternates primarily to minimize trail grades. (See alternate routes below for other options within Afton State Park.)

From Afton, the trail heads south following St. Croix Trail up the “coulee”. This is scenic part of the trail route, even though it stays within the road right-of-way and will be located adjacent to the curb line.

As the *Master Plan* map illustrates, the optimal trail diverts into two branches on the south end of Afton State Park. One branch follows Quadrant Avenue South, and the other follows the park entrance drive and then continues south on St. Croix Trail. The two branches are proposed for a couple of reasons. First, the trail grades on the *Quadrant Avenue Branch* are more modest than those on the *St. Croix Trail Branch*, as illustrated on the detail trail segment maps. Between these two branches, a wide range of users with varying abilities can be accommodated, ranging from family-type groups to fitness enthusiasts.

Second, in combination with 87th Street South, the two branches create one of several loop opportunities that greatly enhance the recreational value of the regional trail (e.g., research suggests that loops are generally preferred over out-and-back trail experiences).

As the *Master Plan* map illustrates, the optimal trail route continues south from 87th Street following St. Croix Trail until it enters St. Croix Bluffs Regional Park. In addition, another *River Loop Branch* of the trail connects 87th Street with the regional park along the river, creating yet another loop for trail users to choose from. Notably, this segment is through privately-owned land and requires the acquisition of a trail easement under a willing seller context.

Within St. Croix Bluffs Regional Park, the regional trail ties into the multiuse paved trail system this is already part of the park’s master plan. As shown on the *Master Plan* map, a loop trail and connection to the St. Croix River will be provided within the regional park.

Heading south from the regional park, the regional trail will continue along the east side of St. Croix Trail until 117th Street South, whereupon it enters and traverses through Carpenter Nature Center, a private nature preserve and interpretive site. The most significant challenge within the preserve is maintaining reasonable grades through the ravine area. Once to the edge of the river, the trail continues heading south following the old rail grade.



As with all of the parks within the study area, the view of the river from Carpenter Nature Center is a highlight of the trail.



From the old rail grade south of the Carpenter Nature Center views of the historic bridge into Prescott dominate the viewshed.

From Carpenter Nature Center, the trail continues south following the old rail grade until it interconnects with Point Douglas County Park. Notably, this segment traverses through a number of privately-owned land parcels, some of which are owned by Carpenter Nature Center, and some are owned by others. As with the *River Loop Branch* previously described, the acquisition of a trail easement across these parcels would be under a willing seller context.

Near the end of the old rail grade, the trail traverses past a private marina, which actually owns half of one section of the old rail bed in this area. (The other half is owned by Carpenter Nature Center.) Maintaining a sense of separation and security between the marina and the trail will be paramount to securing an easement for the trail. This includes maintaining the grade separation that currently exists between the two uses, providing some form of security fencing, and enhancing the vegetative buffer along this part of the trail corridor.

Ultimately, the regional trail will connect with the proposed Point Douglas Trail on the south side of State Highway 10. As shown on the *Master Plan* map, a connection under the river bridge is expected to be the most advantageous option, assuming there is adequate room for the trail and grades allow for a reasonable connection to the Point Douglas Trail. Other, presumably more expensive, options include a separate underpass or overpass across the highway further to the west.

TRAIL GRADIENT CONSIDERATIONS

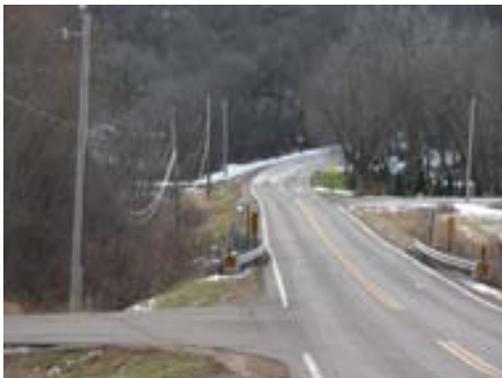
As previously noted, trail grades played a significant role in determining which of the many routing options were best suited for the regional trail. Although the inherent topographic character of the study area precludes keeping all trail grades to 5% or less throughout the corridor, the optimal route does make it possible for most trail users to have an enjoyable, contiguous trail experience. That said, even the optimal route has grades of 6.0% to 7.5% in certain segments, and there will be certain sections of the trail where not all users will be willing or capable of using.

For reference, trail grades of up to 5% are considered accessible for virtually all trail users. A 6% grade is acceptable for most users for moderate distances of 800 to 1200 feet. Likewise, 7% to 8% grades should be kept to 400 and 300 feet, respectfully, to be acceptable to most users. Once into the 9% to 10% grade ranges, the acceptable length of climb is 200 feet or less for most users.

Notably, these grades relate to the average trail user. For fitness training and elite bicyclists and inline skaters, trail grades in the 7% to 8% for moderate distances are not only acceptable, but sought out. That is why St. Croix Trail has become and will continue to be so popular with bicyclists. It is one of a limited number of roads in the region that offers the type of training opportunity and scenic qualities that these riders are seeking.

SELF-SELECTION OF TRAIL ROUTES BASED ON ABILITIES AND DESIRES

Overall, the optimal regional trail route takes advantage of the unique qualities of the study area and provides numerous opportunities for trail users to self-select segments that are within their abilities and suit their personal desires for recreation and fitness. In addition, the optimal trail route also effectively expands the value of the stand-alone parks and open spaces by providing visitors with more recreational options when spending the day or week in the area.



Trail grades were factored into route selection, as is the case here along the St. Croix Trail Branch of the regional trail. Looking south from 80th Street, this climb approaches 9% for a short section. This underscores the importance of the Quadrant Avenue Branch where grades are generally 5% or less. Although steeper than most riders would want, this segment of trail will decidedly appeal to many bicyclists for the challenge.



As this photo illustrates, the character of many of the alternate trail alignments is very appealing, with the main limiting factor being steeper grades in certain sections due to the inherent character of the landscape.



As this photo illustrates, the grade up 50th Street from St. Croix Trail is in excess of 10%. At this grade, most bicyclists would walk their bikes.

ALTERNATIVE TRAIL ROUTES

As the *Master Plan* map illustrates, a number of alternate trail alignments are included for the Afton State Park area for a couple of reasons. First, the alternates are necessary due to the uncertainty of obtaining a trail easement for the trail route through Afton Alps ski area, which is a private enterprise. Under a willing seller approach, acquisition of any easements will have to satisfy all concerns of the property owner, including potential impacts to the ski facility. Whether or not the owner sees the trail as an advantage or disadvantage to summer seasonal business has yet to be determined, but it would be expected to weigh into their willingness to provide an easement. Likewise, being able to satisfy security issues related to the ski area infrastructure would also have to be satisfactorily addressed in order to obtain an easement.

Importantly, the optimal route shown on the master plan is proposed because it provides the most advantageous alignment for the trail, especially as it relates to trail grades. However, should negotiation of an easement prove unsuccessful, the alternative routes through the park provide other options worthy of consideration, albeit each posing different advantages and disadvantages as defined under the descriptions for each route.

The second reason for including alternative trail alignments in Afton State Park is to give DNR park planners some flexibility to integrate the trails into the park's overall master plan. The current master plan is due for updating in the next few years and will undoubtedly take into consideration all aspects of the park's use, level of development, and natural resource preservation/stewardship. (This issue is considered in more detail later in this section.)

With these reasons in mind, the following provides an overview of each of the alternate trail routes identified on the *Master Plan* map.

ALTERNATE TRAIL ROUTE "A"

Going from west to east, this alternate route follows the south side of 50th Street South from St. Croix Trail east into Afton State Park. From there, the trail follows existing natural surface trails within the park. Notably, the regional trail alignment would purposefully avoid the open prairie area on the northern end of the park to preserve its character and the open views across the prairie that local park users have become accustomed to seeing.

Once the trail reaches the picnic area along the river it would tie into the existing multiuse paved trail that begins just to the south of the picnic area and continues south all the way up to the visitor center generally following the entrance drive.

The alignment of this alternate is very aesthetically appealing and offers a lot of scenic value. However, the grades along 50th Street and in certain segments within the park exceed 10%, making the trail more challenging and therefore less appealing to some trail users. Primarily for this reason, this alignment is best considered an alternate rather than the optimal route.

ALTERNATE TRAIL ROUTE "B"

This alternate route essentially follows an existing natural surface trail from Trout Brook to an intersection with the Alternate "A" alignment. As with "A", this is a very appealing alignment with the exception of the grade, which is in the 8% to 11% range. For the same reason as "A", this alignment is best considered as an alternate rather than the optimal route.

ALTERNATE TRAIL ROUTE "C"

This alternate route simply provides another alternative to the other routes previously defined. In this case, the grade of the trail is not an issue since it follows the brook as it ties into the other trails shown on the master plan.

TRAIL LOOPS WITHIN THE STATE PARK

As the *Master Plan* map illustrates, there are numerous opportunities to use the alternate trail alignments to create a series of trail loops within the park. Whether these should be developed to a similar standard as the regional trail is a matter for consideration as part of the park master planning process.

ALTERNATE REGIONAL TRAIL ROUTE FOLLOWING ST. CROIX TRAIL

From a planning perspective, it must be recognized that all of the trail routes that traverse through Afton State Park and Afton Alps ski area entail some inherent uncertainties, as previously defined. For this reason, the regional trail master plan also includes an alternate alignment in which the trail would continue following St. Croix Trail between Trout Brook and 70th Street South should no routes through the park prove workable (within the context of Afton State park master plan or being acceptable to the owners of Afton Alps). Although this is the least interesting and desirable alignment of those identified and also poses some grade challenges, it is included in the master plan to underscore the importance of maintaining trail continuity from the City of Afton down to Point Douglas Park.

BIKEWAY ROUTE

As defined in *Section III – Regional Trail Vision and Value Statement*, bikeways serve a specific subset of bicyclists that prefer riding on the road over trails. These tend to be advanced or experienced riders who are comfortable riding in traffic as long as there is reasonable maneuvering space. Even with a trail nearby, these bicyclists will routinely continue riding on the road because it is often less restrictive, has fewer pavement changes, is suitable for higher speeds, and poses less risk of conflicts with other trail users. For these bicyclists, providing a bikeway is essential to providing a safe operating environment.

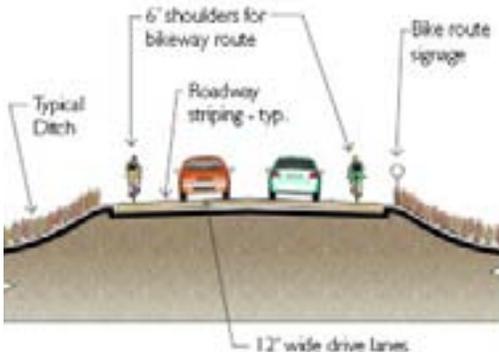
From a driver's perspective, bikeways are also beneficial in that they provide more maneuvering space for vehicles, thus reducing the propensity for conflict. In addition, since many bicyclists will ride on a road irrespective of shoulder width, bikeways are often of equal or greater advantage to motorists than bicyclists. St. Croix Trail is a classic case in point, where bicyclists continue to ride on the road with increasing frequency irrespective of shoulder widths. As traffic levels increase, so does the propensity for conflict and accidents. For these reasons, providing a bikeway along St. Croix Trail is included as part of the regional trail master plan.

DESIGN OF THE BIKEWAY

The design for the bikeway will need to be consistent with the *Natural Preservation Route* designation for St. Croix Trail (As defined in Section I) and any other applicable Washington County transportation engineering standards. Under the *Natural Preservation Route* designation, a six foot shoulder is designated where bicycle use is heavy, which is the case here. A four foot wide shoulder is the typical minimum, which is approximately what is provided on the improved northern end of St. Croix Trail between Afton and approximately 50th Street. The cross-section on the next page highlight key aspects of a typical bikeway design.



Even in inclement weather, St. Croix Trail is a popular ride for fitness seeking bicyclists. From downtown Afton south to approximately 50th Street, an urban road section (top photo) provides a narrow but adequate shoulder, which greatly improves the safety of this part of the bikeway route. South of this area, however, the road is narrow with very limited shoulder (bottom photo), which increases the potential for conflict.



Typical bikeway design following Natural Preservation Route designation standards.

OTHER TRAIL ROUTE CONSIDERATIONS

Note that the technical design specifications for shoulder improvements, including their ultimate width, will be subject to transportation engineering standards at the time of any roadway upgrades. These requirements supersede any implied design guidelines represented in this document.

The actual timing of any improvements to shoulders for bikeways or other purposes is also linked to future roadway improvement schedules. For St. Croix Trail, significant improvements are not anticipated until after 2010, at the earliest (and perhaps significantly later).

In spite of the uncertainty of roadway improvement schedules within Washington County, a designated bikeway along St. Croix Trail adds considerable value to the regional trail system in the study area by improving facilities for all user groups and creating a safer environment for road bicyclists to recreate and for drivers to maneuver around them.

As part of the planning process, numerous other trail route options in the city of Afton and Denmark Township were considered and presented to the public in various forums. Although many of these routes offered exceptional scenic and recreational values, they also posed a number of constraints. Most notably of these were private property ownership issues. The following examines a number of routes that were considered at the conceptual level during the public process but have not been integrated as part of the regional trail corridor.

CITY OF AFTON – BETWEEN 45TH AND 50TH STREETS

Early in the public process, making a trail connection between 45th and 50th Streets was considered due to the directness of the route, desirable grades, and the opportunity to integrate the trail into future development planning in this area. However, strong opposition by land owners and lack of support by the City of Afton precluded this from being considered a viable part of the regional trail corridor master plan. The following map illustrates the routing ideas that were initially considered.



As this photo illustrates, the grade along 45th Street from St. Croix Trail is less than 5%, which made it a very appealing route to consider.



Although regional trails are no longer being proposed through the privately owned land in this area, considerable opportunity remains to link local trails with the proposed regional trail as development occurs in the future, at the discretion of the city of Afton. (These opportunities are considered in greater detail in *Section IV – Local Trail Opportunities.*)

Although regional trails are no longer being proposed for most of these routes, considerable opportunity remains to integrate local trails within this area of Denmark Township with the regional system as development occurs in the future, at the discretion of the Township. (These opportunities are considered in greater detail in *Section IV – Local Trail Opportunities*.)

OLD RAIL GRADE ROUTE ALONG ST. CROIX RIVER

Another notable route that was investigated, but is no longer being considered for the regional trail, was to exclusively follow the old rail grade from the city of Afton south all the way to Point Douglas Park. Although some sections of this grade are indeed part of the regional trail master plan, the vast majority of it is not. Whereas the rail grade would make an exceptional trail corridor for its scenic quality and easy grade, private property issues and local opposition to this alignment preclude it from being a viable option at this juncture in time. With over 70 property owners along this stretch of the river, it is simply unrealistic to expect that acquisition of the corridor under a willing seller context is achievable – especially since it would only take a few non-interested parties to forestall building the trail (due to lack of any alternative routes once on the rail grade). This also holds true for River Raod in Afton, where property ownership issues and limited public right-of-way make retrofitting a trail in the area unachievable.



As this photo illustrates, the old rail grade provides a ready-made corridor for a trail. Although it is taken advantage of in some areas, private property issues preclude the use of the old rail bed for the entire trail.

LIMITATIONS OF THE REGIONAL TRAIL MASTER PLAN

In spite of a willing seller land acquisition context, it was clear from public debate that support at the local level for regional trail routes that extensively traversed across private property was limited. Even in the context that actual trail development may be years in the future, it was clear that local property owners and their respective local governments felt that trail planning that extensively involved private property is best dealt with as a local planning issue. Clearly, some of these alignments could have added value to the regional trail experience within the study area.

Nonetheless, the regional trail master plan is successful in achieving the goals set for the project while still accommodating any limitations put on the project at the local level, especially those related to private property. For the most part, the regional trail stays within public rights-of-way or parks. The only exceptions to this are the trail segments from Carpenter Nature Center south to Point Douglas Park following the old rail grade and the *River Loop Branch* just north of St. Croix Bluffs Regional Park – both of which having compelling justifications.

The Carpenter to Point Douglas Park segment is critical to the regional trail for three reasons. First, it is the only way to integrate the Carpenter Nature Center into the regional trail system, which is a major objective of the plan. Second, the route offers exceptional views of the river and the Prescott, Wisconsin area. Third, there are no reasonable alternative routes given that the right-of-way along St. Croix Trail south of 117th Street is reduced from 120' to 60', which is inadequate to accommodate a trail given the ditches and vegetation patterns. Fortunately, this trail segment along the old rail grade involves only a limited number of property owners.

The *River Loop Branch* trail segment also adds considerable value to the regional trail by providing a more direct link between the Quadrant Avenue Branch and St. Croix Bluffs Regional Park. This loop is also very scenic and creates another trail loop for trail users to choose from. As with the other Carpenter-Point Douglas Park segment, this segment also involves only a limited number of property owners.



The limited right-of-way along St. Croix Trail south of 117th Street is too limiting to easily accommodate the trail, which makes the old rail grade the most suitable and desirable location.

INTEGRATING THE REGIONAL TRAIL MASTER PLAN WITH OTHER MASTER PLANS

As previously defined and illustrated on the *Master Plan* map, the regional trail traverses through a number of public and private parks and natural areas. As separate entities, each of these have individual master plans that may need to be amended to accommodate the regional trail.

Even though the trail routes are believed to be thoughtfully located, there are undoubtedly other relative factors associated with these individual parks and natural areas that have not been fully considered. Factors such as intended uses, level of development, and natural resource stewardship strategies will all factor into how the regional trail is integrated into these sites.

Given these circumstances, this master plan provides a degree of flexibility on route location, plan implementation strategies, and timing in order to integrate the regional trail into the individual master plans for Afton State Park, St. Croix Regional Park, and Carpenter Nature Center. To add context to this, the following provides an overview of the most critical factors associated with each of these entities.

AFTON STATE PARK

As previously defined, there are a number of options for routing the regional trail through the state park, each having various advantages and limitations. For the reasons cited, the optimal route is the most desirable and the recommended starting point for determining the best alignment for the regional trail. In the context of the park master planning process, the most important factors associated with selecting a trail route include:

- Managing trail grades to as close to 5% or less to the degree possible
- Selecting a scenic route that offers high recreational value and links to other park features
- Minimizing ecological impacts and providing adequate buffering between the trail and sensitive ecological systems, such as Trout Brook

ST. CROIX BLUFFS REGIONAL PARK

The proposed regional trail alignment is consistent with the approved master plan for this park (2002). Any changes to that plan that may occur in the future should be subsequently reflected in this master plan.

CARPENTER NATURE CENTER

The context for integrating the regional trail into the Nature Center's master plan is similar to Afton State Park, albeit in a private setting. The most important factors associated with selecting a route for the trail include:

- Managing trail grades to as close to 5% or less to the degree possible
- Selecting a scenic route that offers high recreational value
- Minimizing ecological impacts and providing adequate buffering between the trail and sensitive ecological systems

A significant issue that will require a formal agreement between Washington County and Carpenter Nature Center is the need to ensure public access to the trail. The agreement will have to follow standard County protocol and cover items such as fiscal responsibilities for developing and maintaining the trail, liability issues, and stated rights of public access.

The remainder of this section provides a more detailed overview of the various trail routes defined under the master plan. The primary objective is to define important factors that influenced route selection, as well as highlighting issues that were brought up during the public process that may affect the ultimate development of each trail segment. Note that the detailed maps correlate to the numbers shown on the overall *Master Plan* map.



Some of the existing trails within Afton State Park are well suited to be part of the regional trail, albeit would have to be widened from 8' to 10' to meet typical standards.

REGIONAL TRAIL MASTER PLAN: DETAIL OVERVIEW

TRAIL SEGMENT DETAIL MAP #1

SEGMENT DESCRIPTION / OVERALL CHARACTER

This trail segment connects to the existing regional trail coming into Afton from the north and currently ending at a small local park. From this point, the proposed trail heads south along the east side of the main street in downtown Afton and continues along St. Croix Trail on up the "coulee." Throughout the downtown section, the trail would be located directly adjacent to the curb line to maximize separation between adjacent residential homes and the trail. Once heading south up the coulee, the trail remains on the east side within a few feet of the existing curb to minimize grading and disruption to natural vegetation. If considered appropriate by the city of Afton, the small park (see map) could be used as a trailhead and provide 6 to 10 parking spaces while still leaving space for trailhead amenities such as picnic tables and an information kiosk.

DEVELOPMENT ISSUES AND CONSTRAINTS

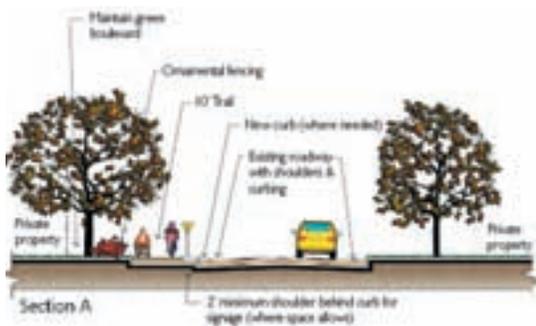
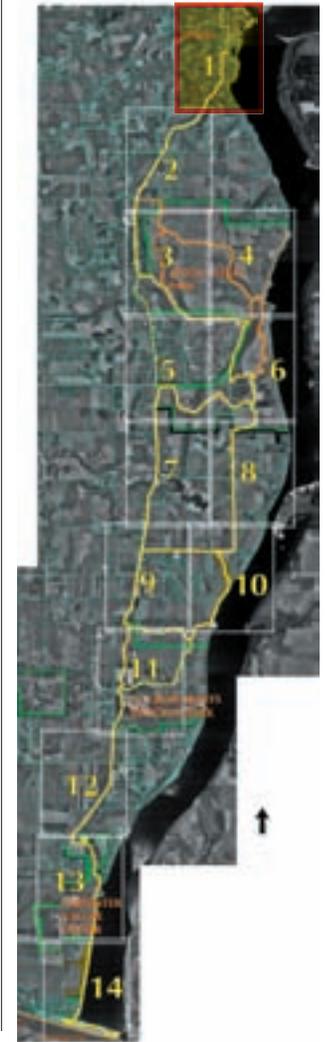
The primary development constraint through this section is the limited right-of-way in the downtown section which requires the trail to be located adjacent to the curb line with a very limited boulevard. Heading up the coulee, the trail crosses one private drive that comes in at a steep angle. This will require detail design attention to ensure that it is safe for trail users and the property owner. Otherwise, there are no major physical impediments to constructing the trail along this stretch with the exception of several ditches or drainageways that will have to be crossed either through filling or bridging. The grades associated with the downtown section are less than 3% and pose no limitations. Once heading up the coulee, the grades average 4% to 5%, with one section at 7.5% to 8.0%. Although this latter segment is steeper than desirable for long stretches, there are no other acceptable options to consider given that following River Road South was found to be unacceptable (e.g., eliminated due to right-of-way and encroachment issues.)

RIGHT-OF-WAY AND PRIVATE PROPERTY ENCREACHMENT FACTORS

The primary encroachment issue for this segment is in the downtown area where space is limited between the trail and several homes. The primary concern of residents is maintaining as much of a separation as possible and, where feasible, a vegetative buffer in front of their homes. Providing an ornamental-type fence adjacent to the trail should also be considered in select locations to increase the sense of separation between homes and the trail. Given these factors, residents should have the opportunity to participate in the detail design phase to ensure their individual concerns are understood and reasonably addressed.

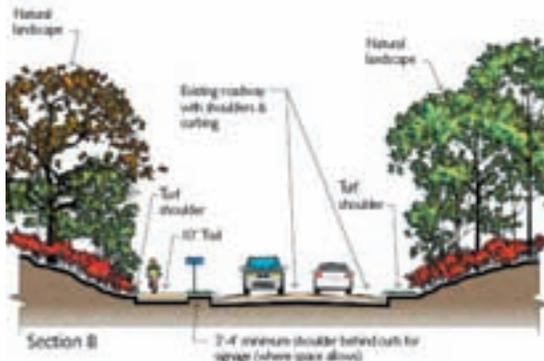
ALTERNATIVE TRAIL ALIGNMENTS THIS TRAIL SEGMENT

There are no alternative trail alignments being proposed for this segment.



This cross-section and photo illustrate the conditions along the main street in downtown Afton. By placing the trail directly behind the curb line with only a 2'-0" shoulder (for signs), the separation between the trail and residential homes can be maximized. In select locations, an ornamental fence is also proposed to create a greater sense of separation between the trail and homes.

A TRAIL CROSS-SECTION IN DOWNTOWN AFTON (viewed looking south)



This cross-section and photo illustrate the conditions common through the early part of St. Croix Trail as it heads south up the coulee between downtown Afton and 45th Street. The trail would be placed on the east (left) side of the road. It would also be located fairly close to the curb line to minimize grading and encroachment into the natural vegetation.

B TRAIL CROSS-SECTION OF COULEE - ST. CROIX TRAIL (viewed looking south)



1
The photo (looking west) shows the small local park that could serve as a trailhead with 6 to 10 parking spaces, picnic tables, and an information kiosk.



4
The two photos above (looking south) illustrate the variable conditions along mainstreet in downtown Afton. Throughout this section, the trail would be located close to the curb line on the east (left) side of the road.



TRAIL SEGMENT DETAIL MAP #2

SEGMENT DESCRIPTION / OVERALL CHARACTER

Continuing south up the coulee, the trail would remain on the east side of St. Croix Trail within a few feet of the existing curb to minimize grading and disruption to natural vegetation. This continues until south of 45th Street, where the curb ends and a rural road section takes over. Heading south from here, the trail would be separated from the road to the degree possible while staying within the right-of-way and minimizing impacts to existing natural vegetation.

DEVELOPMENT ISSUES AND CONSTRAINTS

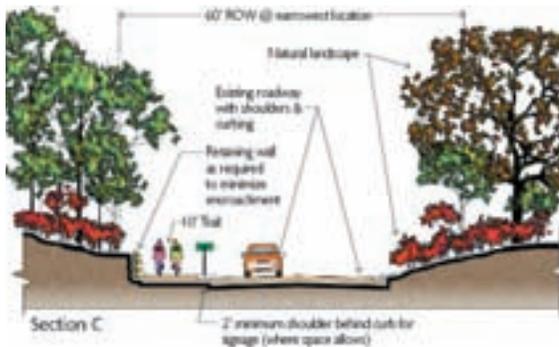
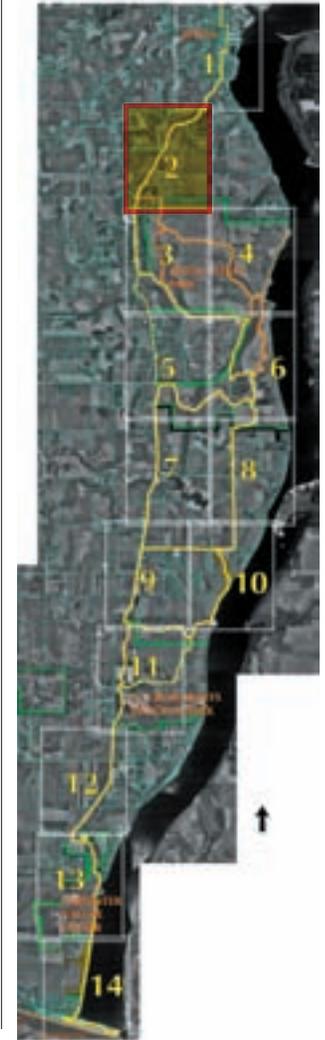
Up to the point where the rural section starts, the development of the trail will be consistent with the previous segment. Working within the existing right-of-way offers certain limitations to trail location, but none of which will preclude its construction. The grades along this segment generally average less than 5%, with the exception of the 6.2% grade coming up the coulee north of 45th Street.

RIGHT-OF-WAY AND PRIVATE PROPERTY ENCROACHMENT FACTORS

The primary encroachment issue for this segment is the section where the right-of-way narrows down to as little as 60' for a short distance. In this area, lacking the acquisition of additional easement width as part of a future road upgrade, the trail would be located directly behind the curb line (as shown in the section below). To avoid encroachment into private property, a small retaining wall may also be needed for certain stretches of this section of trail. Otherwise, the right-of-way should be adequate for construction of the trail. For continuity, residents directly impacted by the trail through this narrow section should have the opportunity to participate in the detail design phase to ensure their individual concerns are understood and reasonably addressed.

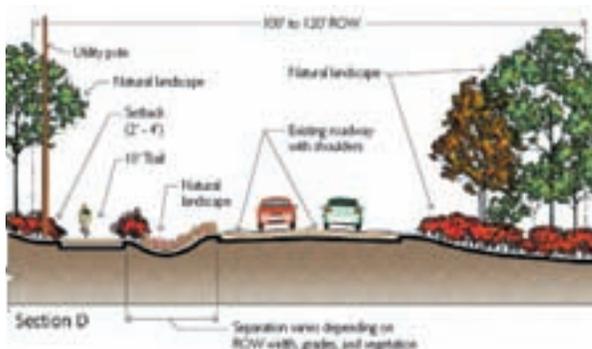
ALTERNATIVE TRAIL ALIGNMENTS THIS TRAIL SEGMENT

As shown on the map, an alternate trail route following 50th Street is included in the master plan to give Afton State Park as much flexibility as possible in determining the best trail route through the park (as part of a separate and future planning process). The advantage of this option is that it gets trail users into the park sooner than the route following St. Croix Trail to the south. The significant disadvantages are the limited right-of-way and the steep grades on 50th Street South, which exceed 10% at points. For these reasons, this route is considered an alternate and is best considered only if the route following St. Croix Trail and Trout Brook is not a workable option after further consideration by Afton State Park. Note also that other routes between 45th and 50th were considered but ultimately not included for a variety of reasons. (See Section V – Local Trail System Opportunities for additional information on this last issue.)



This cross-section and photo illustrate a narrow section of St. Croix Trail just prior to the urban road section ending. Due to the limited right-of-way, the trail will be located close to the curb line and, in select locations, a retaining wall may be necessary to limit encroachment into private property and stay within the right-of-way.

C TRAIL CROSS-SECTION AT NARROW SECTION ALONG ST. CROIX TRAIL (viewed looking south)



This cross-section and photo illustrate a rural road section where the right-of-way is back to 100' or more. In areas such as this, the trail will be set back from the road edge as much as possible. The exact location of the trail will depend on right-of-way width, grades, and extent of existing natural vegetation. The objective is to retain the character of St. Croix Trail consistent with its Natural Preservation Route designation.

D TRAIL CROSS-SECTION ALONG ST. CROIX TRAIL (viewed looking south)

TRAIL SEGMENT DETAIL MAP #3

SEGMENT DESCRIPTION / OVERALL CHARACTER

Heading south, the optimal trail route continues along the east side of St. Croix Trail. The trail remains separated from the road while still staying within the right-of-way and minimizing impacts to existing natural vegetation. At Trout Brook, the trail enters Afton State Park and heads east along the brook. In order to avoid steeper grades within the park, the route continues along Trout Brook and enters the very north side of Afton Alps ski hill (private) at the base of the slope adjacent to the brook. Since this is private property, gaining an easement will be necessary. Under a willing seller context, this poses some inherent uncertainty as to its feasibility. Therefore, even though this is the preferred route, a number of alternatives have been provided, as described below.

DEVELOPMENT ISSUES AND CONSTRAINTS

The main development constraint for the optimal trail route is making the grade transition from the road right-of-way to the alignment along Trout Brook. This involves dealing with a significant ditch on the east side of the road, which poses some grade and grading constraints that may require a combination of bridging and retaining walls. Otherwise, the only other major trail development issue is providing an adequate ecological buffer along Trout Brook. Working within the existing right-of-way along St. Croix Trail again offers certain limitations to trail location, but none of which preclude the trail's construction. The grades along this segment generally average less than 5%, with the exception of the 6.5% grade coming down the hill toward Trout Brook.

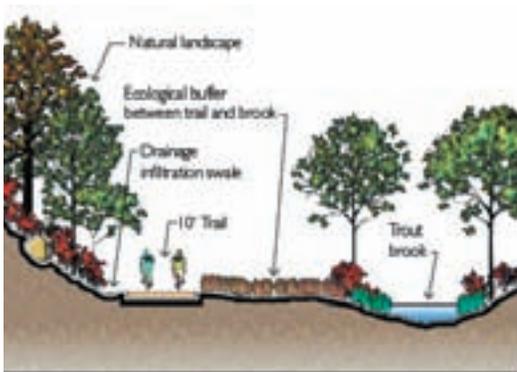
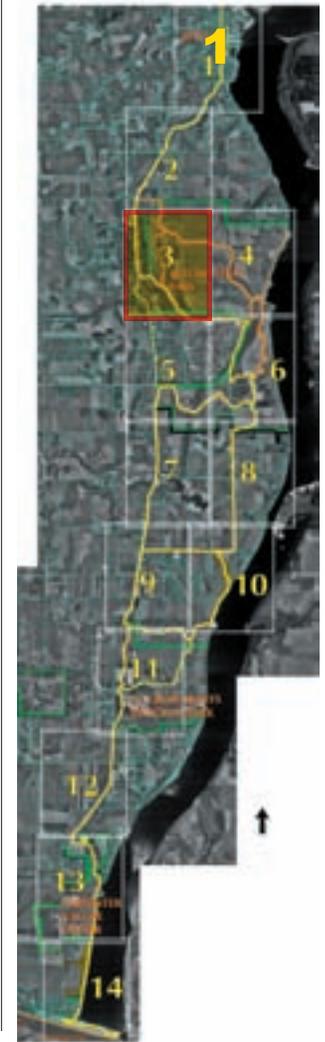
RIGHT-OF-WAY AND PRIVATE PROPERTY ENCROACHMENT FACTORS

In addition to the Afton Alps situation, the primary encroachment issue for this segment is making sure that driveway crossings are safe for both trail users and residents. Otherwise, the right-of-way should be adequate for construction of the trail. For continuity, residents directly impacted by the trail through this section should have the opportunity to participate in the detail design phase to ensure their individual concerns are reasonably addressed.

ALTERNATIVE TRAIL ALIGNMENTS THIS TRAIL SEGMENT

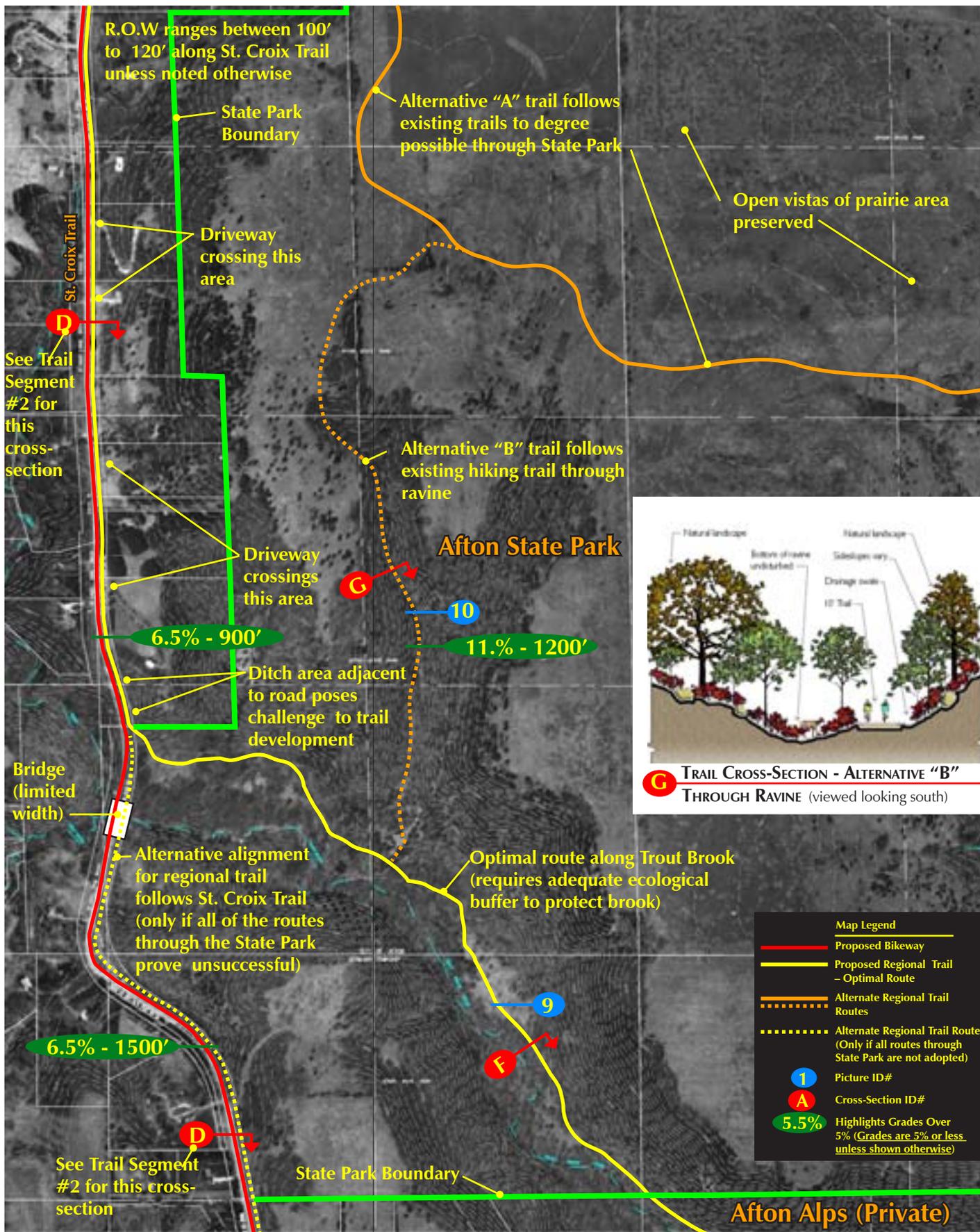
As shown on the map, a couple of alternate trail routes through Afton State park are included in the master plan. This was done to give park planners as much flexibility as possible in determining the best trail route through the park as part of a separate and future planning process. Alternatives are also necessary due to the uncertainty of being able to secure an easement from Afton Alps along Trout Brook. Although these alternative routes are very appealing, they are more limiting due to several sections of steeper grades than would be the case following the optimal route, as shown on the map.

Note also that if none of the trail routes through Afton State Park prove successful, an alternative included in the plan is to continue the trail along St. Croix Trail as shown on the map. Although this is a workable route, it is not as scenic or appealing as the routes through the park, especially the optimal trail route.



This cross-section and photo illustrate the character of the trail as it follows Trout Brook. Importantly, the trail would have to be appropriately located to ensure an adequate ecological buffer along the brook. Since space is limited, this will require the involvement of a trained ecologist during development to address detail ecological concerns.

G TRAIL CROSS-SECTION OF COULEE - ST. CROIX TRAIL (viewed looking east)



TRAIL SEGMENT DETAIL MAP #4

SEGMENT DESCRIPTION / OVERALL CHARACTER

This segment of the master plan focuses on alternative routes within Afton State Park, as considered below.

RIGHT-OF-WAY AND PRIVATE PROPERTY ENCROACHMENT FACTORS

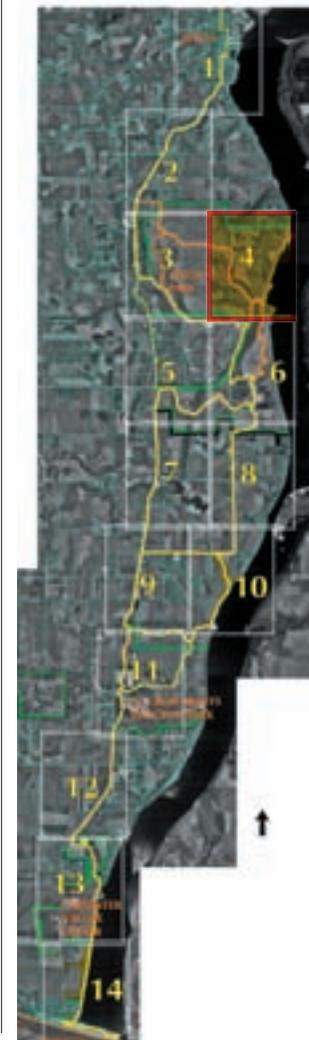
Although not directly a regional trail master plan related issue, much discussion during the public process focused on the use of River Road South in Afton as a trail route into Afton State Park. There was very strong public consensus against this for a variety of reasons as previously considered in this document. Given this, it is recommended that Afton State Park consider ways in which unauthorized access coming into the park along the old rail grade through private property can be more formally blocked off. Other than this issue, there are no other private property encroachment issues associated with the trail segments shown on this map.

ALTERNATIVE TRAIL ALIGNMENTS THIS TRAIL SEGMENT

As shown on the map, the alternative "A" trail route traverses through the state park following existing natural surfaced trail corridors. Notably, there is a significant 7% to 9% grade along one section of this route, which is the main reason it is defined as an alternate rather than the optimal route through the park.

Part of alternate "C" trail route is also shown on the map. This simply provides an alternate to parts of the optimal route that traverses through the state park and Afton Alps property. (Refer to the overall map and Trail Segment Map 6 for additional information on this connection.)

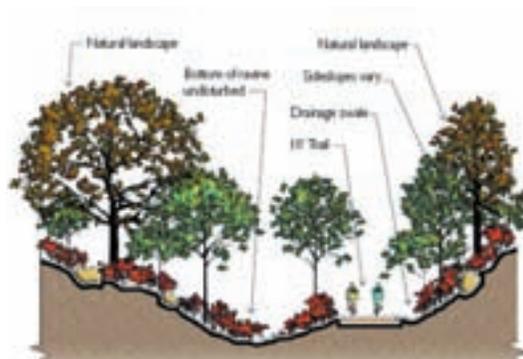
A spur trail to an overlook is also shown on the map. This is recommended to exhibit the appealing views of the river while trail users are within the park. (This is not part of the regional trail master plan. It would be considered as part of future state park master planning.)



12 This photo (looking east from the trail) highlights an existing picnic area on the banks of the St. Croix River. This is just one of the many recreational opportunities in Afton State Park.



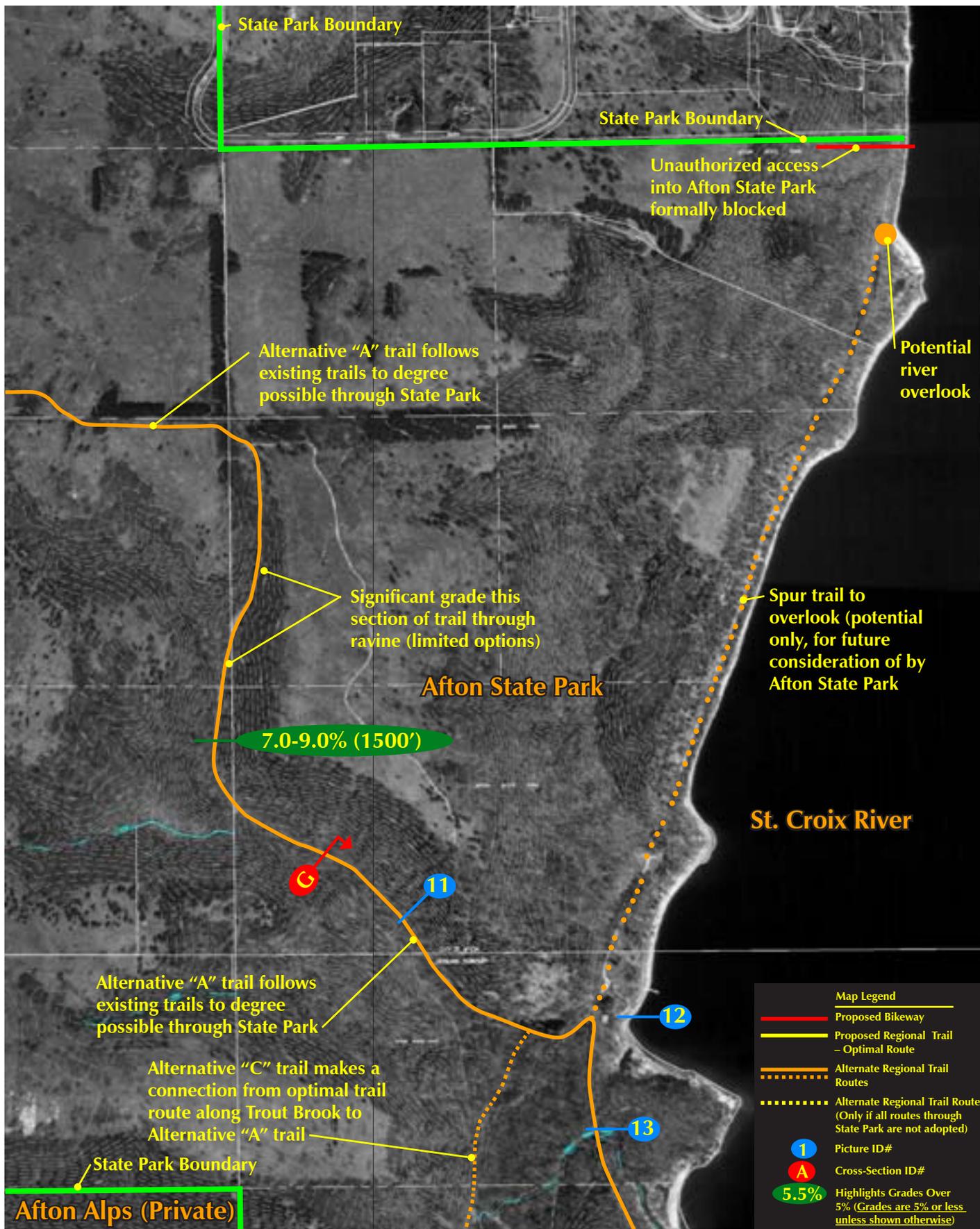
13 This photo (looking south) illustrates an existing bridge over Trout Brook within Afton State Park. If alternate "A" was the selected route through the park, this trail would become asphalt.



11

This cross-section and photo illustrate the general character of the trail through the ravine area following alternate "A" route. It is a very visually appealing route, although the 7% to 9% grade makes it more challenging than the optimal route.

G TRAIL CROSS-SECTION IN RAVINE AREA OF AFTON STATE PARK (viewed looking southeast)



TRAIL SEGMENT DETAIL MAP #5

SEGMENT DESCRIPTION / OVERALL CHARACTER

This map illustrates several segments of the optimal trail route. Along Trout Brook, the trail continues along the very north side of Afton Alps ski hill (private) at the base of the slope adjacent to the stream. Again, since this is private property, gaining an easement will be necessary. Under a willing seller context, this poses some inherent uncertainty as to its feasibility. Therefore, even though this is the preferred route, a number of alternatives have been provided. The map also illustrates part of the St. Croix Trail branch of the optimal trail route, which essentially follows the existing paved trail alignment adjacent to the park entrance drive. From Afton State Park, this branch of the trail once again follows St. Croix Trail in a southerly direction.

DEVELOPMENT ISSUES AND CONSTRAINTS

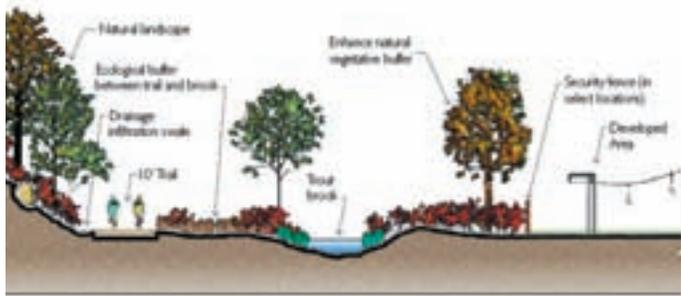
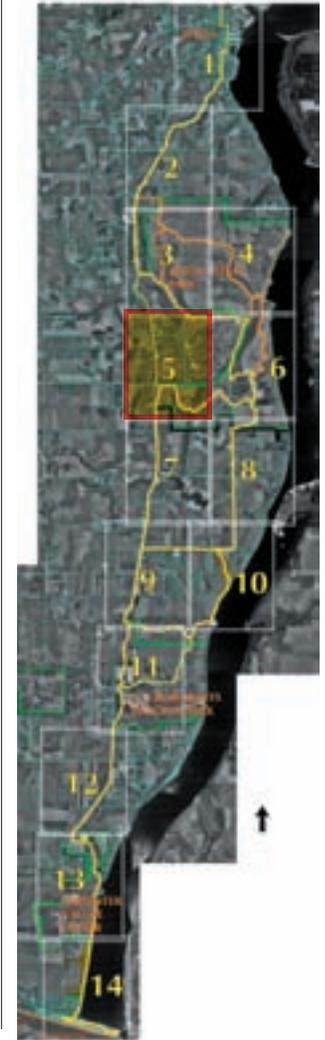
Providing an adequate ecological buffer along Trout Brook remains a development issue. Working within the existing right-of-way along St. Croix Trail again offers certain limitations to trail location, but none of which preclude the trail's construction. The existing grades of the paved trail within Afton State Park are steeper than typically desired, which is part of the rationale for having the two branches to the regional trail. (The Quadrant Avenue branch has trail grades of 5% or less.)

RIGHT-OF-WAY AND PRIVATE PROPERTY ENCROACHMENT FACTORS

The major encroachment issue for this segment relates to the Afton Alps situation, as previously defined. Otherwise, the right-of-way along St. Croix Trail should be adequate for construction of the trail. As with other segments, making sure that driveway crossings are safe for both trail users and residents is an important design factor. For continuity, residents directly impacted by the trail through this section should have the opportunity to participate in the detail design phase to ensure their individual concerns are reasonably addressed.

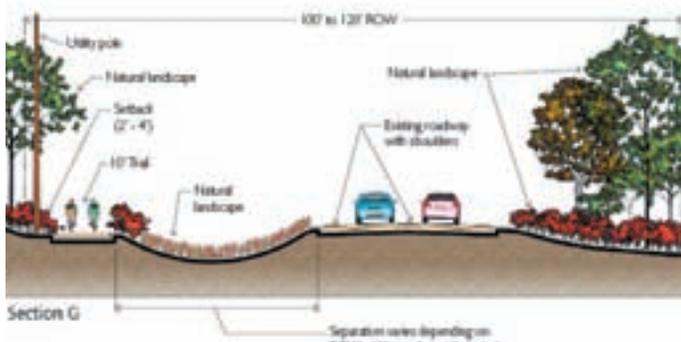
ALTERNATIVE TRAIL ALIGNMENTS THIS TRAIL SEGMENT

The regional trail master plan includes an alternate alignment following St. Croix Trail between Trout Brook and 70th Street South should no routes through the park prove workable (within the context of Afton State park master plan or being acceptable to the owners of Afton Alps). Although this is the least interesting and desirable alignment of those identified (and also poses some grade challenges), it is included in the master plan to underscore the importance of maintaining trail continuity from the city of Afton down to Point Douglas Park.



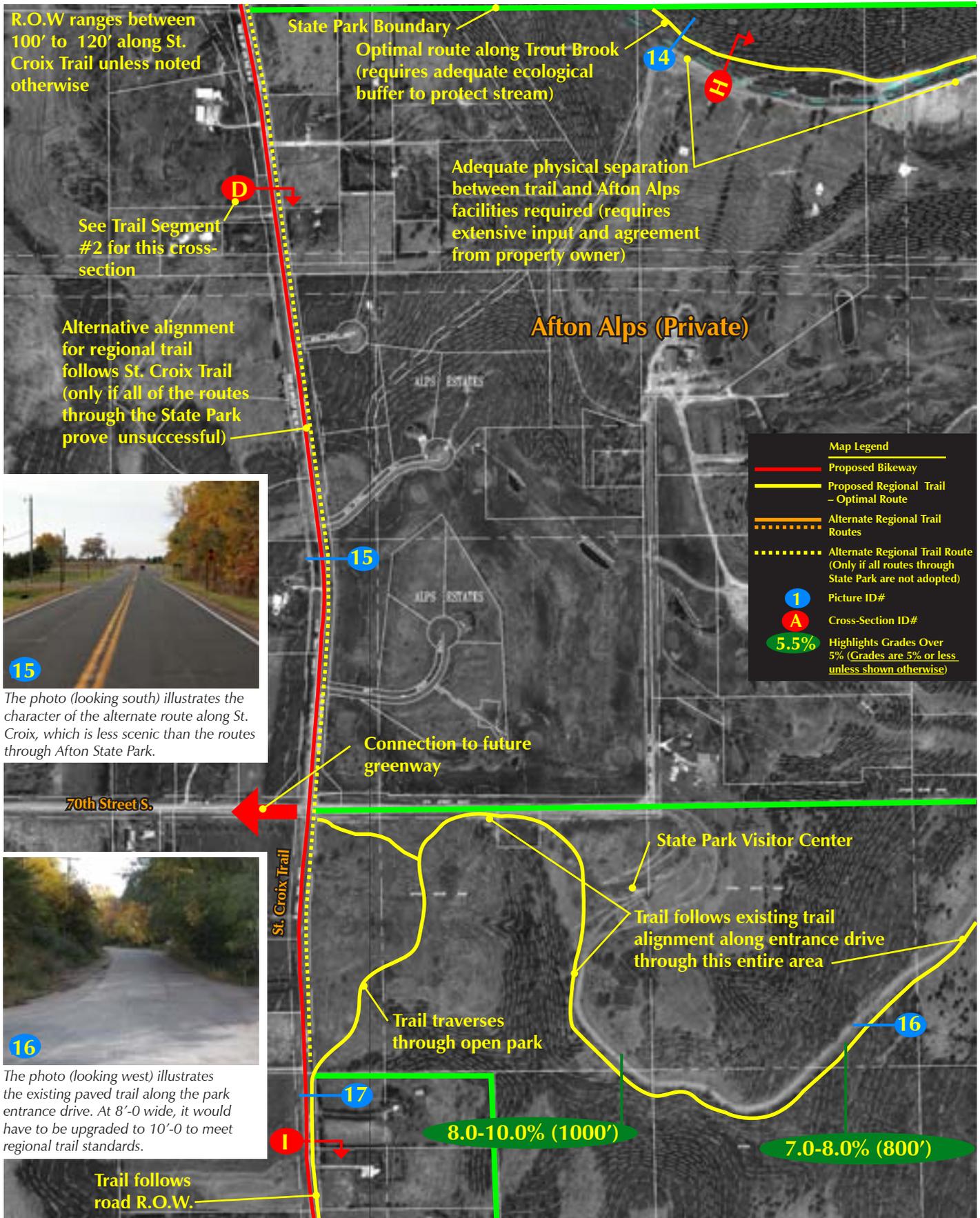
This cross-section illustrates the character of the trail as it follows Trout Brook through the Afton Alps area. As illustrated, providing some type of physical separation between the trail and the ski facility will likely be needed. In some areas, the brook itself might be sufficient. In others, vegetation and a fence might also be needed, although the fence is the least aesthetically desirable approach.

H TRAIL CROSS-SECTION OF TRAIL FOLLOWING TROUT BROOK (viewed looking south)



This cross-section and photo illustrate a rural road section where the right-of-way is 100' or more. In areas such as this, the trail will be set back from the road edge as much as possible. The exact location of the trail will depend the extent of existing natural vegetation and location of driveways that need to be crossed. The objective is to retain the character of the St. Croix Trail consistent with its Natural Preservation Route designation.

I TRAIL CROSS-SECTION ALONG ST. CROIX TRAIL (viewed looking south)



TRAIL SEGMENT DETAIL MAP #6

SEGMENT DESCRIPTION / OVERALL CHARACTER

The optimal route continues along Trout Brook until as it reenters the state park. After crossing the brook, the trail heads south along the property line following an existing hiking and horseback trail until it ultimately crosses the entrance drive and reconnects with the existing paved park trail. The advantage that this route has over alternate route "A" is more modest grades. Otherwise, either route provides a pleasant trail experience.

Once the trail reconnects with the existing paved trail, it continues south and then west following the park drive. As shown on the map, the trail branches off in two directions, one toward the Quadrant Avenue branch and the other to the St. Croix Trail branch. Together, these two branches ultimately form a loop. Of the two, the Quadrant Branch has the more modest grades, with the majority of it 5% or less.

DEVELOPMENT ISSUES AND CONSTRAINTS

Maintaining an adequate ecological buffer along Trout Brook remains a development issue. The grades associated with the existing park trail as it follows the park entrance drive are steeper than desired, but there is no practical way around this except to follow the Quadrant Avenue branch of the trail.

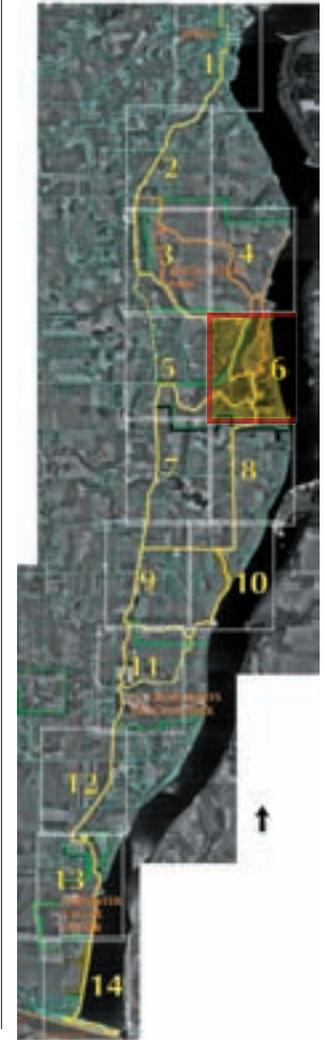
At 8'-0", the width of the existing paved trail is below the regional standard of 10'-0". Upgrading to this standard could either occur when the rest of the trail is implemented, or when the existing trail wears out and needs to be replaced, whichever occurs first.

RIGHT-OF-WAY AND PRIVATE PROPERTY ENCROACHMENT FACTORS

Other than those previously defined for the segment that relates to the Afton Alps situation, there are no encroachment or rights-of-way issues for this segment of trail.

ALTERNATIVE TRAIL ALIGNMENTS THIS TRAIL SEGMENT

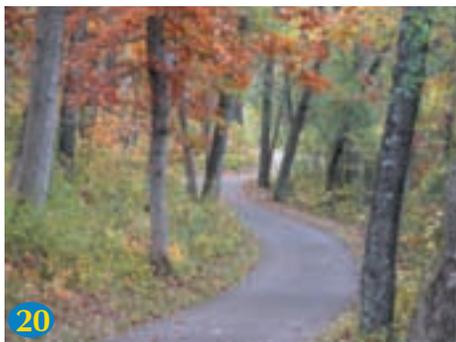
The existing paved trail defined as alternate "A" on the map is the only alternate for this segment of trail. The only limitation with this route is the steeper grade along one key section. Otherwise, it is a pleasant trail. If desired by state park planners, development of alternate "C" would create an internal loop that allows trail users to self-select a route based on abilities and scenic values.



This photo (looking south) illustrates the character of the trail corridor following the optimal trail route.



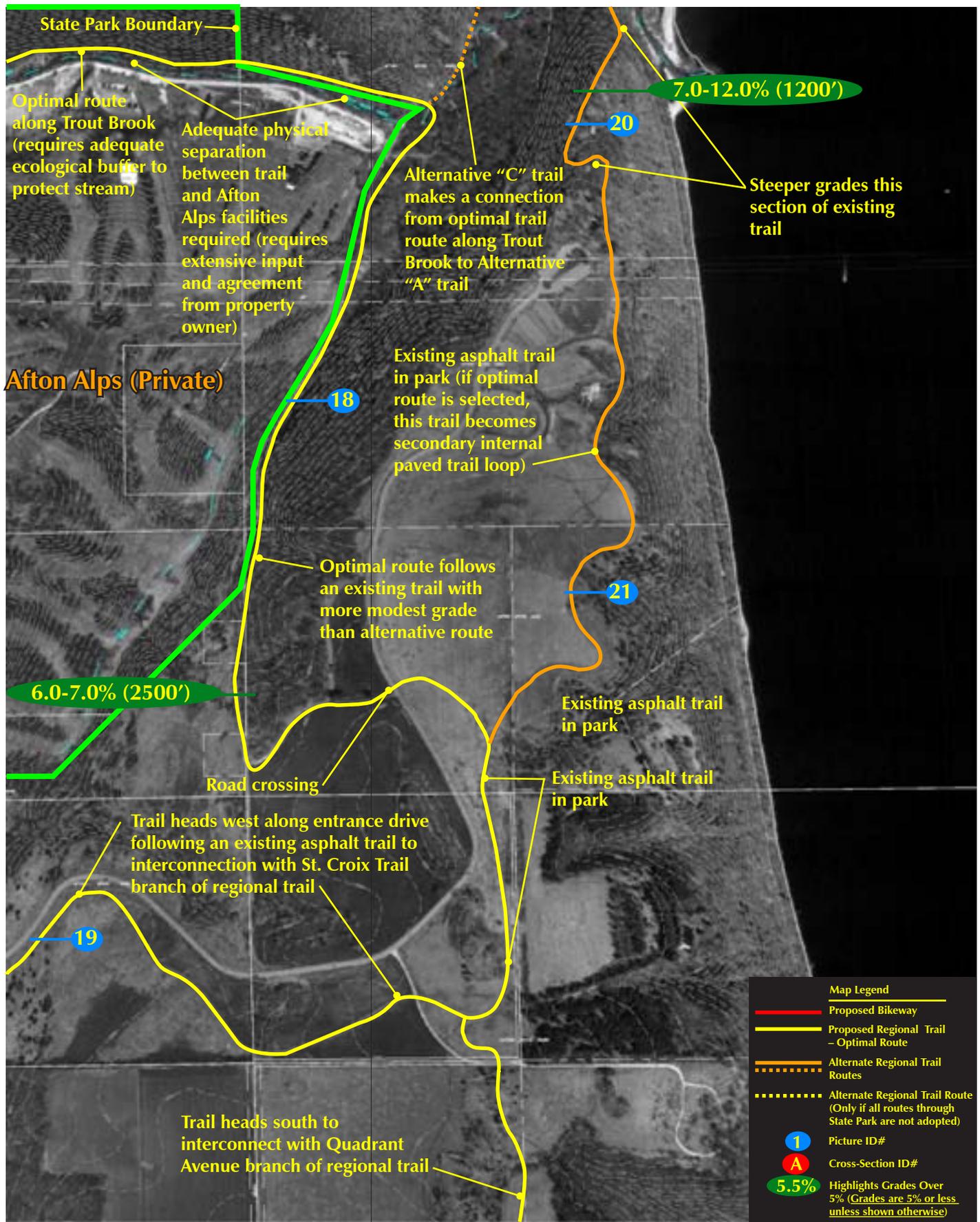
This photo (looking south) illustrates the character of the existing paved trail corridor following the park entrance drive. Note the significant grade as the trail and drive head west toward the visitor center.



This photo (looking south), illustrates the existing paved trail under alternate "A", which is pleasant but steeper than the optimal route. Nonetheless, it will still appeal to many trail users.



This photo (looking south) illustrates another section of the existing paved trail. This too provides a very appealing scenic setting.



TRAIL SEGMENT DETAIL MAP #7

SEGMENT DESCRIPTION / OVERALL CHARACTER

The St. Croix Trail branch of the regional trail continues south within the existing right-of-way for this entire segment. Although some of the grades in this section are more challenging, it is a very pleasant part of the trail, as the aerial photo suggests.

DEVELOPMENT ISSUES AND CONSTRAINTS

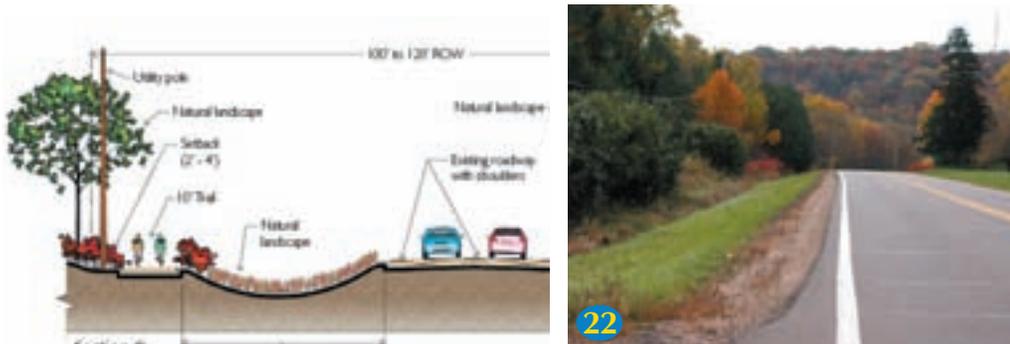
Although the right-of-way is ample in width throughout this section, preserving as much of the natural vegetation as possible will require flexibility in locating the trail within the right-of-way, as the two cross-sections below suggest. This is especially the case where the right-of-way is limited to 66'-0" for a stretch of the road. Otherwise, the grades along one section range from 7% to 9%, which is steeper than the desired 5% (but also inherent with this alignment).

RIGHT-OF-WAY AND PRIVATE PROPERTY ENCROACHMENT FACTORS

As with other segments, making sure that driveway crossings are safe for both trail users and residents is an important design factor. For continuity, residents directly impacted by the trail through this section should have the opportunity to participate in the detail design phase to ensure their individual concerns are reasonably addressed.

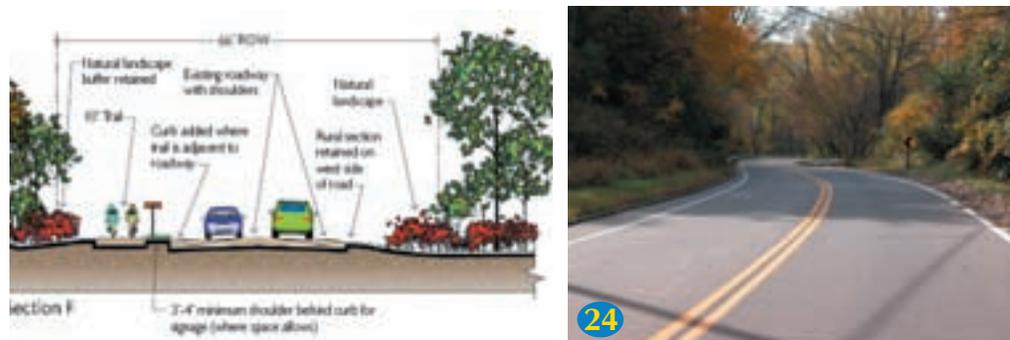
ALTERNATIVE TRAIL ALIGNMENTS THIS TRAIL SEGMENT

There are no alternative trail alignments being proposed for this segment.



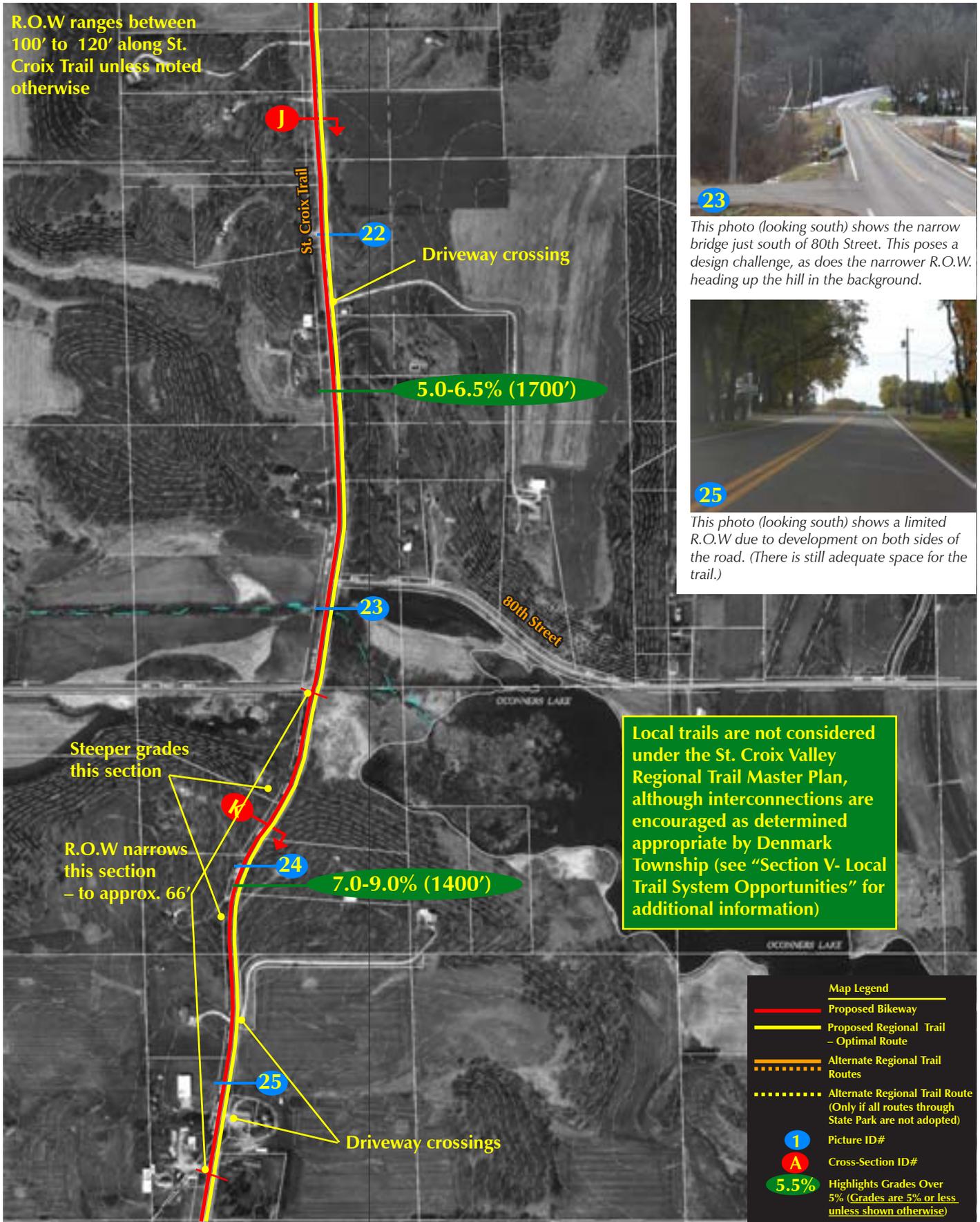
This cross-section and photo illustrate a rural road section where the right-of-way is 100' or more. As with other similar areas, the trail will be set back from the road edge as much as possible. The exact location of the trail will depend the extent of existing natural vegetation, ditch grades, and location of driveways that need to be crossed.

J TRAIL CROSS-SECTION ALONG ST. CROIX TRAIL WHERE THE RIGHT-OF-WAY IS WIDEST (viewed looking south)



This cross-section and photo illustrate the condition encountered where the right-of-way narrows to 66'-0". If it stays this width, a curb and minimum shoulder may be needed to accommodate the trail within the right-of-way.

K TRAIL CROSS-SECTION ALONG ST. CROIX TRAIL WHERE THE RIGHT-OF-WAY IS NARROWEST (viewed looking south)



TRAIL SEGMENT DETAIL MAP #8

SEGMENT DESCRIPTION / OVERALL CHARACTER

The Quadrant Avenue branch of the regional trail begins on the south side of Afton State Park and heads south along Quadrant Avenue until 87th Street. Currently, the trail is shown on the west side of the road based on the current level of development, in which it crosses fewer driveways and encroaches less on the homes that are now present. At 66'-0", the right-of-way is narrow but adequate, as the cross-section illustrates. Relative to the St. Croix Trail branch, the views and character of the trail are more wide open, yet pleasant and complementary. The major advantage of this route is that the grades are generally 5% or less, making it accessible for most trail users.

DEVELOPMENT ISSUES AND CONSTRAINTS

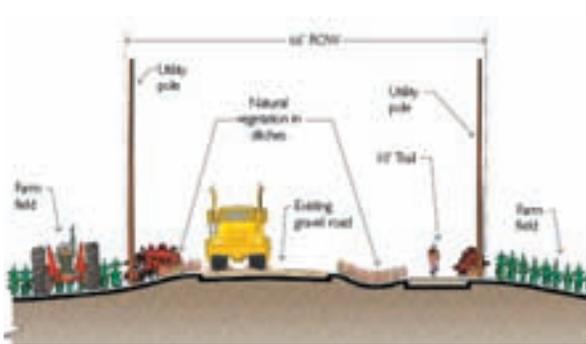
The major issue that is best resolved at the point of implementation is which side of the road the trail should be located on. At that time, the level of development and location of any new roads and driveways, along with other factors, will be better understood. Overall, there is no distinct advantage to the trail being on one side or the other, except perhaps at the intersection of 87th Street. If the trail was on the east side of Quadrant, the crossing of 87th Street would involve less traffic since most of it would head north on Quadrant from 87th Street, thus not affecting trail users as they cross 87th.

RIGHT-OF-WAY AND PRIVATE PROPERTY ENCROACHMENT FACTORS

As with other segments, making sure that driveway crossings are safe for both trail users and residents is an important design factor. For continuity, residents directly impacted by the trail through this section should have the opportunity to participate in the detail design phase to ensure their individual concerns are reasonably addressed. This is especially the case here, where the location of the trail remains uncertain.

ALTERNATIVE TRAIL ALIGNMENTS THIS TRAIL SEGMENT

There are no alternative trail alignments being proposed for this segment.

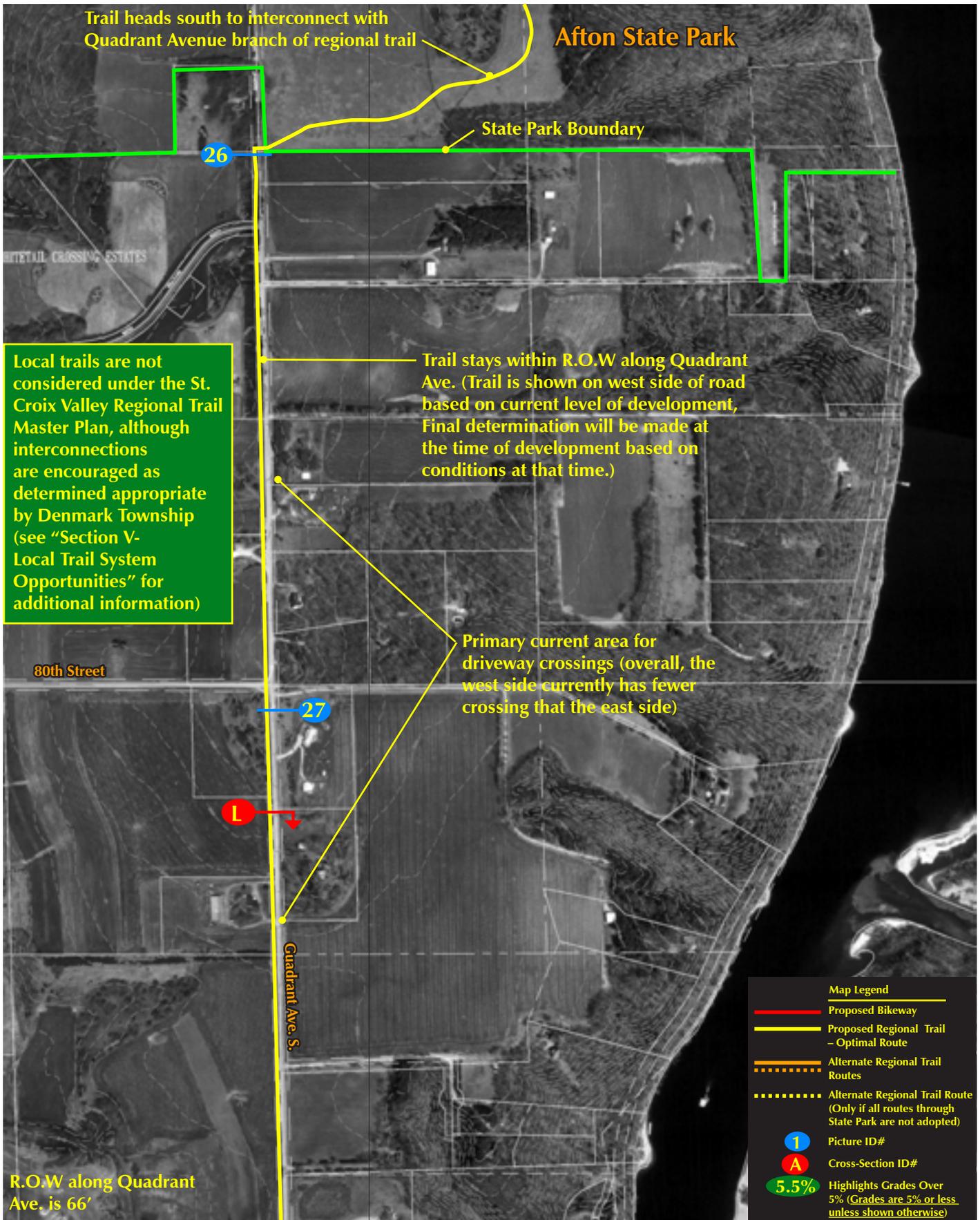


This cross-section and photo illustrate the general character of the Quadrant Avenue branch of the regional trail. The photo is taken from the high point of the road, looking south.

L TRAIL CROSS-SECTION ALONG QUADRANT AVENUE SOUTH (viewed looking south)



These photos (looking south, in panoramic) illustrate the general location where the trail leaves the state park. To the west (right) of the road are a couple of private properties, which may affect the trail crossing location if the trail was located on the west side.



TRAIL SEGMENT DETAIL MAP #9

SEGMENT DESCRIPTION / OVERALL CHARACTER

The St. Croix Trail branch of the regional trail continues south within the existing right-of-way for this entire segment. The 87th Street cross trail that links the Quadrant Avenue and St. Croix Trail branches together and runs east-west on the south side of the road within the existing right-of-way. Grades are not an issue with either of these trail segments. On the southern end of the St. Croix Trail segment the trail enters St. Croix Bluffs Regional Park and connects with the park's internal trail system.

DEVELOPMENT ISSUES AND CONSTRAINTS

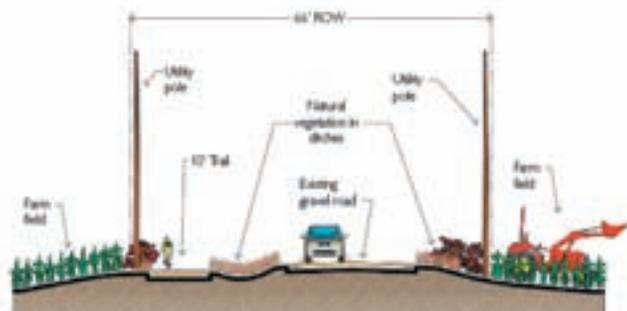
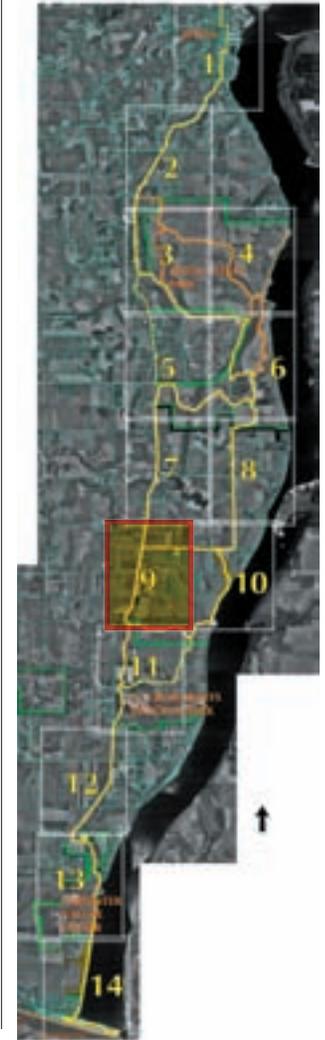
On St. Croix Trail, there is ample right of way width throughout this section. However, in a number of areas there is considerable elevation change between the edge of the road and the bottom of the ditch, which will pose some constraints on the final location and grading-in of the trail. On 87th Street, the same condition is found, albeit to a lesser extent. Otherwise, the grades along both of these trail segments are generally 5% or less.

RIGHT-OF-WAY AND PRIVATE PROPERTY ENCROACHMENT FACTORS

As with other segments, making sure that driveway crossings are safe for both trail users and residents is an important design factor. For continuity, residents directly impacted by the trail through this section should have the opportunity to participate in the detail design phase to ensure their individual concerns are reasonably addressed.

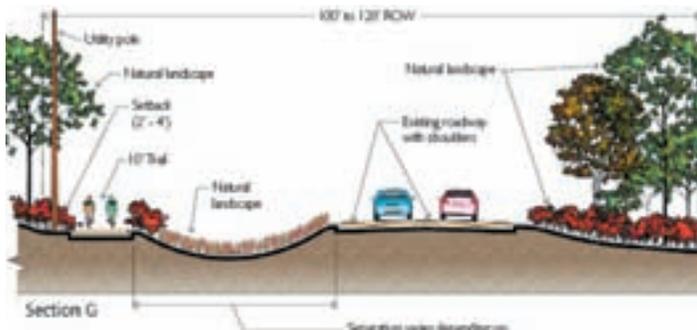
ALTERNATIVE TRAIL ALIGNMENTS THIS TRAIL SEGMENT

There are no alternative trail alignments being proposed for this segment.



This cross-section illustrates the general character of trail within the 66'-0 right-of-way. Although certain sections of this corridor will pose some grade change issues in the ditches, none are expected to be insurmountable.

M TRAIL CROSS-SECTION ALONG 87TH STREET SOUTH
(viewed looking south)



This cross-section and photo illustrate the general character of the St. Croix Trail through this segment. Note the depth of the ditch area adjacent to the road, which will present some limitations on the final location for the trail.

N TRAIL CROSS-SECTION ALONG ST. CROIX TRAIL
(viewed looking south)

R.O.W ranges between 100' to 120' along St. Croix Trail unless noted otherwise

Interconnecting trail between St. Croix Trail and Quadrant Ave. trail branches (trail stays within R.O.W along 87th Street on the south side of road)

66' R.O.W along 87th Street

87th Street

28

Driveway crossings

Local trails are not considered under the St. Croix Valley Regional Trail Master Plan, although interconnections are encouraged as determined appropriate by Denmark Township (see "Section V-Local Trail System Opportunities" for additional information)

N

M

Driveway crossings

Trail enters regional park

Existing Regional Park Boundary

Proposed Regional Park Boundary

Map Legend

- Proposed Bikeway
- Proposed Regional Trail - Optimal Route
- Alternate Regional Trail Routes
- ⋯ Alternate Regional Trail Route (Only if all routes through State Park are not adopted)
- 1 Picture ID#
- A Cross-Section ID#
- 5.5% Highlights Grades Over 5% (Grades are 5% or less unless shown otherwise)

TRAIL SEGMENT DETAIL MAP #10

SEGMENT DESCRIPTION / OVERALL CHARACTER

The 87th Street trail that links the Quadrant Avenue and St. Croix Trail branches together and runs east-west on the south side of the road within the existing right-of-way. Grades again are not an issue with either this or the Quadrant Avenue trail segment. The River Loops branch of the regional trail is also illustrated on the map. This connection between 87th Street and St. Croix Bluffs Regional Park follows a ravine down to the old rail bed along the river, which then connects to a proposed beach area. This is a very scenic area and although the grades are in the 6% to 9% range, the trail is not as steep as many others.

DEVELOPMENT ISSUES AND CONSTRAINTS

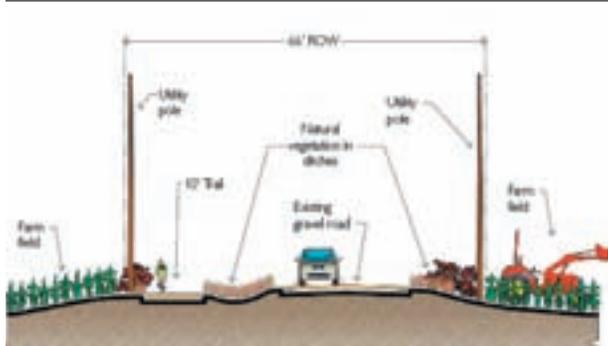
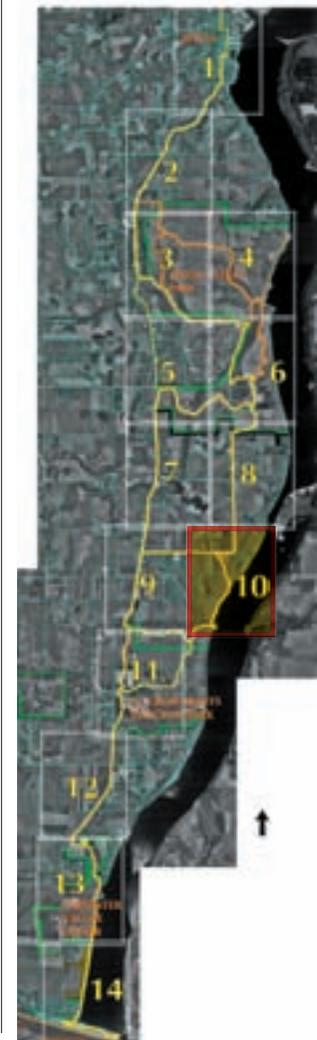
On 87th Street, the elevation change between the edge of the road and the bottom of the ditch will pose some constraints on the final location and grading-in of the trail. With the River Loops branch, the major issue will be acquiring a trail easement under a willing seller context. The major issues are expected to be the impact that the trail would have on property values, limitations on future land uses/development, and any associated liability concerns (based on input by the property owner.) Throughout the ravine area, providing an adequate buffer between the trail and any sensitive ecological area is also an important development factor.

RIGHT-OF-WAY AND PRIVATE PROPERTY ENCROACHMENT FACTORS

As with other segments, making sure that driveway and roadway crossings are safe for both trail users and residents is an important design factor. For continuity, residents directly impacted by the trail through this section should have the opportunity to participate in the detail design phase to ensure their individual concerns are reasonably addressed.

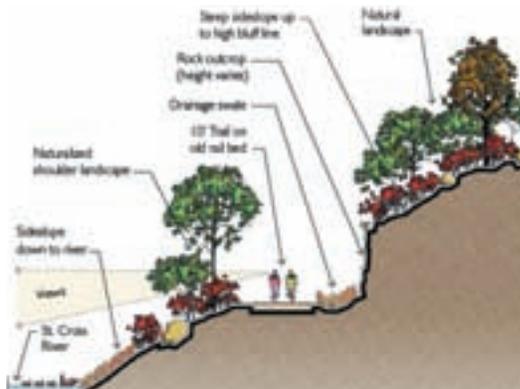
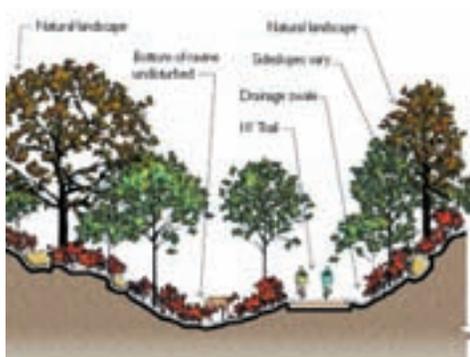
ALTERNATIVE TRAIL ALIGNMENTS THIS TRAIL SEGMENT

There are no alternative trail alignments being proposed for this segment.



This cross-section and photo illustrate the general character of trail within the 66'-0 right-of-way.

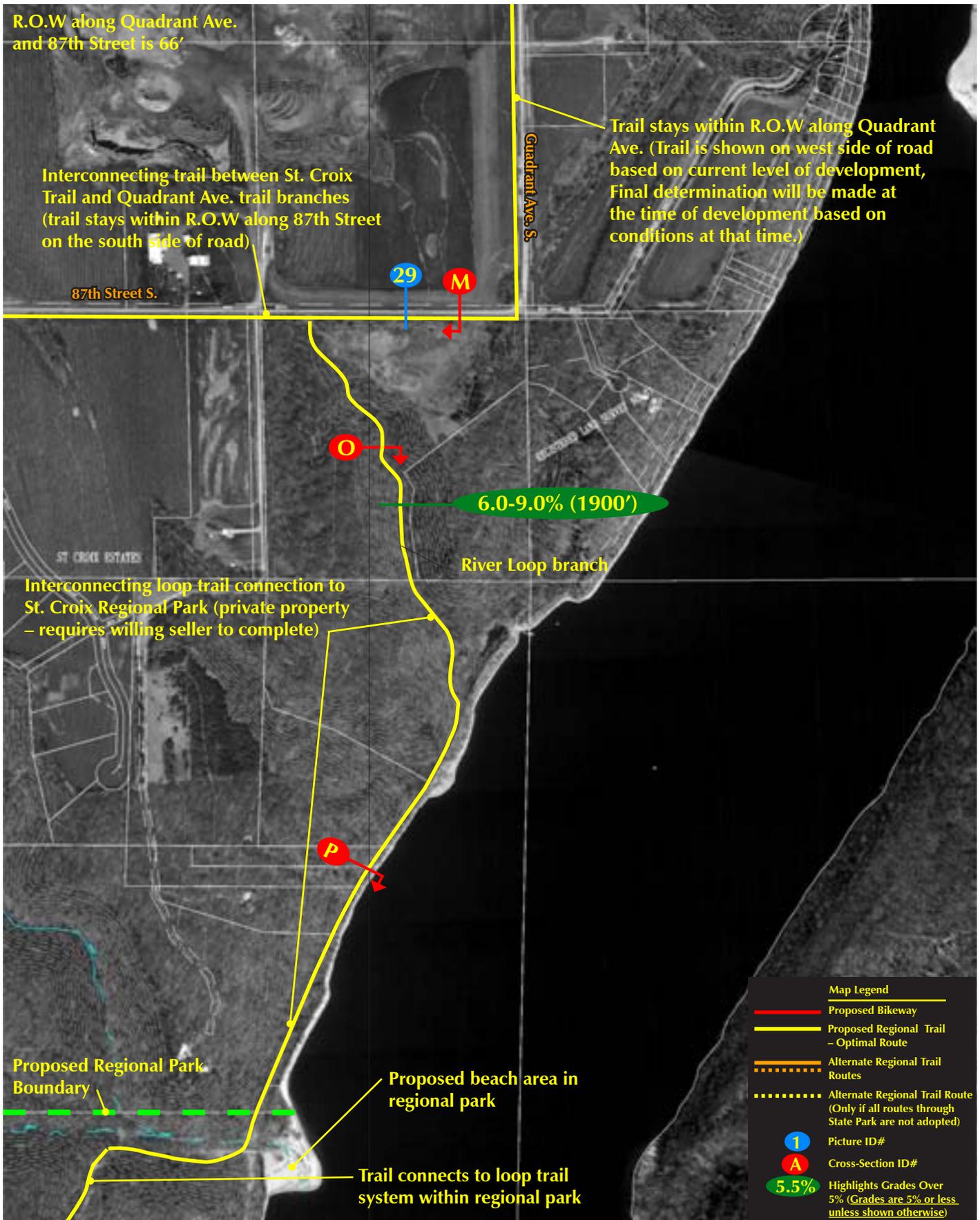
M TRAIL CROSS-SECTION ALONG 87TH STREET SOUTH (viewed looking south)



These cross-sections illustrate the character of the River Loop branch as it traverses through a ravine and then along the old rail grade. Although relatively short, it would undoubtedly be a very scenic and appealing trail segment.

O TRAIL CROSS-SECTION ALONG RAVINE (viewed looking south)

P TRAIL CROSS-SECTION ALONG OLD RAIL GRADE (viewed looking south)



TRAIL SEGMENT DETAIL MAP #11

SEGMENT DESCRIPTION / OVERALL CHARACTER

This segment of the regional trail lies entirely in St. Croix Bluffs Regional Park and will be consistent with the updated master plan of 2002. Within the park, the trail would connect to all of the major use areas and recreational facilities and amenities, as the master plan graphic below illustrates. As the map illustrates, the trail would exit the park on the southwest corner, where it once again follows St. Croix Trail to the south.

DEVELOPMENT ISSUES AND CONSTRAINTS

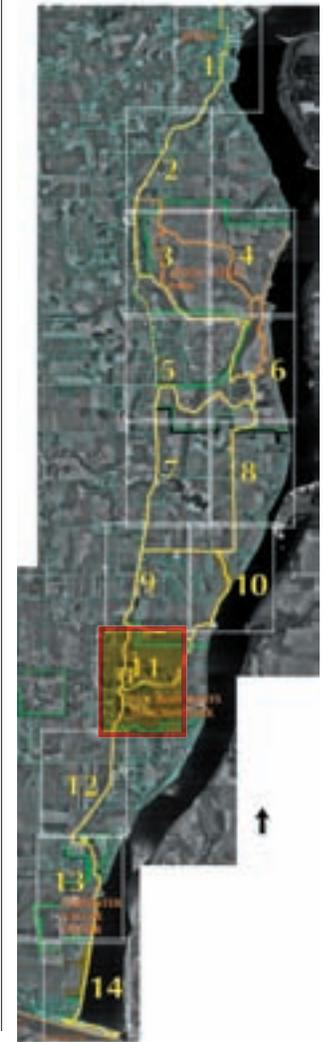
As defined in the master plan for the regional park.

RIGHT-OF-WAY AND PRIVATE PROPERTY ENCREACHMENT FACTORS

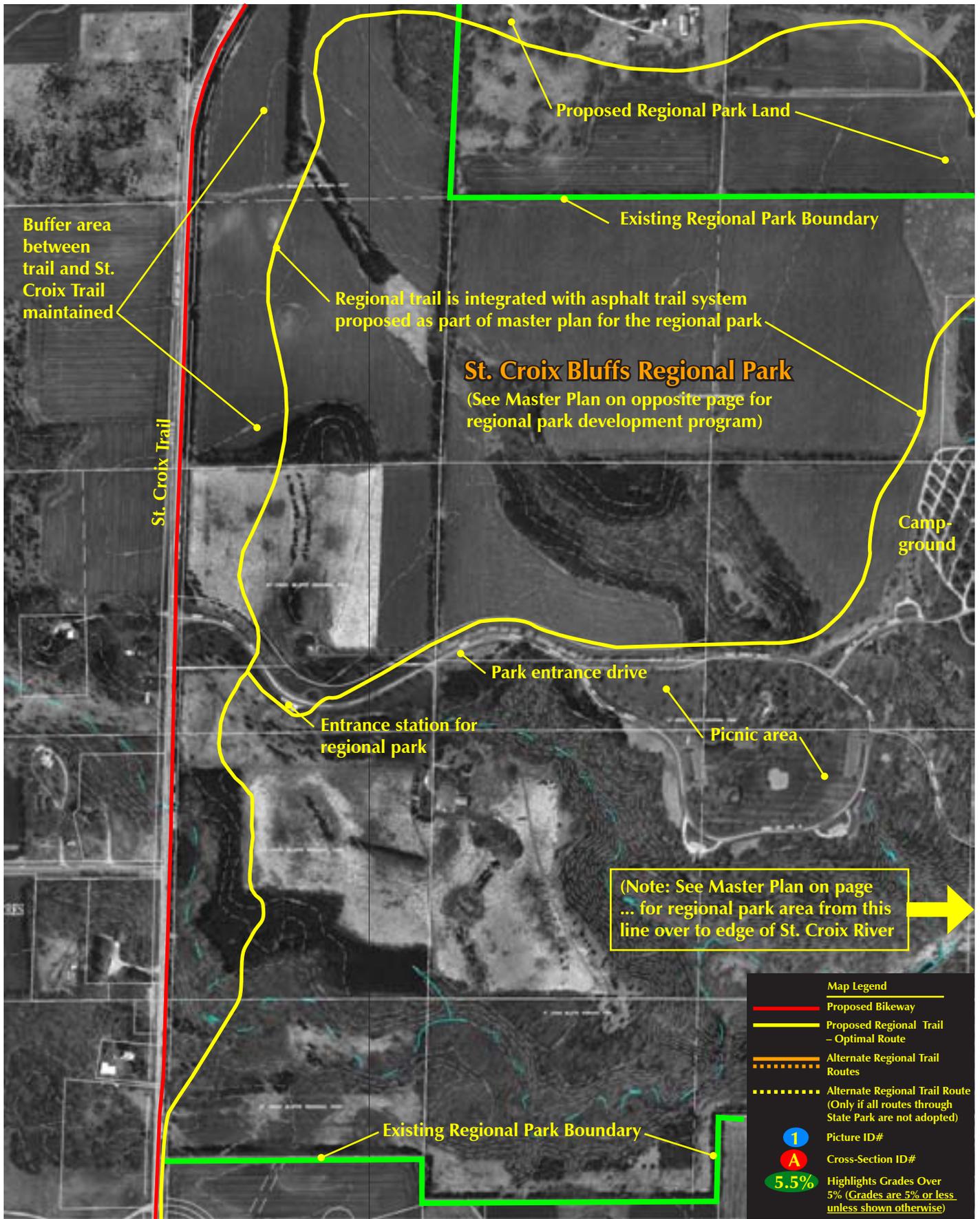
The regional park master plan includes the acquisition of additional acreage to the north of the current park boundary, as shown on the master plan graphic. If this land is not ultimately acquired, some rerouting of the trail would be necessary.

ALTERNATIVE TRAIL ALIGNMENTS THIS TRAIL SEGMENT

There are no alternative trail alignments being proposed for this segment.



MASTER PLAN FOR ST. CROIX BLUFFS REGIONAL PARK



TRAIL SEGMENT DETAIL MAP #12

SEGMENT DESCRIPTION / OVERALL CHARACTER

From St. Croix Bluffs Regional Park, the regional trail continues south within the existing right-of-way of St. Croix Trail for this entire segment until 117th Street, whereupon it crosses the road and enters Carpenter Nature Center. Grades are not an issue with this trail segment.

DEVELOPMENT ISSUES AND CONSTRAINTS

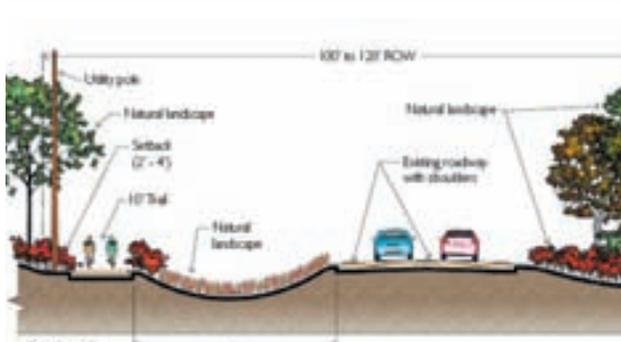
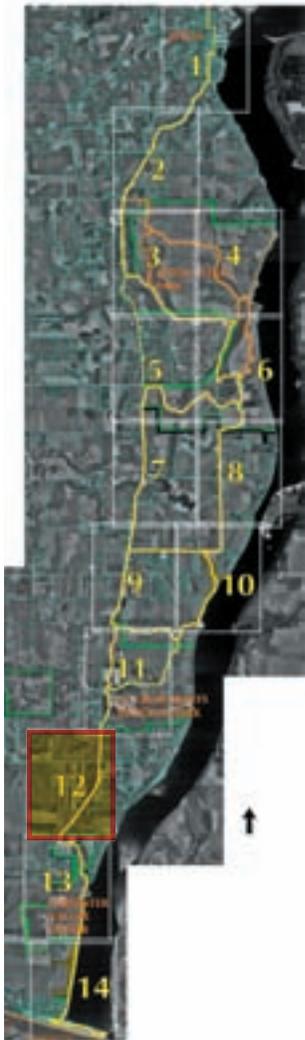
On St. Croix Trail, there is ample right of way width throughout this section. However, in a number of areas there is considerable elevation change between the edge of the road and the bottom of the ditch, which will pose some constraints on the final location and grading-in of the trail. Otherwise, the grades along this trail segment are generally 5% or less.

RIGHT-OF-WAY AND PRIVATE PROPERTY ENCROACHMENT FACTORS

As with other segments, making sure that driveway crossings are safe for both trail users and residents is an important design factor. For continuity, residents directly impacted by the trail through this section should have the opportunity to participate in the detail design phase to ensure their individual concerns are reasonably addressed.

ALTERNATIVE TRAIL ALIGNMENTS THIS TRAIL SEGMENT

There are no alternative trail alignments being proposed for this segment.



This cross-section and photos illustrate various views of the rural road section present throughout this segment of St. Croix Trail. As with other similar areas, the trail will be set back from the road edge as much as possible. The exact location of the trail will depend on the extent of existing natural vegetation, ditch grades, and location of driveways that need to be crossed.

Q TRAIL CROSS-SECTION ALONG ST. CROIX TRAIL
(viewed looking south)





TRAIL SEGMENT DETAIL MAP #13

SEGMENT DESCRIPTION / OVERALL CHARACTER

After crossing 117th Street, the regional trail enters Carpenter Nature Center, a private natural area and preserve. As the map illustrates, the trail skirts around a separate adjacent private property (leaving adequate buffer) before it traverses through a ravine and ties into the old rail grade along the river. In the ravine area, the final location of the trail will be dictated by grades and providing an adequate buffer between the trail and sensitive ecological systems. Once to the river, the trail simply follows the existing rail grade. Note also that other trails within the nature center will likely connect to the regional trail, at the discretion of the Carpenter Nature Center.

DEVELOPMENT ISSUES AND CONSTRAINTS

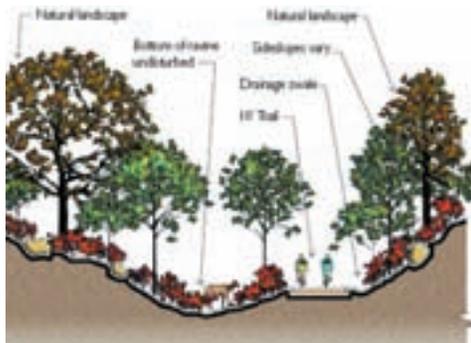
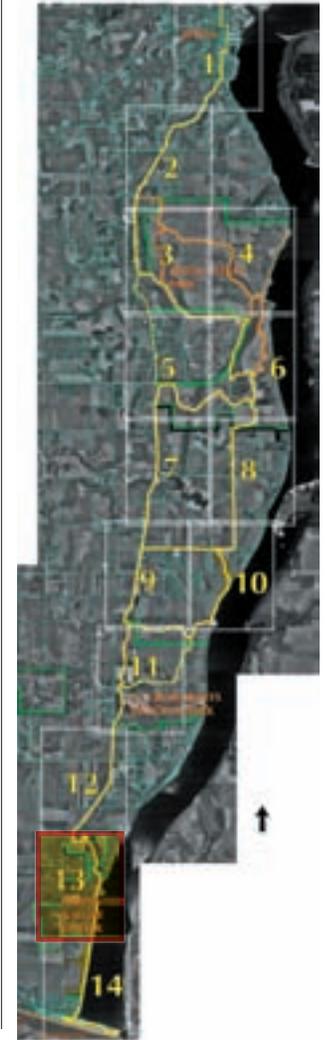
As a private entity, running the trail through this property will require a formal agreement between the Carpenter Nature Center and Washington County as previously considered in this section. Otherwise, the most challenging design issue is traversing through the ravine area and making the transition from the ravine to the top of the rail grade. The latter will likely include some grading or bridging, or a combination of both. The grades associated with the ravine area (7% to 9%) will also pose some limitations to use, but there are no other reasonable options.

RIGHT-OF-WAY AND PRIVATE PROPERTY ENCROACHMENT FACTORS

Other than the stated need for a formal agreement to secure an easement for the trail through this property, there are no other major issues.

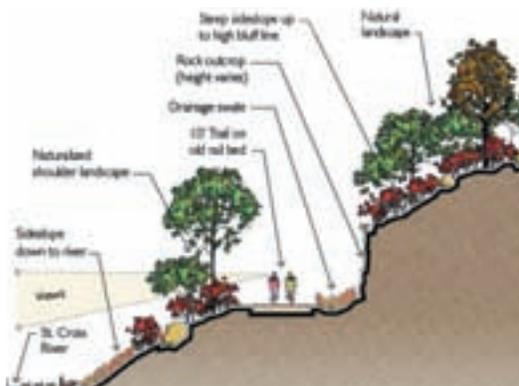
ALTERNATIVE TRAIL ALIGNMENTS THIS TRAIL SEGMENT

Since the right-of-way along St. Croix Trail narrows down to 60'-0" south of 117th Street, there are no alternative trail alignments being proposed for this segment.



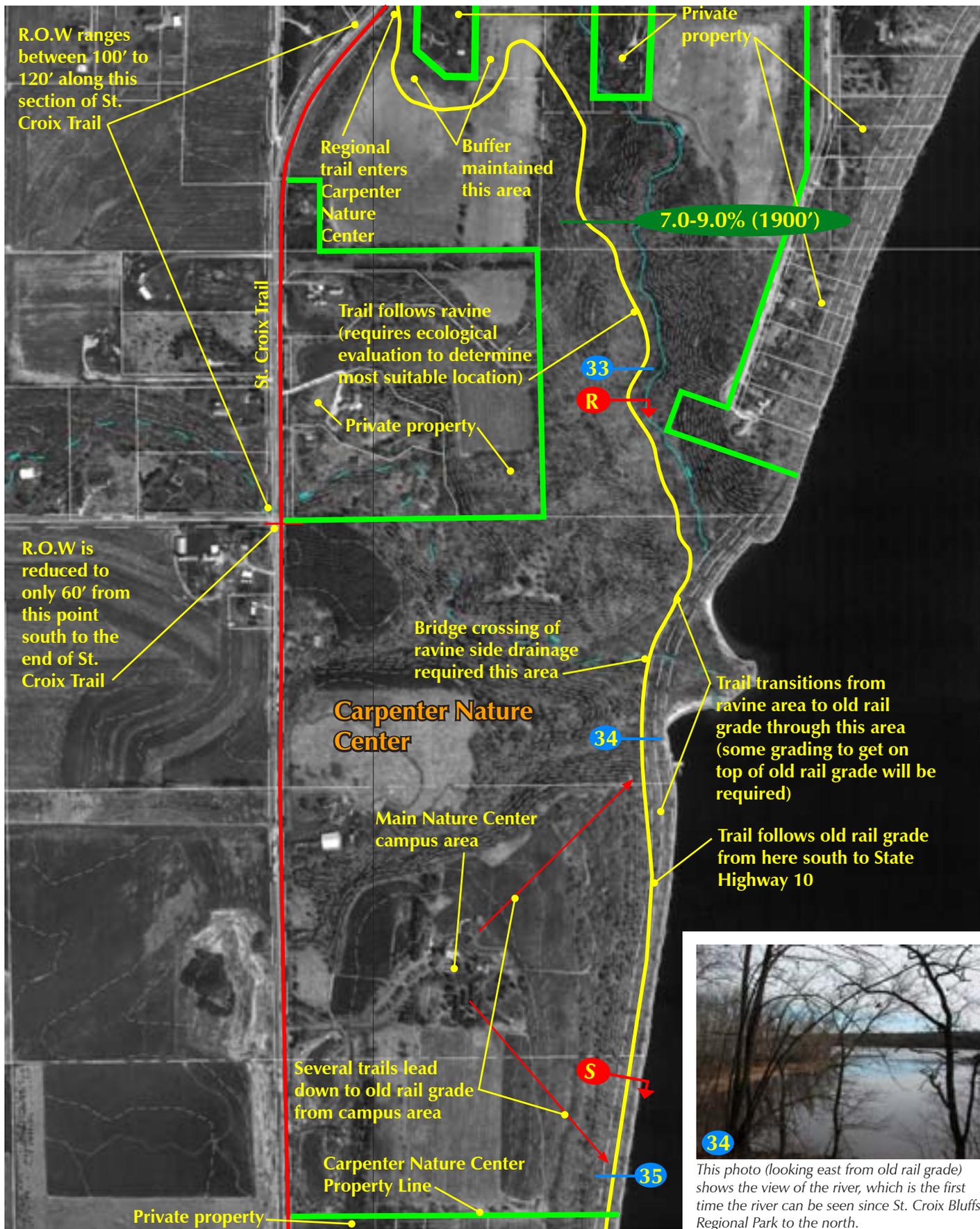
This cross-section and photo illustrate the character of the ravine area, which is common to many of the ravines traversed by the trail in the study area. Providing an adequate buffer between the trail and sensitive ecological systems, preventing erosion, and managing trail grades are the major issues associated with this area.

R TRAIL CROSS-SECTION IN THE RAVINE AREA
(viewed looking south)



This cross-section and photo illustrate the character of the old rail grade along this stretch of the St. Croix River. It makes for a compelling setting for a trail without major development challenges, other than replacing some bridges further to the south.

S TRAIL CROSS-SECTION ALONG THE OLD RAIL GRADE
(viewed looking south)



34 This photo (looking east from old rail grade) shows the view of the river, which is the first time the river can be seen since St. Croix Bluffs Regional Park to the north.

TRAIL SEGMENT DETAIL MAP #14

SEGMENT DESCRIPTION / OVERALL CHARACTER

From Carpenter Nature Center, the regional trail continues along the old rail grade until it intersects with the right-of-way for State Highway 10, whereupon it heads east into Point Douglas Park. Once into the park, it continues east until the river bridge. Ideally, the trail will go under the highway bridge and connect to the Point Douglas Trail near the historic bridge crossing into Prescott, Wisconsin. Note that another alternate is to provide an over or underpass across the highway, but these are likely to be more costly and less visually appealing solutions. Situated on the old rail grade, this is also a very scenic and easy segment of the trail that will appeal to many trail users.

DEVELOPMENT ISSUES AND CONSTRAINTS

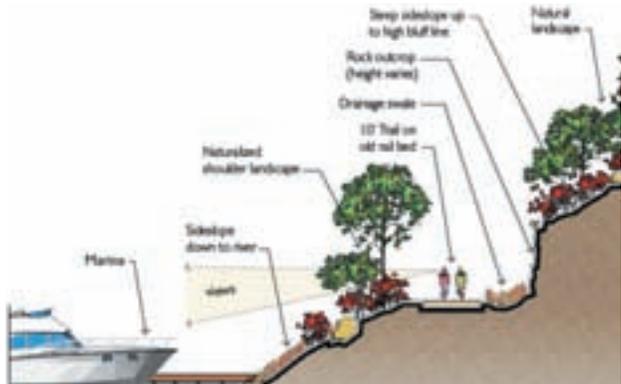
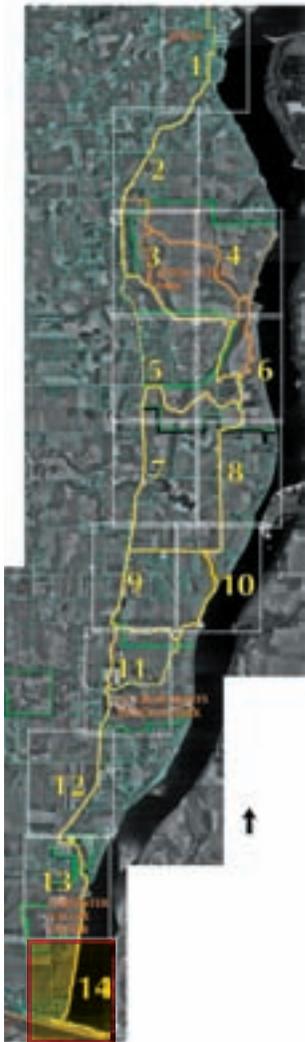
Other than determining the best approach to crossing the highway, the actual development of the trail along this segment is fairly straightforward. The only exception to this is the need to replace two bridges that had been removed some time ago. Although not technically challenging, these are significant cost factors. Also, the exact alignment of the trail through Point Douglas Park has to be considered in the context of its master plan and any other development initiatives that may be played.

RIGHT-OF-WAY AND PRIVATE PROPERTY ENCROACHMENT FACTORS

The most challenging and perhaps controversial development issue is gaining easement rights along this corridor from several private property owners. The most complex of these relates to the private marina property that shares half of the rail grade with the Carpenter Nature Center. To accomplish this, the marina operators will have to be assured that the trail activities will be adequately buffered and controlled to prevent any encroachment of marina activities. This will require maintaining the considerable vertical separation that already exists, enhancing the vegetative buffering along that side of the trail, and providing a security fence along the length of the marina property. For continuity, private property owners along this segment should have the opportunity to participate in the detail design phase to ensure their individual concerns are understood and reasonably addressed.

ALTERNATIVE TRAIL ALIGNMENTS THIS TRAIL SEGMENT

There are no alternative trail alignments being proposed for this segment.

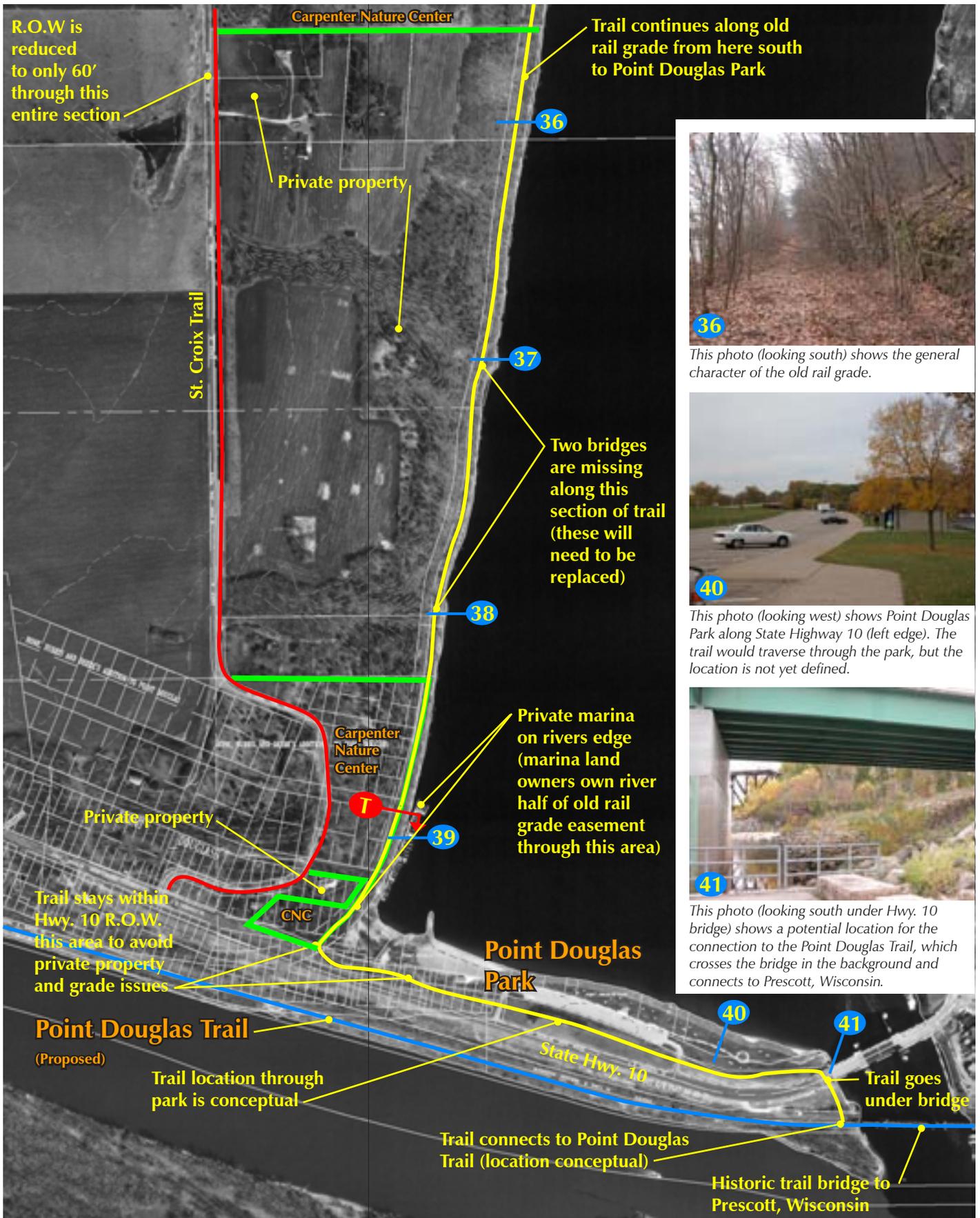


This cross-section illustrates the optimal relationship between the trail and the existing marina site. The accompanying photo shows a portion of the marina adjacent to the embankment.

A TRAIL CROSS-SECTION ADJACENT TO PRIVATE MARINA (viewed looking south)



As these two photos illustrate, at least two bridges will have to be replaced along this segment of trail.



36 This photo (looking south) shows the general character of the old rail grade.



40 This photo (looking west) shows Point Douglas Park along State Highway 10 (left edge). The trail would traverse through the park, but the location is not yet defined.



41 This photo (looking south under Hwy. 10 bridge) shows a potential location for the connection to the Point Douglas Trail, which crosses the bridge in the background and connects to Prescott, Wisconsin.

PARKING AND OTHER TRAIL SUPPORT INFRASTRUCTURE _____

Since the regional trail traverses through several larger established public parks, the need to develop standalone parking lots and other trail support infrastructure is very limited. With respect to parking, St. Croix Bluffs Regional Park, Afton State Park, and Point Douglas Park collectively have adequate parking to accommodate anticipated trail use.

The only potential additional parking recommended as part of the master plan is adding six to ten parking spaces in the small park located in Afton (as defined in Trail Segment Detail Map #1). As a local park, the City of Afton would have to approve the development of these parking spaces for the benefit of their residents and downtown businesses.

Point Douglas Park is likely to see increased use of the parking lot by visitors to the trail. Located adjacent to State Highway 10 and near Prescott, Wisconsin, it is a well-situated park to serve as a trailhead.

The aforementioned parks also provide much of the other forms of support infrastructure for the trail, including restrooms, concessions, information, and a host of other amenities common to regional and state parks.

Signage along the trail will also be provided consistent with Washington County Parks signage program for parks and trails. This includes kiosks at trailheads with mapping, directions, and related trail information. Typical signage along the trail includes warning, directional, mileage, and points-of-interest signs.

DESIGN ELEMENTS TO MEET SPECIAL NEEDS _____

As highlighted in this section, the regional trail is aligned to accommodate a wide-range of user groups with varying abilities. With the support of facilities and staffing in the state, regional, county, and private parks and natural areas, the trail offers access to many populations well beyond that which is available with standalone trails.

Although trail grades vary considerably throughout the corridor, there is ample opportunity for trail visitors of all abilities to find a place to recreate and have a comparable experience to that of the more ambulatory visitor.

Under current policy, Washington County Parks will not charge a fee for use of the trail, making it affordable to all populations.

PUBLIC SERVICES _____

Consistent with other comments, there are no major new public services required to support the trail other than those previously identified in this section.

SECTION IV

LOCAL TRAIL OPPORTUNITIES

OVERVIEW

Section IV –Regional Trail Master Plan defines the proposed alignment for the regional trail through the study area. As also defined in that section, numerous other potential trail routes were considered during the planning process. In many cases, these routes traversed across the countryside following natural features or logical routes seemingly well suited for a trail corridor. Although most are no longer being considered as part of the regional trail, these and perhaps other potential trail routes may have merit for consideration at the local level. This section considers these opportunities in greater detail.

SENSITIVITY TO LOCAL PLANNING ISSUES

As defined in other sections, the master plan represents a balance between the larger values of the community and the personal values of the many stakeholders. In this context, community refers to the regional population that the trail is intended to serve.

In finding this balance, every attempt was made to be sensitive to local perspectives. Most important of these was respecting the notion that planning trails that extensively involved private property was best considered a local planning issue in both the City of Afton and Denmark Township. To the greatest extent possible, the regional trail master plan has made a good-faith effort to accommodate these concerns, with the vast majority of the regional trail staying within public rights-of-way, parks, and natural areas.

At the same time, the planning process uncovered some viable local trail planning opportunities worth highlighting. Presumably, by considering these at the local level and integrating those that have merit into local land use decisions, the value of the regional trail to the local communities can be enhanced.

THE POTENTIAL OF BECOMING A TRULY REMARKABLE SYSTEM

On its own, the regional trail holds the promise of being a compelling regional recreational asset. Every expectation would be that it will be very successful in tying together the many public and private parks and open spaces in the study area, as well as being a destination unto itself.

Integrated with local land use plans, the regional trail has the potential of becoming part of a truly remarkable system of neighborhoods, rural preserves, parks, open spaces, and trail corridors. Although the regional trail is a key component of this broader context, the degree to which this vision is ultimately realized rests with the land use decisions made by the City of Afton and Denmark Township.

It is not the intent of this master plan to prescribe how Afton and Denmark Township should plan for the future. Instead, it is to simply define the opportunities that exist today as discovered during the planning process for the regional trail. By presenting these findings, Washington County Parks hopes to add some insights and value to future local land use planning decisions that more fully integrate the regional trail (and other parks and open spaces) into the fabric of the local community infrastructure.



There are many opportunities for setting aside land for greenways and local trail corridors in Afton and Denmark Township.

LOCAL TRAIL OPPORTUNITIES

As of the date of this master plan, the merit and value of any particular local trail corridor identified as part of the regional trail planning process has not been formally considered by Afton or Denmark Township. Currently, both have policies that preclude condemning private land for trail development. Given this, the forthcoming recommendations are limited to defining local trail opportunities that would be consistent with the regional trail master plan. Any and all judgements on the merit of these opportunities rests with the local units of government.

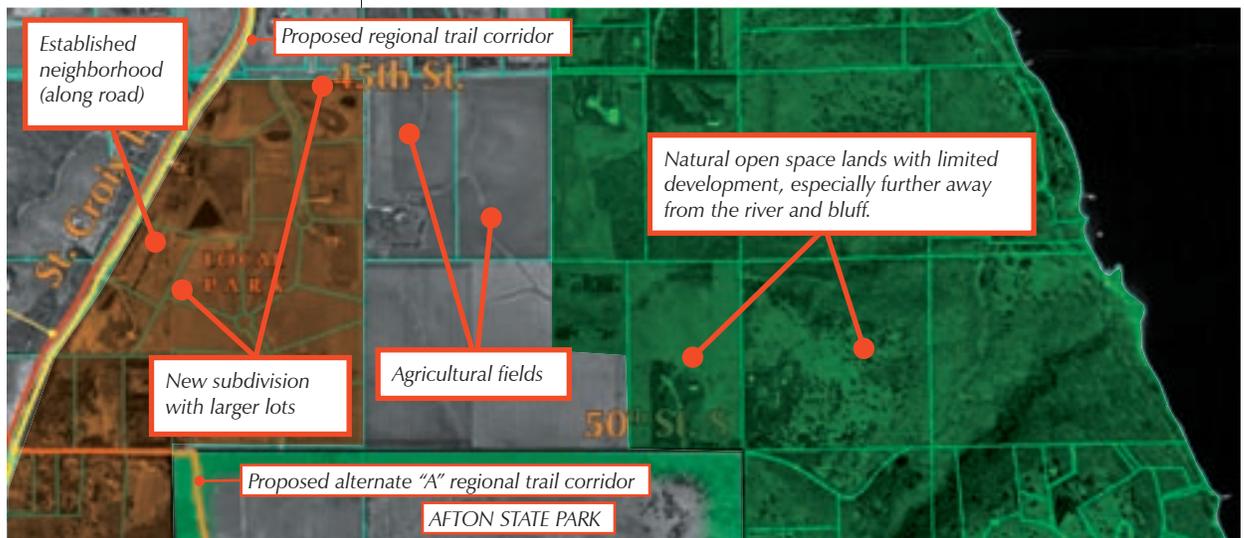
INCREASING PACE OF RESIDENTIAL DEVELOPMENT

As the forthcoming aerial mapping illustrates, the pace of development within the study area is beginning to accelerate, with new residential developments occurring or being planned in recent years throughout the study area. Realistically, this will continue along with regional population growth as projected by the Metropolitan Council.

Although land uses and the level of development are changing, the opportunity still exists to comprehensively integrate trails into land use plans for Afton and Denmark Township. But this prospect is, in many ways, fleeting. With each new development, the chance to integrate trails and open spaces with new forms of development is reduced, with fewer and fewer options being available each year for local governments to consider.

CITY OF AFTON LOCAL TRAIL OPPORTUNITIES

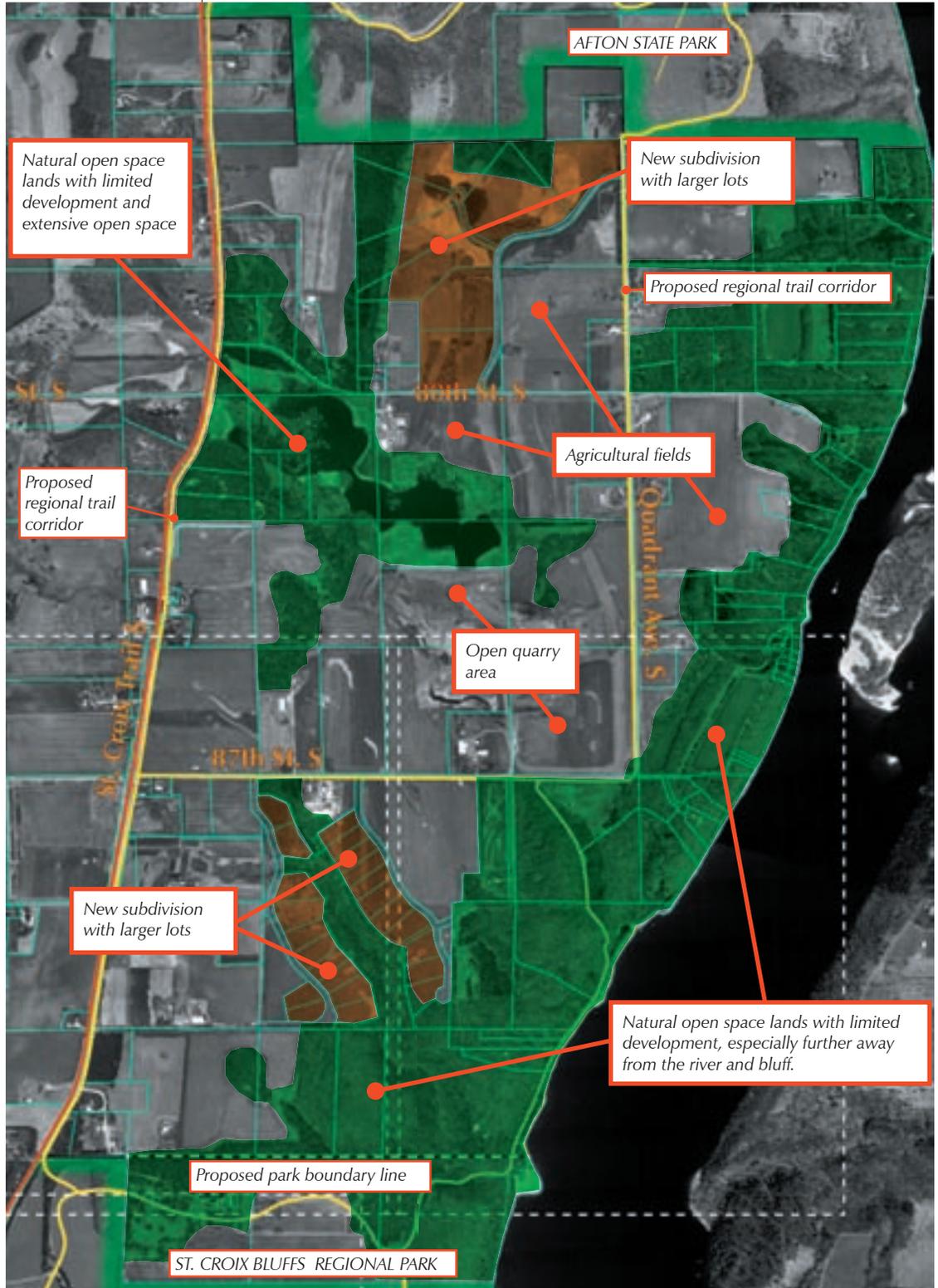
Within the context of the regional trail master plan, local trail opportunities in the Afton area relate primarily to the area between 45th and 50th Streets, as the following aerial map illustrates.



As the aerial mapping illustrates, some land in this area has already been subdivided into larger lot properties. Although this is occurring, a substantial amount of privately-owned agricultural land and natural open space still remains. Based on field evaluation, the greatest prospect for integrating local trail corridors is in the middle section of this land area. (On the west side, the new subdivision precludes the future integration of local trails. On the east side, the properties along the river bluff and old rail grade are well established, with little prospect or desire for retrofitting trails in this area.) Notably, the land owners in this area are uniformly opposed to trails across their properties. Whether this perspective will change in the future is uncertain. Nonetheless, the City of Afton is encouraged to consider local trails through this area as land use changes occur.

DENMARK TOWNSHIP LOCAL TRAIL OPPORTUNITIES

Within the context of the regional trail master plan, local trail opportunities in Denmark Township relate primarily to the area between Afton State Park and St. Croix Bluffs Regional Park to the south, as the following aerial map illustrates.



LOCAL TRAIL PLANNING IN THE CONTEXT OF COMPREHENSIVE LAND USE PLANNING

As the aerial mapping illustrates, new subdivisions are becoming more predominant in the last few years. Nonetheless, a substantial amount of privately-owned agricultural land and natural open space still remains, which makes the prospects for developing a local trail system to augment and interconnect with the regional trail encouraging. As the aerial photo also illustrates, the prospects for integrating these trails with preserved natural open space corridors is also encouraging.

Although the land owners in Denmark Township have their own uncertainties about trails, and some are indeed against them, there seems to be an openness to continuing the debate at the local level. In this context, Denmark Township is encouraged to diligently consider how and to what extent local trails and open spaces should factor into future land use decisions.

At the local level, trails are only one part of a larger comprehensive planning context that includes private land development, rural preserves, parks, greenways, and other elements of the public infrastructure. As defined in the publication *Maintaining and Enhancing Environmental Quality in Denmark Township*, there are a number of innovative strategies and policy approaches that can be used to foster preservation and protection of natural areas, which are commonly referred to as greenway or green infrastructure.

At the local level, the same strategies used to preserve open space also have application for setting aside land for trail corridors. The following provides an overview of these and other strategies that may prove useful for local trail planning. The degree to which any of these have merit would be at the discretion of the City of Afton and Denmark Township.

STRATEGIES FOR PRESERVING OPEN SPACE

The standard land use controls adopted by Afton and Denmark Township provide much of the regulatory strength behind their management of development. Although these controls have their value, they also have inherent limitations, one of which is the limited flexibility to comprehensively integrate greenways and trails into development plans.

Consistent with the aforementioned publication, a number of alternative strategies and tools to preserve open space and set aside land for greenways and trail corridors are available to local units of governments. These include, but are not necessarily limited to, the following:

- **Park Dedications:** Relates to the common practice of developers setting aside land for parks and trails in conformance with park dedication policies set forth by a local city or township.
- **Direct Purchase/Fee Simple Acquisition:** Relates to purchasing the property when the parcel meets the long-term preservation objectives of the community and the parcel can be integrated into the larger parks, open space, and trail system. Priority is typically given to larger parcels. With limited fiscal resources, direct purchase is typically considered only after other protection methods have proven to be unsuccessful.
- **Conservation Easement:** Restricts development of land while permitting the landowner to retain ownership of the property. It is filed in the public records of the property and binds current and future property owners. The landowner may sell or donate the easement to a conservation organization, but it is not required. Where the easement is donated to a charitable organization, a tax benefit may occur to the property owner.
- **Overlay Zoning:** Refers to a type of resource protection zoning that is superimposed over traditional zoning to protect defined natural resource areas while still allowing the underlying use in an appropriate form. A flood plain zoning district is an example of this.

- **Purchase or Transfer of Development Rights:** A city, land trust, or other developer purchase the development rights to a property, while the landowner continues to maintain ownership. Once the rights are purchased, the land could only be used for a specified purpose other than development. The land would typically be protected under a subsequent conservation easement or other protection program. Transfer of development rights refers to protecting the natural values of one property by transferring or selling the right to develop that property to other properties within the city under strict guidelines. Both of these approaches ensure that there is no economic harm to the landowner or developer and that the city retains its desired development density.
- **Bonus/Incentive Zoning:** Is similar to transferring development rights except that the landowner or developer rights are used by the developer on the same property rather than purchased by another developer for some other property. This could allow a developer to develop at a higher density than normally allowed if the developer sets aside land in a conservation easement or greenway.
- **Clustering:** Allows developers to cluster development of smaller lots to allow for the provision of conservation easements and greenways.
- **Natural Resource Protection Zones:** Allows the city to impose a buffer along sensitive environmental areas. The buffer width varies depending on the situation, and these can be fixed or flexible.
- **Land Trusts:** Property owners can donate their property or a conservation easement to a conservation program. A number of these programs exist at the local, state, and national level. However, because of participation requirements (particularly with regards to parcel size), land trusts are sometimes of limited use.
- **Deed Restrictions/Mutual Covenants:** Establish legally defined limits on the use of a property. They are put in place by the property owner or land developer and are carried forward by the owner or a legally established association. Typically, they do not endure for more than 30 years unless renewed.
- **Stewardship Program:** Land management practices may be voluntarily undertaken by a landowner to preserve open space. In some instances, a landowner may "register" their property with a conservation organization, thereby entering into a non-binding agreement to follow good land management practices. A landowner may also enter into a management agreement with a conservation organization, specifying how land will be managed.

The publication *Maintaining and Enhancing Environmental Quality in Denmark Township* also highlights other incentive and education programs that are worthy of consideration.

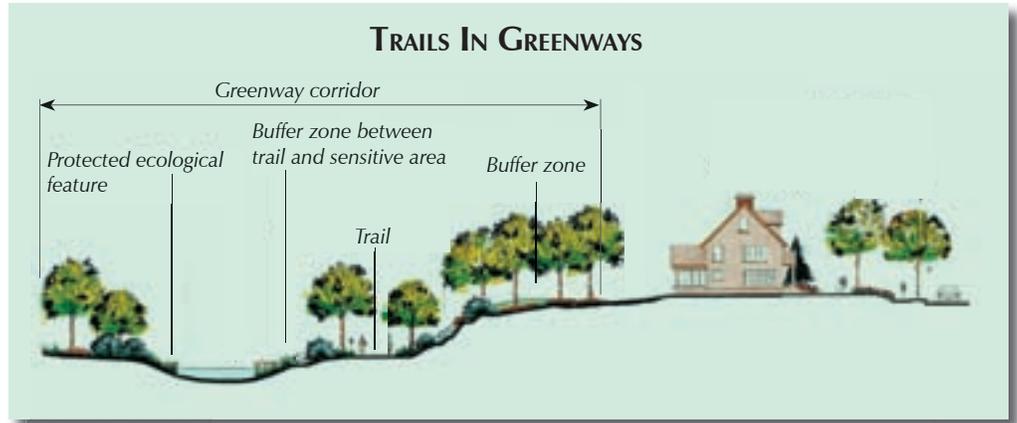
CONSERVATION DEVELOPMENT APPROACH TO LAND DEVELOPMENT

The aforementioned publication also encourages the use of conservation development as a means to set aside land for greenways, trails, and other public values. This alternative approach to traditional development also makes it easier to successfully use the alternative strategies listed above to accomplish these goals.

Importantly, the conservation development approach to land development requires a much more proactive level of collaboration between local units of government and land owners/developers. In spite of these challenges, this approach holds the promise of being able to preserve natural open spaces and provide other public values (including trails) while remaining economically viable to land owners and developers.

BALANCING ECOLOGICAL PROTECTION OF GREENWAYS WITH PUBLIC ACCESS VIA TRAILS

The use of conservation development-like approaches to setting aside land for greenways also provides the corridors for local trail systems, as the following graphic highlights.



However, trails within greenways must be compatible with the ecological protection strategies developed to protect it. Typically, this takes the form of an ecological buffer between trails and sensitive ecological systems, as the previous graphic illustrates. This is considered in greater detail in the publication *Maintaining and Enhancing Environmental Quality in Denmark Township*.

CONCLUSIONS

As previously stated, it is not the intent of this master plan to prescribe how Afton and Denmark Township should plan for future trails at the local level. It is clear that much local discussion remains on this issue. It is equally as clear that the opportunity is great to integrate trails and greenways with future development to, presumably, add to the already high quality of life in the region. Whether or not those values are appreciated and will be realized through thoughtful planning is yet to be seen. Nonetheless, Washington County Parks stands ready to partner with Afton and Denmark Township for the mutual benefit of a common constituency.

SECTION V

NATURAL RESOURCES STEWARDSHIP PLAN

OVERVIEW

Natural resources stewardship refers to the thoughtful care of ecological systems to preserve or enhance their natural qualities, which are intrinsic to the trail's value as a place of natural scenery and respite from the built form. Although much of the trail follows existing rights-of-way, there are still numerous natural resources and ecological issues that need to be addressed. This section provides a framework for stewardship consistent with those of other parks and open spaces in the study area.

CONSISTENCY WITH OTHER NATURAL RESOURCE STEWARDSHIP PLANS

In 2002, Washington County completed an inventory and environmental plan for Denmark Township. Entitled *Maintaining and Enhancing Environmental Quality in Denmark Township*, the plan included an inventory of and general strategies for protecting natural resources. That plan is included by reference as part of this master plan, with select excerpts being used in this section to highlight pertinent natural resource findings and stewardship approaches that relate to trails.

Although set for updating in 2005, the *Afton Natural Resources Inventory* is also included by reference as part of this master plan. Any updates to the MLCCS inventory will be utilized as part of any resource planning associated with the regional trail.

The regional trail master plan is also consistent with the natural resources stewardship and water management plan for St. Croix Bluffs Regional Park, which is part of its 2002 master plan. Pertinent aspects of that plan are also highlighted in this section and included in Appendix B.

Within Afton State Park, natural resource stewardship associated with the regional trail will be consistent with the park's stewardship program to ensure continuity of resource management. The same holds true of Carpenter Nature Center, a non-profit entity that has its own stewardship program.

NATURAL RESOURCES STEWARDSHIP PHILOSOPHY

All of the cited natural resource plans promote an ecosystem-based approach to natural resource stewardship. An ecosystem is essentially where things live and represents an interacting group of physical elements (soils, water, plants, animals, etc.) that inhabit a particular place. All of these elements and their interactions need to be considered in developing goals and plans for management. Ecosystem-based management views people as part of the community, and that maintaining a healthy ecosystem is the best way to meet human needs as well as those of other organisms in the community.

As it relates to the regional trail, general goals of this philosophy are to:

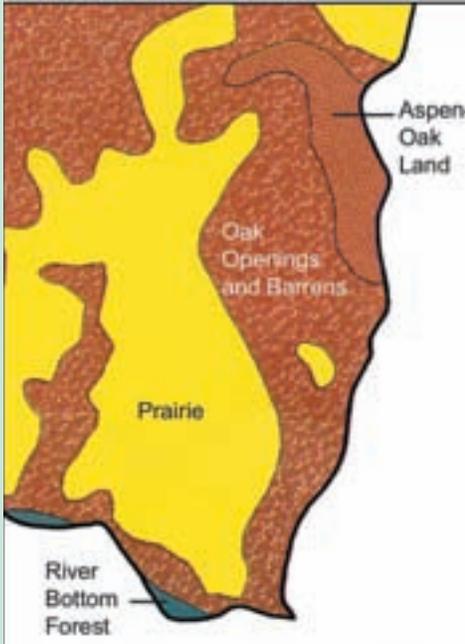
- Protect or enhance the health of the ecosystems along the trail corridor and throughout the study area
- Enhance the biological diversity of native habitats
- Provide an appropriate balance between resource preservation and recreational use

NATURAL RESOURCES INVENTORY

An extensive inventory for Denmark Township has been completed using the MLCCS process and included in the *Maintaining and Enhancing Environmental Quality in Denmark Township* report, which is an attached reference to this master plan. The following graphic highlights core findings.

NATURAL RESOURCE INVENTORY – DENMARK TOWNSHIP

PRE-SETTLEMENT HABITS – CIRCA 1845



The MLCCS mapping (right) illustrates the land cover relative to the trail alignment. With the trail either following existing rights-of-way, trail alignments (within parks) and the old rail grade, ecological impacts are manageable. That said, care will still be taken to buffer sensitive areas.

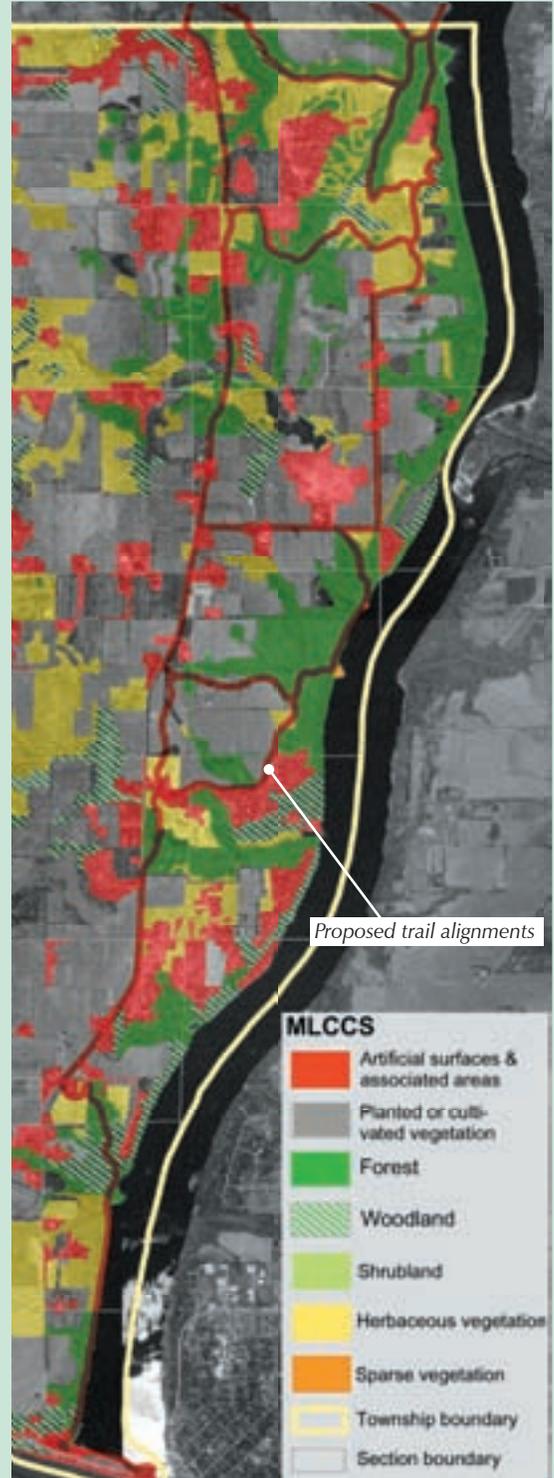
As the comparison between habits circa 1845 and 1990 (left) illustrate, only small remnant native vegetation remains within the study area – some of which is near the trail corridor. Portions of the trail will allow visitors to observe these areas while at the same time not taking away from those values in the process.

REMAINING HABITATS – CIRCA 1990



MLCCS inventory note: The land cover for the portion of the trail in Afton is not available in electronic format. However, in Afton, the trail follows the St. Croix Trail right-of-way with limited impact to existing ecological systems. Nonetheless, the same stewardship practices will be adhered to for all trail sections.

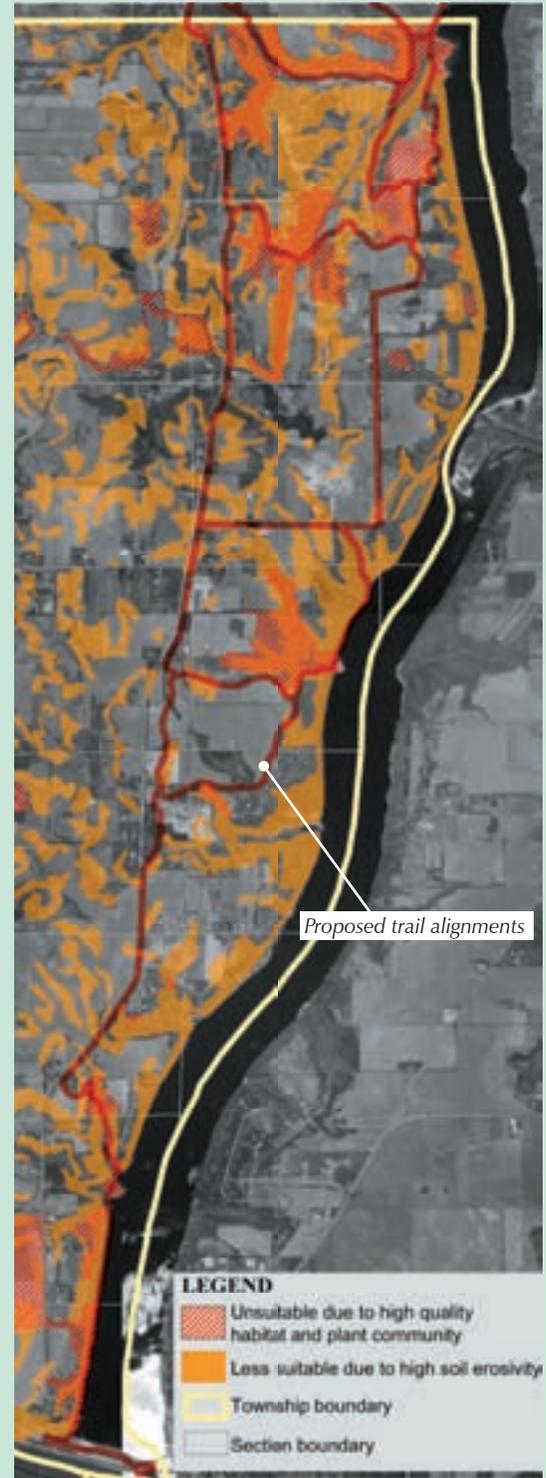
MLCCS COVER MAPPING – GENERAL OVERVIEW



TRAIL IMPACTS TO NATURAL RESOURCES

Finding a reasonable balance between natural resource protection and trail access to scenic areas was a key objective of the master plan. By staying within established rights-of-way and following existing trail, road, and rail alignments, the vast majority of the trail stays within existing impact areas. This approach greatly reduces any new impacts caused by the trail. The following graphic highlights these issues.

RELATION BETWEEN THE TRAIL CORRIDOR AND NATURAL RESOURCES



ECOLOGICAL PROTECTION STRATEGY

There are two main aspects to the ecological protection strategy as it relates to the actual development of the trail. The first is managing stormwater from the trail in an ecologically sustainable manner. The second is aligning the trail to minimize disruption to natural systems. The following considers these in greater detail.

USING NATURAL INFILTRATION FOR STORMWATER MANAGEMENT

Stormwater runoff is one of the major natural forces to contend with in trail planning, design, and development. Managing runoff in an ecologically sensitive way is fundamental to creating sustainable trails where impacts to adjacent ecological systems are minimal.

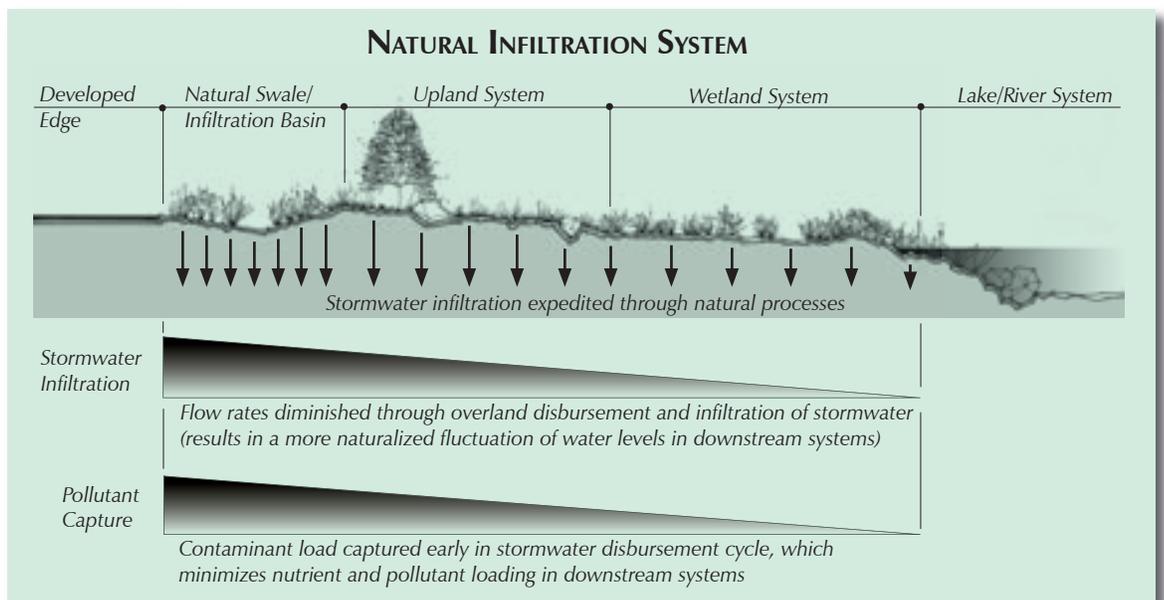
Using a natural infiltration approach to stormwater management that relies on passive, overland routing of runoff offers a couple of distinct advantages over conventional systems (i.e., storm sewers, engineered ponds, and other built structures), including:

- Introduced contaminants picked up by runoff are removed at the initial stages of water flowage rather than being transported to downstream locations and accumulating in wetland, lake, and river systems. This greatly reduces degradation to water quality and vegetative health in downstream systems.
- Stormwater flow rates and volumes more closely emulate natural conditions. This greatly reduces unnatural fluctuations in water levels in downstream systems (wetlands and lakes) and therefore reduces impacts to the natural condition of water systems and vegetation.

For these reasons, the natural infiltration will be the primary approach used to manage stormwater associated with the development of the regional trail and related support structures.

COMPONENTS OF NATURAL INFILTRATION SYSTEMS

Natural infiltration systems typically consist of four primary components, as illustrated in the following graphic box.



Each of the components illustrated in the previous graphic box function in sequence to treat the water before it enters wetlands, lakes, and rivers. The following considers each of these components.

SHALLOW NATURAL INFILTRATION SWALES AND BASINS SYSTEMS

Initially, stormwater runoff from the built environment is routed into natural or man-made shallow swales or, more recently, “raingardens” or “natural infiltration basins” that are planted with native plants with deep root systems. These swales, basins, and raingardens provide initial infiltration and removal of pollutants, as well as convey runoff from developed areas and disperse it across upland and prairie systems.

UPLAND SYSTEMS

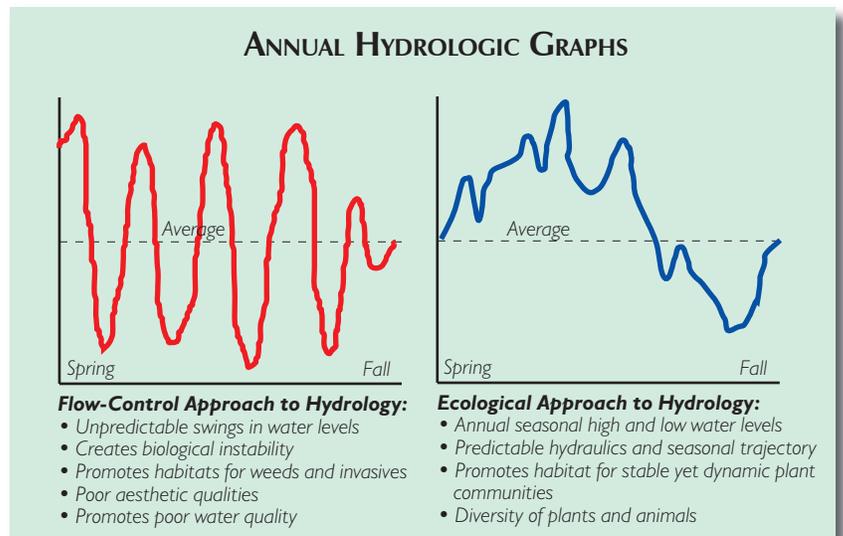
The upland systems (i.e., prairies and oak savannas) are the second component of this method, functioning to convey stormwater as diffused overland flow to the wetland systems that often link directly or indirectly to bordering lakes and rivers. These systems infiltrate a substantial portion of the annual surface runoff volume due to their very deep root system. They also provide additional solids settling and biological treatment.

WETLAND, LAKE, AND RIVER SYSTEMS

The wetlands are the third component of the natural infiltration method and provide both stormwater detention and biological treatment prior to runoff entering the lake and river systems. The final component is the lake or river, which provides stormwater detention, additional solids settling and biological treatment.

HYDROGRAPH ASSOCIATED WITH NATURAL AND FLOW RATE CONTROL APPROACHES

The use of a natural infiltration system also produces a much more natural hydrograph, resulting in lower peak flows and higher base flows relative to the hydrograph of a typical engineered flow rate control approach, as illustrated in the following graphic box.



For trail planning, design, and development, natural infiltration methods will be used to as the primary approach to creating sustainable trails where impacts to adjoining natural systems is minimal. Engineered or mechanical systems for conveying stormwater will only be used when natural approaches are technically not feasible or reliable.

BEST MANAGEMENT PRACTICES FOR STORMWATER MANAGEMENT

Under the master plan, the natural infiltration approach philosophy to managing stormwater is supported by *Best Management Practices* that address common development circumstances likely to be encountered as the trail is developed. These practices define specific techniques that can be applied to different development scenarios to achieve stated environmental protection objectives.

The Metropolitan Council's *Urban Small Sites Best Management Practice Manual* provides the basic underpinning for many of the techniques that will be employed wherever applicable as the trail is developed. Note also that newly emerging ecologically-based techniques will also be applied to achieve desired ecological benefits. Specific techniques envisioned to have application for the trail include:

- Use of infiltration systems (e.g., biofiltration systems, rain gardens, filter strips, swales, and slotted/flat curbs) as part of trail designs
- Use of site grading techniques to achieve naturalized infiltration objectives
- Use of contemporary erosion control techniques to prevent migration of soils during the construction process

In addition to the *Best Management Practices*, the master plan is also supported by the Metropolitan Council's *Model Storm Water Management Ordinance*, which defines specific approaches to protecting a site's ecological resources, especially wetland systems. The provisions of the model ordinance will be applied to the trail's development as applicable.

MINIMIZING DISRUPTION TO NATURAL ECOLOGICAL SYSTEMS

Aligning the trail to minimize disruption to natural systems is also a major objective of the regional trail master plan. Along the trail corridor, two primary developmental situations are encountered: 1) right-of-way alignments; and 2) natural area alignments. Each of these requires slightly different approaches to trail development, as the following considers.

RIGHT-OF-WAY ALIGNMENTS

In these situations, the primary objective of trail alignment is to: 1) minimize disruption to the ecological and scenic qualities of natural vegetation within the corridor; and 2) managing stormwater using natural infiltration techniques. The most advantageous way to accomplish this is being flexible on the location of the trail within the right-of-way to respond to found conditions, as the graphic box on the next page illustrates.

NATURAL AREA ALIGNMENTS

In these situations, the primary objective of trail alignment is to provide an adequate buffer between the trail and sensitive ecological systems, as the graphic box on the next page illustrates.

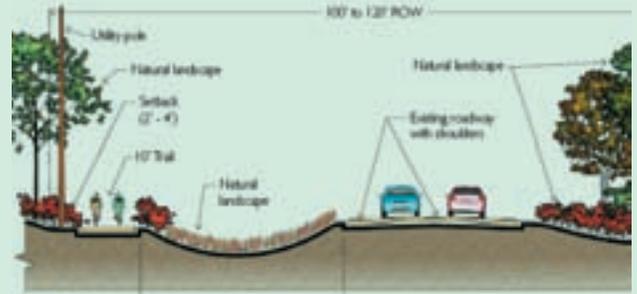
A secondary objective it is to locate the trail to serve as a management breakline between ecological management units. This is especially important with managing prescribed burns.

Importantly, the trail corridor has very little impact on wetland areas, which are not very prevalent in the study area due to the land forms. Nonetheless, should any be encountered, an adequate buffer as determined by a trained ecologist will be provided.

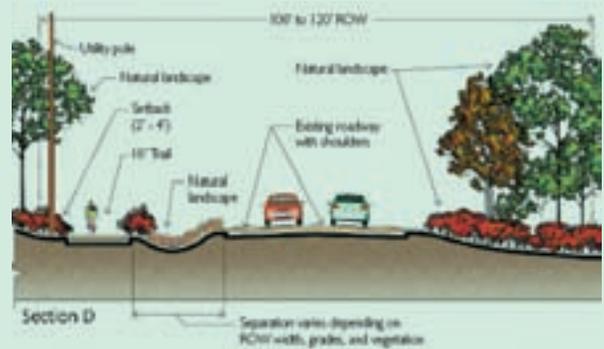
MINIMIZING DISRUPTION TO NATURAL ECOLOGICAL SYSTEMS

RIGHT-OF-WAY ALIGNMENTS (RIGHT IMAGES)

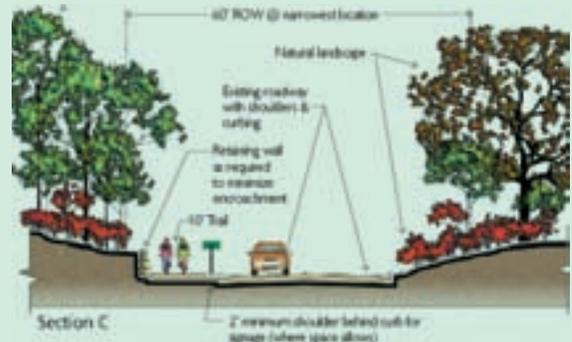
From top to bottom, the graphics illustrate a progressively more constricted right-of-way. As illustrated, the trail will be located in response to found conditions to minimize disruption to the ecological and scenic qualities of the corridor. In each case, stormwater will be managed using natural infiltration techniques to the degree possible, with the third example illustrating the most challenging (and infrequent) situation.



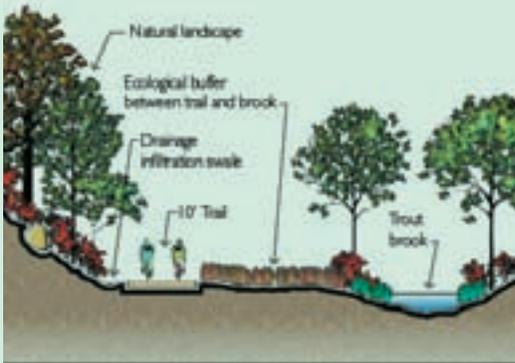
WIDE RIGHT-OF-WAY WITH LIMITED NATURAL VEGETATION



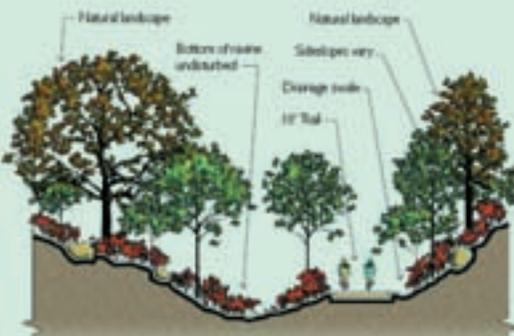
RIGHT-OF-WAY WITH MORE EXTENSIVE NATURAL VEGETATION



LIMITED RIGHT-OF-WAY WITH EXTENSIVE NATURAL VEGETATION



TRAIL ALONG SENSITIVE ECOLOGICAL AREA – SUCH AS TROUT BROOK



TRAIL WITHIN A RAVINE AREA



TRAIL ALONG OLD RAIL GRADE

NATURAL AREA ALIGNMENTS (LEFT IMAGES)

From top to bottom, the graphics illustrate various natural areas encountered. In each case, the corridors would be individually evaluated and designed with the aid of a trained ecologist to minimize disruption to natural ecological systems. This most often will take the form of providing an adequate buffer between the trail and sensitive ecological systems. Notably, most of the alignments that the regional trail follows are already trail or old rail grade corridors, albeit in a natural surface form in many cases.

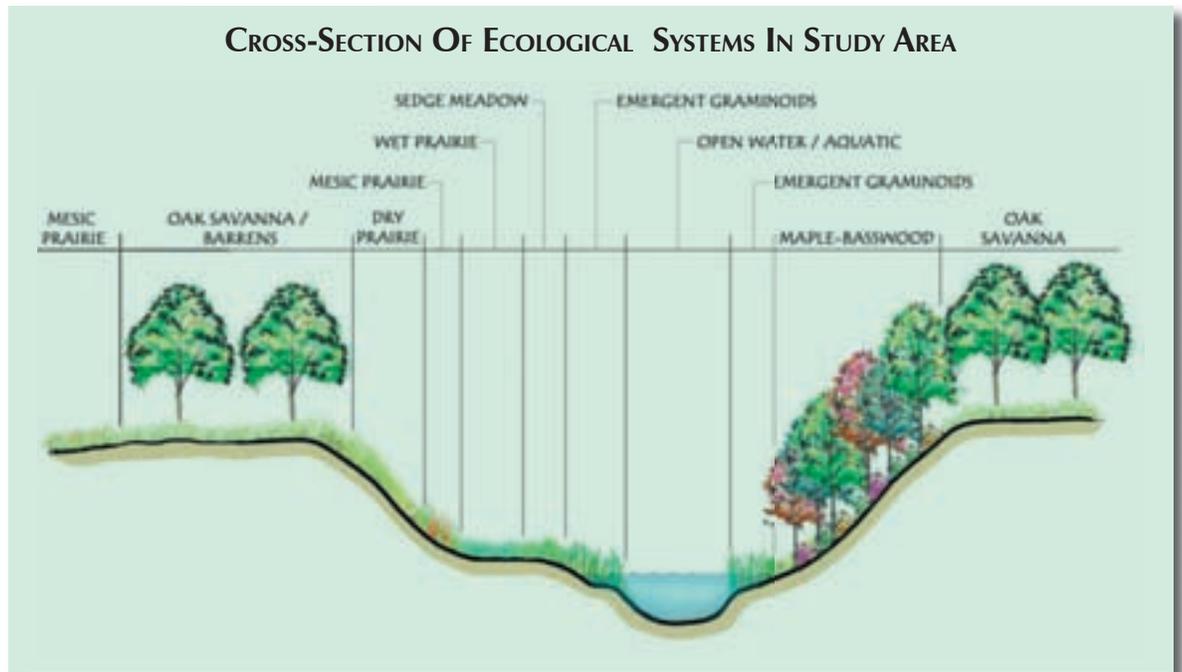
The biggest concern with paving these existing trail corridors is managing increased stormwater runoff. To prevent erosion and unnatural fluctuations in water flows, ecological-based natural infiltration will be used along all of these corridors.

NATURAL RESOURCES STEWARDSHIP PLAN

Natural resource stewardship relates to restoring, managing, and maintaining ecological systems to enhance their intrinsic values, protect remnant landscapes, and provide ecological benefits. Since the trail traverses through a number of established parks and natural open spaces, a number of independent, but interrelated, stewardship programs come into play. The following provides an overview of the common stewardship goals pertinent to the regional trail corridor.

OVERALL STEWARDSHIP CONTEXT

Historically, the study area was a very diverse, ranging from aquatic zones along the river and lowland areas to upland oak savanna and prairies systems, as the following graphic box illustrates.



Within the master plans for Afton State Park, St. Croix Bluffs Regional Park, and Carpenter Nature Center, stewardship focuses on reversing current trends in ecological quality, which is toward continued decline as documented in the publication entitled *Maintaining and Enhancing Environmental Quality in Denmark Township*. Aspects of each of these plans and reports have value in establishing stewardship strategies for natural areas encountered along the trail corridor.

In general, the stewardship programs for individual parks will take precedence, with natural areas adjacent to the trail being managed as part of those larger systems. For areas outside of established parks and natural areas, the stewardship plan for the regional trail will be consistent with St. Croix Bluffs Regional Park and the *Maintaining and Enhancing Environmental Quality in Denmark Township* publication since those are plans that Washington County Parks adopted and has jurisdiction over.

STEWARDSHIP STRATEGY

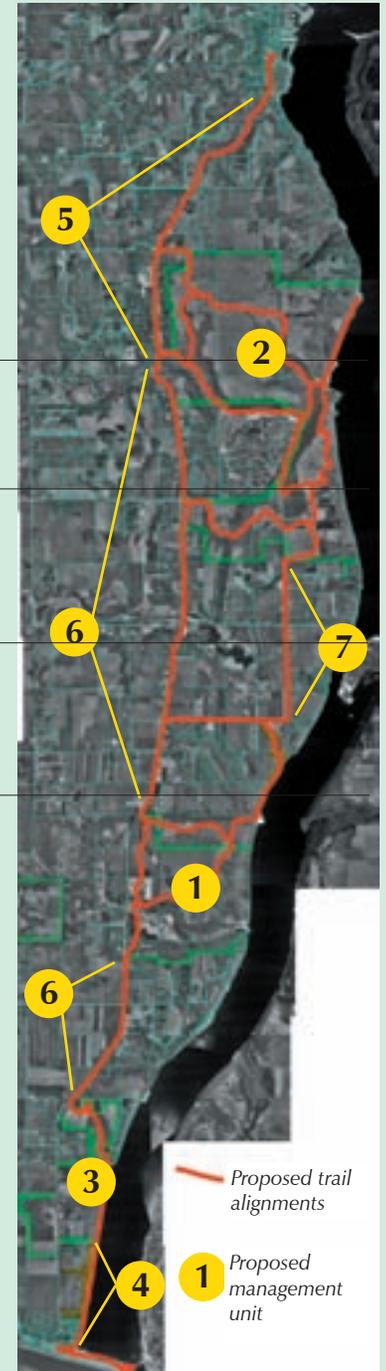
Consistent with St. Croix Bluffs Regional Park's master plan, a multi-phased stewardship program will be used to restore and manage natural resources along the trail corridor. The program would be spread out over a period of time coordinated with funding appropriations and scientific expertise. The program will also be coordinated with the stewardship activities associated with individual parks to gain program efficiencies and effectiveness.

The baseline strategy for the stewardship program is to segment the trail into management units where natural areas can be sequentially restored to higher quality sustainable systems, as defined in the following graphic box.

NATURAL RESOURCES STEWARDSHIP UNITS AND PRIORITIES

The following table establishes the management units in general (but not exclusive) order of priority, which is based on the master plan's interrelationship with other stewardship programs, extent of natural resources found along each segment of the trail corridor, and other factors as described.

| UNIT | OVERVIEW AND RATIONALE |
|------|--|
| 1 | This management unit relates to St. Croix Bluffs Regional Park. It is listed first to ensure consistency between stewardship programs associated with the regional park and trail amenities within the study area. All of these are managed, administered, and funded through Washington County Parks. Stewardship of natural resources would be in accordance with the programs established for the park as part of its 2002 master plan. |
| 2 | This management unit relates to Afton State Park. Although listed second, it is expected that stewardship programs in St. Croix Bluffs Regional Park and Afton State Park will be concurrent in line with funding availability. Stewardship of natural resources would be in accordance with the state park's programs as part of their management plan. |
| 3 | This management unit relates to Carpenter Nature Center. It is listed third due to it being a private entity that Washington County has no direct control over. Within trail easement, stewardship of natural resources will be closely coordinated between Washington County and Carpenter. Lacking an on-site program, stewardship of the trail easement will be consistent with the practices of St. Croix Bluffs Regional Park, as funding allows. |
| 4 | This management unit relates to the old rail grade between Carpenter Nature Center and Point Douglas Park. Although listed fourth, ensuring that natural systems are stable to minimize any potential for erosion on side slopes adjacent to the river will be an ongoing priority. As funding allows, a more robust approach to stewardship will be used following practices consistent with those established for St. Croix Bluffs Regional Park. |
| 5 | These management units relate to road rights-of-way that the regional trail follows. Unit 5 is the top listed right-of-way due to the more extensive natural vegetation along the coulee area of St. Croix Trail heading south out of Afton. Unit 6 relates to the other segments of this road, which exhibit varying degrees of natural vegetation impacted by the trail corridor. Unit 7 relates to the corridor along Quadrant, which exhibits much more limited natural vegetation than the other segments. In each of these units, the primary objective will be to ensure that natural systems are stable to minimize any potential for erosion of side slopes associated with the trail. As resources allow, a more robust approach to stewardship will be used following practices that are consistent with those used for St. Croix Bluffs Regional Park. |
| 6 | |
| 7 | |



TECHNICAL APPLICATION OF ECOLOGICAL AND NATURAL RESOURCE STEWARDSHIP STRATEGIES

As the graphic box on the previous page illustrated, natural resource stewardship along the trail corridor will be consistent with other programs already established as part of master plans for the regional and state parks within the study area. At the technical trail design level, stewardship will focus on four priorities:

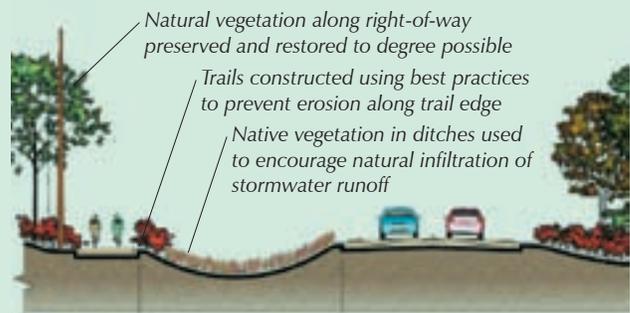
- Minimizing potential for erosion during construction
- Buffering adjacent ecological systems, especially Trout Brook
- Enhancing the quality of natural resources within the corridor consistent with ecological prototypes for healthy systems (as established for St. Croix Bluffs Regional Park)
- Enhancing the natural scenic qualities of the corridor.

The following graphic box illustrates these priorities relative to several trail cross-sections.

TECHNICAL OVERVIEW OF STEWARDSHIP FOCUS

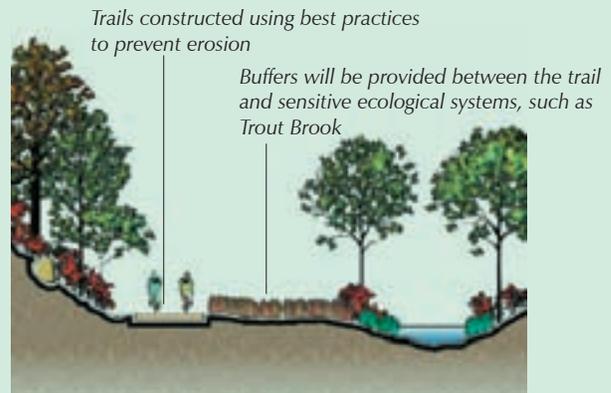
RIGHT-OF-WAY ALIGNMENTS

Stewardship of natural resources within these areas will focus on good construction techniques that minimize erosion, infiltrate stormwater, and enhance the natural character of the corridor over time. Management of invasive plant species will be a significant challenge and priority.



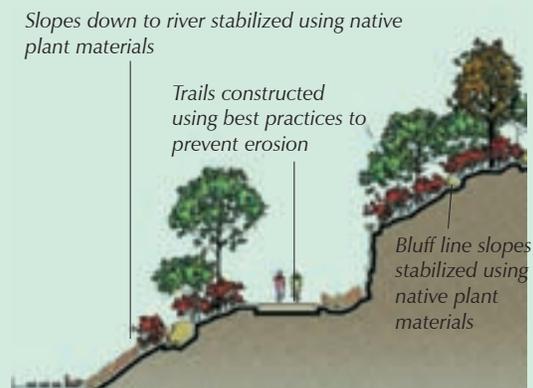
SENSITIVE AREA ALIGNMENTS

Stewardship of natural resources within these areas will focus detailed technical evaluation of ecological systems and locating the trail to minimize disruption and provide adequate buffers. Wildlife needs will also be considered.



OLD RAIL GRADE ALIGNMENTS

Stewardship of natural resources within these areas will focus on staying on already disturbed areas and stabilizing river embankments and bluff lines using native plant materials. Management of invasive plant species will be a significant challenge and priority along these segments.



Note: "Best practices" relates to the Best Management Practices defined on page 5.6)

TECHNICAL RESOURCES IN SUPPORT OF THE NATURAL RESOURCES STEWARDSHIP PLAN

Maintaining and Enhancing Environmental Quality in Denmark Township and the natural resources stewardship and water management plan for St. Croix Bluffs Regional Park are directly referenced for a more detailed overview of specific techniques and approaches to natural resource stewardship. The former is provided as an attachment under separate cover. Key excerpts from the latter are provided in Appendix B, with the entire document on file with Washington County Parks and the Metropolitan Council.

In addition, the guidelines for natural resource stewardship defined in two publications from the MNDNR are also referenced as part of this master plan. The first is *Guidelines for Managing and Restoring Natural Plant Communities Along Trails and Waterways* (2000) and the second is *Trail Planning, Design, and Development Guidelines* (scheduled for release in 2005). Both of these provide valuable technical information that support the strategies defined in the other referenced master plans and publications.

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SECTION VI IMPLEMENTATION AND MANAGEMENT PLAN

OVERVIEW

Implementing the master plan for the St. Croix Valley Regional Trail will require significant initial and long-term capital investments for physical development, ecological stewardship, operations, and maintenance. Undoubtedly, implementation will occur over a number of years as funding and other resources become available and plans become refined and ready for implementation.

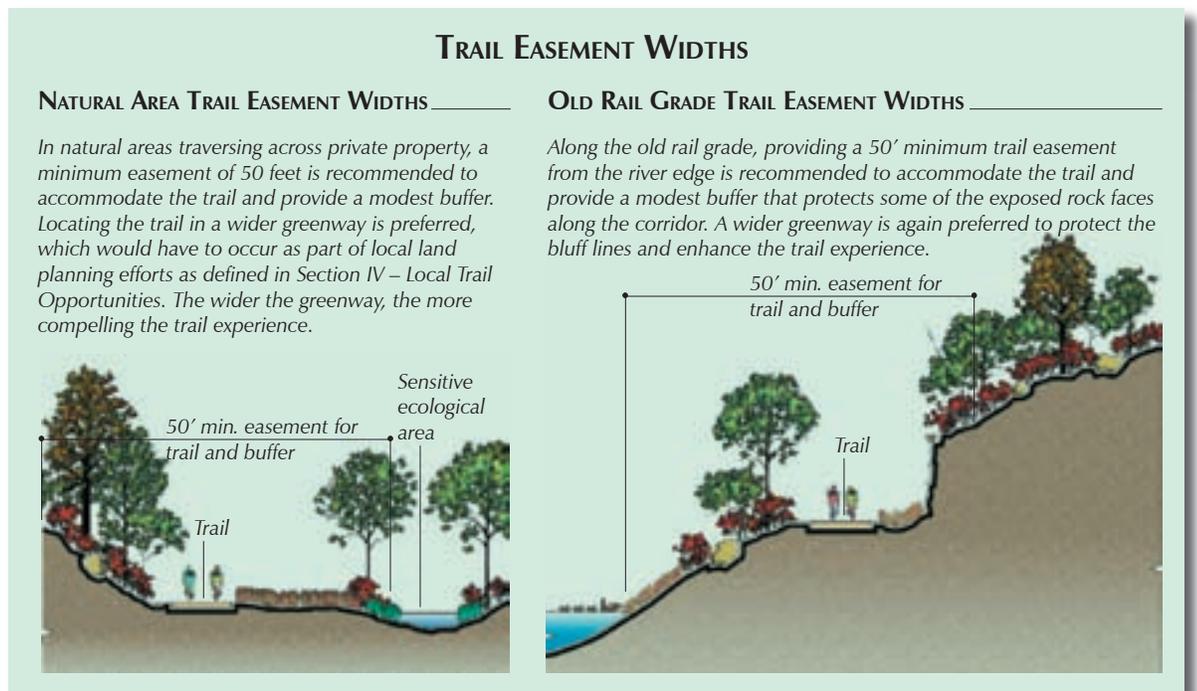
The following considers an overall strategy for implementing the master plan and managing the trail once it is completed. This section also considers Washington County's approach to operations and management as it pertains to the trail. Implementation components include:

- Acquisition Plan
- Development and Natural Resources Stewardship Cost Projections
- Implementation Strategy and Priorities
- Management and Operations
- Public Involvement in Implementing the Master Plan

This following considers each of these in greater detail.

ACQUISITION PLAN

As defined in Section III, three segments of the trail traverse across private property, exclusive of the Carpenter Nature Center. In each of these cases, a trail easement will be needed, either through direct acquisition or other arrangement. For planning purposes, a minimum easement width of 50 feet is recommended, as illustrated in the following graphic box.



EASEMENT REQUIREMENTS ASSOCIATED WITH EACH PRIVATE PROPERTY

The three segments of trail that traverse across private property include:

- Afton Alps trail segment (as defined on Trail Segment Detail Maps #5 and #6 in Section III) – 2,900 lineal feet of trail (3.3 acres)
- River loop trail segment (as defined on Trail Segment Detail Maps #10 in Section III) – 4,450 lineal feet of trail (5.1 acres)
- Old rail grade segment (as defined on Trail Segment Detail Maps #14 in Section III) – 5,325 lineal feet of trail (6.1 acres)

For each of these segments, a minimum of a 50 foot easement is recommended as the basis for negotiation and determining the cost for acquisition. Note that the master plan does allow Washington County Parks some flexibility on the final width of these easements to accommodate concerns of property owners and the realities of negotiating under a willing seller context. In some cases, such as near the existing private marina, acquiring property to the edge of the river may not be feasible.

In addition, Washington County Parks will work in concert with the City of Afton and Denmark Township on broader greenway planning initiatives associated with these trail segments to expand their scenic value and protect natural open space adjacent to the trail easement.

EASEMENT REQUIREMENTS ASSOCIATED WITH CARPENTER NATURE CENTER PROPERTY

Washington County will negotiate in good-faith with the Carpenter Nature Center Board for a trail easement through their property for mutual benefit. Whether that is best accomplished through formal acquisition of an easement or some other form of agreement has not been determined.

Under the assumption that the nature preserve will continue its focus on open space preservation, the actual width of the easement can be limited to only what is required to construct and maintain the trail. In general, a minimum 30 foot permanent easement is recommended, with a 50 foot construction easement also recommended. This trail segment is approximately 7,350 lineal feet.

TRAIL EASEMENT ACQUISITION COST PROJECTIONS

Given the rapidly changing land values and the sensitivity of the issue to local land owners, acquisition cost projections have not been established. Once the master plan has been adopted, Washington County Parks will maintain an open a dialogue with affected property owners to stay abreast of market rate acquisition costs and their level of interest in providing an easement. At the time of trail funding, Washington County will formally establish property values for review and approval by the Washington County Board and Metropolitan Council. To-date, no property owner has been individually contacted about acquisition or property valuations.

Cost projections for developing the trail are on a unit basis based on typical average costs for developing similar trails in Washington County and other counties and local municipalities. Typically, development costs to build the trail range average \$135,000/mile, with limited grading and site preparation costs included. For general trail development, this average cost is used, with additional line items associated with other development items. The following table defines the projected cost for developing the *optimal* trail route only. Alternate routes are not considered.

DEVELOPMENT COST PROJECTIONS

TRAIL DEVELOPMENT COST PROJECTIONS

The table provides cost projections for the optimal regional trail route. Alternative routes are not included in the estimate. Costs are based on 2005 dollars. (* Trails in St. Croix Bluffs are included as part of that master plan.)

| ITEM | DESCRIPTION | COST ESTIMATE |
|---|---|---------------|
| Trail | Development of 17.4 miles* of paved asphalt trail at 10 feet wide. Includes 2.5 inches of asphalt and 7 inches of Class 5 aggregate base. Also includes basic grade preparation. \$135,000/mile was used. | \$2,349,000 |
| Trail Bridges | Two 60 foot span replacement bridges for old rail grade south of Carpenter Nature Center. | \$150,000 |
| Trail Amenities | Basic support amenities, including information signage, trailhead kiosks, benches, picnic tables, and related. | \$90,000 |
| Misc. | Extra construction related to trail development, including native vegetation reestablishment/enhancement, retaining walls, storm sewers, etc. | \$220,000 |
| Total Master Plan Cost Estimate | | \$2,809,000 |
| Professional Fees (Survey, Design, Engineering) @ 15% | | \$420,000 |
| Total Overall Master Plan Cost Estimate | | \$3,229,000 |

NATURAL RESOURCE STEWARDSHIP COST PROJECTIONS

Cost projections for natural resource stewardship are not included under this master plan. Stewardship of natural areas adjacent to the trail will be part of larger programs associated with individual parks and natural areas. This includes St. Croix Bluffs Regional Park, Afton State Park, and Carpenter Nature Center.

In rights-of-way, the development cost estimate includes a cost item for vegetation reestablishment and enhancement. Thereafter, stewardship of natural vegetation in rights-of-ways would be budgeted through the Washington County Transportation Department.

IMPLEMENTATION STRATEGY AND PRIORITIES

Implementation of the master plan will occur over an extended period of time coordinated with funding appropriations. Ideally, full development of the trail under one phase would be the most efficient and serve the broadest public need. However, uncertainty as to funding availability, and timeframes associated with easement acquisition, roadway upgrades, and local approvals may require development phasing, as the following considers.

PHASING PRIORITIES

The general strategy for phasing development is to work from south to north. The primary reason for this is the critical nature of securing a trail easement along the old rail grade from Point Douglas to and through the Carpenter Nature Center before larger-tract properties are further divided up, making acquisition and development of a trail corridor that much more challenging. Washington County Parks also places high value on connecting Point Douglas County Park and St. Croix Bluffs Regional Park together via a trail to expand use opportunities of both of these parks. Once this segment is completed, the phasing plan continues north, as the following listing defines.

PHASING SCHEDULE:

- Phase 1 – Point Douglas Park to St. Croix Bluffs Regional Park
- Phase 2 – St. Croix Bluffs Regional Park to Afton State Park – Quadrant Avenue and River Loop Branches
- Phase 3 – Afton State Park to City of Afton
- Phase 4 – St. Croix Bluffs Regional Park to Afton State Park – St. Croix Trail Branch

Quadrant Avenue Branch is listed as a higher priority than the St. Croix Trail Branch due to the more accommodating grades, making that route more family-friendly. Notably, both routes are key aspects to the overall trail master plan due to the different experiences and level of difficulty they offer.

Trail development within Afton State Park and St. Croix Bluffs Regional Park will be consistent with their master plans, which will take into consideration the timing of trail development associated with this master plan.

The timing of developing a bike route (widened shoulder) on St. Croix Trail is directly associated with and part of future road upgrading, which as of 2005, could be after 2015. Nonetheless, the bike route remains an important aspect of the overall regional trail master plan and its expedient development would have considerable value to those user groups.

MANAGEMENT AND OPERATIONS

The Washington County Parks Division is charged with the management and operation of the County's park and trail system. This includes the St. Croix Valley Regional Trail as defined under this master plan. The Washington County Board of Commissioners establishes policies and goals for the park and trail system and through an annual budgeting process provides capital and operating funds for parks. The Parks and Open Space Commission, appointed by the County Board of Commissioners, serves as an advisory committee advocate for an improved and enhanced park and trail system in the County. The specific responsibilities of the Parks Commission include:

- Review proposals and make recommendations concerning park and trail acquisition and development
- Review and make recommendations concerning recreation programming, fees for facility use and park use policies
- Recommend enhancing natural resources in County parks and regional trail corridors
- Provide input into the County Park Policy Plan and Park Master Plans for park development site planning
- Perform fact-finding tasks as directed by the County Board.

A copy of the specific wording of the related ordinance is available through Washington County staff.

ORDINANCES

Public use and enjoyment of the County park and trail system, including the St. Croix Valley Regional Trail, is controlled by Ordinance No. 93, Park Ordinance, (the Ordinance) which was last amended on December 12, 2000. The Ordinance incorporates pertinent Minnesota statutes, and addresses the following issues:

- Regulation of Public Use
- Regulation of General Conduct
- Regulations Pertaining to General Parkland Operation
- Protection of Property, Structures, and Natural Resources
- Regulation of Recreation Activity
- Regulation of Motorized Vehicles, Traffic and Parking

A copy of the ordinance is available through Washington County.

ENFORCEMENT

Trail users will be informed of trail rules and regulations in a variety of ways. Kiosks and signs will be strategically located to address specific information about allowable trail uses, permitted and prohibited activities, fees, and directions. The Washington County Sheriff's Department responds to emergencies and criminal complaints.

GENERAL OPERATIONS

The Parks Division has an annual operations and maintenance budget of approximately \$1,750,000 to operate and maintain the County's park and trail system with approximately 12.5 permanent employees. In addition, approximately 62 seasonal employees are hired each year as life guards, maintenance workers and gate attendants.

Washington County's annual report of facts and figures for 2001 reported that 180,000 visits were made to St. Croix Bluffs Regional Park, which is in the study area. Development of the St. Croix Valley Regional Trail is expected to increase use of the park and also bring many more visitors to the area just to use the trail.

MAINTENANCE

Maintenance of facilities and lands is essential to protect public investment, enhance natural resource qualities and achieve the County's goals of providing users clean, safe, enjoyable year round park experiences. Washington County Parks Division has a clearly defined maintenance program. Reporting to the Park Director are the Parks Manager and Planner. Reporting to the Parks Manager are the Maintenance Supervisor, Parks Coordinator, and office staff. The Maintenance Supervisor oversees five maintenance workers, 12 seasonal maintenance workers, and six park attendants. In addition, the Washington County Transportation Department will provide assistance to maintaining the trail segment located in roadway rights-of-way.

As defined under its master plan, St. Croix Bluffs Regional Park has a maintenance facility that functions as an equipment and supply storage area. The facility also provides an indoor work area to perform minor vehicle and equipment maintenance, as well as serving as a place to conduct park maintenance operations. It is expected that this facility will support trail maintenance activities.

Accomplishing the maintenance needs of the St. Croix Valley Regional Trail will be challenging. As trails and other park land and facilities are further developed, new or expanded maintenance services will need to be provided. Washington County recognizes the need to remain committed to the maintenance needs of parks and trails. It is unlikely that existing staff and budget resources will be sufficient. Although increased funding is critical, perhaps even more important is increasing the number of staff. As an example, trail development and natural resource management have an initial cash intensive need, but ultimate success requires hands-on stewardship for many years to achieve desired results. This takes staff with the knowledge and time to commit to this stewardship. Traditional and non-traditional funding and staffing sources will have to be pursued to meet the maintenance needs of the park and the master plan objectives.

OUTREACH AND MARKETING

Washington County continues to expand its outreach effort, in an effort to improve public awareness of its park and trail facilities, programs, and services. This outreach effort has various components, including the following:

- **Printed Materials:** Washington County has developed and distributes on a regular basis brochures and maps, including trail and park maps and picnic, camping, and other brochures. Park and trail fliers are also distributed to County departments, libraries, community agencies, and other contacts throughout the community.
- **Electronic Communication:** Washington County has a web page to inform citizens about the County's functions and services (e.g., Park Commission meetings, the master planning process, trails, park facilities, and programs). In addition, the public can contact the Parks office through the County's e-mail system.
- **Other Outreach:** Other forms of outreach and marketing include displays at the Washington County Fair, articles in the County Commissioners' quarterly newspaper, the production of flyers and brochures and the display of information at County Service Centers and park kiosks. The County also publishes news releases and advertisements in local community and metropolitan area newspapers that highlight upcoming programs and facility openings. The County also promotes park and trail use through feature articles and presentations to other County departments and local agencies.
- **Marketing Initiatives:** Washington County will be developing a comprehensive marketing plan to increase public awareness, understanding, and use of park facilities, services and programs. In addition, the marketing plan will identify the need to expand and diversify marketing and communication efforts to advance park use by minority populations and special needs groups.

PUBLIC INVOLVEMENT IN IMPLEMENTING THE MASTER PLAN

Public interest in the trail is expected to remain high in the years to come, especially as it relates to the impact the trail will have on individual properties. Public involvement and comment will continue to be sought during the design and construction phase to ensure that every precaution against avoidable impacts is taken in a good-faith manner. In addition, forums for broader public input (e.g., open houses and presentations) are also envisioned as needed to communicate and exchange ideas with interested citizens.

The objectives associated with involving citizens in the implementation process include:

- Determine who the stakeholders are and their interest in a particular segment of the trail
- Understand their needs and unique perspectives
- Identify and understand concerns and problems
- Develop alternatives and find appropriate solutions with input from stakeholders

In addition, Washington County has an appointed Parks and Open Space Commission that advises the County Board on development initiatives within the county. The public is welcome to attend its regularly scheduled meetings. Also, Washington County is continuing to develop numerous tools to provide a consistent level of communication with interested citizens, as previously defined.

End of master plan.

APPENDIX A PUBLIC COMMENTS

OVERVIEW

As part of the public process, Washington County Parks asked participants at meetings to fill out comment cards for the public record. The following are word-for-word statements that individuals provided.

St. Croix Valley Trail Master Planning
Public Comments

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| | | We do not support any trail along Quadrant. We pay good money (property taxes) to live away from your "greater community" |
| | | Stay on County 21 |
| | Private Citizen | Tour data suggests that essentially a majority of the trail users have live within ¼ of a mile of the trail. Therefore, why do you speak of the greater community? By your own data it is essentially only the current landowners adjacent to the proposed trail that would use it, so let's have it in the landowners' perspective that is all that should be taken into account here! |
| | Private Citizen | This is simple. Any plan that requires landowners to see property should be evaluate for feasibility by surveying the affected landowners to determine if there is any willingness to sell. If not, stop wasting tax payers dollars on a dead issue! |
| ? | Private Citizen | Close County 21 to thru traffic and use only for bike/recreational – unless it can be safe for all! |
| ? | Private Citizen | There is clearly no support for any trail through this area. Let's stop wasting people's time and money. |
| ? | Private Citizen | Vote No for Any Trail – This trail is going to drive up my property taxes. It'll bring more people trespassing on my property and drain people resources away from more important public endeavors like education, public health, and homeland security. Nobody's going to be using – fails if we can't properly respond to events like a SARS outbreak. |
| ? | | Use Neil Ave or Manning Ave – straight shots |
| Bergland, Dorothy 15862 45 St Afton MN 55001 651-436-4470 | Private Citizen | I am totally opposed to the proposed trail being routed on 45 th St and using private property for access to the state park. That spur gains absolutely nothing. The only reasonable option is to continue on 21 and widen the existing shoulder. Co Rd 21 is not a family friendly route, the entire distance to Prescott, because of the grade. |
| Bernardy, Val and Bill 15260 80 St S Hastings MN 55033 651-436-1730 | Private Citizen | Widening St. Croix Trail would not be a good option because bikers do not use shoulders (example 70 th St) and walking along a busy road does not allow enjoyable conversation or scenery (we do not like watching and listening to cars while we walk). The best option I see is Quadrant because it connects to the state park very nicely, is not a busy road, has a nice grade to it, and connects to the development on 87 th St which has green (common) space. The hill that comes down the property and across the swamp (over 80 th) from the park is not a good choice due to the steep slope down to 80 th . You would have to develop switch backs and the grade would not be family friendly. The cost to go over the swamp? The swamp is very wide and water level goes up and down due to spring run off and heavy rains. |
| Biscoe, Steve 13329 70 th Street South Hastings, MN 55033 | Private Citizen | Cost! Increased Traffic! Safety! Property Rights! |

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| Boeckermann, Herbert 15824 50 St Afton MN 55001 | Private Citizen | I am a citizen of Afton and prefer not to connect the bike trail to the City of Afton. However, if this is not possible, I strongly request that the trail be located only on existing highway right of way along St. Croix Trail (Hwy 21). I do not support entering the residential area on 50 th Street. I would like to see you explore the possibility of a below grade crossing below Hwy 21. |
| Boeckermann, Herbert P O Box 266 Afton MN 55001 651-436-6289 | Private Citizen | I am opposed to any kind of trail within the corridor search zone show in red on the map. I am opposed to any kind of trail over private land. Hwy 21 alternative route is the only route that should be considered. |
| Boeckermann, Merrill P O Box 266 Afton MN 55001 651-436-6289 | Private Citizen | No bike trail on private land. |
| Boorman, Dave 16542 Swede Hill Dr S Afton MN 55001 651-436-5430 | Private Citizen | Trail users – where would people “park” and then walk/bike. Presently, many cars park on 50 th St S to enter Afton State Park where no parking is provided. I believe this to be a serious problem. How do you deal with parkers who park along existing roadways? |
| Boyd, Jean 7575 Quadrant Hastings MN 55033 651-436-8031 | Private Citizen | I feel that we have enough parks in Denmark. Afton, St. Croix Bluffs, and Carpenters all have walking trails now. Many people moved here to get away from the city and the people. I don't believe that 75% of the users would be neighbors. I'm not comfortable with others walking along the edges of my property. |
| Brake, Mike 11155 St. Croix Trail South Hastings MN 55033 651-438-2501 | Private Citizen | It sounds like a great idea if you are a developer, business owner, or hard core biker, but a less than desirable proposition if you are a land owner. My biggest concerns are taxes/costs to land owners/taxpayers, liability to landowners, and legitimate traffic concerns. Please put this measure to the voters. I don't want developers and the Met Council deciding the fate of Denmark Township. |
| Brumbaugh, Angela 8313 Quadrant Ave S Denmark Twp MN 55033 651-998-0806 | Private Citizen | I am totally against using the railroad bed as a trail. It would have strangers on my property and give them access to my beach, dock, and boat. I would support a trail along 21. |
| Brumbaugh, Monte 8313 Quadrant Ave S Denmark MN 55033 651-998-0806 | | Not on my railroad bed! |
| Bullis, Susan 15580 15 St S Afton MN 55001 651-436-1287 | Private Citizen | How about a trail along Cty 18 starting north of the village to Trading Post, going south to 80 th St. to the park entrances? We all want to keep Afton rural, but what about horse owners? Our needs are not being addressed. Please consider a Gateway type trail. |

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| Christensen, Lester 4206 River Rd Afton MN 55001 436-8889 | Private Citizen | Keep trail off River Road. A good number of skate boarders, hikers, etc., make use of River Road now. Some groups are quite large. |
| Conzemius, Ann 4786 ST Croix Tr Afton MN 55001 651-436-1024 | | Connect the parks with a trail Afton St Park south to River Bluff park where there is no parking. Add small shoulders to 21 where there are existing shoulders for safety. Connect cul de sacs between 45 th and 50 th already existing grass trail. |
| Conzemius, Jack 4786 ST Croix Tr S Afton MN 55001 | Private Citizen | We are 1000% percent opposed to any trail anywhere along CR 21. CR 21 is a preserved route and is not to be disturbed. I will vehemently oppose both verbally and legally any attempt to impinge on my property along CR 21. |
| Davies, Butch and Diane 8487 Quant Ave S Hastings MN 55033 651-436-7234 | Private Citizen | We feel that we already have a trail or two connecting the existing parks. The trails are called the St. Croix River and St. Croix Trail (Cty Rd 21). Let's improve Cty Rd 21 for the safety of all of its users. |
| Delaney, Kathy 14906 50 th St S Afton MN 55001 | Private Citizen | There was no comment on the suggestion that that trail be constructed to accommodate horses. The timing of the meeting – during the holidays, makes it very difficult for people to attend. Presentation began at 6:00, which is a difficult time for families. It seems that because this trail is along Cty. Road 21 for most of its alignment, there is not a real need or desire for this trail in the community. The consultant firm that is working on the project is not familiar with the grades on the road. The 50 th Street grade is 45 – 50 degrees, not 7% that he seems to think it is. I got the feeling that he has not personally visited the sight going through Afton. |
| Delaney, Kathy 14906 50 St S Afton MN 55001 651-436-6961 | Private Citizen | Afton and Denmark township are horse communities with minimum acreage, requirements that encourage horse properties. Any trail through these communities should plan for horse usage. Your statistics indicate that 75% of trail users are from the community. The properties around the Gateway Trail are increasing in value because it is a horse trail and heavily used by horsemen. |
| Devine, Charlie 15489 45 St S Afton MN 55001 651-436-8323 | Private Citizen/Elected Official | Keep proposed trail off private property. Trails must incorporate horse trails. Stay on county roads. |
| DiLorenzo, Charlotte 16380 Swede Hill Dr S Afton MN 55001 436-2878 | Private Citizen | Not interested at all in trail – existing facilities are very adequate. Once 50 th /River Road is paved, families will use it to get to the state park. This trail is not wanted in this community and not needed – the whole idea is a waste of resources! |

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| Dunn, Carolyn 15268 50 th St S Afton MN 55001 436-5382 | Private Citizen | Please.....not 50 th St!!! I cannot and will not support this option today or in 15 years if we still reside here. The grade is too steep. There is not enough room on the north side of 50 th Street (or the south side) for a bike trail. Foliage would have to be removed – these trees and brush between the road and the homes removed would destroy our privacy. Privacy and the rural aspect of our area is the reason we purchased our home. In addition, there is already a current parking problem on 50 th Street and people already seem to think my driveway is a turn around, which it is not! Lastly, our beautiful sunrise view and open land view would be destroyed!!!! You stated that 50 th St. is the "most desirable" to the county; however, this is not the case according to residents of Afton and those on 50 th St. Why have the Afton residents been part of your bike trail surveys??? |
| Dunn, Carolyn 15268 50 th St S Afton MN 55001 651-436-5382 | Private Citizen | With regards to the "proposed trail search area", Co Rd 21 could be the only option. If there are too many issues/difficulties involved with this line, the ALTERNATIVE <u>should be</u> Co Rd 18 (west to Neal or Manning. Neal or Manning would or <u>could be</u> made into a "family friendly" route. |
| Eisinger, Claire P O Box 190 15843 45 St S Afton MN 55001 651-436-5839 | Private Citizen | I want our property taken <u>out</u> of the search area! Now, 5 years from now – 20 years from now. County Road 21 should leave the trail. |
| Eisinger, Claire P O Box 190 Afton MN 55001 | Private Citizen | If trails are being constructed on the right of way, no comment. Absolutely no private property. Afton will not be much different than it is today! |
| Ellingson, Pam 11721 Osprey Ave 651-480-3574 | Private Citizen | I would like to see St. Croix Trail widened and trail put along side it. |
| Ellingson, Pamela 11721 Osprey Avenue Hastings | Private Citizen | I realize that there is a problem with County Road 21 and I feel a trail / path along there is needed, but let's keep it on 21. There are a lot of parks in Washington County with trails that these bikers could use. Why don't they come to these meetings if they want a trail so bad? They need to have some road use training also. They don't share well. They feel they need your whole lane and do not move over, then get mad when you try to pass. |
| Engstrom, Dave 14805 45 St S Afton MN 55001 651-436-7082 | Other – Mayor Elect | A trail on Co Rd 21 with ties to the parks would be great. Use Co 21/narrow it down and put in an off road trail for bikes on one side and an equestrian trail on the other. "Do not condemn" |
| Fallon, Ann 5431 St. Croix Tr S Afton MN 55001 436-1909 | Private Citizen | Not thru my front yard! Meetings need to be later in the evening so people who work can make it. |

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| Fesler River Rd Afton MN 55001 651-665-0030 | Private Citizen | Spend my tax dollars on schools, libraries, county parks, fire depts.. I don't want my county paved over. Concept is flawed. River <u>is</u> the trail!! Put anything on ROW of Neal or Manning. Why pave our whole state? Who says we need trails in every corner? These are environmental scars – HUGE wilderness impact, Why not keep state park rustic and remote? It is not Lake Phalen!! How many pristine acres will be made impervious? You will never be able to police use (no ATVs or snowmobiles) – you can't do it now – you won't be able once usage increases. |
| Fesler, Janet P O 374 Afton MN 55001 665-0030 | Private Citizen | Is density a foregone conclusion? Do we have to pave the state? Can't we leave undeveloped areas? Don't force this on us. You need better fire, police and schools, leaving open land as a legacy to the future. I do not want a trail. I want tax dollars used elsewhere. There is no enforcement of trespass laws now – it'll be hopeless with a trail. |
| Finwall, Shaun 5493 St Croix Tr S Afton MN 55001 651-436-2450 651-249-2304 (w) | Private Citizen | I am very supportive of a trail system. I know how difficult planning for the future can be being a city planner myself. Of course everyone supports a trail until it affects their property – which is my concern now. A trail along Hwy 21 in front of my house would be a real asset to me. I believe there is an existing trail easement in front of my house, if I recall correctly from our survey. However, you reflect the trail straddling the south side of our property on a piece of 60' wide land that went tax forfeit a few years ago. We purchased the land from the County as it actually has our driveway located on it. You are proposing a trail on our driveway. This is an extreme grade and would never work. Please visit the site and see for yourself. |
| Fitzpatrick, Jim 12805 St. Croix Trail South Hastings, MN 55033 | Private Citizen Elected Official Organizational Representative | Remember that Carpenter Nature Center Board of Directors will need to approve the trail and probably will need to be paid for its use. I can lead the way but please don't assume it's a done deal through CNC . . . yet. I still think it's a good idea. I support it. |
| Fitzpatrick, Jim | Organization Representative | It's a great idea! |
| Freitag, Judy 11253 St Croix Tr S Hastings MN 55033 651-437-8852 | Private Citizen | If you're trying to make family friendly areas and bicycle friendly pathways – it was agreed upon tonight that you need 2 different trails. Families don't need a trail – they have the St. Croix Bluffs Park, Afton State Park, and Carpenter Nature Center. These are all in place right now. The need to satisfy bikers would be to widen shoulders of County 21. Families are not going to walk for 20 plus miles. If they (Met Planning Commission) want to spend planning money, tell them to plan more trails in the existing parks. |
| Freitag, Richard Lot 5 St Croix Harbor Hastings MN 55033 651-437-8852 | Private Citizen | We need 20' at high water to clear Prescott RR bridge along the river you would need a life bridge so we could access the river from our harbor. What's wrong with St. Croix Trail? |
| Frichol, M 4723 Parson Ct Afton MN 55001 | | Second plan/Section E: must incorporate parking facilities in the plan – this is where people will start the trail to avoid the steep grades on Coulee and 50 th . Contrary to your claimed supposed value add of trail, most Afton residents consider the trail a big negative and don't want it at all. |

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| Frichol, M 4723 Parsons Ct Afton MN 55001 651-436-8788 | Private Citizen | Stop working to use private property. Stay out of our neighborhoods. Use Cty 21 – be creative using existing access. |
| Fritze, Tracy 15499 87 St S Hastings MN 55033 651-436-1602 | Private Citizen/Denmark Clerk/Treasurer | Don't support trail along river; the taking of private property. Not opposed to trail in general. |
| Gerenday, Anna 5431 S. St. Croix Tr Afton MN 55001 436-1909 | Private Citizen | There was nothing said about the stretch of land south of 50 th to the park. This is a concern to people on the east side where the county does not have easement on some of the properties. We have been owners for 17 years and intend to stay another 25 (we are not selling). |
| Gombroto, Louis 4401 Patelay Bridge Ave S Afton MN 55001 436-8747 | Private Citizen | Please notify me of any meetings. We live along Highway 21 (Coulee). I support construction of bikeway such as that already on the Coulee. Road plus 6' shoulder. I do not support an off road bike path that would require recontouring the right of way or private property. |
| Gombroto, Rebecca 4401 Patelay Bridge Ave S Afton MN 55001 436-8747 | Private Citizen | I am extremely opposed to any type of "contouring" or the taking of trees on private property. I also oppose taking of mature trees on the right of way when the taking of such trees will decrease the property value of adjacent land owners. I would like to be notified of all workshops and meetings regarding this issue. |
| Haider, Jean and Larry 14733 113 th St S Hastings MN 55033 651-437-6453 | Private Citizen | We commend your efforts thus far. We believe a trail would be beneficial to this area. |
| Harbor, Kimberly 10545 Cedar Heights Tr Hastings MN 55033 651-437-5210 | | Great presentation. I would love to see a trail that would link through my property or elsewhere. |
| Hartmann, Jean 3601 St. Croix Tr Afton MN 55001 | Private Citizen | I live in the village of Afton. My property includes the levee which is private owned. My drain field is on top of the land which is considered the levee. I also have a large garden there. This is my back yard. I'm not interested in having the bike trail here. Thank you. |
| Hartmann, Jean Gerke, Jim Thomas, Leslie Weir, Holly 3547/3579/3601/3633 St Croix Trail | | Please take us off the map – for the trail on old railroad bed – or east of St. Croix Trail |

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| Have, Mark 12745 32 St S Afton MN 55001 436-6408 | Private Citizen | I'm glad that a trail is being planned. I think you guys are doing a terrific job in your planning process. Please continue full speed ahead for the public good!! |
| Have, Mark 12745 32 St S Afton MN 55001 651-436-6408 | Private Citizen | I've lived in Afton for 20 yrs. What is glaringly absent from this rural area is a bike/hiking trail. Co. 21 sounds like a good option at this time from the village of Afton to Afton State Park. We can engineer anything if we put our minds to it and we can engineer <u>this</u> . |
| Heinbuch, Gerald 14510 104 th Street Hastings, MN 55033 | | Good. |
| Horn, Susan 7456 Quadrant Ave S Denmark MN 55033 651-436-8289 | Private Citizen | I would love to see a bike trail going down the old quadrant or Cty 21. I do not want a trail going through my front yard. |
| Howe, Tom 7952 Quadrant Denmark MN 952-591-0396 | Private Citizen | I don't think you will find a willing seller along the old RR bed. This route would be extremely expensive. This trail route would have an extreme negative value to properties along river. Best route would be to use existing public property right of way. The line that designated this proposed trail will dictate how the area gets developed so it is important to get it to connect. The serious biker will continue to use 21 shoulder – they do not like the family biker in their way. The serious biker enjoys the challenge of the |
| Jacobs, Jeff | Private Citizen | You claim trails raise property value. I am strongly opposed to you spending my taxes to build trails, especially if the end result is that they raise my property value and therefore my property taxes. There is no support from landowners for a trail along Quadrant. This road does not have sufficient width, there is heavy haul truck traffic on 87 th , which is a major safety issues and we don't want all the parking that this will encourage along Quadrant to get free access to Afton. |
| Jacobson, Tom 185 Lakeland Shores Blvd Lakeland Shores MN 55043 436-6866 | Private Citizen | I am very much in favor of the trail. I would like to see it built as soon as possible. I believe it would be of great benefit to the residents of the valley communities such as Lakeland Shores, Lakeland and St. Croix Beach. It would be great to be able to bike to the state park without going on the dangerous road. Also, as a motorist, it would be safer because it would divert bikes onto the trail. |
| Johnson, Bruce 3529 33 rd Avenue South Minneapolis, MN 55408 | Private Citizen Family prop. in Denmark | I am opposed to the Quadrant / 87 th loop option for safety and scenic reasons. Also, it seems we already have loops into Afton State Park, St. Croix Bluffs and Carpenter. The upgrade on Co. 21 will happen anyway with time. Most importantly – do not pave along the river. |
| Johnson, Ken & Linda 3752 River Road S Afton MN 55001 436-1107 | Private Citizen | Have concern over impact of trail being located on east side of highway. As the trail leaves Afton at base of Coulee, it would cross to private driveways. Trail would create a possible hazard entering street. Also, grade of second driveway would be affected. Minimal sight lines create another problem. |

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| Johnson, Ken & Linda 3752 S River Rd Afton MN 55001 651-436-1107 | Private Citizen | Own first property on River Road, at junction of Co Rd 21 and River Road. We have a 100 year old hedge around our front yard and would like to see this retained. Our house is also going to be enlarged toward the county road and is concerned with a trail being 15 feet from our house. Do not like the idea of a local trail into Afton State Park through private land. |
| Johnson, Mark 134 16 th Ave S South St Paul MN 55075 651-451-3767 | Private Citizen | Please stay away from the old railroad bed for any trail locations. We are not willing to sell and for any trail running through our property. |
| Johnson, Mark 134 16 th Ave South South St Paul MN 55055 | Other | I am concerned about the possibility of bike traffic having to cross 87 th and continue to the south. I would suggest you keep the trail on St. Croix Trail. |
| Johnson, Shari 2403 S St Croix Tr Afton MN 55001 651-436-3038 | Private Citizen | I don't think Afton needs anymore recreational areas – we have the river, a regional park, a state park, belwin preserve and a million dollar bike path. It isn't necessary to connect Afton to Pt. Douglas and a trail that will impact private land owners in a way that they don't wish. I hope you'll have empathy for the Afton landowners. |
| Jones, Don 2730 Itasca South St. Mary's Point, MN 55043 | City Council – St. Mary's Point and Mayor Elect | We discussed the plans for the trail at our last SMP council meeting. The trail does go through our community – a very small section. I hope to present more info on the trail at our January meeting, and perhaps send a letter of support. Right now, I'm speaking primarily as a private citizen. I support the trail as proposed. Good job presenting the current plan and the board process. |
| Kapawa, Greg 45 Quant Ave N Lakeland MN 55043 436-7658 | Private Citizen | My wife and I have biked over 200,000 miles each over the last 21 years. I teach a bicycle repair class and have taught touring classes for School Dist. 834. This proposed path is going to be hilly for families. Don't build a path for me – give me a shoulder 4' is just fine. |
| Keene, Jeff 7920 Quadrant Hastings | Private Citizen | Keep it on St. Croix Trail because bikes are there now. |
| Keller, Jim 8180 St. Croix Trail Hastings, MN 55033 | Elected Official | Great job presenting and dealing with difficult questions. I support your efforts and look forward to the trail going by my house. |
| Keller, Pat 8180 St Croix Tr S Hastings MN 55033 | Private Citizen | Thanks for making us look ahead. We need more visionaries like Teddy Roosevelt! |
| Killeen, John 7688 Prairie Smoke Blvd Bay S Hastings MN 55033 | Private Citizen | I prefer not to see trails. The trails will attract bicyclists and associated traffic. I wish to retain the rural character of this area. That is the reason we chose to live here. I will oppose any trails. |

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| Kraftson, Bob and Joanne Denmark Township | Private Citizen | My husband and I are avid bikers and roller bladders. We have long felt that a trail of this nature could be the most beautiful trail in MN. The emotional and physical health benefits of outdoor activity are well established. Furthermore, opportunities of this nature continue to draw individuals and businesses to MN promoting economic vitality and growth. We are excited about this proposal, and if we can be of help in promoting it, please let us know. |
| Kummer, Deb 13693 St Croix Tr Hastings MN 55033 651-438-2969 | Private Citizen | Keep trail west of 21 on top the hill. |
| Langstraat, Warren 3904 River Rd S Afton MN 55001 651-337-0147 | Private Citizen | I think use of Co Rd 21 is a faulty plan due to the steepness of the hills. It will not be used by families. More consideration should be given going west from Afton State Park via 50 th Street to Manning, then north to I-94. The trail can split at that point going to Lake Elmo and to Wisconsin. Forget the idea of connecting the City of Afton to Afton State Park. |
| Lerthausser, Barbara 110 th St Lane Denmark Twp MN 55016 651-458-0529 | Private Citizen | Keep trail following 21. |
| Leyasmeyer, Edith 10707 Cedar Hgts Tr S Hastings MN 55033 651-437-6795 | Private Citizen | I oppose a trail being continued along the old railroad bed from St. Croix Bluffs park south. Concerns about fires, vandalism, and other safety issues. Condemnation of private property should not be an option. |
| Manke, Rich 12033 Osprey Avenue S. Hastings, MN 55033 | Private Citizen | I must leave early and am unable to view the charts closely. That said, the plan looks acceptable – I support it. |
| Mankie, Rich 12033 Osprey Ave S Hastings MN 55033 651-437-4079 | Private Citizen | I support the development of a bike trail if the concerns of affected landowners can be addressed. I live near carpenters, but my land will not be affected. My quality of life would improve with the trail. |
| Marcus, J 4220 River Rd S P O Box 277 Afton MN 55001 | Private Citizen | River Rd is very narrow. Cars travel fast. It is already, at times, unsafe for bikers/walkers. The increased traffic, if a path was put in to connect the road to the park, I feel would be very unsafe. |

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| McAllister, Lucy Ph. D. 16368 S Swedehill Drive Afton N 55001 651-436-5150 | Private Citizen | Use Manning for car traffic. Shrink Co. 21 – make room for trails, slow down traffic. I support intensive development of Co. 21 with one side for horses and another side divided for hikers on a section and another for walkers. Online skaters can share with walkers as is done in Duluth or ban them. For a beautiful aesthetic experience, develop just as the Duluth walkway has done; it is a fantastic exemplar. Plantings, sculptures, exercise stations, benches, overlooks, etc. |
| McDougall, Gary 14325 110 th St S Hastings MN 55033 651-437-6794 | Private Citizen | Use existing right of way on 21 and utilize public lands if deviating from #21. Much needed – no horses or motorized vehicles. What about dog walkers and liability and mess? |
| McGuire, Matt 122 Lakeside Dr Stillwater MN 55082 651-260-5381 | Private Citizen | I am firmly in favor of the trail proposal in the 'macro' sense. I'm hopeful that the large number of trail users (potential trail users) will not be silenced by the local opposition. The 'micro' stage of the plan should include voices from the trail user populations. |
| McQuade, Bruce 1755 Grace Lane St. Paul, MN 55106 | Private Citizen | Excellent Presentation by all involved – insightful, inclusive, and respectful. You did your homework. I favor the '21' route and am intrigued by many of the secondary trails. Can we start construction soon? I want to be around to ride what looks like a fun and challenging trail. |
| Mikulay, Kathryn 7601 Quadrant Hastings MN 55033 651-428-0907 | Private Citizen | I like the orange proposed trail that comes out of the park rather than the trail following quadrant – not because my family has property off Quadrant but because the orange trail is more scenic. I think the mining pit offers wonderful recreational scenic opportunity in future. The connection there would be scenic. |
| Miller, Janet and George 10909 Paris Ave S Hastings MN 55033 651-438-3513 | Private Citizen | Our preference is to stay on St. Croix Trail and use St. Croix Trail for the bike trail. Leave private property alone. |
| Mosby, Paul | Private Citizen | Strongly object to placement of trail along River's Edge in park areas. Keep trail in center of parks – out of sight of the river – as viewed from the river. Strongly endorse the bike trail. However, keep it closer to County Highway 21. My comments are submitted as the appointed representative of the Town of Clifton to the Lower St. Croix Land Use Advisory Group plus the Lower St. Croix Partnership Team. I also speak for the 186 members of the St. Croix Landowners Assn. As their president. All members are landowners in the riverway district. I also speak as a riparian directly across the river from St. Croix Bluffs Regional Park. |
| Moynagh, Darlene 13506 Valley Ch Afton Mn 55001 651-436-8927 | Private citizen | I'm in favor of a trail to link all the parks along the St. Croix River. This should have been done many years ago. It should go along the old railroad running along the river. It would be an economical boom to the small cities. Nobody will want it to go by their house, so we it go along the river. It should be available for walking, biking, horses. |

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| Nelson 5565 St Croix Tr S Afton MN 55001 436-7168 | Private Citizen | As usual, the Co. is trying to snowball the citizens of Afton. No trail on private land or near right of way. |
| Nickolay, Larry 1665 Woodbury Rd Newport MN 55055 459-0664 | Private Citizen | Good job – keep up the good work. |
| Nickolay, Larry Newport MN 55055 651-459-0664 | Private Citizen | Good on whole team presentation – definitely most strongly operated audience in TC. |
| Niederkorn, Joe 8501 Quadrant Ave S Hastings MN 55033 651-436-7526 | Private Citizen | Please, please, please remove Quadrant Ave. from the bike path route. |
| Niederkorn, Joe 8501 Quadrant S Hastings MN 55033 | | NO TRAIL |
| O'Connor 2706 McKnight Rd N St Paul MN 55109 651-777-4406 | Private Citizen (15325 110 th St Lane) | Following Hwy 21 seems the most feasible with detours through standing parks. |
| Pavlovic, Jennifer 5381 St. Croix Tr S Afton MN 55001 | Private Citizen/Property Owner | I am concerned about environmental impacts on the state park and surrounding areas. No biking is allowed in the park now due to environmental concerns. I'm concerned that the majority of people in Afton do not want a bike trail and that this portion may not be properly reported to the county and Met Council. I'm concerned about the noise problems that online skaters and snowmobilers bring to this type of trail – whether they are officially allowed or not. Please also refer to my comments from the November meeting. I am not in favor of a trail through Afton or altering County Road 21. |

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| Pavlovic, Jenny 5381 St Croix Tr S Afton MN 55001 651-436-6164 | Private Citizen | Widening County Road 21 will have a detrimental effect on the property owners. Even adding 4' shoulders or a bike path on one side would be an extensive construction project involving grades and drainfields, decreasing setbacks, decreasing property values, and increasing the noise level. The property owners rejected this idea in force 12 years ago and obtained Natural Preservation Route designation for this road, which Brauer and Associates apparently have not been informed about. One detriment of widening the road will be increased speeds (the speed limit is not enforced along this section of the road now). Another drawback will be increased traffic by roller skiers, who bring more noise on early Saturday morning than other traffic. A wider road would also be more snowmobile friendly, and although snowmobiles are prohibited, this is not widely enforced. Adding a bike path on Cty 21 south of 50 th Street would damage my drainfield and significantly decrease my property value by lowering the setback. I would request an environmental assessment, including a noise assessment, of any options to be considered. There are many paved roads, bike paths, and wide roads available for bikers already. There are not many narrow, scenic roads like Cty Road 21 left. That is the purpose of the Natural Preservation Route designation. My experience is that the majority of Aftonites do not want this trail – period. |
| Perrier, Pat Denmark Township | Private Citizen | My husband and I own property on 117th which we break ground next Month (hopefully) for our new home. We have had the property for quite a while and are so excited about moving Back to the area. When I got your letter about the St. Croix Trail it was better than winning a lottery. We hike, bike, jog, and walk and it has bothered me that there was NO where to walk around our at our new place. St. Croix Trail Scares me. We had no idea this was coming and are so pleased. We are also happy that it goes into the parks and you are staying clear of the railroad bed way and not crossing over private land owner's property. I hope everyone in the area is as happy as we are. For us it is like a dream come true.1 |
| Pontius, John 13485 St Croix Tr 651-437-7127 | Private Citizen | We are opposed to this trail on the river. Keep it on Co Rd 21! |
| Powers, Peg 7969 Quadrant Ave S Hastings MN 55033 651-436-5087 | Private Citizen/Elected Denmark Official | Why haven't you considered Cty 71 (Neal Ave)? Good grade, not developed yet, county road and easement. The devil is in the details. My home has minimal setback from Quadrant. Would you be cutting down my trees and installing a trail 30 feet from my front door? Wouldn't be too nuts about that obviously. |
| Reents, Amy /Afton Alps 15221 68 th St S Hastings MN 55033 651-436-7840 | Private Citizen/Other (Afton Alps Inc) | Afton Alps has concerns over safety on Cty 21. Bike trail or increasing the shoulder will help safety as traffic increases. If trail needs to run on St. Croix Trail adjacent to Afton Alps – golf ball danger will be an issue. |

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| Rogers, Lucy & Grant, Larry 4608/4609 St. Croix Tr S Afton MN 55001 436-5030 | Private Citizen | We live at "C" just south of 45 th Street. The trail on either side of the road will be right in front of our homes. Are there any concerns about dividing a person's real estate? I am concerned about having a path so close to my house and think it would adversely affects it value and living there. |
| Rogers, Lucy & Grant, Larry 4608 & 4609 St Croix Tr S Afton MN 55001 651-436-5030 | Private Citizen | I live on 21 on the top of the cooile and own properties on both sides of the road. Both houses are very close to the road. Would the bikers use the shoulder in front of our houses? What if there is no room between our houses? |
| Routier, Ann 4233 Penfield (off of 45 th) Afton MN 55001 651-436-5260 | Private Citizen | I support a trail like the Superior Hiking trail. I am not in favor of a paved, multi-use trail. I currently bike a lot in Afton and rarely see anyone on the trails. I support a more rugged trail – this would be in synch with the terrain and unfortunately, would keep the traffic down. If it is paved, keep it along 21. Also, if you made it available for horses, there may be more support. I agree that the trail south of Afton would be too steep for family use. I bike it (50 yrs old) and you <u>never</u> see any kids on it. Truly, it is used 95% by the spandex guys. |
| Sauer, Fred 10710 Cedar Heights Tr. S. Hastings, MN 55033 | Private Citizen | I attended your Denmark Township meeting and a follow-up question for the trail system; No motorized vehicles (snowmobiles, 4-wheel's dirt bikes etc.) is this in the plan? 2. Will horses be allowed on the trails? I believe that Hwy 21 corridor is still the best for the County and Denmark. |
| Schmidt, Gregory 10601 Cedar Heights Tr Denmark MN 55033 651-480-8707 | Private Citizen | I oppose any trail. Why are bicyclists preferred over other recreational activities? Why not fund acquisition for land at Big Marine Park? |
| Schulte, Len 7460 St Croix Tr S Hastings MN 55033 651-436-1651 | Private Citizen | I am not in favor of more trails. Afton State Park, St. Croix Bluffs Regional Park, and Carpenter Nature Center offer plenty of trails for recreational use. |
| Sieben, Anthony 15051 87 St Hastings MN 55033 651-436-5420 | Private Citizen | No trail across private property. No to clean trail daily (walking the dog). Clean trail year round. Too expensive to maintain. Revert back to township. |
| Sigmond, Mark 4767 River Rd S Afton MN 55001 651-436-8675 | Private Citizen | Do not even consider trying to put a trail along the old railbed, which is on private property and would pass through people's front yards. |
| Soleim, Skip 15425 110 St S Hastings MN 55033 651-437-8412 | Private Citizen | Build it and I will come! See you in Denmark. |

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| Stoffin, Lu P O Box 511 Hastings MN 55033 651-437-9511 | Private Citizen | Danger intersection – 117 th St. (If the trail will turn there?) St. Croix Trail blind for south to north |
| Storti, Fred 14889 15 St S Afton MN 55001 651-436-4646 | Private Citizen | I support primary and secondary multi-use trails. Cycling is a viable alternative transportation mode and for safety and recreational purposes, we need to enhance the venues. |
| Straka, Gordon 5650 St. Croix Tr. Afton MN 55011 436-8567 | Private Citizen | I think a trail is needed but the bicyclists and cross country skiers today are a real hazard – ignore drivers riding 2 and 3 wide across. You need to get them off the road. Is the trail going to do it? Doubt it. |
| Strauss, Robyn & Shaun 11021 Panama Ave S Hastings MN 55033 651-437-7687 | Private Citizen | Would prefer a trail that was close or attached to St. Croix Trail, CR 21. We don't want a trail going across our backyard. We have concerns for children, property value. We live on the intersection of 110 th and Panama. |
| Strom, Doug & Melissa 4420 Pateley Bridge Ave Afton MN 55001 436-8210 | Other | We live on Hwy 21 (Coulee & 45 th St) and we oppose the trail on Hwy 21 and on our property line. We live on the NE corner. We would support the continuation of the 4-6" side shoulder on Cty. 21 (a continuation of what already exists up the coulee as the current road). Oppose additional path that would require recontouring right of way or private property |
| Szczepaniak, Alex 7601 Quadrant Hastings MN 55033 651-208-2943 | Private Citizen | Thanks Thanks Thanks – Good presentation! Please make topos/maps available via web. Please reveal metrics involved in decision-making regarding final master plan. Please describe anticipated numbers of users of proposal trails and traffic type. 21 is not viable, railroad bed is too \$ and too straight. Quadrant cut-through or orange trail are more viable. Perhaps use Quadrant temporarily while viable land is acquired. |
| Tesija, Mark 10677 Cedar Heights Tr Hastings MN 55033 952-920-2494 | Private Citizen | I live on the railbed area off Cedar Trail, Hastings. I would absolutely not want a trail to cut through my property using the railbed. I bought my place for the serenity, peace, and quiet, not to see folks transverse on trail through separating me from the river. |
| Thomas, John & Leslie 3579 St Croix Tr S Afton MN 55001 651-436-2959 | Private Citizen | There is not enough room in the front of my house (along St Croix Tr). The railroad bed behind my house is PRIVATELY owned and the woods behind my house to the river is too secluded. A friend of mine in Fairbanks Alaska lived next to a trail that could not be seen and her house (similar to my setup). Her 5 yr old son was raped and murdered next to the trail in the secluded area by a biker. The city removed the trails. Neighborhoods with small kids and remote, secluded trails are a dangerous combination. |

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| Thomas, Leslie 3579 St. Croix Tr S Afton MN 55001 436-2959 | Private Citizen | My house is very close to the road (Cty. 21). It was built in 1855. I have established shrubs and trees (lilacs) and a 180 old Burr oak tree close to the road for privacy and well, the oak is beautiful and in mind condition. I had a county forester do a boor drilling of the tree and it is very healthy. I would like the trail to be west of my lilacs and oak trees and to extend the road (widen) it further west so that my home and my neighbor's home are not so close to the trail. Thank you. We would also have to be careful of the oak tree roots so that it does not fall on my house. |
| Van Alstine, Oliver 14420 90 th St S Hastings MN 55033 651-436-3303 | Private Citizen | Trails are great for a lot of people if you ever watch a trail you can see that they are popular. It's bound to be used if built. Very informative and you did a good job answering questions and trying to straighten people out that are so scared of living in such a secured world!! |
| Van Alstine, Valda 14420 90 th St S Hastings MN 55033 651-436-3303 | Private Citizen | Thanks for your information and answering questions. I am glad a trail is being planned. You have been sensitive to local issues. Keep up the good work. |
| Van Alstine, Valda 14420 90 th St S Hastings MN 55033 651-436-3302 | Private Citizen | We own farmland 1/2 mile east of Denmark town hall on 90 th St. I am excited to know a trail is being considered. I like to bike and walk but feel it is unsafe on 90 th St and St. Croix Trail. I am jealous of my city friends who have access to trails. It would be wonderful if it happened in my life time. |
| Voita, James 4333 Pentfield Ave S Afton MN 55001 651-436-8172 | Private Citizen | The trail is a very good asset for Afton and me. The sooner the better. |
| Wagner, Lois (Pat) 12099 Osprey Ave S Hastings MN 55033 651-437-4449 | Private Citizen | We live off 117 th St which comes onto St. Croix Trail South. This is a very dangerous intersection that land was bought for an appropriate turn many years ago. Our lives are in danger each time we enter St. Croix. Bikers would be coming out 117 th to St. Croix from Carpenters Nature Center. |
| Webster, J. 7670 Prairie Smoke Blvd Bay S Hastings MN 55033 | Private Citizen | Parking issue is a valid concern – The distance between Afton and Carpenter without "free" parking is too great. Not only will folks park on 21, but side streets will suffer. |
| Weir, Marj 3633 St Croix Tr Afton MN 55001 651-436-3713 | Private Citizen | Please call. I live at the bottom of the coulee hill (house with statue of library tree) and am for widening the road from 45 th to the state park, but <u>downtown</u> Afton's roads are plenty safe for bikers. My kids bike downtown all the time, but I don't see an option for them to bike south until maybe 16 years old! For 2 million dollars, I will think about giving up right of way. |
| Weschake, Jen 4226 Hallmark Ave N Oakdale MN 55128 651-770-8795 | Private Citizen (15325 110 th St Lane) | Have the trail follow CR 21 |

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| Winsor, Susan 15269 42 nd St S Afton MN 55001 436-3521 | Private Citizen | Coulee Road is full of motorcycles on nice weekends – what about pedestrian safety? I would like trail to be available to horseback riders. |
| Wolf, Kent 10750 Paris Ave S Hastings MN 55033 651-437-7282 | Private Citizen | Can you please post powerpoint presentation and other TOPS on web site (county or township). Since there is a current program of developing Co Rd 21 as a green zone, why not keep the trail paralleling Co Rd 21? |
| Woltman, Henry & Virginia 4220 River Rd Afton MN 55001 651-436-5697 | Private Citizen | We have lived at the above address since 1972. At that time we had trespassers who believed they had the right to use the existing railroad bed as public property. Strangers used our deck, swam at our beach, fished from our dock and boat. We had property stolen and damaged despite "No Trespassing-Private Property" signs. This came to an end with the removal of the railroad. We do not want to deal with trespassers, theft, police etc., again. We came to Afton for peace and quiet. We are opposed to the creation of any public trail. |
| Woodfill, Jan P O Box 333 Afton MN 55001 | Private Citizen | Any attempt to connect River Rd to the state park will be met with legal action by all of the River Road residents. We already have an attorney attending the meetings. What about PARKING LOTS for this mess???) WE NEED HORSE TRAILS!!!! |
| Yurek, Leo 4723 River Dr S Afton MN 55001 651-265-2041 | Private citizen | I would consider any taking of private property for a trail to be a major breach of public trust. Contemplating a trail through so much private property as discussed at the meeting given the "no taking" pledge is impossible. Therefore, given this statement, the whole search area and this project is a waste of tax payer (my) money. |

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Achievability and Sustainability of Ecological Stewardship Programs

It is important to recognize that restoring and managing ecological systems must be done in a manner that is both achievable and sustainable.

A successful program requires a full understanding of the ecological problems being faced and a defined course of action that is based on science.

From an economic perspective, what is achievable and sustainable is based on the amount of human and economic capital that Washington County and the Metropolitan Council can commit to ecological programs now and in the future.

As shown, the diversity of plant assemblages was historically very broad, ranging from aquatic zones along the river and in lowland areas to upland oak savanna and prairie systems. Although challenging, realizing a more diverse and healthy natural landscape is achievable and sustainable under a well-defined stewardship program.

It is important to recognize that restoring and managing ecological systems must be done in a manner that is both achievable and sustainable. Achievable refers to what is scientifically and economically feasible. Sustainable refers to the level to which restoration and management programs can be scientifically and economically sustained over an extended period of time. The following considers achievability and sustainability from the two distinct but interrelated perspectives of ecology and economy (human/economic capital).

Ecological Perspective

From an ecological perspective, what is achievable and sustainable is defined in scientific terms based on testing and research. Scientifically, human intervention through well thought-out programs that are carefully implemented over a period of time can help to reverse the current downward trend in the ecological quality of the park's natural systems (as measured by biodiversity and general ecological health). A successful program requires a full understanding of the ecological problems being faced and a defined course of action that is based on science. As defined in this section, human intervention will be required given the current state of alteration that has occurred.

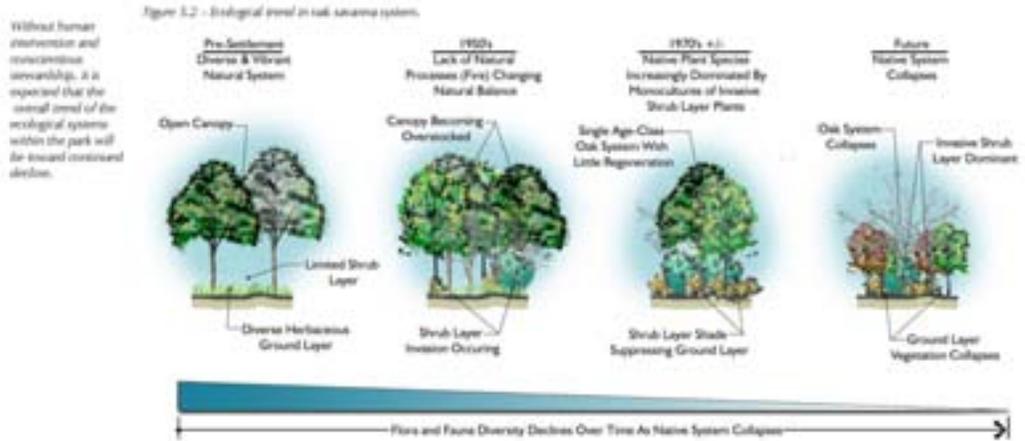
Although dramatic improvements can be made in some cases, restoring the landscape to pre-settlement conditions is not realistic from a scientific perspective. Past impacts to the land since man first settled and introduction of invasive alien plants simply preclude this possibility. However, it is achievable to restore and manage ecosystems to sustainable and productive levels that result in considerable human and ecological value that can be perpetuated for generations to come. The key point here is that Washington County and the regional community must set realistic goals and expectations as to what can be achieved and sustained through restoration and management programs.

Economic (Human/Economic Capital) Perspective

From an economic perspective, what is achievable and sustainable is based on the amount of human and economic capital that Washington County and the Metropolitan Council can commit to ecological programs now and in the future. The importance of this cannot be overstated in that the long-term viability of any ecological program undertaken is directly related to the long-term commitment made to it in terms of human and economic resources. Ultimately, how the collective community values land stewardship and ecological health relative to other quality of life issues will define the extent to which ecological programs can be successfully implemented. Recognizing this, it is critical that Washington County and the Metropolitan Council time ecological programs in a pragmatic and paced manner that keeps pace with available economic resources.

Spectrum of Opportunity for Restoration of Ecological Systems

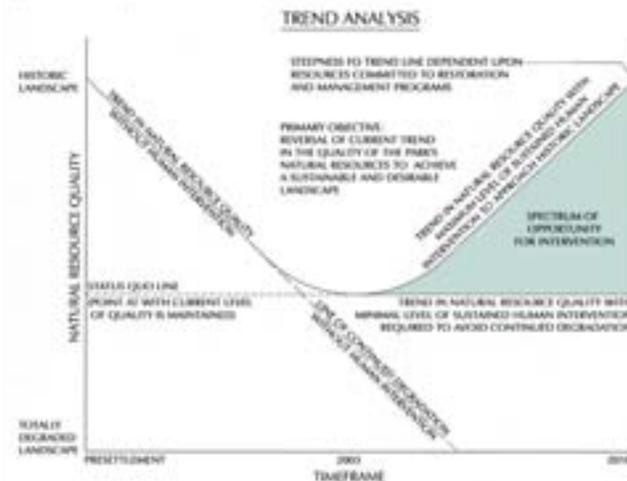
Without human intervention and conscientious stewardship, it is expected that the overall trend of the ecological systems within the park will be toward continued decline, as measured by bio-diversity and general ecological health. Figure 5.2 graphically illustrates the current trend in a typical oak savanna system found in this and many other midwestern regions.



This example is reflective of what is happening to varying degrees in all of the ecological systems found within the park. Although some of the ecological degradation will have lasting effects, there are also many opportunities to forestall further degradation and make substantial progress toward achieving a more sustainable and healthier landscape for future generations to enjoy. Figure 5.3 graphically illustrates the current overall trend in ecological quality, as well as defining the spectrum of opportunity for reversing this trend.

There are many opportunities to forestall further degradation and make substantial progress toward achieving a more sustainable and healthier landscape for future generations to enjoy.

Figure 5.1 - Trend Analysis



The goal of the stewardship program is to first identify restoration and management needs in detailed scientific terms, and then define strategies that can reverse these trends. The framework presented here recommends that Washington County seek to achieve a sustainable landscape quality, which is defined as the point at which the parks division can indefinitely maintain a certain acceptable level of resource quality within the context of realistic limits - which is contingent upon two primary factors:

- Public understanding of and commitment to natural resource preservation and stewardship programs.
- Undertaking ecological restoration and management programs that are scientifically sound.

Natural Resource Stewardship Philosophy

The plan outlined here promotes an ecosystem-based approach to restoration and management.

The framework presented here promotes an ecosystem-based approach to restoration and management. An ecosystem is essentially where things live and represents an interacting group of physical elements (soils, water, plants, animals, etc.) that inhabit a particular place. All of these elements and their interactions need to be considered in developing goals and plans for management. Ecosystem-based management views people as part of the community, and that maintaining a healthy ecosystem is the best way to meet human needs as well as those of other organisms in the community. General goals of this philosophy are to:

- Protect or enhance the health of the ecosystems in St. Croix Bluffs Regional Park.
- Enhance the biological diversity of its native habitats.
- Provide an appropriate balance between resource preservation and recreational use.

Through a well-defined stewardship program and a concerted, ongoing effort by Washington County, a certain level of confidence can be gained that the current ecological conditions and trends can be reversed and a more sustainable and higher quality landscape achieved. Note, however, that stewardship programs also need to be flexible due to the changing nature of the living systems addressed by the plan. For these reasons, the framework presented here should be viewed as being neither conclusive nor absolute. It is a starting point in an ongoing process that relies on monitoring and research to provide feedback on program effectiveness.

Ecological Prototypes for Unaltered and Altered Ecological Systems

Ecological prototypes are defined along topographic, soil type and hydrological gradients from high-dry uplands to lowlands and river or lake edges.

In this context, ecological prototypes refer to vegetative species models for the various natural systems found within the park. Prototypes assist restoration and management efforts by helping compare existing conditions against measurable criteria for healthy systems and in recognizing possible causative agents that result in ecological changes. By recognizing what a healthy system looks like, specific targets or models for management and restoration programs can be developed and implemented.

Ecological prototypes are defined along topographic, soil type and hydrological gradients from high-dry uplands to lowlands and river or lake edges. Based on an initial review of the park, both unaltered and altered ecological prototypes can be found - although unaltered systems are limited to isolated pockets. In unaltered areas, depending on soil types and hydrology, different plant and animal communities have developed over long periods of time and have persisted even to present day under less than ideal circumstances. On these same soil types, alteration of land use and hydrology along with cessation of natural processes have created changes in the plant and animal communities. Each of the unaltered and altered types of plant and animal communities fall within a definable ecological prototype, or in some cases, in the ecotonal (i.e., transitional) area between prototypes.

The following descriptions define some of the more typical and definable prototypes for healthy (unaltered) and unhealthy (altered) ecological systems found within the park. Figure 5.1 on page 5.1 provided a character sketch of how these selected prototypes relate to each other. Lacking greater technical evaluation and in-field research, the prototypes presented here serve as a starting point as Washington County moves forward with its stewardship program. Although these prototypes are not exhaustive, they do articulate the fundamental qualities between healthy and unhealthy ecological systems found within the park.

Historic Oak Savanna



Healthy Systems

General Structure

- Semi-open to open tree canopy
- Multiple age classes of trees
- Dominant cover of native grasses, sedges, and forbs
- Natural oak regeneration
- Sporadic native shrub layer
- High light levels interspersed with partial to total shade

Soils Profile/Topography/Hydrology

- Well drained silt, clay and sand loams, generally sandy, alluvial glacial features
- Higher and dry sites, and more, well drained soils

Indicator Species of Healthy System

- Bur oak
- Northern pin oak
- White oak
- Savanna grassland species

Associated Species

- Pineshama sedge
- Silky and Virginia wild rice
- Bottlebrush grass
- Ohio sedges
- American hickory
- Little bluestem



Unhealthy Systems

General Structure

- Continuous, closed canopy
- Dense layer of non-native shrubs
- Bare, eroding soil
- Low light levels, predominant dense shade
- No oak regeneration
- Few or no young age classes of trees
- Lack of native groundcover vegetation
- Disenfranchisement by development or agriculture

Indicator Species of Unhealthy System

- European buckthorn
- Tartarian honeysuckle
- Black locust
- Buckleberry
- European hawthorn, hickory thicket, and other non-native grasses
- Agricultural weed species and broadleaves

Protection and Management Considerations

Causes of Change

- Conversion of historic fire regimes
- Disturbance due to urban development
- Invasion of competing non-native shrubs
- Disenfranchisement of adjacent development with associated pollutants
- Intensive grazing and agricultural practices
- Change in hydrologic regime (drier or wetter)

Restorative Capacity

- Highly restorable under well-designed and implemented restoration and management program
- Highly disturbed sites may require replanting of native species, especially ground cover, if native seed bank is absent

Protection Strategy

- Adopt land development practices that place a high priority on ecological protection beyond that of existing wetland regulations
- Implement an annual, long-term restoration and management plan
- Protect historic hydrologic ecosystems

Maple-Basswood Forest



Healthy Systems

General Structure

- Mixed canopy of oaks, ash, maple, and basswood
- Predominated by cool season grass and sedge ground cover

Soils Profile/Topography/Hydrology

- Found in isolated or protected locations, steep slopes, and on landscape islands
- Topography ranges from level ground to rolling and steep grades
- Loam and fine sandy loam

Indicator Species of Healthy System

- Basswood
- Sugar maple
- Red oak
- Green ash
- Ironwood
- Woodland sedges
- Spring wildflowers (collins and spring beauty)

Associated Species

- Sedges, such as Pineshama sedge
- Shrubs, such as pagoda dogwood



Unhealthy Systems

General Structure

- Shift to even canopy, with limited age groups of trees
- Dense understorey
- Bare soil after spring cyclonemysk die back
- Noticeable soil erosion

Indicator Species of Unhealthy System

- Buckleberry
- European buckthorn
- Canary grass
- Stolonchord
- Thistles
- Barberry
- Rough hickory
- String nettle

Protection and Management Considerations

Causes of Change

- Conversion of light ground fires
- Loss of seedbank and erosion
- Weed invasion and agricultural practices
- Altered hydrology, whether drier or wetter
- Logging disturbance of composition, structure, light, and nutrient regimes
- Livestock grazing causing trampling and tree damage

Restorative Capacity

- Highly restorable under well-designed and implemented restoration and management program
- Highly disturbed sites may require replanting of native species if native seed bank is absent

Protection Strategy

- Adopt land development practices that place a high priority on ecological protection
- Implement an annual, long-term restoration and management plan
- Protect historic hydrologic ecosystems

Upland Prairie Systems



Healthy Systems

- General Structure**
- High biodiversity – plants, insects, birds, and other animals
 - High diversity of native plant species
 - Predominance of warm-season grass species
 - Natural succession and progression toward conservation species
 - Full to nearly full sun
 - Drought tolerant

- Soils Profile/Topography/Hydrology**
- Moderate to well drained, fine textured sands and sandy loams
 - Higher and dry sites, most often associated with flat benches or gentle slopes

Indicator Species of Healthy System

- Big bluestem
- Little bluestem
- Side-spike grass
- Purple prairie clover
- Leadplant
- Sky blue aster
- Prairie coneflower
- Partridge pea
- Flowering spurge
- Blue giant hyssop
- Cowpen plant
- Prairie dock

Associated Species

- Literally hundreds of associated species



Unhealthy Systems

- General Structure**
- Low biodiversity – plants, insects, birds, other animals
 - Predominance of woody, non-native vegetation
 - Absence of ecological functions
 - Loss of water infiltration
 - High soil erosion potential
 - Invasion by woody species
 - Nutrient enrichment
 - Tilt drained or ditched, resulting in altered hydrology

Indicator Species of Unhealthy System

- European larch and other non-native grasses
- Ragweed
- Blue's tail
- Queen Anne's lace
- Canada thistle
- Wild parsnip
- Woody species such as sumac, black cherry, boxelder, and silver-elm

Protection and Management Considerations

Causes of Change

- Introduction of post-settlement agriculture practices and livestock grazing
- Soil disturbance from urban development
- Creation of periodic fire
- Invasion of competition, non-native plants
- Change in hydrologic regime (water or drier)

Restorative Capacity

- Highly restorable under well-designed and implemented restoration and management program
- Highly disturbed sites may require replanting of native species if native seed bank is absent

Protection Strategy

- Adopt land development practices that place a high priority on ecological protection beyond that of existing wetland ordinances
- Implement an annual, long-term restoration and management plan
- Protect historic hydrologic regime/systems

Wet Prairie Remnants



Healthy Systems

- General Structure**
- Patchy, patterned plant communities reflecting soil and hydrologic gradients
 - High biodiversity – plants, insects, birds, and animals
 - High diversity of native grasses and forbs
 - Predominance of native grass, sedge, and forb species of low, moist to wet soils
 - Natural succession and progression toward conservation species
 - High groundwater table and often groundwater-based hydrology
 - Full to nearly full sun

Indicator Species of Healthy System

- Prairie coneflower
- Canada thistle
- New England aster
- Virginia mountain-iron

Associated Species

- Extensive variety of other native grasses, sedges, and forbs

Soils Profile/Topography/Hydrology

- Shallow organic soils
- Soils are saturated in the spring and dry out as year progresses



Unhealthy Systems

- General Structure**
- Altered hydrology due to dewatering
 - Heavy invasion by woody growth
 - Invasion by non-native reed canary grass
 - Homogeneous vegetation and low pattern of diversity

Indicator Species of Unhealthy System

- Reed canary grass
- European buckthorn
- Gloss buckthorn
- Chokecherry dogwoods
- Purple loosestrife
- String nettle
- Reeds

Protection and Management Considerations

Causes of Change

- Draining of soils for agricultural tillage
- Creation of solid line and overgrazing
- Hydrologic changes due to urban development and a change to surface water rather than groundwater dependent hydrology
- Nutrient enrichment from dewatered substrates and sulfate introduction
- Salt and fertilizer loading

Restorative Capacity

- Potential to be restorable under well-designed and implemented restoration and management program in cases where off-site factors can be controlled
- Highly disturbed sites may not be naturally restored due to extent of past degradation and uncontrollable off-site factors
- Restoration may require replanting of native species if native seed bank is absent

Protection Strategy

- Adopt land development practices that place a high priority on ecological protection, with a particular focus on riparian buffer systems and natural infiltration systems
- Implement an annual, long-term restoration and management plan
- Protect historic hydrologic regime/systems

Sedge Meadow Remnants



Healthy Systems

General Structure

- High biodiversity – plants, insects, birds, and animals
- High diversity of native sedges and forbs
- Dominated by sedges, rushes, reeds and grasses

Soils Profile/Topography/Hydrology

- High groundwater table
- Shallow to moderate organic substrates

Indicator Species of Healthy System

- Sawick sedge
- Lake sedge
- Canada bluejoint
- Wood grass
- Marsh milkweed
- Swamp aster
- Sawtooth sunflower

Associated Species

- Swamp dock



Unhealthy Systems

General Structure

- Altered hydrology due to dewatering or too much water
- Heavy invasion by woody growth
- Invasion by non-native reed canary grass

Indicator Species of Unhealthy System

- Cloney foxtail
- Reed canary grass
- Chimney dogwood
- Purple loosestrife

Protection and Management Considerations

Causes of Change

- Sediment, nutrient and contaminant loading from disturbed uplands
- Soil disturbance from development
- Conversion of periodic flow
- Invasion of competitive, non-native plants
- Change in hydrologic regime (wetter or drier)

Restorative Capacity

- Potential to be restorable under well-designed and implemented restoration and management programs in cases where off-site factors can be controlled or mitigated
- Highly disturbed sites may not be ecologically restored due to extent of past degradation and uncontrollable off-site factors
- Restoration may require replanting of native species if native seed bank is absent

Protection Strategy

- Adopt land development practices that place a high priority on ecological protection, with a particular focus on upland buffer systems and natural infiltration systems
- Implement an annual, long-term restoration and management plan
- Protect historic hydrologic regime/systems

Emergent Graminoids (Sedges, Grasses, and Rushes)



Healthy Systems

General Structure

- Shallow, open water communities
- Water depths less than 2 meters (6.5 feet)
- Emergent, submergent, floating and floating-leaved aquatic vegetation
- Presence of habitat and communities of waterfowl, amphibians, fish, foraging mammals and invertebrates

Soils Profile/Topography/Hydrology

- Sand and gravel or shallow lacustrine organic matter

Indicator Species of Healthy System

- Bur-reed
- Arrowweed
- Bulrushes
- Water plantain
- Pickerelweed
- Water lilies
- Coontail

Associated Species

- Various sedges and native shrubs



Unhealthy Systems

General Structure

- Sustained high water levels or drastic level changes
- Nutrient, sediment and toxic chemical loading from uplands and wetlands
- Dominated by cattail, giant reed grass, and reed canary grass

Indicator Species of Unhealthy System

- Purple loosestrife
- Cattail
- Giant reed grass
- Reed canary grass
- Eurasian water milfoil
- Duckweed
- Eurasian water lily
- *

Protection and Management Considerations

Causes of Change

- Increased runoff due to upland development
- Damming and impairment of waters
- Industrial and agricultural runoff
- Nutrient enrichment

Restorative Capacity

- Potential to be restorable under well-designed and implemented restoration and management programs in cases where off-site factors can be controlled or mitigated
- Highly disturbed sites may not be ecologically restored due to extent of past degradation and uncontrollable off-site factors
- Restoration may require replanting of native species if native seed bank is absent

Protection Strategy

- Adopt land development practices that place a high priority on ecological protection, with a particular focus on upland buffer systems and natural infiltration systems
- Implement an annual, long-term restoration and management plan
- Protect historic hydrologic regime/systems

Refinement of Ecological Prototypes

As part of the prototype refinement process, Washington County Parks is encouraged to utilize the Minnesota Department of Natural Resources' Minnesota Land Cover Classification System (MLCCS) where it has application as part of the stewardship program. This classification system, which is very extensive, is useful for defining natural ecosystems (although it is a bit more limiting in addressing developed or agricultural systems). Whereas this classification system was used for the Natural Resource Inventory for Denmark Township as defined in Section III and provides the baseline information needed to guide the master planning purposes, additional refinement using the MNDNR system will be required as the master plan moves from planning into implementation.

Effect of Healthy and Unhealthy Ecological Systems on Wildlife

As would be expected, there is a marked effect on the species richness of wildlife when ecological systems become degraded.

As would be expected, there is a marked effect on the species richness of wildlife when ecological systems become degraded. What is perhaps not expected is the degree of decline that can entail. To illustrate this point, the forthcoming table defines the decline of breeding bird species between healthy and unhealthy ecological systems.

Breeding Bird Species Associated with Healthy Ecological Systems

| Prairie | Sedge Meadow | Emergent | Savanna | Lakes |
|----------------------|------------------------------|-------------------------|-----------------------|---------------|
| Bobolink | Yellow warbler | Heron | Flicker | Towhee |
| Blue jay | Willow fly catcher | Rails | Bluebird | Comorant |
| Brown-headed cowbird | Yellow throat | Ducks, geese | C. crested flycatcher | Merganser |
| Crowhopper sparrow | Red winged blackbird | Swamp sparrow | Robin | Duck |
| Vesper sparrow | Goldfinch | Red winged blackbird | Cardinal | Grebe |
| Western meadow lark | Swamp sparrow | Southern | Cardinal | Coot |
| Song sparrow | Short/long billed marsh wren | Mallard | Blue jay | |
| Cold finch | Kingbird | Crow | W. B. nuthatch | |
| Kingbird | | Canada goose | Warbling vireo | |
| | | Yellow headed blackbird | | |
| | | Kingbird | | |
| 20-30 species | 15-20 species | 30-40 species | 20-30 species | 20-30 species |

Breeding Bird Species Associated with Unhealthy Ecological Systems

| Corn Field | Cattail and Canary Grass | Degraded Savanna | Lakes |
|---------------|--------------------------|------------------|--------------|
| Horned lark | Red winged blackbird | Robin | Mallard |
| House sparrow | Mallard | Cardinal | Canada goose |
| | Canada goose | Starling | Coot |
| | Heron | | |
| 4-6 species | 5-10 species | 5-10 species | 5-10 species |

As the last table clearly illustrates, the decline in bird species can be quite steep as ecological systems transition from biologically healthy to unhealthy. When considering the needs of wildlife, healthy, natural ecological systems provide the essential components for wildlife to flourish. Unhealthy systems, on the other hand, do not provide for the basic needs of wildlife because many of these components are lacking. Figure 5.4 defines the essential components of wildlife habitat.

Figure 5.4 - Sixteen components of wildlife habitat. Source: Landscaping for Wildlife, published by the MNDNR.

When these components are lacking or degraded relative to a healthy system, the diversity of wildlife found within the park will be diminished.



When these components are lacking or degraded relative to a healthy system, the diversity of wildlife found within the park will diminish. While certain species of wildlife can flourish under degraded conditions, they often do so at the expense of other species that historically would have frequented the park.

Natural Resources Stewardship Program

The stewardship program establishes the long range vision for restoring and managing the natural ecological systems within the park.

The stewardship program establishes the long range vision for restoring and managing the natural ecological systems within the park. This includes defining:

- The long range vision for natural resources within the park.
- A restoration and management strategy to achieve that vision.
- The typical phases associated with implementing the strategy.
- The standard restoration techniques used within each phase of implementation.

The following considers each of these aspects of the stewardship program – each of which being critical to creating a vibrant natural landscape quality that is indefinitely sustainable.

Long Range Vision for Natural Resources Within the Park

As defined in Section IV, the park was historically dominated by oak savanna (barrens) systems, with several other systems also being common to the area. The long range vision for the park is to reestablish these systems to the extent possible within the context of inherent ecological and economic limitations.

Although there are many ecological nuances within the park, there are three dominant ecological systems that define its overall natural character. This includes:

- **Oak savanna dominated system** – encompasses the upland areas outside of the ravines and steeper slopes down to the river. Prototypes that may be found within this system include:
 - Oak savanna (dominant system).
 - Upland prairie (areas in transition to savanna system).
 - Ecotonal areas (i.e. transition zone between distinct ecological systems) may also include species associated with maple-basswood systems. Wet prairie and sedge meadow systems may also be present where depressions are found within the savanna system.
- **Maple-basswood dominated system** – encompasses the ravines and steeper slopes down to the river. Prototypes that may be found within this system include:
 - Maple-basswood (dominant system).
 - Ecotonal areas may also include species associated with oak savanna and upland prairie systems. Wet prairie and sedge meadow systems may also be present where lowland areas merge with the steeper slopes.
- **Lowland dominated system** – encompasses the lowest depressional areas at the base of ravines and drainways down to the river. Prototypes that may be found within this system include:
 - Wet prairie, sedge meadow, and emergent grasslands are dominant systems.
 - Ecotonal areas may also include species associated with maple-basswood systems. Lowland forest species may also be found in the ecotonal areas.

Figure 5.3 on the next page illustrates these three major systems.

Restoration and Management Strategy

The restoration and management strategy establishes an overall road map toward the realization of a more healthy and vibrant natural landscape.

The restoration and management strategy establishes an overall road map toward the realization of a more healthy and vibrant natural landscape. Realistically, implementing the program will require a multi-phased approach spread out over an extended period of time and lock-stepped with funding appropriations and scientific expertise.

The baseline strategy is to segment the park into manageable units and subunits that can be sequentially restored to higher quality sustainable systems – ultimately resulting in complete restoration of the park. The primary management units are closely aligned with the dominant ecological systems as illustrated in figure 5.3. Within each of these units are subunits of a size that can be effectively managed on a year-to-year basis. This strategy ensures that in any given year restoration activities will be well balanced – ranging from very intensive restoration work in one or two units to less intensive (but vital) ongoing maintenance work in other units that have been previously restored. Importantly, restoration of any new units should only occur when funding for ongoing maintenance of previously restored units can be assured. Otherwise, the value of any new restoration initiatives will be greatly diminished, and perhaps unsuccessful, if the long-term maintenance program is not in place to manage the resource once its been restored.

Phases of the Strategy

The actual restoration of a given unit will occur in phases. Each phase will have distinct objectives toward attaining more diverse and healthy ecological systems within the park. The phased approach also allows for close monitoring of program successes and ensuring that resources invested in the program are appropriately allocated to their greatest value.

In general, three major phases are envisioned for the stewardship program, as defined in the following table.

Phasing Program Table

| Phase | Overview | Additional Comment |
|--|---|--|
| Phase I – Testing and Education Phase | Broadens understanding of restoration needs, options, and opportunities. Also increases local residents' knowledge and understanding of restoration issues. This phase is especially important during the initial implementation phase. As the program matures over time, the need to do extensive testing prior to restoring large tracts is diminished due to knowledge gained over that time. However, testing of restoration approaches will always remain part of the program as new conditions are encountered. | Small test or demonstration plots are the backbone of the initial testing program. Testing should occur in each ecological unit to test a cross-section of conditions found and to provide wider public exposure to the program. These tests will help determine which restoration practices are best suited for the setting. Likely test and demonstration plots include: <ul style="list-style-type: none"> • Reduction of invasive shrub cover -- to increase light to the ground layer and stimulate growth. • Regeneration of oak forests -- to stimulate new growth. • Reduction of cool season grasses (and associated duff) -- to stimulate native species soil seed banks. • Reduction of noxious weeds and woody plants -- to give competitive edge to native plant species, instead of invasive, non-native plants (i.e., garlic mustard, buckthorn, tartarian honeysuckle, and reed canary grass). • Reintroduction of ground cover plants and seed -- to reestablish native seeds. • Establishment of native plant nurseries and gardens -- for educational purposes. • Establishment of community outreach programs -- so residents establish a personal stake in the stewardship program. Education plays a key role in the successful implementation of stewardship programs. The public's understanding of what is occurring becomes paramount to their support for the stewardship program. Although primarily for research purposes, the testing programs also serve as in-the-field educational tools. Direct exposure to restoration practices and their impact on the surrounding environment will give park visitors working knowledge of stewardship programs. This approach sets the stage for Phases II and III of the restoration and management plan. |
| Phase II – Remedial Phase | Involves the major restoration and management tasks and consequently is the more expensive phase. Its focus is on returning the land to the biological and structural conditions necessary for a healthy ecological landscape to emerge and prosper. | The remedial phase employs a variety of restoration techniques in a major effort to restore vegetation and habitat structure and biological diversity and restore ecological and bio-geochemical functions. Tasks undertaken during this phase include reducing introduced nonnative and other undesirable trees and brush, removal of previous debris and substrate fill areas, addressing erosion and other problems, and other general tasks. In some cases, this phase may involve mechanized/mechanical planting of native plants, including larger trees and other plants. The period of time required to conduct the remedial restoration phase depends on the level of work effort required, condition of the ecological systems, opportunities and constraints (e.g., access, weather, biological response), and level of funding available for the program. |
| Phase III – Maintenance Phase | Represents the routine tasks that are conducted annually at strategic times to maintain specific ecological and biological objectives set for each unit and subunit. | After significant investments during Phase II, the stewardship program shifts to a lower level of intervention during the maintenance phase. This is inherently less costly and provides an excellent opportunity for long-term citizen and student involvement as volunteers. Once established, the maintenance phase is guided by both regular management techniques and by strategies that are implemented on a rotational basis through identified subunits. It is during the maintenance phase that the restoration plan would become part of the park's general operations and maintenance function. Along with this comes routine training and education of maintenance staff. |

Overview of Restoration and Maintenance Techniques

Of the techniques listed, prescribed burning is the single most useful and important management method required for restoring native plant communities.

As the previous table defines, the stewardship program requires undertaking specific tasks to meet performance criteria and achieve improvements to the ecological systems within the park. Forthcoming is an overview of specialized, yet relatively straightforward, techniques used to carry out specific restoration tasks. Of the techniques listed, prescribed burning is the single most useful and important management method required for restoring native plant communities. The other techniques and strategies are most often used to prepare a site for prescribed burning or as a means to reintroduce proper conditions and species into sites. It is important to underscore that these techniques are used as part of a well-thought out program that considers scientific practicality, costs, and safety.

Prescribed Burning

Prescribed burning is generally defined as: *"the highly controlled use of fire under optimal weather and environmental conditions to achieve specific ecological objectives"*

Wildfire and fires started by indigenous people have for centuries played an important role in the evolution of many biological systems throughout North America. It is now recognized by the scientific community just how essential the role of fire is in maintaining grasslands, wetlands, savannas, barrens, and numerous forest types. It is also recognized that fire suppression can result in gross changes in the aspect, appearance, and ecological functions of these natural systems.

As an example, fire suppression is often followed by a decline in the richness and diversity of native plants and animal species, increased litter, shading, phytotoxin build-up in substrate, decreased availability of essential nutrients and increased homogeneity in habitat structure and spatial heterogeneity. Reduced nutrient cycling and increasing domination by few species often results. In some ecosystems, shifts in wildlife and increases in shade tolerant and less flammable plant species accompany fire suppression, with detrimental effects.

Although prescribed burning has been a primary prairie management tool for some time, it is now recognized that fire also plays a major role in restoring and maintaining other ecological systems as well. Simply stated, no other technique comes close to the impact that this naturally occurring phenomenon has on restoring and preserving natural ecological systems. It is a fundamental component of a restoration program to which there is no reasonable substitute. Conducted by trained personnel, prescribed burning has proven to be very safe and effective.

Weeding and Brushing

Preparing the site for prescribed burning will likely be necessary on sites that have significant restoration needs, especially in locations where invasive species, like buckthorn, are dominant. Weeding and brushing are the primary techniques used where there is dense brush and little combustible fuel. Manual reduction of existing dense shrub growths will be required to open up these areas.

Once the site is opened up, prescribed burning can be used much more effectively. In some systems, weeding and brushing coupled with prescribed burning can successfully liberate long dormant native seed banks and "jump start" the restoration program.

In cases where the direct use of fire is hampered due to non-native cool season grasses being present, pre-burn treatments may be necessary, including:

- Very careful and discriminate use of herbicides -- used where the evergreen growth of some cool season grasses precludes the use of fire. Direct plant contact with a select herbicide has provided quick and safe initial control of these grasses.
- Low mowing of the grasses (0.5 to 1 inch height) -- can reduce green foliage and, after drying, litter can be used as fuel to sustain a low-level fire.

Although the use of herbicides is always kept to a minimum, their use is a fundamental aspect of creating the conditions necessary for restoring native plant communities. Carefully selected herbicides have very low toxicity to humans and wildlife and will not present a threat when used properly. It is applied at prescribed rates by trained and licensed field specialists.

In general, herbicide is applied to cool season grasses after they have reached a height of 5-8 inches and display a new flush of green, actively growing foliage. For invasives like buckhorn, herbicides are applied directly to cut stems and stumps to kill the root structure. Prescribed fire usually follows 5-15 days after the herbicide treatment or after the mowed grasses are dry enough to burn, which varies depending on weather conditions.

Seed Harvesting and Disbursement / Planting

Field observations suggest that some seed banks may remain present within the park's soils, especially in areas where remnant native plant communities still exist. If carefully fostered, these seed banks can be a major facet of the restoration program and greatly reduce cost and time necessary to reestablish native systems. However, seeds and plants from local sources will also be required to ensure that sufficient quantity and quality exists to undertake a successful restoration program. This is especially the case in the oak sacama and prairie systems, where much of the seed bank may have been lost due to past agricultural uses. In these instances, directly reintroducing native plant species will be necessary to reestablish healthy ecological systems.

For native species that are no longer present within the park, alternative sites for seed harvesting, propagation, cultivation, and collection will have to be identified for eventual redistribution within the park. Whenever possible, seeds and plants should come from sites that are as close to the park as possible, with the outside limit being a 150 mile radius from the park. In the longterm, once native communities are reestablished, the park itself will be its own source for seeds and plants.