

A painting of a family walking on a trail through a forest. In the foreground, a man with a red backpack is walking away from the viewer, holding the hand of a small child on a bicycle. Further ahead, a woman and another child are walking. The trail is a light-colored path that curves through a dense green forest. The sky is visible through the trees at the top of the image.

Whitewater Country Loop State Trail Master Plan

**Including part of
Blufflands State
Trail System
and
Great River Ridge
State Trail**

February 2008

The Minnesota department of Natural Resources, Trails and Waterways Division would like to thank all who participated in this master planning process. To those individuals who have been working for many years to help establish this trail, thank you. Assistance from the Great River Ridge, Chester Woods and Whitewater Trail Committees that worked together as the Whitewater Country Loop State Trail Citizens Advisory Committee is greatly appreciated. The Rivers, Trails, and Conservation Assistance Program Many DNR staff, city and county officials, trail association members and local citizens contributed their time and energy to the planning process as well.

This master plan was prepared by:

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January 2008, Minnesota Department of Natural Resources.

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February 15, 2008

RE: Department of Natural Resources Approval of Whitewater Country Loop State Trail Master Plan

Minnesota Statutes 86A.09, requires that a master plan be prepared for units of Minnesota's outdoor recreation system, including state trails. This master plan addresses two authorized state trails that are jointly called the Whitewater Country Loop State Trail. The trail segments that connect Rochester, Chester Woods County Park, Eyota, Dover, St. Charles, & Elba are authorized as part of the Blufflands Trail System in Minnesota Statutes, Section 85.015, Subdivision 7. The trail segments connecting Plainview, Elgin, Viola and Eyota are authorized as the Great River Ridge Trail in Minnesota Statutes, Section 85.015, Subdivision 25.

The Minnesota Department of Natural Resources interdisciplinary team with the assistance of the Whitewater Country Loop State Trail Citizens Advisory Committee developed the Whitewater Loop State Trail Master Plan.

The Whitewater Country Loop State Trail Master Plan has been reviewed and approved by the Division of Trails and Waterways, and the Central Region Management Team.

I have reviewed this master plan and have determined that it complies with Minnesota Statutes 86A.09 and find it provides for the administration of the Great River Ridge State Trail and a part of the Blufflands State Trail in a manner that is consistent with the purposes for which these trails were authorized.

Sincerely,

A handwritten signature in black ink, appearing to read 'Mark Holsten'.

Mark Holsten
Commissioner

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Introduction

Executive Summary

Trail Alignment

The Whitewater Country Loop is a combination of part of the Blufflands State Trail System and the Great River Ridge State Trail. Both of these trails are legislatively authorized. The completion of the Whitewater Country Loop from Elba to Plainview is not presently authorized in legislation, but is recommended as a way to complete the loop. The Whitewater Country Loop State Trail will be an important link in the overall trail system of southeast Minnesota. It will connect to the Douglas State Trail through the Rochester city trail system, and to the rest of the Blufflands State Trail System in southeast Minnesota. It will provide a recreational, transportation and greenway connection between the cities of Rochester, Eyota, Dover, St. Charles, Elba, Plainview, Elgin and Viola. The trail will connect to Chester Woods County Park, Whitewater State Park and Carley State Park. The trail is projected to be approximately 50 miles in length, but actual mileage will be determined by the final route selected.

For purposes of this plan, the Whitewater Country Loop State Trail alignment has been divided into eight planning segments. The segments are:

1. Rochester to Chester Woods County Park,
2. Chester Woods County Park to Eyota,
3. Eyota to Dover,
4. Dover to St. Charles,
5. St. Charles to Elba-via Whitewater State Park,
6. Elba to Plainview via Carley State Park,
7. Plainview to Elgin (Great River Ridge State Trail)
8. Elgin to Blufflands Trail System (Great River Ridge State Trail)

If an exact alignment has not been determined for a segment, criteria for location of the trail are listed as well as those alternative corridor options that have been identified.

Recommended Trail Uses



The Whitewater Country Loop State Trail is a multi-use trail and a dual treadway is proposed for the entire length to accommodate paved surface users, and those that require an unpaved surface. However, limitations of width, landowner agreements and land use restrictions may dictate that not all recommended uses can be accommodated at all times for the entire length of the trail. Additional alternative trail alignments will be pursued as necessary to accommodate proposed uses.

The following trail uses are recommended for the Whitewater Country Loop State Trail: bicycling, hiking and walking, cross-country skiing, dog walking, running/jogging, in-line skating/skate skiing, cross-country skiing, snowmobiling, horseback riding, hunting (except where regulated by community ordinance) and environmental education / interpretation. Trail development will accessibility guidelines and regulations.

Trail Management

This plan contains recommendations for maintenance, enforcement and interpretation of natural and cultural resources. Trail maintenance is critical to provide and sustain the quality experience trail users expect and appreciate. The plan recommends that an adequate level of enforcement be provided via a multifaceted approach to help maintain a safe and secure trail environment. It is also a goal to encourage trail users to understand and obey trail rules, respect other trail users and respect adjoining properties.

Natural and Cultural Resources

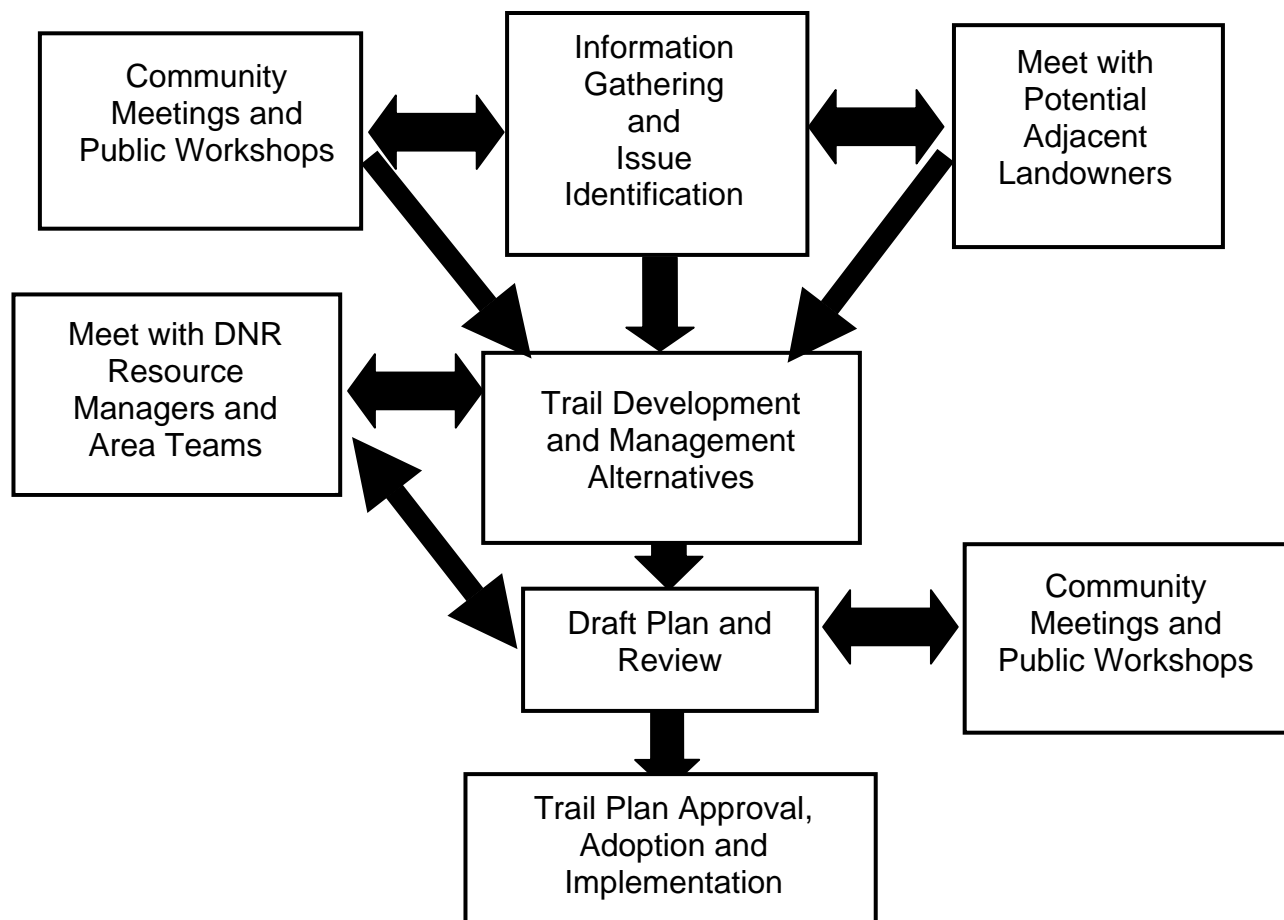
The vegetation within the trail right-of-way will be enhanced and managed to provide a healthy diversity of native species. This will be achieved by planting native flowers, grasses, trees and shrubs that are consistent with the natural plant communities of the area. Areas disturbed during construction will be seeded with native plants. Cultural resources will be preserved and managed for interpretive purposes. There will be opportunities for trail users to experience the history of the area through existing historical and proposed interpretive sites. The plan recommends that the natural and cultural features along the trail be interpreted and that a standard kiosk design should be used in trail communities and other locations where wayside exhibits are proposed.

Planning Process: Purpose and Scope

This master plan was prepared for the Whitewater Country Loop State Trail to comply with the mandate to prepare a master plan in Minnesota Statutes 86a.09, and to:

- Provide a unifying vision for trail advocates who are working to secure a trail alignment and funds for development and maintenance of the trail. The Chester Woods Trail Committee, Great River Ridge Trail Committee, and the Whitewater Trail Committee are the driving forces behind the establishment, acquisition and development of this trail.
- Guide the development, management, maintenance and operation of the Whitewater Country Loop State Trail so that quality recreational, transportation and healthful exercise opportunities are provided.
- Provide a forum for open public discussion concerning trail use and trail development options, trail maintenance and management issues, and trail operations and enforcement needs.
- Support partnerships and processes that will help execute the plan and contribute to providing quality trail opportunities.
- Assess the projected impacts of trail development on natural, cultural and historic resources in the area as well as the impacts on local communities.
- Satisfy the requirement of Minnesota Statutes, Section 86A.09, which requires that a master plan be prepared for state trails.

Master Plan Process



Trail Authorization

This master plan addresses two state authorized trails that are jointly called the Whitewater Country Loop. The trail segments that connect Rochester, Chester Woods County Park, Eyota, Dover, St. Charles, & Elba is authorized as part of the Blufflands Trail System in Minnesota Statutes, Section 85.015, Subdivision 7. The trail segment connecting Plainview, Elgin, Viola and Eyota are authorized as the Great River Ridge Trail in Minnesota Statutes, Section 85.015, Subdivision 25. The completion of the Whitewater Country Loop from Elba to Plainview is not presently authorized in legislation.

Blufflands Trail System

The original authorizing language for the Blufflands Trail System was first passed in 1971 as the Root River Trail¹, but was subsequently amended several times to include more counties, cities and an eventual name change to "Blufflands Trail System." The Blufflands Trail System language was amended in 1995 to include St. Charles and Elba², in 1996 to include Dover, Eyota and Chester Woods County Park³, and in 2006 to clarify the connection to Rochester⁴.

Minnesota Statutes, Section 85.015, Subdivision 7.

Blufflands Trail System, Fillmore, Olmsted, Winona, and Houston Counties.

(a) The Root River Trail shall originate at Chatfield in Fillmore County, and thence extend easterly in the Root River Valley to the intersection of the river with Minnesota Trunk Highway No. 26 in Houston County, and extend to the Mississippi River.

(b) Additional trails may be established that extend the Blufflands Trail system to include La Crescent, Hokah, Caledonia, and Spring Grove in Houston County; Preston, Harmony, Fountain, Wykoff, Spring Valley, Mabel, Canton, and Ostrander in Fillmore County; Rochester, Dover, Eyota, Stewartville, Byron, and Chester Woods County Park in Olmsted County; and Winona, Minnesota City, Rollingstone, Altura, Lewiston, Utica, St. Charles, and Elba in Winona County. In addition to the criteria in section 86A.05, subdivision 4, these trails must utilize abandoned railroad rights-of-way where possible.

(c) The trails shall be developed primarily for nonmotorized riding and hiking.

Great River Ridge State Trail

Minnesota Statutes, Section 85.015, Subdivision 25.

Subd. 25. Great River Ridge Trail, Wabasha and Olmsted Counties. The trail shall originate in the city of Plainview in Wabasha County and extend southwesterly through the city of Elgin in Wabasha County and the town of Viola in Olmsted County to the Chester Woods Trail [Blufflands Trail System] in Olmsted County.

Outdoor Recreation Act

Most of the Whitewater Country Loop State Trail is made up of two legislatively authorized state trails in the State Trail System. (See the maps of Minnesota's State Trail System on pages 12 and 13.) State trails are one unit of the state's outdoor recreation system established by the Legislature. In 1975, the Minnesota Legislature enacted the Outdoor Recreation Act (ORA) (Minnesota Statutes Section 86A.05.) This act established an outdoor recreation system comprised of eleven components or "units" classifying all state-managed recreation lands. The ORA requires that the managing agency prepare a master plan for the establishment and development of each unit. This plan fulfills that mandate.

The Whitewater Country Loop State Trail meets the following criteria established for state trails in the Outdoor Recreation Act, Minnesota Statutes 86A.05, Subdivision 4, State Trail: purpose; resource and site qualifications; administration; designation.

(a) A state trail shall be established to provide a recreational travel route which connects units of the outdoor recreation system or the national trail system, provides access to or passage through other areas which have significant scenic, historic, scientific, or recreational qualities or reestablishes or permits travel along an historically prominent travel route or which provides commuter transportation.

(b) No unit shall be authorized as a state trail unless its proposed location substantially satisfies the following criteria:

(1) Permits travel in an appropriate manner along a route which provides at least one of the following recreational opportunities:

(i) travel along a route which connects areas or points of natural, scientific, cultural, and historic interest.

The Whitewater Country Loop will connect Chester Woods County Park, Whitewater State Park, Carley State Park, and the Whitewater Wildlife Management area in addition to the city parks and areas of open space.

(ii) travel through an area which possesses outstanding scenic beauty.

The Whitewater Country Loop will introduce the trail user to the prairie plateau and stream dissected region of the state. The western part of the loop will pass through rolling terrain with the eastern part providing long distance views into the Whitewater Valley.

(iii) travel over a route designed to enhance and utilize the unique qualities of a particular manner of travel in harmony with the natural environment.

Trail uses will be compatible with the distance and scale of the region.

(iv) travel along a route which is historically significant as a route of migration, commerce, or communication.

The Great River Ridge segment of the Whitewater Country Loop will follow the Dakota, Minnesota & Eastern Railroad (DM&E) railroad line alignment.

(v) travel between units of the state outdoor recreation system or the national trail system.

The Whitewater Country Loop will connect Whitewater State Park, Carley State Park, and the Whitewater Wildlife Management area. It will connect the Blufflands State Trail System and the Great River Ridge State Trail and through the city of Rochester trails to the Douglas State Trail.

(2) Utilizes, to the greatest extent possible consistent with the purposes of this subdivision, public lands, rights-of-way, and the like.

Much of the Whitewater Country Loop will utilize public rights-of-way. The Great River Ridge State Trail follows the Dakota, Minnesota & Eastern Railroad (DM&E) railroad line alignment owned by the Wabasha County Regional Rail Authority. Portions of the trail

alignment on the rest of the loop will pass through Whitewater State Park, and will utilize road rights of way, and the county trail easement along Bear Creek where appropriate.

(3) Provides maximum potential for the appreciation, conservation, and enjoyment of significant scenic, historical, natural, or cultural qualities of the areas through which the trail may pass.

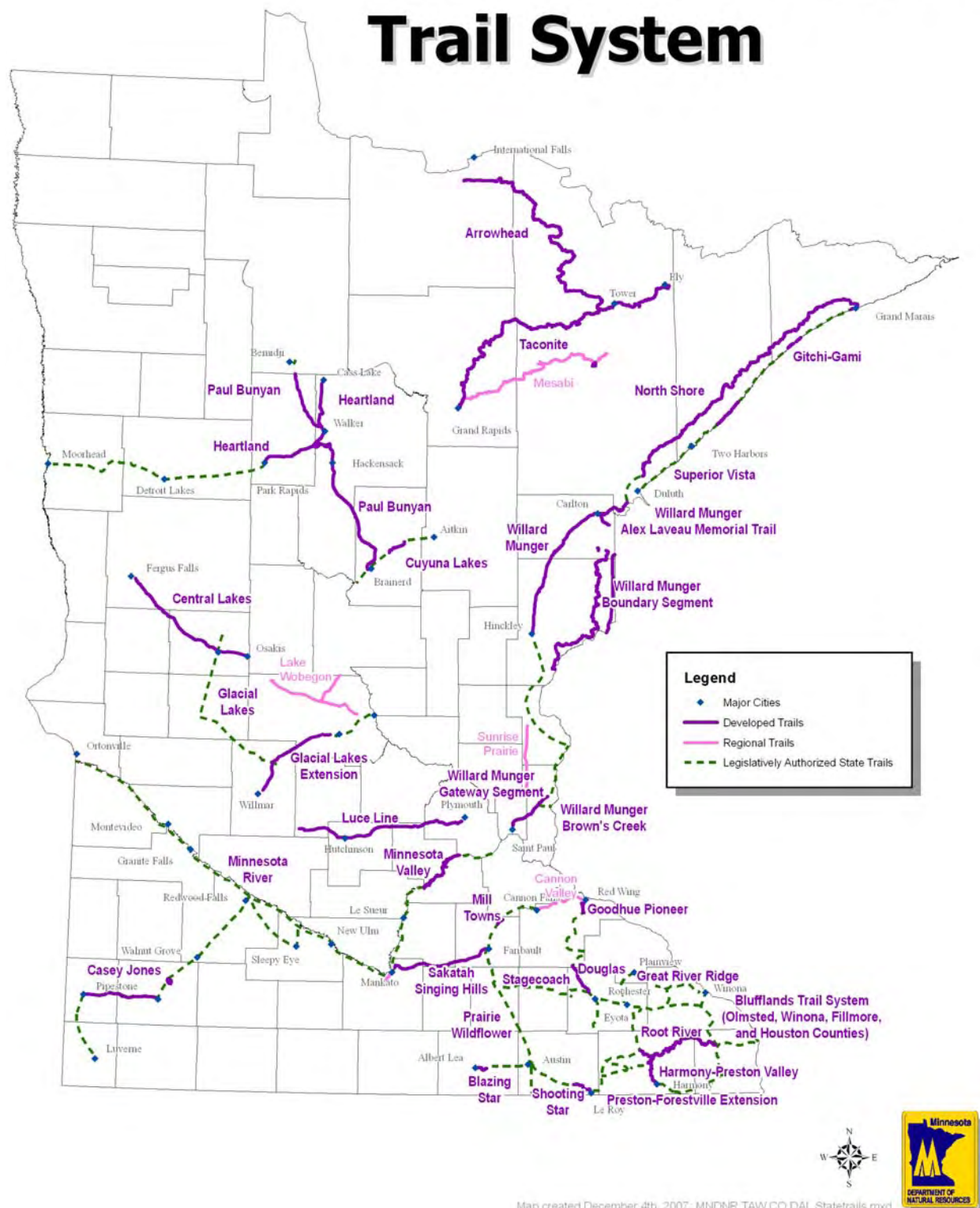
The western part of the loop will pass through rolling terrain with the eastern part providing long distance views into the Whitewater Valley. Opportunities for scenic alignments will be selected where possible rather than strictly utilitarian routes.

(4) Takes into consideration predicted public demand and future use.

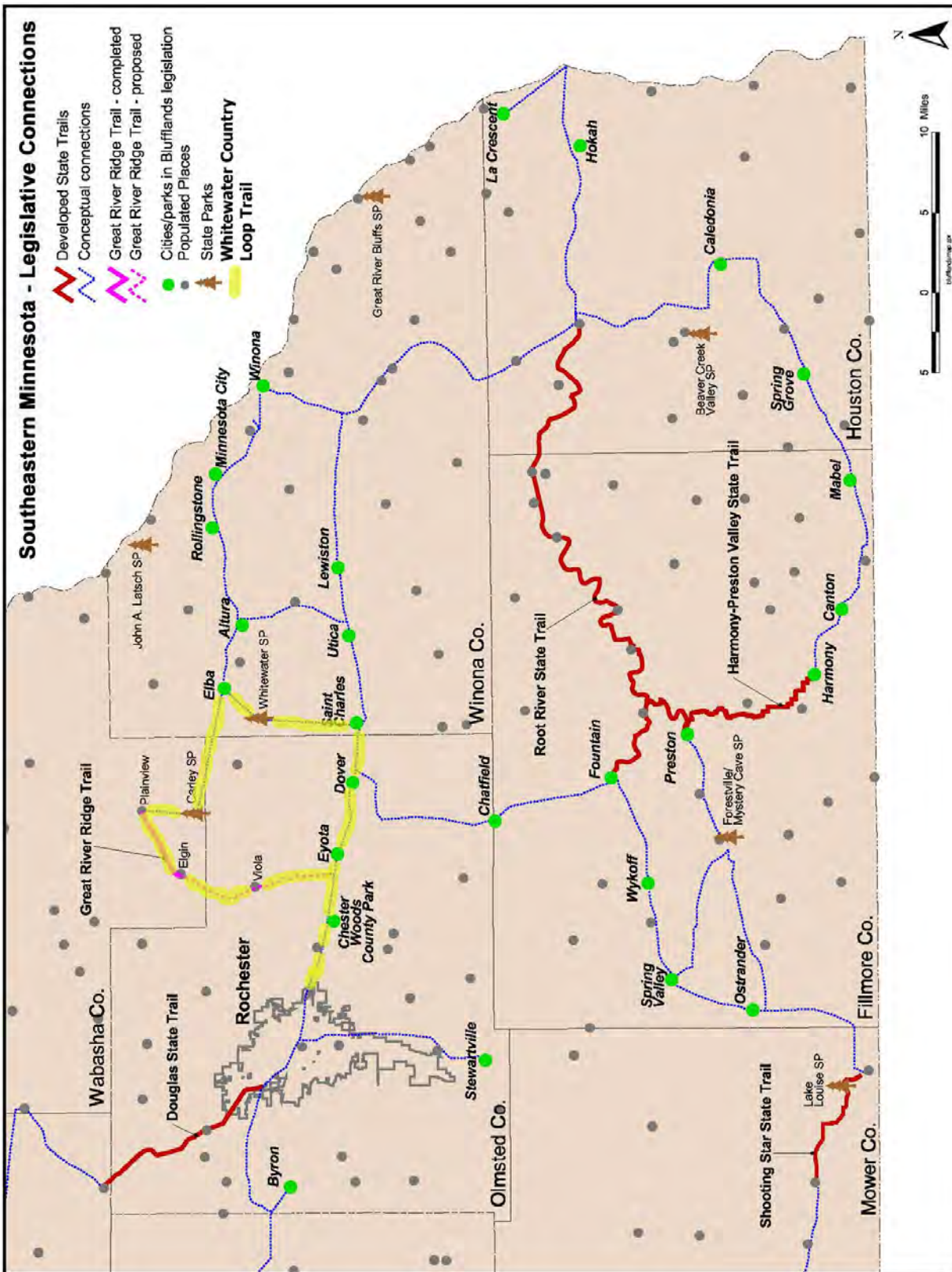
The Whitewater Country Loop is adjacent to one of the fastest growing populations in the state. Future demand for recreational trail use in the area is projected to increase.

State Trail System

Minnesota's State Trail System



SE Minnesota Trail System Map



Vision and Goals for the Whitewater Country Loop State Trail

Vision

In planning for the future, the involved communities and trail associations wish to develop a 50-mile loop trail that brings economic development to the area while improving the quality of life for residents. The trail system will provide trail users with quality services and accommodations that contribute to positive recreation, transportation and educational experience.

Goals

- To bring economic development to the area.
- To improve the quality of life for the residents, workers and visitors in the area.
- To connect the cities in the area – Eyota, Dover, St. Charles, Elba, Plainview, Elgin, Viola and Rochester.
- To connect to Whitewater State Park, Carley State Park and Chester Woods County Park.
- To identify trailhead sites in each community to facilitate economic development.
- To promote the trail as an integral element in the regional open space system as well as the state trail system.
- To promote the trail as an alternative transportation opportunity.
- To promote the trail as an opportunity to connect the consolidated school districts in the area.
- To promote the trail as a vital facility for health in the community.

Summary of Recommended Trail Uses



This page summarizes the recommended allowable uses for the Whitewater Country Loop. The Whitewater Country Loop State Trail is a multi-use trail and a dual treadway is proposed for the entire length to accommodate paved surface users, and those that require an unpaved surface. However,

limitations of width, landowner agreements and land use restrictions may dictate that not all proposed uses can be accommodated at all times for the entire length of the trail. Additional alternative trail alignments will be pursued as necessary to accommodate proposed uses.



The following trail uses are recommended for the Whitewater Country Loop State Trail: bicycling, hiking and walking, cross-country skiing, dog walking, running/jogging, in-line skating/skate skiing, cross-country skiing, snowmobiling, horseback riding, hunting (except where regulated by community ordinance) and environmental education / interpretation. Trail segments will provide fishing access in Chester Woods County Park and Carley and Whitewater State Parks. Trail development meet accessibility guidelines and regulations.

Hunting is allowed during legal hunting season only. State trail rules allow hunting within the trail right-of-way, except where restricted by local ordinance. The current rule states: *"No firearm or bow and arrow shall be discharged within the trail at any time, except for the purpose of lawful hunting during the period from September 15 to March 30 only. No rifle, shotgun with slug or bow and arrow shall be discharged upon, over, or across the trail treadway at any time."* Communities may restrict firearms or bow and arrow discharge, or trapping, by ordinance. These ordinances take precedence over state trail rules.



Overview of the Trail Alignment

The Whitewater Country Loop State Trail, will be an important link in the overall trail system of southeast Minnesota. (See the map of the Blufflands State Trail System on page 8.) It will connect to the Douglas State Trail, the Rochester city trail system, Chester Woods County Park, Whitewater State Park and Carley State Park. The Whitewater Country Loop State Trail will provide a recreation and transportation connection between the cities of Rochester, Eyota, Dover, St. Charles, Elba, Plainview, Elgin and Viola. The trail is projected to be approximately 50 miles in length, but actual mileage will be determined by the final route selected.

A portion of the Blufflands State Trail System and the Great River Ridge State Trail will together form the Whitewater Country Loop State Trail. One segment of the loop from Elba to Plainview is not currently authorized in statute, but is recommended that Plainview be added to the Blufflands Trail System legislation to complete the loop trail.

In 2006, the Great River Ridge Trail was designated a state trail. A management agreement will be prepared that defines the responsibilities of the Wabasha County Regional Rail Authority; and the Department of Natural Resources, Division of Trails and Waterways in the management of the Great River Ridge State Trail.

When completed, the Great River Ridge State Trail will be approximately 15 miles in length. The trail will utilize the abandoned railroad alignment from Plainview to Olmsted County Road 9. The Wabasha County Regional Rail Authority has an easement with the DM&E Railroad to continue the trail from County Road 9 to Highway 14 along the active DM&E Railroad right-of-way.

The rest of the approximately 35 miles of trail loop will be part of the Blufflands Trail System.

For purposes of this plan, the Whitewater Country Loop State Trail alignment has been divided into eight planning segments. The segments are:

1. Rochester to Chester Woods County Park,
2. Chester Woods County Park to Eyota,
3. Eyota to Dover,
4. Dover to St. Charles,
5. St. Charles to Elba-via Whitewater State Park,
6. Elba to Plainview via Carley State Park,
7. Plainview to Elgin (Great River Ridge State Trail)
8. Elgin to Blufflands Trail System (Great River Ridge State Trail)

If an exact alignment has not been determined for a segment, criteria for location of the trail are listed as well as alternative corridor options. These are not a definitive list of corridor options. Additional good solutions may be identified in the future.

Segment 1: Rochester to Chester Woods County Park

Description of the Alignment

An exact alignment has not been determined between Rochester's city limits and County Road 11. However, the City of Rochester is working on a trail connection to the Rochester city trail system. The Rochester-Olmsted Councils of Government (ROCOG) adopted a Long Range Transportation Plan in August 2005. According to that plan, they have determined a study area, as seen on segment map 1, to close the one-mile gap between County Road 11 and Eastwood Park.

From County Road 11 to Chester Woods County Park, the trail will primarily utilize the county easement along Bear Creek and the right-of-way of County Roads 143 & 19. In addition, the acquisition of some private land not covered by the Bear Creek easement will be needed to make the connection. The easement along Bear Creek is very narrow in places, and trail uses may have to follow separate alignments to ensure a sustainable trail alignment connection to Chester Woods for all proposed trail uses.

Proposed Trail Uses on This Segment

Walking, Bicycling, Horse Riding, In-line skating, Dog walking, Cross-country skiing.

Criteria for Trail Alignment

- Connect to the Rochester city trail system
- Connect to Chester Woods County Park

Options for Trail Alignment

A combination and/or portions of the following:

- Olmsted County easement along Bear Creek
- County Roads 143 & 19 right-of-way
- Chester Woods County Park
- Pursue private land acquisition options.

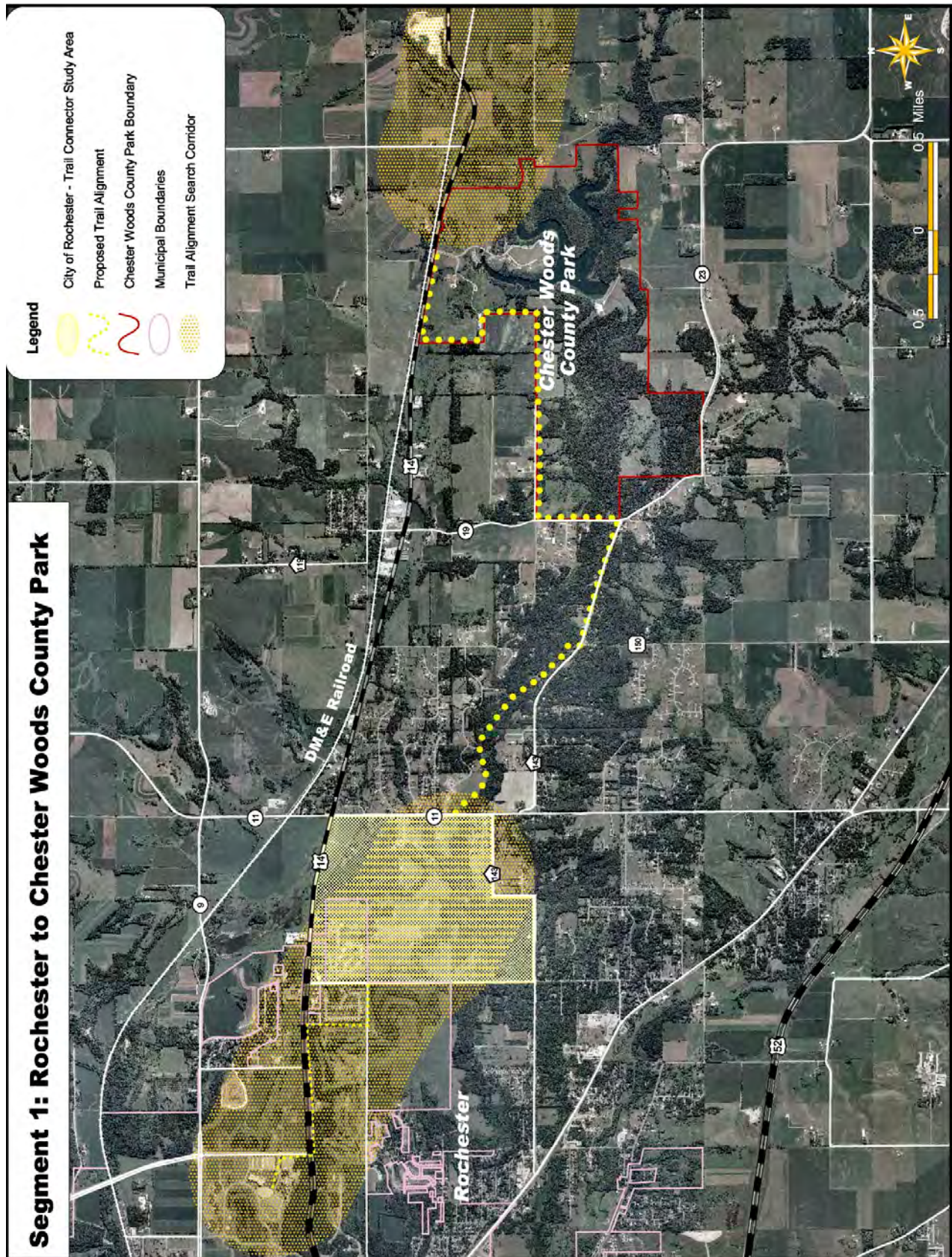
Trail Access – Parking Areas, Rest Areas and Interpretive Sites

Rochester

Currently, there is not a trailhead planned within the city of Rochester but it is recommended that future planning include designs for a Whitewater Country Loop State Trail trailhead.

Chester Woods County Park

Chester Woods County Park is located seven miles east of Rochester on Highway 14 at the headwaters of Bear Creek. It is a 1,330-acre park that contains Bear Creek Reservoir and has facilities for camping, picnicking, hiking trails, equestrian trails, cross-country ski trails, a swimming beach, canoe rentals and fishing piers. Bicycle use within the park is now limited to improved roads. An entry permit is required for each vehicle and horse rider. Daily or annual entry permits are available at the park entrance. Trailhead parking could take place in existing black top parking areas.



Segment 1 Map

Rochester

Rochester is the county seat of Olmsted County. It was incorporated as a city on August 5, 1858 and was named after Rochester, New York by George Head, a settler who had lived there before settling in this area.

When he arrived, Rochester was a crossroads camping spot for the wagon trains that rolled into southeastern Minnesota. Two years later, the new village had 50 inhabitants, and four years after Head arrived, Rochester had a population of 1,500.

In 1863, Doctor William Worrall Mayo arrived in Rochester to become examining surgeon of federal draftees during the Civil War. A tornado swept through Rochester that year and after that terrifying experience Mary Alfred, a Franciscan Sister, offered to build and maintain a hospital if doctor Mayo would provide the medical staff. This action set in motion what would become the world famous Mayo Clinic.

Community Today

As of the 2005 census, Rochester had a total population of 97,806, and is Minnesota's third largest city. It is best known as the home of the Mayo Clinic Medical Center, which now has satellite clinics in several other cities. The clinic and IBM's Rochester Campus are the two largest private employers in the city.

Rochester has a large park system with more than 100 parks, 65 miles of paved trails, municipal golf and other athletic facilities.

Trail Alignment

The Whitewater Country Loop State Trail is planned to connect to the Rochester city trail system (65 miles) somewhere near Olmsted County Road 11. The city trail system in the eastern part of the city is still in the planning stages, so it is undetermined where the transition between state trail and city trail will take place. It is recommended that future planning include the establishment of a trailhead within the southeastern city limits, where it would help trail users understand the state and the city trail systems connection.

TRAIL SYSTEM

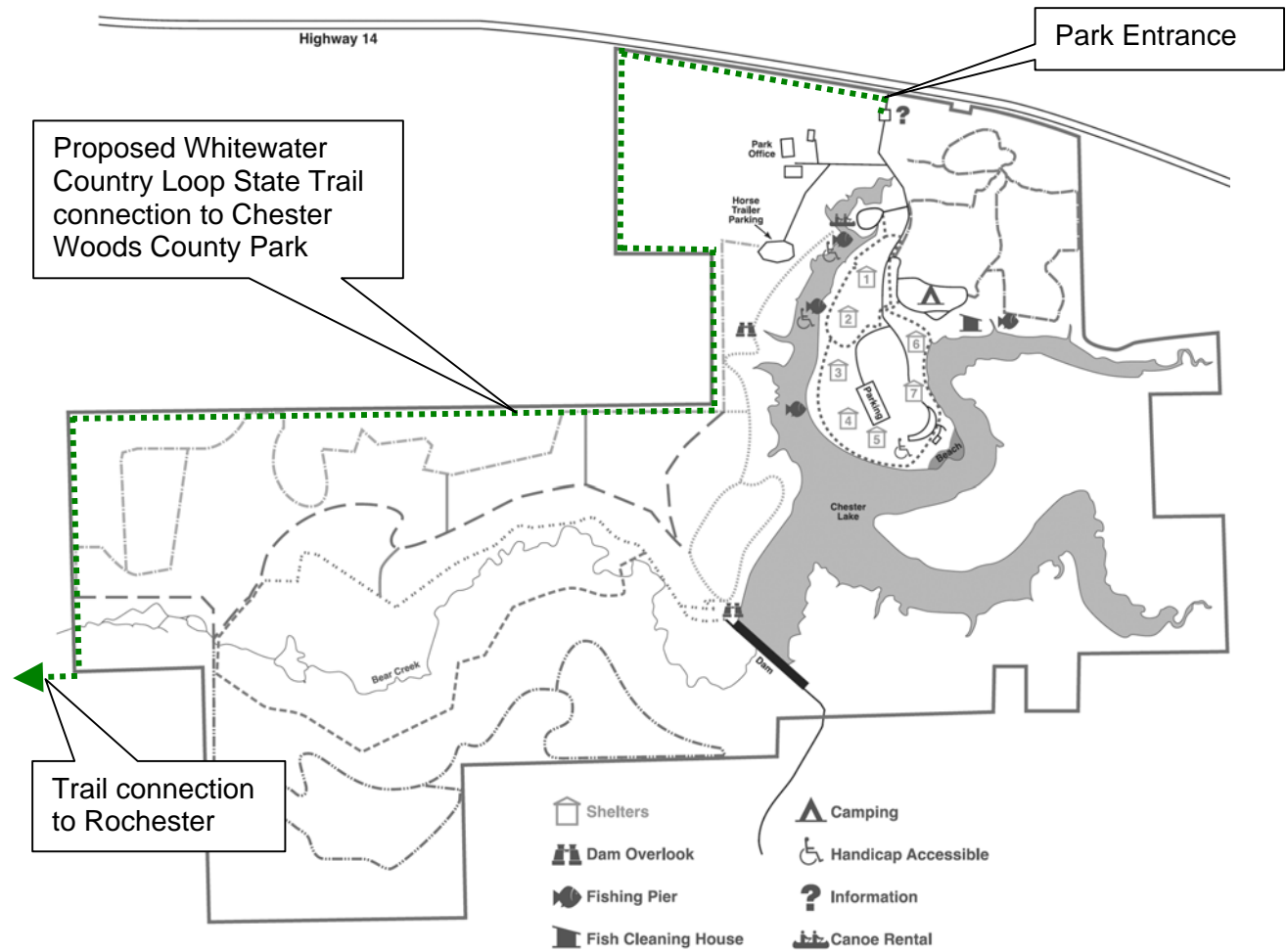
- EXISTING PATH: —
- PROPOSED PATH: - - -
- EXISTING ROUTE / LANE: —
- PROPOSED ROUTE / LANE: - - -
- PARK AREAS: ■

APPROXIMATE SCALE

N

To Whitewater Country Loop State Trail

Chester Woods County Park Concept Map



Segment 2: Chester Woods County Park to Eyota

Description of the Alignment

The trail in this area will generally parallel TH 14 and an exact alignment has not been determined, however several options exist for this segment. See the options below.

Proposed Trail Uses on This Segment

Walking, Bicycling, Horse Riding, In-line skating, Dog walking, Cross-country skiing.

Criteria for Trail Alignment

- Connect to Great River Ridge State Trail near U.S. Highway 14
- Connect to Westside Park in Eyota
- Connect to Eyota's downtown business district
- Connect to the Dover-Eyota Elementary and High School in Eyota
- Provide a safe crossing of major roads – may require a separated grade crossing or a controlled at-grade crossing of MN Hwy. 42 and/or U.S. Highway 14.

Options for Trail Alignment

A combination and/or portions of the following:

- Easement along DM&E railroad (snowmobiling is not allowed if this option is chosen)
- Private landowner easements along railroad and 19th Street SE
- Segments of current Highway 14 right-of-way
- Future reroute of Highway 14 - potential alignment options
- Pursue private land acquisition options
- Township road - 20th Street SE
- Township road - 110th Avenue SE
- Township road - 19th Street SE
- Olmsted County Road 102 right-of-way

Trail Access – Parking Areas, Rest Areas and Interpretive Sites

Chester Woods County Park

Use existing black top parking areas located within park. Amenities include outdoor shelters, drinking fountains, seasonal toilets, beach, campground, existing horse trail and a playground.

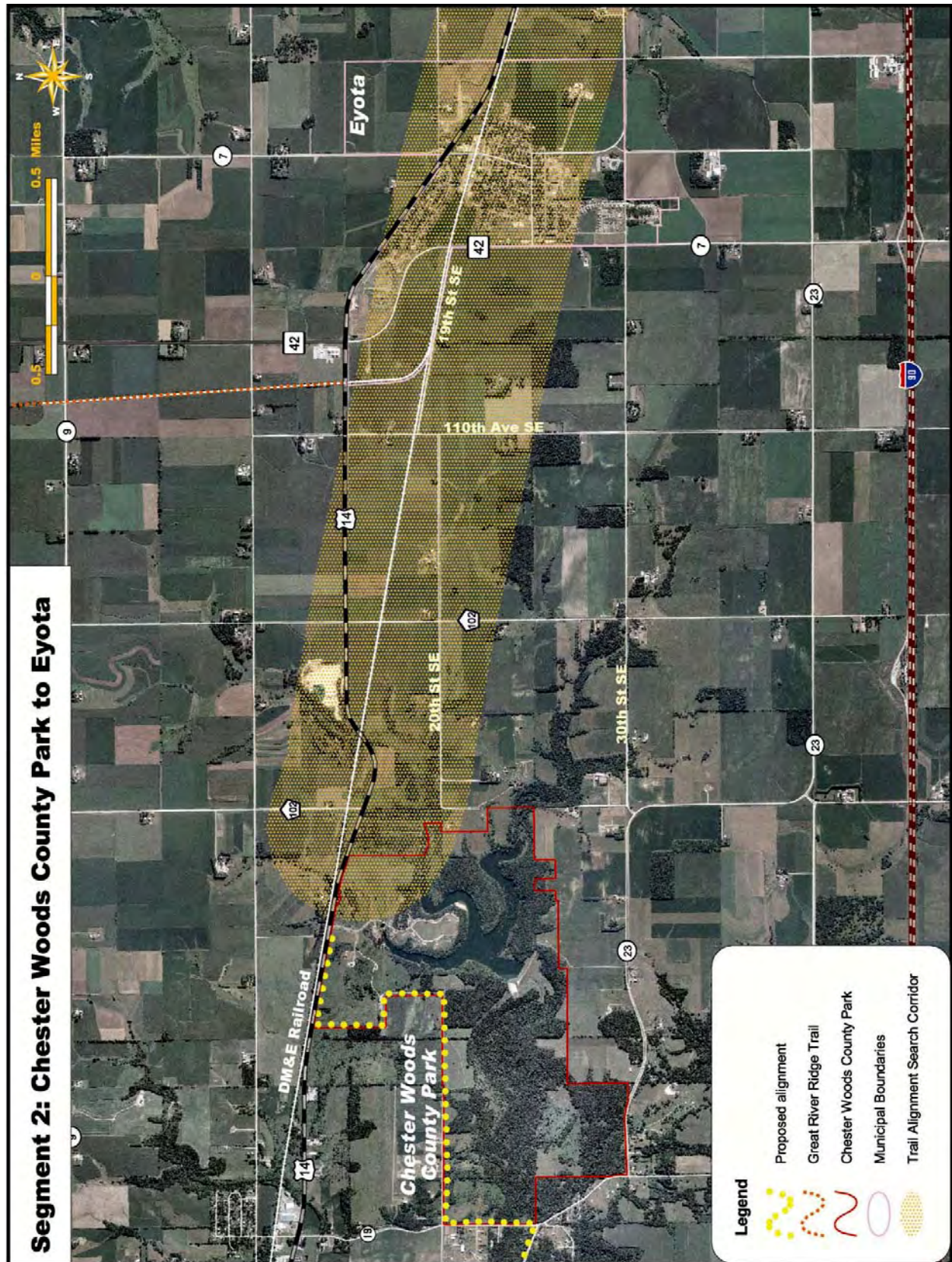
Intersection of the Chester Woods to Eyota Trail & the Great River Ridge Trail

This intersection will be difficult to construct, but an important connection and an important location for trail user information. TH 14 is a 55 mph major truck route with an average daily traffic volume of 6,400 vehicles per day. Under these conditions, MnDOT Bikeway Facility Manual recommends that the trail cross the highway either in a tunnel under TH 14, or a bridge over it. Any structural changes to TH 14 planned by MnDOT near this crossing should look for ways to implement such a separated grade trail crossing. This intersection will also be a decision point for trail users, so information addressing orientation, directional signing and interpretation should also be provided.

Eyota

A trailhead is proposed at Westside Park. Amenities include a shelter, drinking fountain, two parking lots, seasonal toilets and a playground.

Segment 2 Map



Eyota

History

Eyota Township's first settler was Benjamin Bear. He arrived in 1853 to stake a claim, then left to return the following year with his family to settle. A spring on his property forms the beginning of Bear Creek, which was named after him. Eyota Township, a high point in Olmsted County, includes a dividing watershed line. Bear Creek runs toward Rochester to the west. In the opposite direction, the beginning of Whitewater River's South Branch flows east toward Dover.

The town of Eyota was platted in 1864 when the westward advancing rails of the Winona and St. Peter Railroad (W&SP) arrived. Within three years the larger Chicago & Northwestern Railroad (C&NW) had bought out W&SP. In 1878, C&NW laid two extension rail lines at a point a mile west of Eyota: one traveled north extending to Plainview (now Great River Ridge State Trail), the other headed south to Chatfield. Eyota became a hub for local railway traffic, having at least three hotels and employing around 30 railroad workers. The downtown district was unique because it lined only one side of South Front Street, facing the railroad depot and a busy rail yard. Eyota was not incorporated until February 16, 1875.

Harold Crawford, born in 1888, grew up on a farm in rural Eyota. After receiving an education in Boston and Chicago to become an architect, he returned to the area. During his career he designed many homes built in the "Pill Hill" area of Rochester and numerous structures in Southeast Minnesota. In 1922, a spacious new brick school designed by Crawford replaced a small five-room brick school in Eyota. It won a national award for being a community-centered school. Five local rural schools had closed to become one of the earliest school consolidations in Minnesota. Students were bussed into Eyota (in Model-T type busses) and housed in the brand new building. The school was demolished in the 1990's, its site becoming a housing subdivision. Crawford also designed a creamery building that was built on the east edge of town. It still stands today, but has been converted to a private home.⁵

Community Today

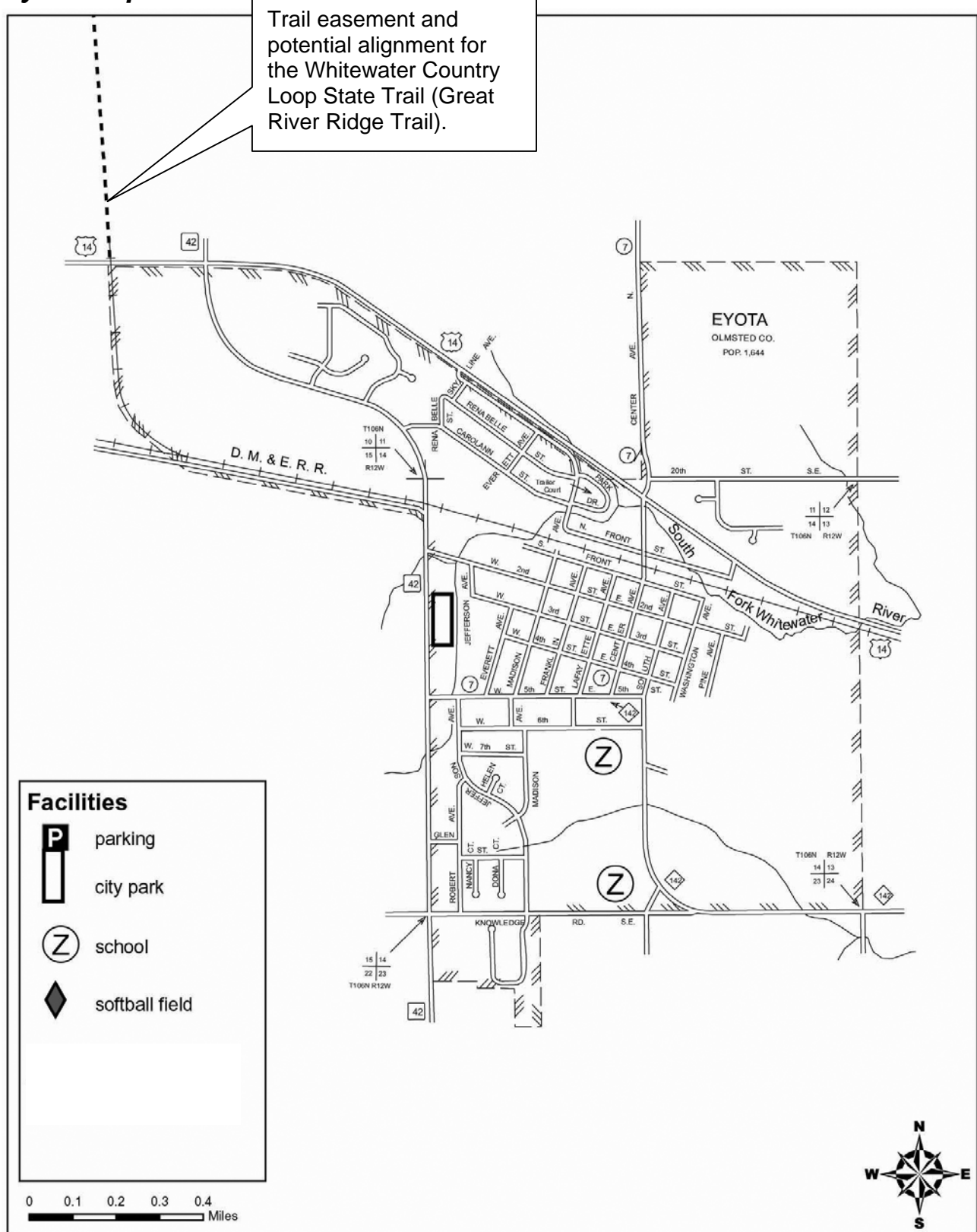
Located ten miles east of Rochester, Eyota is a fast growing community that provides a small town atmosphere with easy access to Interstate 90, Highway 14 and Highway 42. Eyota has three parks with playgrounds and picnic shelters, and several baseball diamonds.



Trail Alignment

An exact alignment through the community is undetermined at this point but trail association members expressed interest in connecting to Westside Park and possibly having this park serve as a trailhead. It is also important to connect to the downtown business district as well as the elementary and high school.

Eyota Map



Segment 3: Eyota to Dover

Description of the Alignment

The alignment in this segment will generally follow TH 14 and the DM&E Railroad corridor. An exact alignment has not been determined, however several options exist for this segment. See the options below.

Proposed Trail Uses on This Segment

Walking, Bicycling, Horse Riding, In-line skating, Dog walking, Cross-country skiing.

Criteria for Trail Alignment

- Connect to the softball fields in Dover
- Connect to Dover City Park
- Dover and Eyota are a consolidated school district, so connecting these two towns is important in providing a safe travel alternative to school

Options for Trail Alignment

A combination and/or portions of the following:

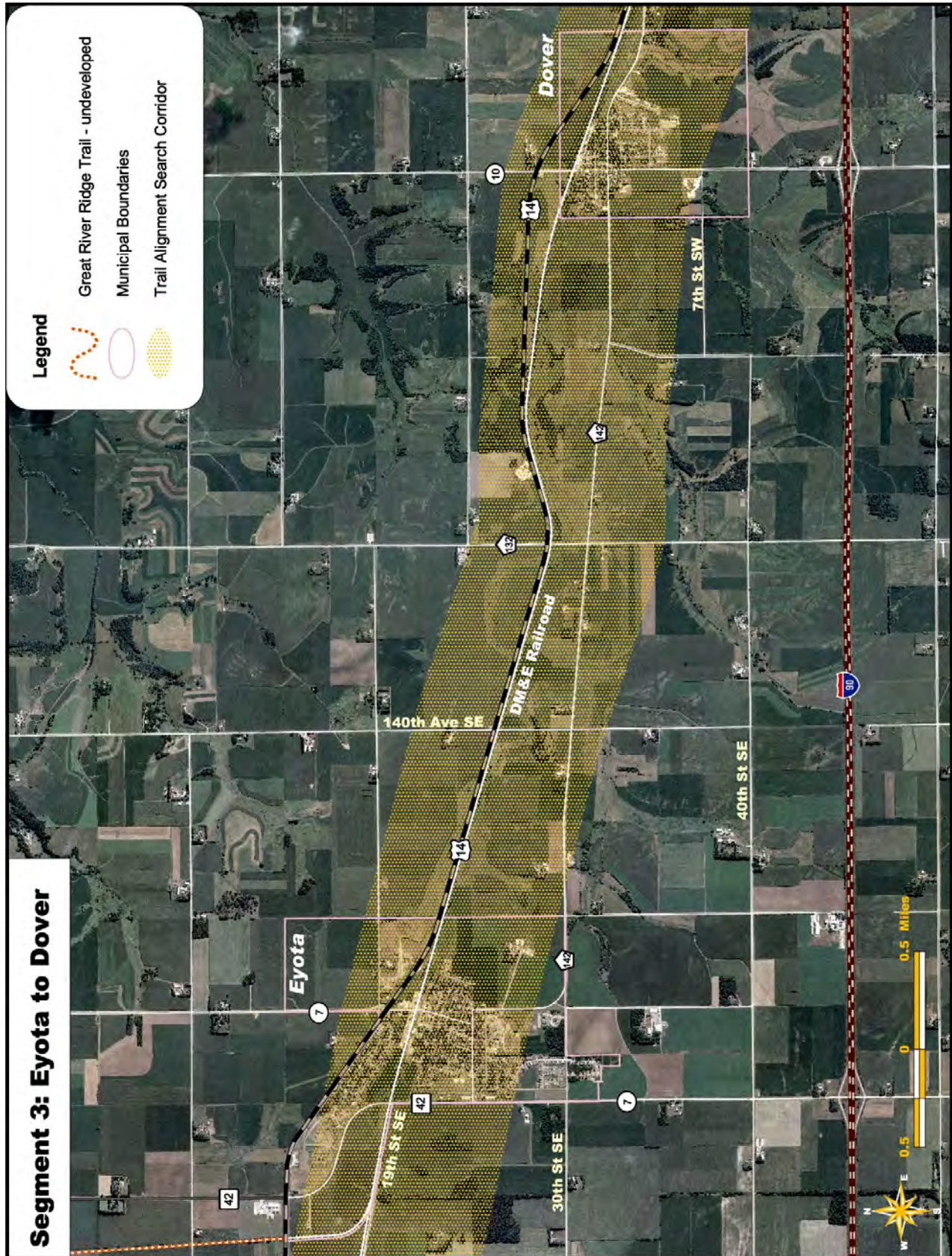
- Easement within sewer line easement – Located south of Highway 14 and the active Dakota, Minnesota and Eastern (DM&E) railroad line (need to negotiate an easement with all landowners as permission was granted for the sewer only)
- Easement along DM&E railroad (snowmobiling is not allowed if this option is chosen)
- Olmsted County Road 142 right-of-way corridor
- Highway 14 right-of-way
- Pursue private lands from willing landowners

Trail Access – Parking Areas, Rest Areas and Interpretive Sites

Dover

A trailhead is proposed at Dover City Park. This park provides bathrooms, picnic shelter, playground equipment and space for open play. The Dover City Park is also adjacent to the fire station that has a community room that can be reserved for community activities.

Segment 3 Map



Dover

History

A surge of settlers came from the east in 1853 and settled in the Dover area. Dover village had its beginning 15 years later when a railroad sidetrack was constructed. Originally called Dover Center, as it was located at the center of the township. Dover was incorporated on December 22, 1908. Hiram Thompson, who later became Judge Thompson in Olmsted County, was the first to arrive in 1853 and stake a claim in Dover Township.

The Chicago & Northwestern Railroad (C&NW) had been built from east to west through their township for five years before a sidetrack was constructed in the middle of the township. Dover Center was platted in 1869; the name was later changed to simply Dover. It wasn't incorporated until December 22, 1908.

For a decade before two railroad spur lines were laid north and south from the nearby neighboring Eyota, the Dover station was immensely busy with wagonloads of wheat from the Chatfield and Plainview area. When a second railroad company laying rail lines west from Winona arrived in 1890, Dover had two train depots. The new railroad, known as the Chicago Great Western (CGW), cut through the middle of town, exiting to angle west as it passed 2.5 miles south of Eyota, which was five miles from Dover. (The CGW line between Dover and Planks Junction, where on the Chatfield line CGW and C&GW intersected, was discontinued in 1935. After this time the CGW trains traveled the C&NW line until reaching the Eyota Wye junction to Chatfield. After going 2.5 miles south from Eyota to Planks Junction, trains then switched west toward Simpson on CNW rail lines.)

A new school designed by Rochester architect Harold Crawford in 1925 replaced an early brick faced five-room school built in 1876. This newer school still stands today and is used for early childhood education by the Dover-Eyota School District.



The South Branch of the Whitewater River flows along the north edge of town. In the early years of railroad, a portion of the river was widened to form Lake Dover. Bottomlands along the river were excavated by hand as a source for gravel. Located right along the train tracks adjacent to the C&NW depot, the large pond provided an important harvest of ice in the winter before the days of refrigeration⁶.

Community Today

Dover is a small community that prides itself on having a friendly

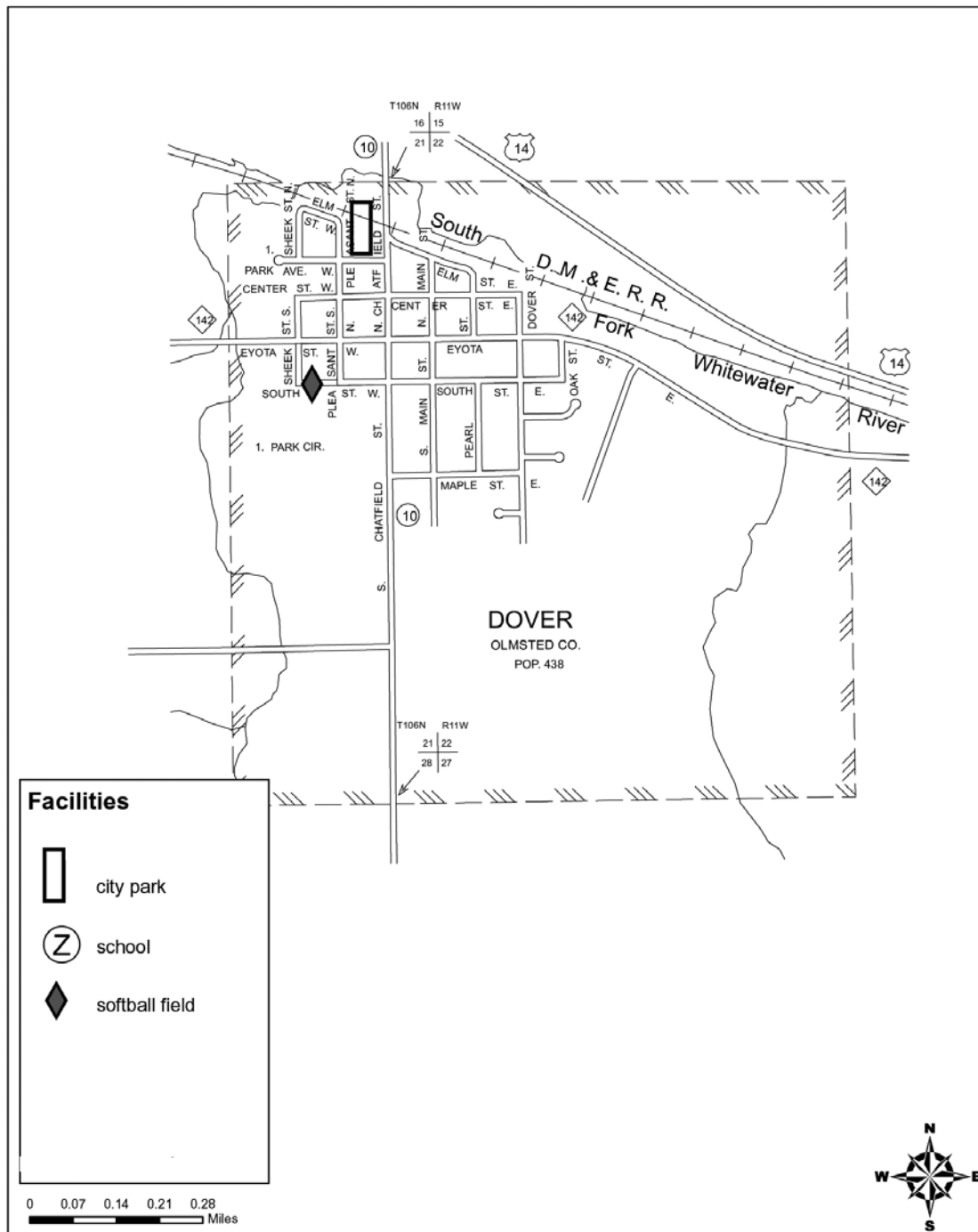
and progressive population. There are several park and recreation areas in the city of Dover that offer basketball courts, tennis courts and playground areas, among other activities. This community is experiencing growth and is upgrading communication and utility services to

accommodate this growth. Many of the residents work in larger communities in the vicinity, including Rochester and Winona.

Trail Alignment

An exact alignment through the city is undetermined at this point. However, it would be desirable to have the city park and softball fields connect with the state trail either directly or with locally developed trail spurs.

Dover Map



Segment 4: Dover to St. Charles

Description of the Alignment

An exact alignment has not been determined, however several options exist for this segment. See the Options for Trail Alignment below.

Proposed Trail Uses on This Segment

Walking, Bicycling, Horse Riding, In-line skating, Dog walking, Cross-country skiing.

Criteria for Trail Alignment

- Connect to Brookwood Park
- Connect to other St. Charles city parks
- Connect to the Mel Brownell Family Aquatic Center

Options for Trail Alignment

A combination and/or portions of the following:

- Easement within sewer line easement – Located south of Highway 14 and the active DM&E railroad line (need to negotiate an easement with all landowners as permission was granted for the sewer only)
- Pursue private land acquisition options
- Highway 14 right-of-way
- Easement along DM&E Railroad (snowmobiling not allowed if this option's chosen)
- Olmsted County Road 142
- Winona County Road 26

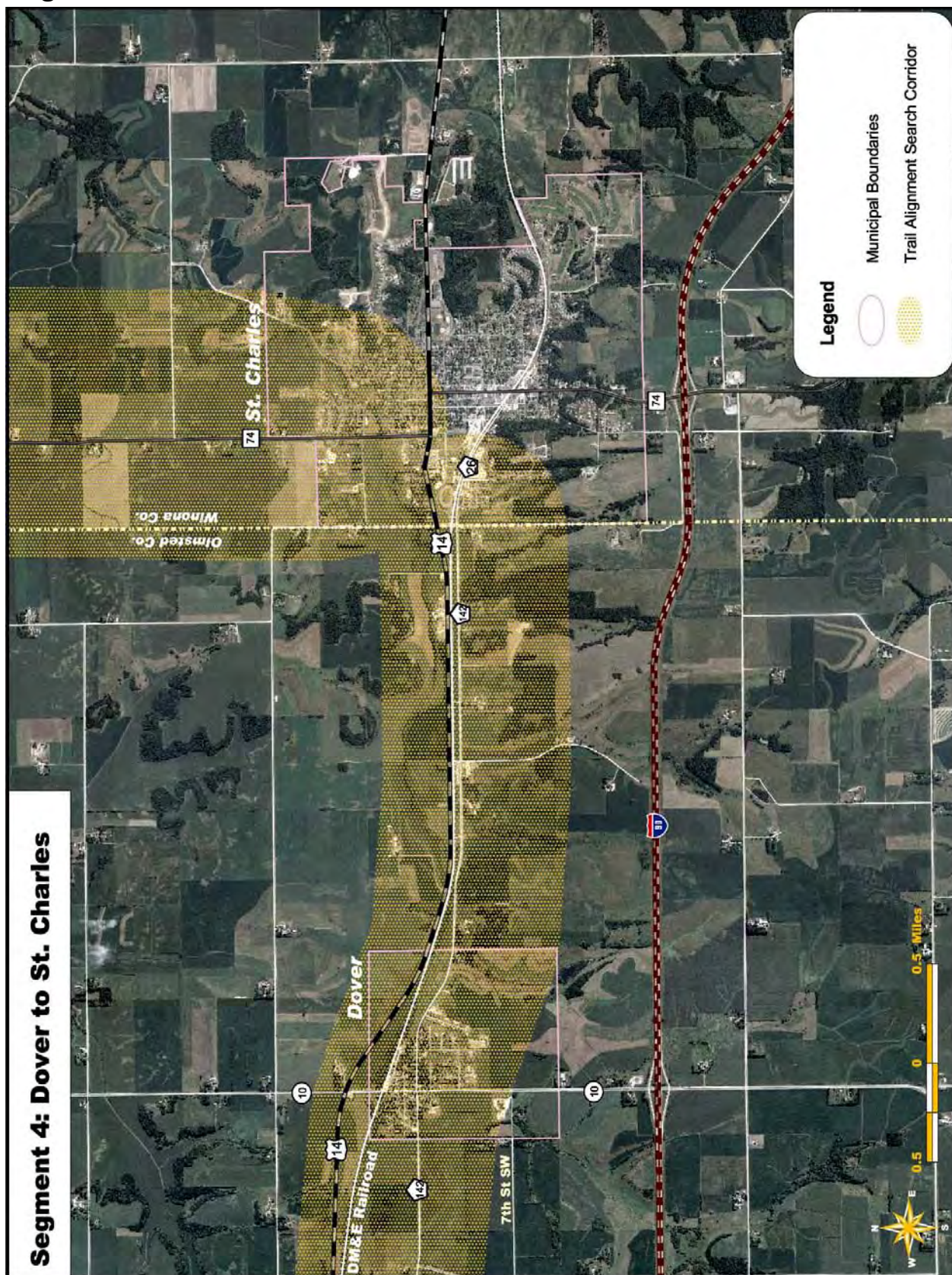
Trail Access – Parking Areas, Rest Areas and Interpretive Sites



St. Charles

A trailhead is proposed near the intersection of TH 14 and 74. Areas considered will be the 31-acre St. Charles City Park that has amenities including park shelters, ball diamonds, seasonal restrooms, playground area and asphalt parking areas, or other city land in the vicinity. The City of St. Charles has built several miles of trails in recent years, and plans to connect this trail access to the rest of the city with additional trails and bike lanes.

Segment 4 MAP



St. Charles

History

St. Charles was founded in 1854 and was incorporated as a city on February 28, 1870. It was named for St. Charles of Italy who became cardinal of Milan and secretary to Pope Pius IV. The city initially served as a station for the Winona and St. Peter Railroad.

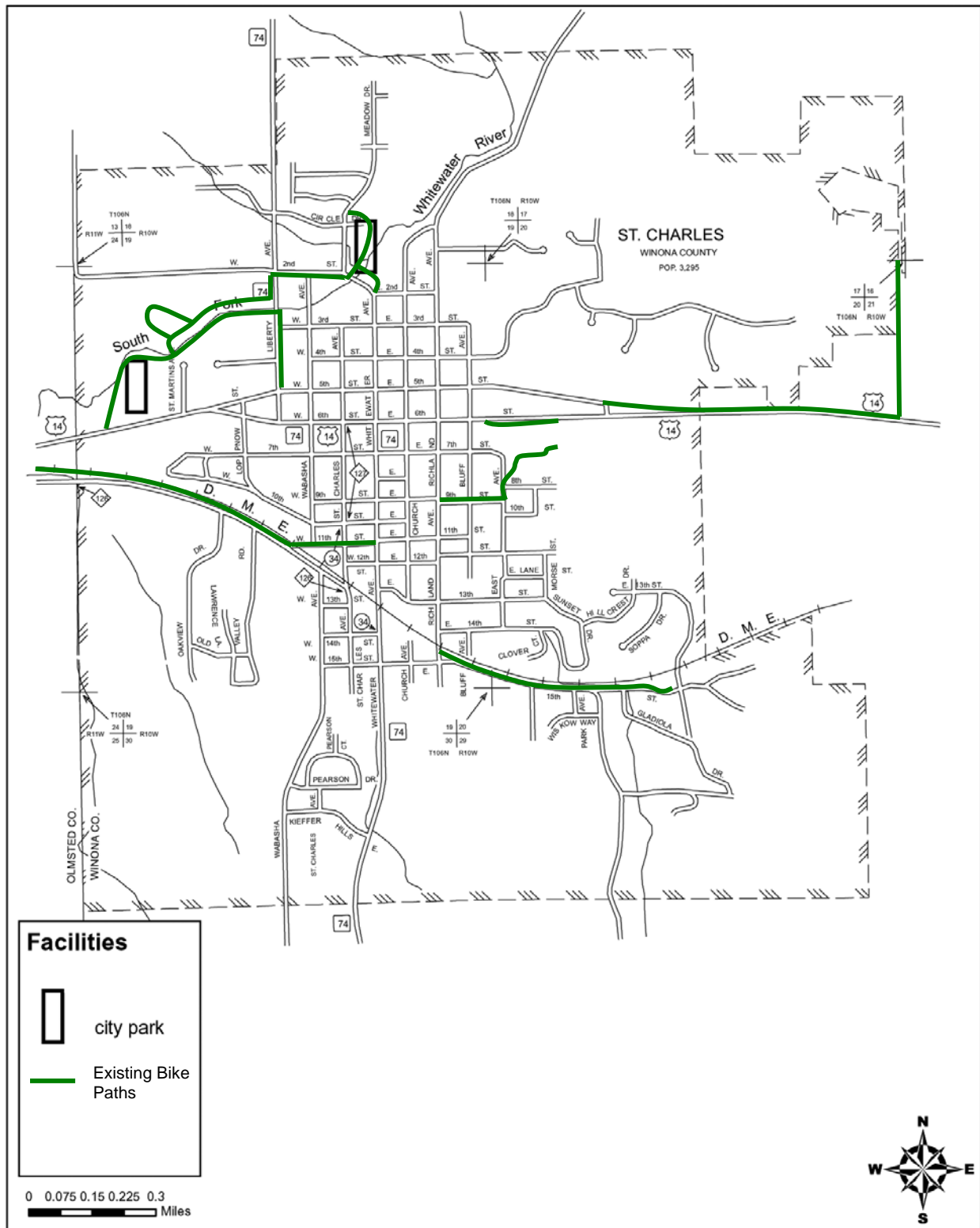
Community Today

St. Charles lies along the South Fork of the Whitewater River, and calls itself the “Gateway to the Whitewater Valley” for its proximity to Whitewater State Park, seven miles north. With over 3500 residents, St. Charles is the largest community on the loop trail besides Rochester. It is 20 miles from both Rochester and Winona, that are employment centers for area residents. The city has experienced significant growth in both housing and the commercial business center. The city center includes two blocks that are listed on the National Register as the Whitewater Avenue Commercial Historic District. Two motels, a bed and breakfast, five city parks, restaurants and retail shops serve tourists and residents.

Trail Alignment

An exact alignment through the city is undetermined at this point. A trailhead is proposed at the St Charles City Park.

St. Charles MAP



Segment 5: St. Charles to Elba via Whitewater State Park

Description of the Alignment

An exact alignment has not been determined, however several options exist for this segment. An off road trail is proposed to generally parallel State Highway 74 from St. Charles to the southern border of Whitewater State Park. The landscape changes dramatically in this segment. The gently rolling plains near St. Charles quickly give way to the highly dissected landscape of the Blufflands, with river bottom forests, deep stream valleys, dolomite and limestone bluffs. The steep, rocky terrain makes locating, developing and maintaining a trail difficult in this segment.

Proposed Trail Uses on This Segment

Walking, Bicycling, Horse Riding, In-line skating, Dog walking, Cross-country skiing.

Criteria for Trail Alignment

Surfaced trails for bicycling or in-line skating may be accommodated in Whitewater and Carley State Parks, but are not allowed in Wildlife Management Areas. Horses are not accommodated in Whitewater or Carley State Parks, or in the Whitewater Wildlife Management Area. The surfaced trail alignment will need to avoid Wildlife Management Lands, and the horse trail alignment will avoid the state parks and the wildlife management area.

- It is desirable to connect to Whitewater State Park for those uses that can be accommodated in the State Park.
- Connect to food and drink businesses in the vicinity.

Options for Trail Alignment

A combination and/or portions of the following:

- Pursue private land acquisition options
- Follow township road corridors
- Highway 74 right-of-way

Trail Access – Parking Areas, Rest Areas and Interpretive Sites

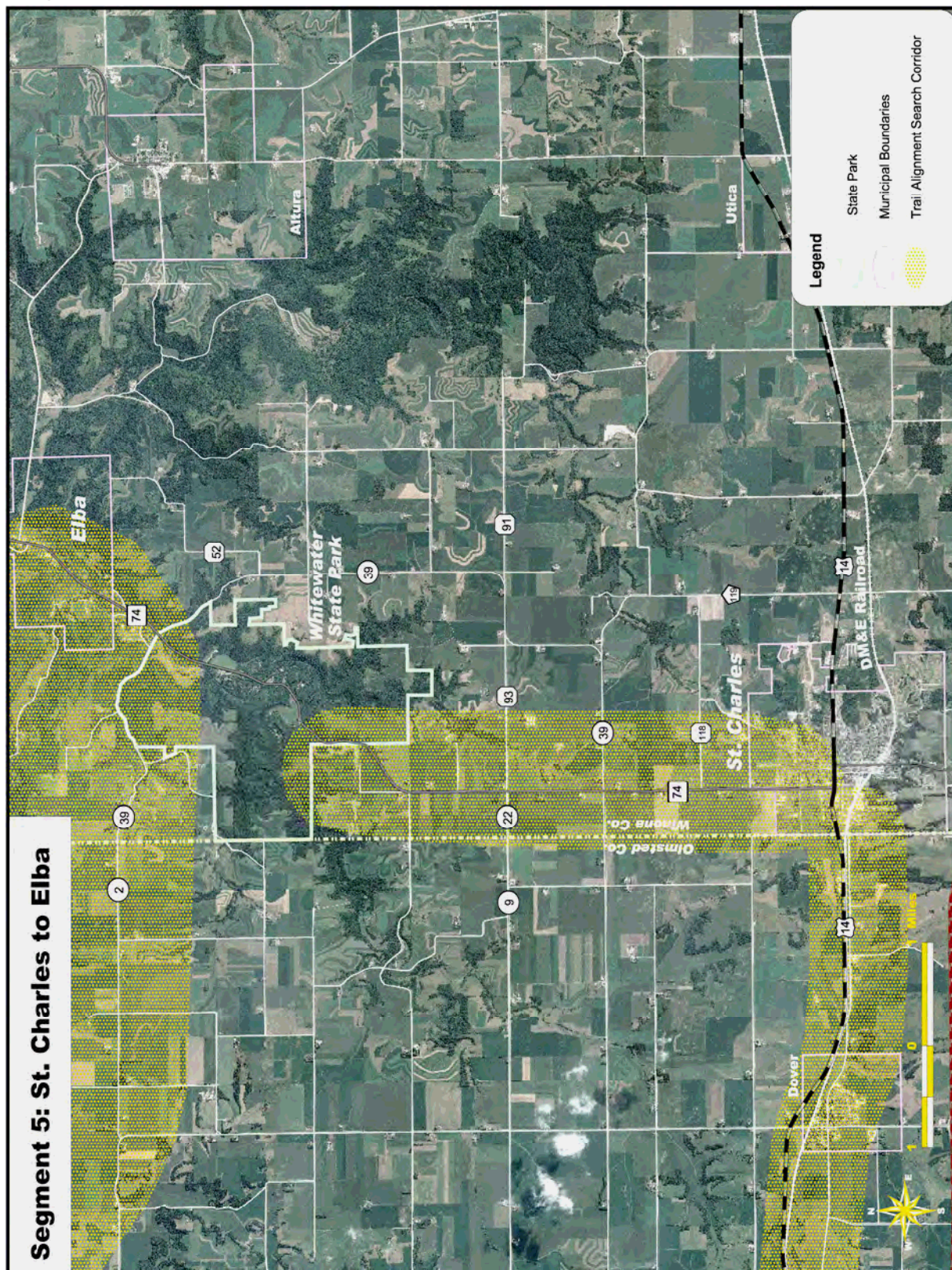
Whitewater State Park

Whitewater is likely to be a major destination for bicycle and pedestrian trail users, with many recreational amenities. There are several trailhead opportunities, but the most likely one is near the Whitewater State Park Office and Visitor Center.

Elba

A trail access location has not been identified, but a location that provides easy access to the commercial core of town would be desirable.

Segment 5 MAP



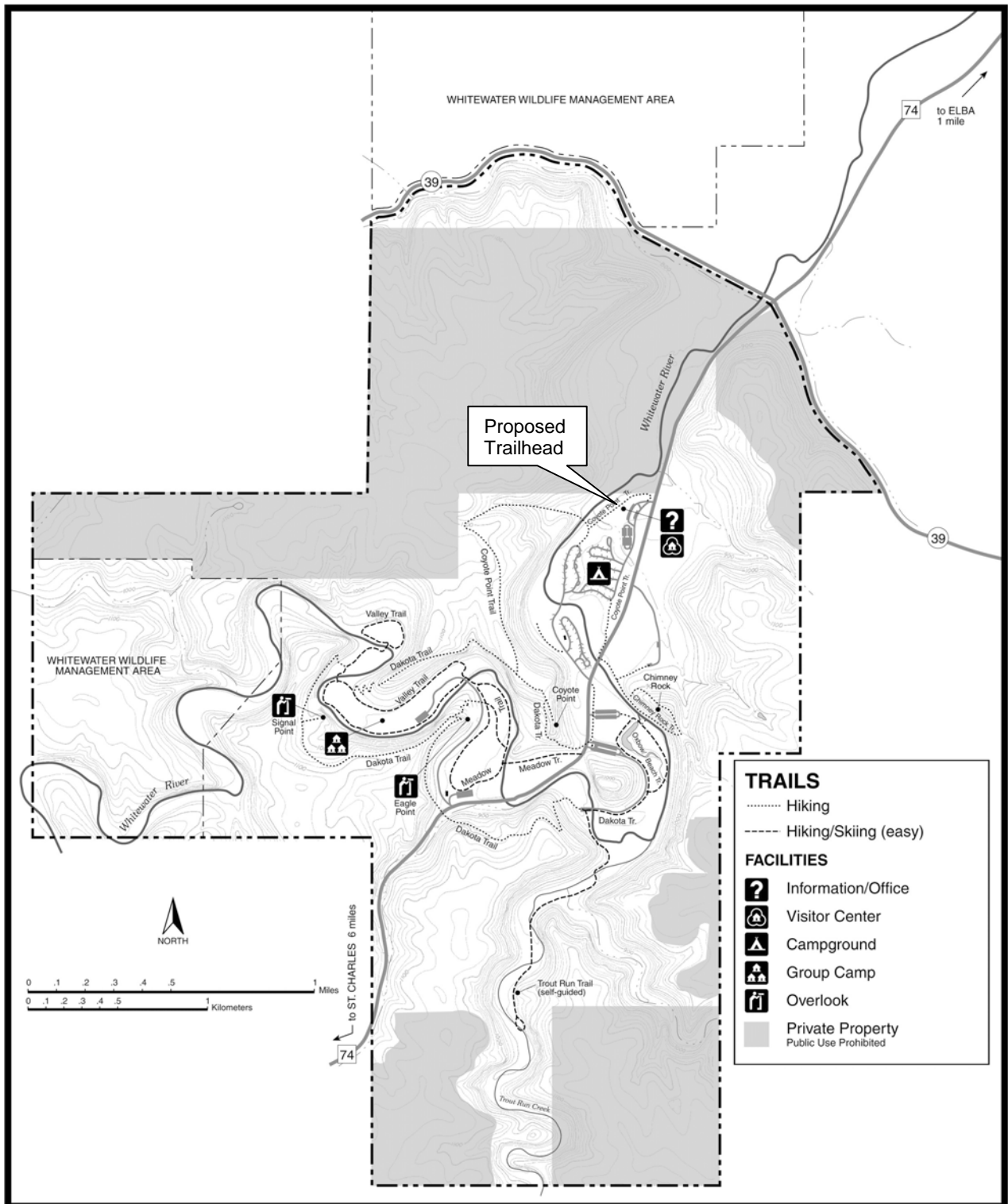
Whitewater State Park

Whitewater State Park is located three miles south of Elba on State Highway 74. The blufflands of southeastern Minnesota are well represented by Whitewater State Park with its dolomite cliffs, trout streams and hardwood forests. Examples of the geology, plants, animals and history typical of this part of the state can be found within the boundaries of this 2,800-acre park that has diverse recreational opportunities and a noticeable absence of mosquitoes⁷.

Nearly 50 kinds of mammals and 250 kinds of birds use the Whitewater River Valley during the course of a year. Wild turkeys are in the valley and bald eagles stay here all year. In the spring, listen and look for the rare bird, the Louisiana waterthrush.

Whitewater State Park has many amenities including 106 drive-in campsites, 5 pull-through campsites, 47 electric sites, 2 handicapped accessible sites, 4 walk-in sites, 3 group camps, 1 group center and 1 camper cabin. The park also offers 10 miles of hiking trails (2 miles are accessible) and 8 miles of cross-country ski trails. Snowshoeing is allowed anywhere, except on groomed trails. Horseback riding and snowmobiling are not accommodated in Whitewater State Park.

Whitewater State Park Map



Elba

History

The Marnach House (just north of Elba) built in 1857 by Luxembourg immigrants, was restored in the early 1990's. It is a home that was built to last with its 2 foot thick walls made of limestone and mortar. The history of the house is significant to the country of Luxembourg, and stands today as a tribute to the immigrants who came and made the valley their home.

The Elba Fire Tower, located on the east side of the valley, was built in 1933 to monitor the forest for fire. It was restored for visitor use in the early 1990's. You can climb steps to the bluff top and then climb the tower itself, which offers a magnificent view of the Whitewater Valley.

Community Today

Elba is nestled in the heart of the Whitewater Valley at the confluence of the North, South and Middle Branches of the Whitewater River. Long known for outstanding trout fishing, the Whitewater River and its tributaries provide over 210 miles of excellent trout waters surrounded by vistas of scenic river bluffs and native hardwood forest. Abundant species of fish include brown, rainbow and brook trout.

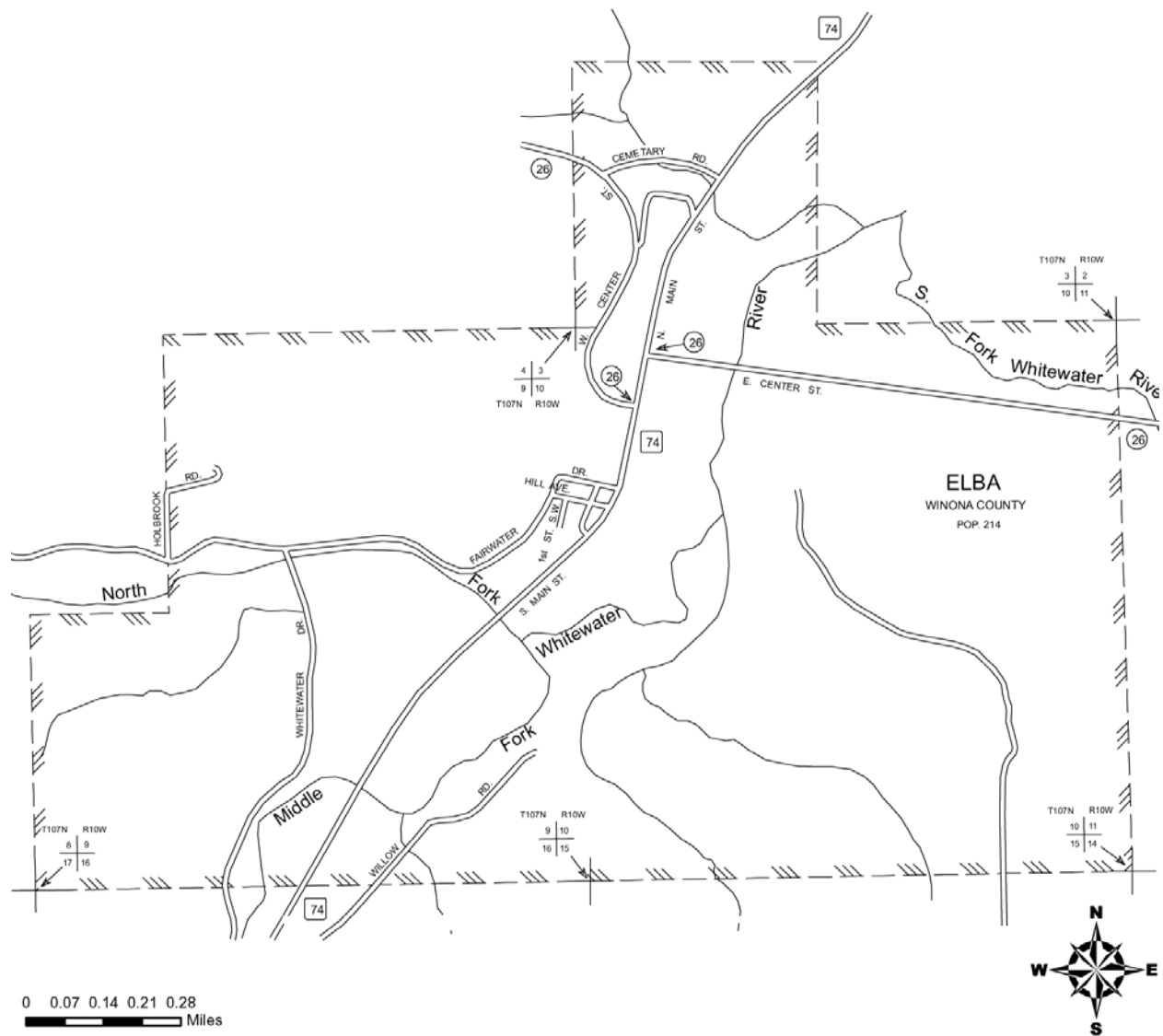
While in Elba you can enjoy fine dining or just up the street find a bar where the same family has been serving drinks for 117 years, and learn about Black Bill, Elba's own legend.

The town of Elba is surrounded by 27,500 acres of the Whitewater Wildlife Management Area, Whitewater State Park, dairy farms and hardwood forests. This combination of land usage has created ideal habitat for an abundant assortment of wildlife.

Trail Alignment

An exact alignment through the city is undetermined.

Elba MAP



Segment 6: Elba to Plainview via Carley State Park

Description of the Alignment

An exact alignment has not been determined, however several options exist for this segment. This segment includes the largest alignment search area in the trail proposal. There is a significant elevation difference between Elba and Plainview. This is also very scenic area with beautiful narrow valleys, rushing trout streams and long distance vistas. The Whitewater Wildlife Management Area preserves much of the area between Elba and Carley State Park for wildlife management, hunting and fishing.

Two county roads, Winona County CSAH 26 and CSAH 39, climb out of the Whitewater Valley generally connecting Elba and Carley State Park. Both these roads have steep grades, some areas with limited shoulders, and very variable ditches and back slopes. Traffic volume is similar on both roads. CSAH 39 although still steep in sections, is not as steep as CSAH 26 and would be the preferred route. An interim solution to connect the Whitewater Country Trail Loop through this area is to improve one of these roads to accommodate both motorized vehicles and trail users. The MnDOT Bikeway Facility Design Manual recommends a 4-foot wide shoulder on this type of roadway to accommodate bicycle traffic. Many trail users are not comfortable sharing a road with motorized vehicles, but other users would enjoy this “share the road” connection.

Proposed Trail Uses on This Segment

Walking, Bicycling, Horse Riding, In-line skating, Dog walking, Cross-country skiing.

Criteria for Trail Alignment

Surfaced trails for bicycling or in-line skating may be accommodated in Whitewater and Carley State Parks, but are not allowed in Wildlife Management Areas. Horses are not accommodated in Whitewater or Carley State Parks, or in the Whitewater Wildlife Management Area. The surfaced trail alignment will avoid wildlife management lands, and the separate horse trail alignment will be designed to avoid both the state parks and wildlife management lands.

- It is desirable to provide access to Whitewater and Carley State Parks for those uses that can be accommodated in the State Parks.
- Connect to food and drink businesses.
- Connect to Great River Ridge State Trail in Plainview
- Take advantage of the spectacular scenic quality of the area.

Options for Trail Alignment

- A combination and/or portions of County and Township roads
- Pursue private land acquisition options
- Improve on-road biking opportunities to provide an interim connection for some users.

Trail Access – Parking Areas, Rest Areas and Interpretive Sites

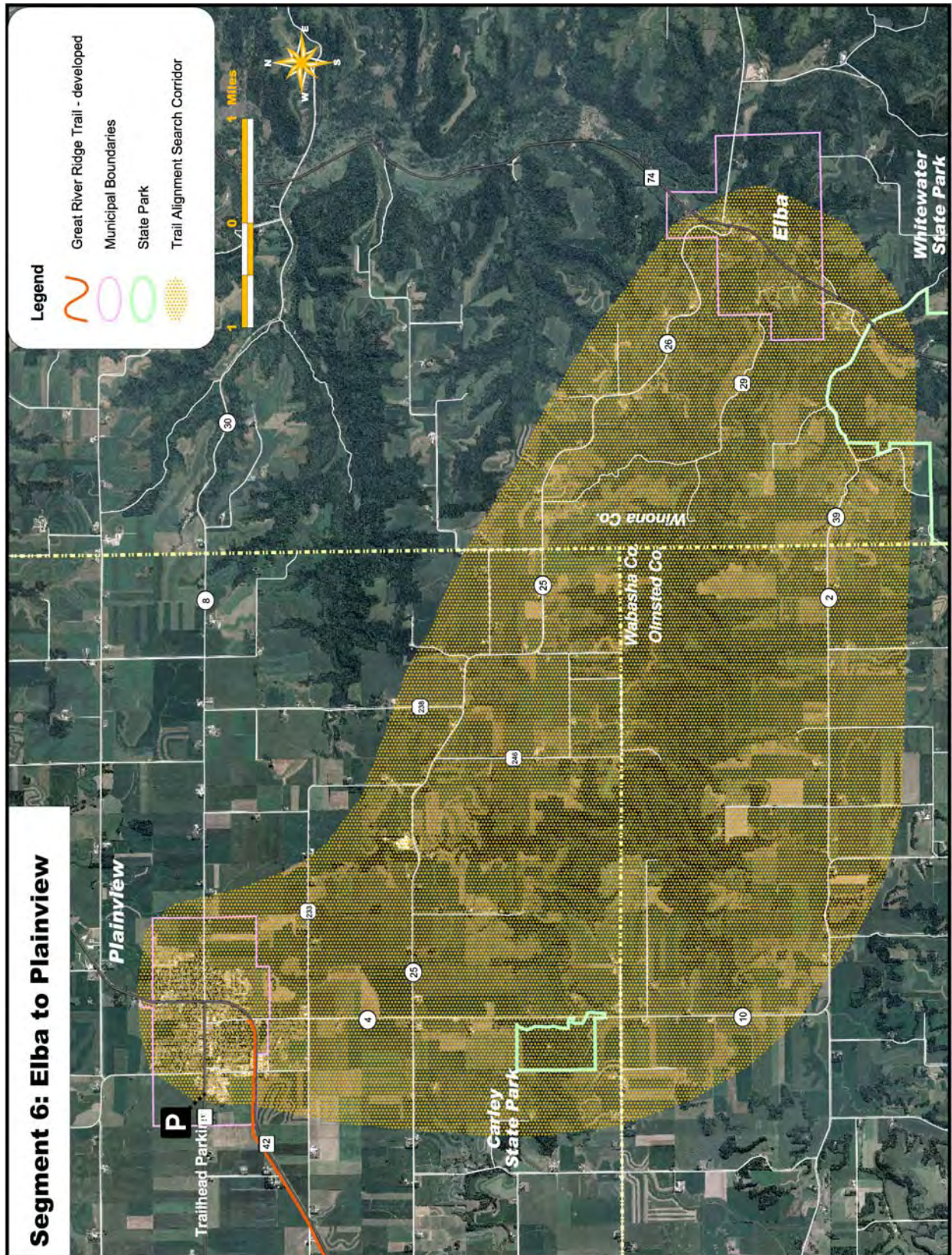
Carley State Park

Carley State Park will be a significant destination along the trail. This small but beautiful oasis will make an excellent place to pause and be refreshed. Access along the main park entrance or through the west side of the park will be considered.

Plainview

The trailhead for the Great River Ridge State Trail is at the northwest corner of the intersection of County Road 42 and 3rd Street SW. Parking is available for approximately 20 vehicles. Amenities include lighting and a paved parking lot. Quiet city streets now provide access to the rest of town. The City of Plainview will work to define a route that connects the commercial part of town to the trailhead.

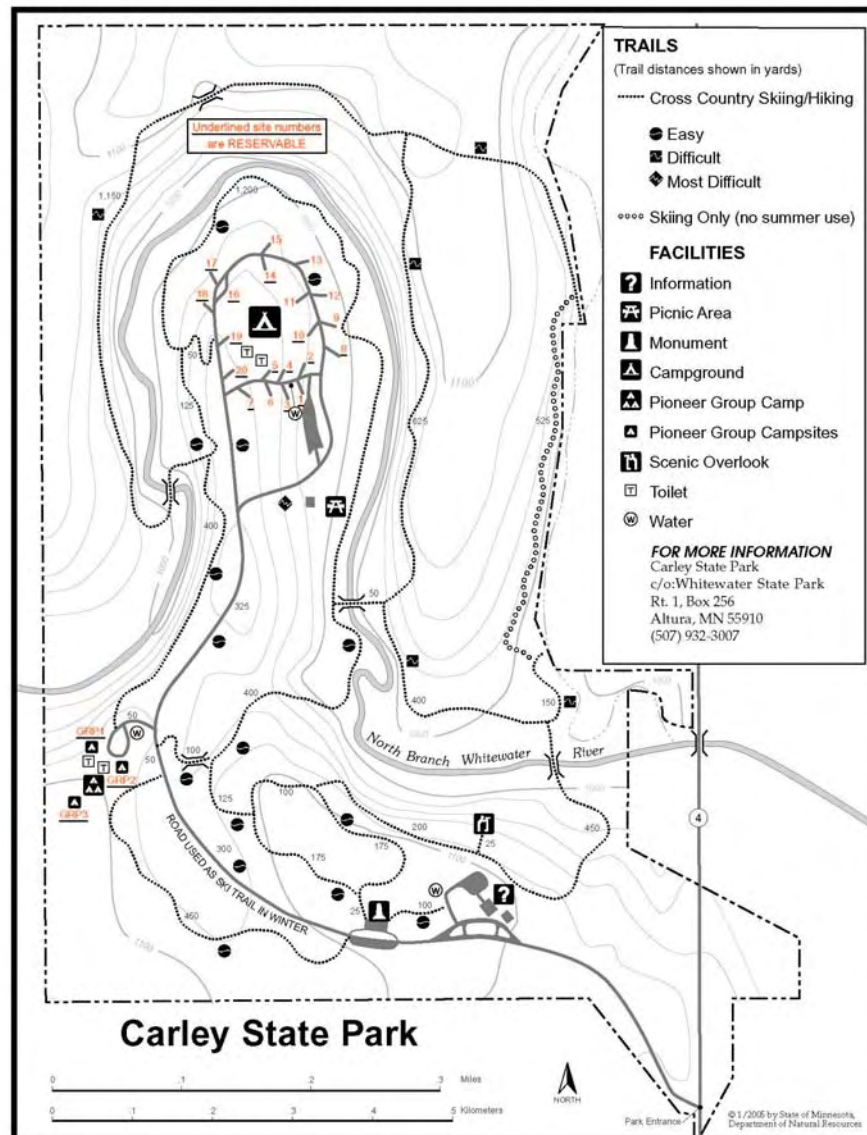
Segment 6 MAP



Carley State Park

Carley State Park is located approximately three miles south of Plainview. State Senator James A. Carley and the Ernestina Bolt family donated the land in 1948 to preserve an outstanding grove of native white pines. In 1957, a severe hailstorm ravaged the trees. The remnant stand of white pines towers in the steep, rugged valley of the Whitewater River, opposite the picnic area, and can be seen from the trail observation platform. Carley State Park has 20 drive-in campsites and three group campsites. There are 5 miles of hiking trails. In winter, the park has 5 miles of un-groomed cross-country ski trails and snowshoeing is permitted anywhere in the park. The hiking trail winds around the north branch of the Whitewater River. Horseback riding and snowmobiling are not accommodated in Carley State Park. The park's hardwood forest and adjacent farmland is home to white-tailed deer, beaver, coyotes, red and gray fox, pileated woodpeckers, great horned owls and many migratory songbirds. Delicate wildflowers bloom in April and May.

Carley State Park MAP



Whitewater Wildlife Management Area

The Whitewater Wildlife Management Area (WWMA) is located in portions of Winona, Wabasha, and Olmsted counties, with the majority in Winona County. It is located in rugged terrain dissected with trout streams and elevation differences of up to 500 feet from the tops of ridges to the valley floor.

The State of Minnesota began acquiring land in the Whitewater Valley in 1931. It currently encompasses 27,500 acres of publicly owned land purchased using monies from hunting license and surcharge dollars, Resource 2000 funds from general revenue, Minnesota Resources Commission funds from a cigarette excise tax, and federal matching funds from Pittman-Robertson excise taxes on sporting arms and ammunition.

The management emphasis is to maintain a diverse interspersed of communities throughout the wildlife area. The steep hillsides are covered with mixed hardwoods with numerous bluff prairies where open glades face south and southwest. The valley floors adjacent to the trout streams contain floodplain species. Seventeen natural and man-made wetlands dapple the valley. The ridges are a mixture of agricultural fields, old retired fields for nesting cover and flat mesic prairies. On ridge tops, agricultural fields are planted as food plots to enhance the natural foods available.

Recreation Opportunities: Outdoor recreation, primarily hunting and fishing, accounts for the largest share of public use on the WWMA, but timber harvest, cooperative farming, and environmental education make up a portion of the uses of the WWMA. Hunting opportunities include deer, small game, forest birds, pheasants, turkey, and waterfowl. There is a 2,300-acre State Game Refuge inside the WWMA that is closed to deer hunting and waterfowl hunting. Over 500,000 visits are made annually to the Whitewater Valley each year. There are about 1,200 deer hunters for both season openers, although hunting pressure drops off drastically after opening weekend. Approximately 48% of the use is deer hunting. Trout fishing makes up 25%, small game hunting, 12%; all other activities such as berry picking, bird watching, hiking and environmental study account for 15%. Springtime brings many visitors looking for shed deer antlers.

Wildlife viewing is a growing interest in the wildlife area. Spring and fall migration periods afford chances to observe tundra swans, nesting sandhill cranes and over 237 bird species. It is home to the federally endangered Karner Blue butterfly, the threatened Leedy Roseroot, and numerous species of special concern. Cerulean warblers and red-shouldered hawks are present on the unit and occasionally golden eagles are sighted. The native prairies feature flame flower, goat's rue and timber rattlesnakes.

In general, proposed state trails (those authorized in M.S. 85.015 or 84.029) and local (non-GIA) trails will not traverse, or terminate at, state wildlife management areas. When no other reasonable or feasible alternatives exist, a state or local trail may be considered through a state wildlife management area. In such instances, interdivisional or interagency agreements (pertaining to the reclassification of lands, compensation for lands, or the replacement of lands with lands of equal wildlife value, and the mitigation of damages) must be developed and approved by the Division of Wildlife Director before implementation.

There are forty parking areas and 20 miles of access roads, which allow public access to the Whitewater Wildlife Management Area. Dikes constructed around the man-made impoundments allow hikers, bird watchers and hunters other travel routes through the area.

Plainview

History

Plainview was organized on May 11, 1858; the same day Minnesota became a state. It was originally named Centerville, but the name was changed to Plainview because it is located in “plain view” on the edge of the prairie.

Plainview has always focused on agriculture. Positioned in the center of the broad, rich tableland known as the Greenwood Prairie, Plainview is 465 feet above the community of Kellogg and 95 feet above the neighboring town of Elgin. Early settlers were a mix of many nationalities. They brought ideas that diversified the agricultural base with cattle, horses and planting corn, barley, clover and oats in addition to wheat.

The Dakota, Minnesota & Eastern Railroad (DM&E) railroad line that the trail now follows mainly transported people and milk cans. The milk cans were delivered to the Plainview creamery from Eyota, Viola, and Elgin. In the afternoon, the cans were returned to the respective towns. In 1997, the Wabasha County Regional Rail Authority purchased the abandoned DM&E railroad.

An interesting nearby historic site is the Hoosier Ridge Church that is over 100 years old and still used. Although it has no water or electricity, weddings and an annual Christmas service are held there.

Community Today

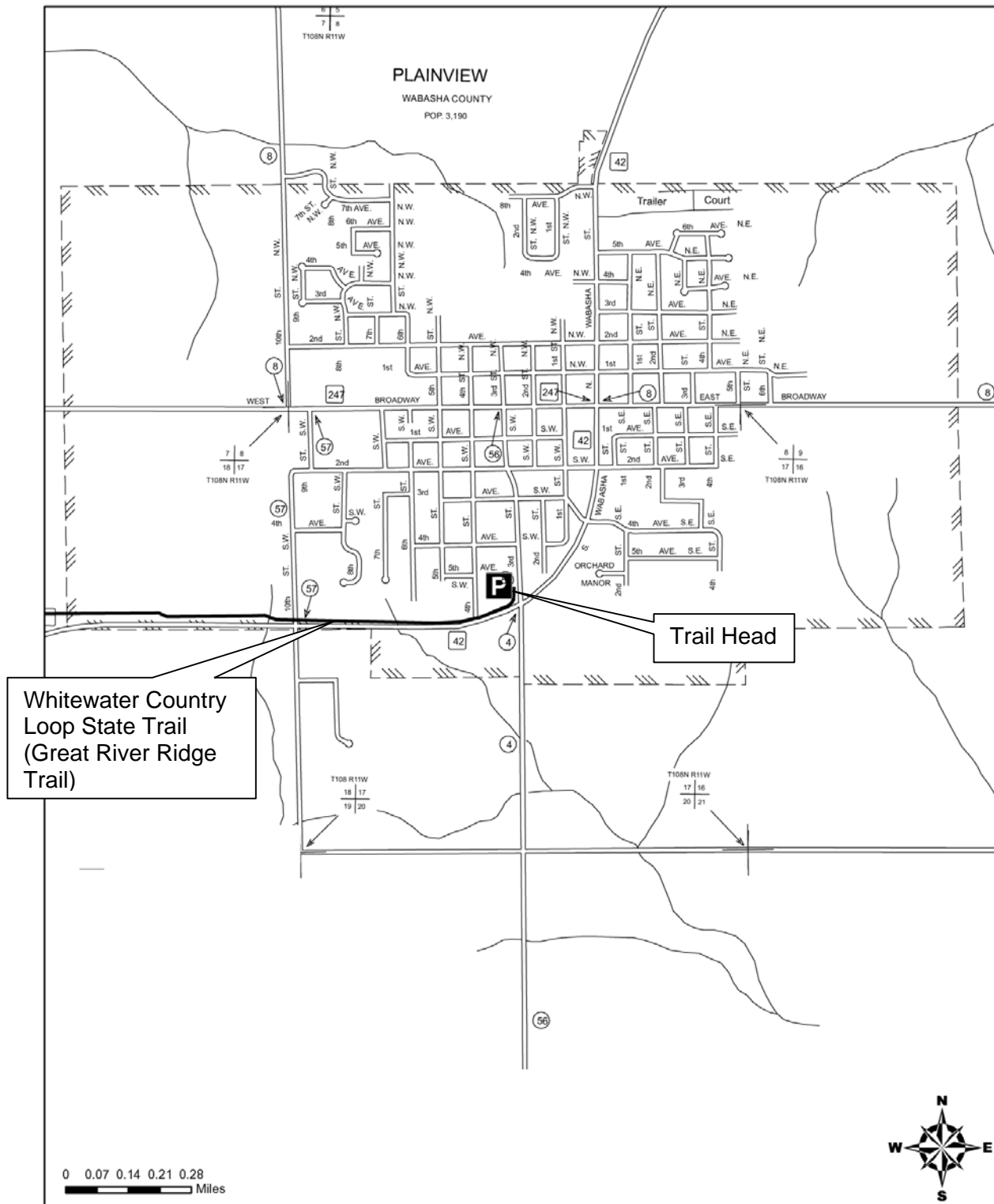
Plainview is a town of about 3200 people in Wabasha County. It revolves around the area’s agricultural businesses. It is on the prairie above the Mississippi bluff lands. In 2006, it celebrated its sesquicentennial (150 years). Plainview has a diverse economic base with over 120 businesses providing products and services. Many residents are commuters who work in the surrounding towns of Rochester and Winona.

Every Wednesday, April through September, a farmers market is held in the library parking lot selling anything from home made pies to butchered cows and pigs, almost anything hand raised.

Trail Alignment

Plainview has a trail head parking lot for the Great River Ridge State Trail just off Hwy 42, near the southern edge of the city. The original railroad track that the trail follows, was a spur line that ended in Plainview just a few blocks north of the trail head near the blue water tower.

Plainview MAP



Segment 7: Plainview to Elgin (Great River Ridge State Trail)

Description of the Alignment

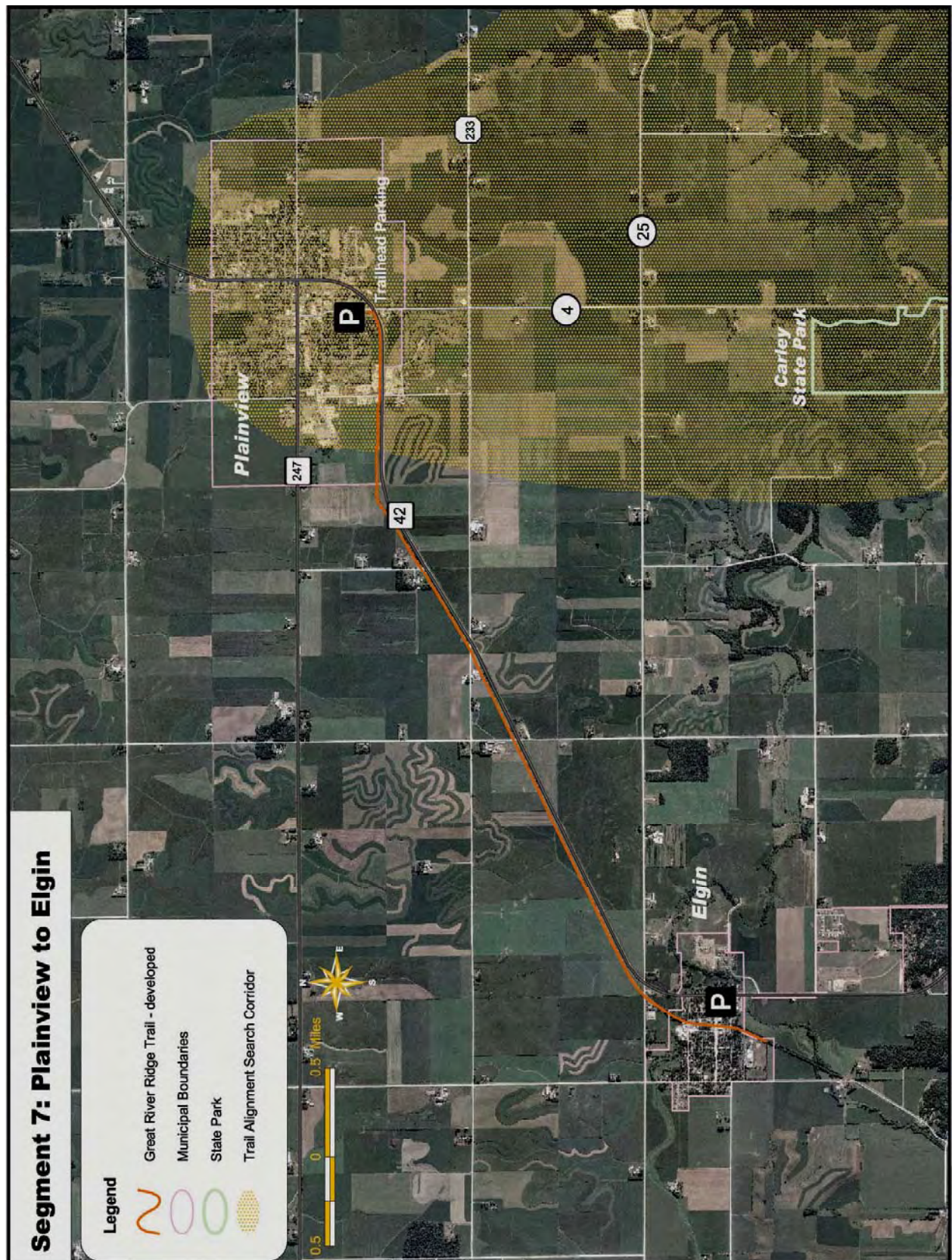
The six-mile segment between Plainview & Elgin is an 8 foot wide paved trail. The Wabasha County Regional Rail Authority owns the alignment, although it is designated a state trail. A natural surface grant-in-aid snowmobile and horse treadway will be constructed parallel to the paved trail.

Proposed Trail Uses on This Segment

Walking, bicycling, in-line skating, & x-country skiing are allowed on the paved Great River Ridge State Trail, and snowmobiling and horseback riding will be provided for on the adjacent unpaved alignment.

Trail Access – Parking Areas, Rest Areas and Interpretive Sites

A trailhead is located in Elgin on Main Street between Center Avenue and 1st Avenue. Parking and an information kiosk are provided.



Segment 7 Map

Elgin

History

The city of Elgin was founded in 1878 and incorporated as a village in 1895, when the railroad branch from Eyota to Plainview was completed.

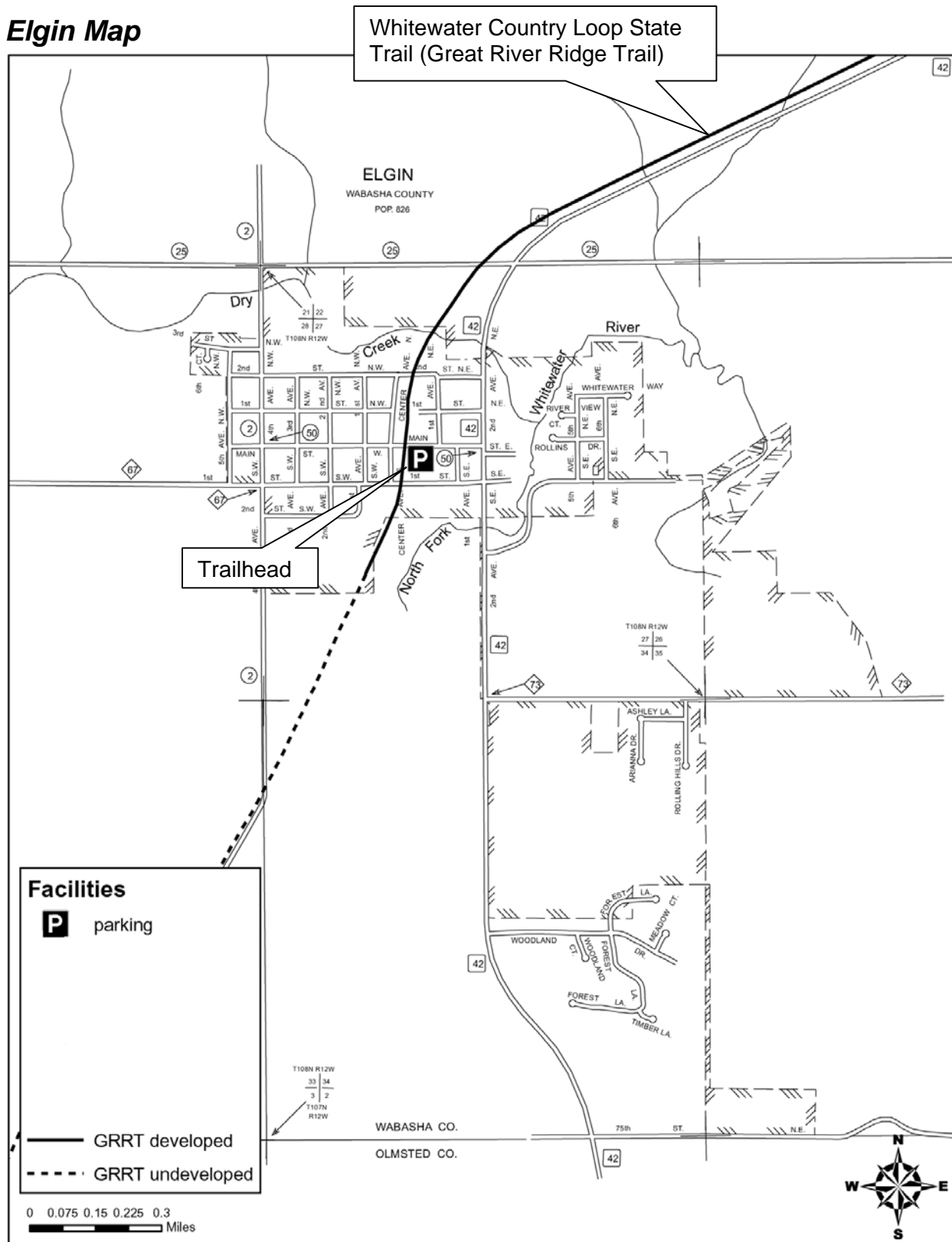
Community Today

As of the 2000 Census, Elgin had a population of 826 people. Of the residents in Elgin, 50% report German ancestry, and 10% report Irish.

Trail Alignment

The trail follows the former north south railroad bed through the center of Elgin. A trailhead is located on Main Street between Center Avenue and 1st Avenue.

Elgin Map



Segment 8: Elgin to Eyota (Great River Ridge State Trail)

Description of the Alignment

The Great River Ridge State Trail will utilize the abandoned railroad line from Elgin to Olmsted County Road 9 (milepost 3) that is approximately 1 mile north of TH 14. The Wabasha County Regional Rail Authority has an easement with the DM&E Railroad to continue the trail from County Road 9 to Highway 14 parallel with the active DM&E Railroad right-of-way. It is unclear what the best alignment will be from County Road 9 across TH 14, and connecting to the Blufflands State Trail segment near Eyota. Additional acquisition of private land may be needed to create a safe and convenient connection.

The Wabasha County Regional Rail Authority rehabilitated the 14 former railroad bridges between Elgin and County Road 9 in 2006. The railroad tracks have been removed, however the railroad bed is topped with large gravel with limited fines.

Proposed Trail Uses on This Segment

Walking, Bicycling, Horse Riding, In-line skating, Dog walking, Cross-country skiing, and Snowmobiling.

Criteria for Trail Alignment

The trail alignment must provide a safe and convenient crossing of TH 14 to connect with the rest of the Whitewater Country Loop.

Options for Trail Alignment

An on grade crossing of the state trail across TH 14 is not desirable due to the high traffic volume and traffic speed. The following options will be considered:

- Going over TH 14 with a bridge
- Going under TH 14 in a tunnel
- Waiting until TH 14 is upgraded by MnDOT and integrate a crossing into that construction project.

Trail Access – Parking Areas, Rest Areas and Interpretive Sites

- A trail access will be located in Viola, at an undetermined location. The historic Viola Cooperative Creamery may have potential for tourism-related development.
- A trail access may be desirable near the intersection of TH 14 and TH 42 depending on how that area is designed.
- The Great River Ridge State Trail may not be developed south of Olmsted County Road 9 for several years. A temporary trailhead at this location would be desirable during this interim period.

Viola



History

George Whitman discovered a large spring in Viola Township in 1853. The following year Whitman and Carl H. Bierbaum returned to Viola and made claims near the spring. Today descendants of Bierbaum still reside in the area. Many of German descent, like Bierbaum, settled in the southeast part of Viola Township.

In 1874, a town hall was built and the same year the locals started a tradition called the Viola Gopher Count. It all began with a good-natured competition

between schoolboys over who could catch the most gophers, a pest to the local farmers. The "Count" was a tally of gopher tails from those caught by the young men. This celebration continues today on the third Thursday in June. There is a parade at 10 a.m. and a variety of events, rides, food and old-fashioned charm. Viola's celebration may be the oldest continuous community celebration in the U.S.; it's one year older than the Kentucky Derby.

In 1878, the Chicago & Northwestern Railroad built a sub-line from Eyota to Plainview, and the village of Viola was born along this line. Although never large, there was once a business district, an elevator, post office, two hotels and two churches. It was not until 1914, that the town hall was moved west from its original site, about a mile away into the village in the valley. The Viola School District 115, located on the west side of town, never moved into town.

Viola, Doty and Corra were all railroad stations between Eyota and Elgin. Doty was located near where the railroad crossed County Road No. 9. The Corra station was located about a half mile east of the Corra School and post office (formerly North Viola)⁸.

Community Today

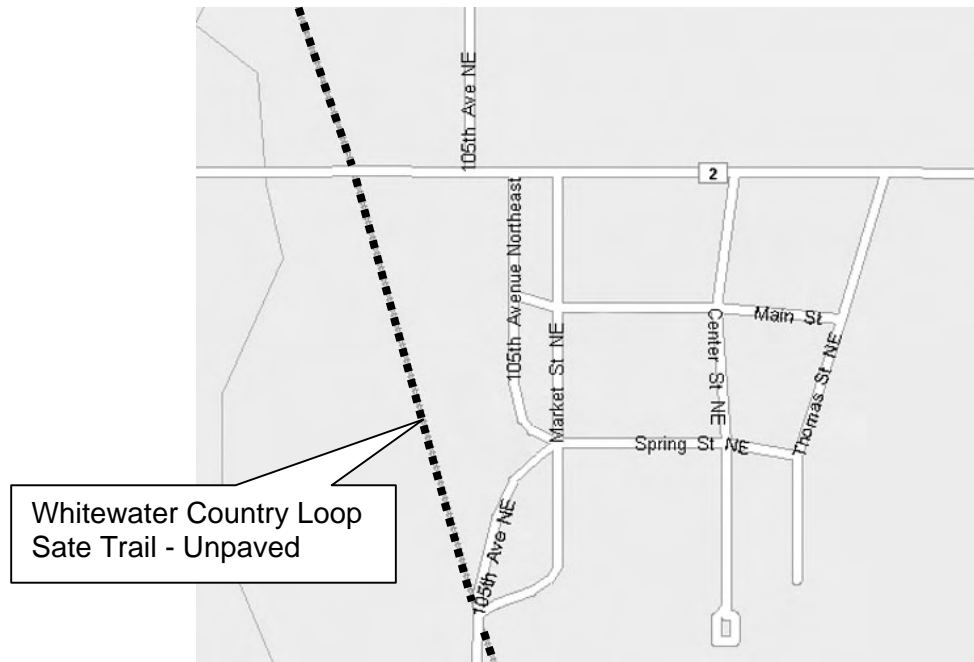
Viola Township had 555 people, 199 households as of the 2000 Census. Most of these reside in the community of Viola.

Several stores along with an elevator burned in a 1920's fire and were never rebuilt. One brick structure still standing on the edge of town is the Viola Creamery Cooperative, designed by Harold Crawford of Rochester, and built in 1924;

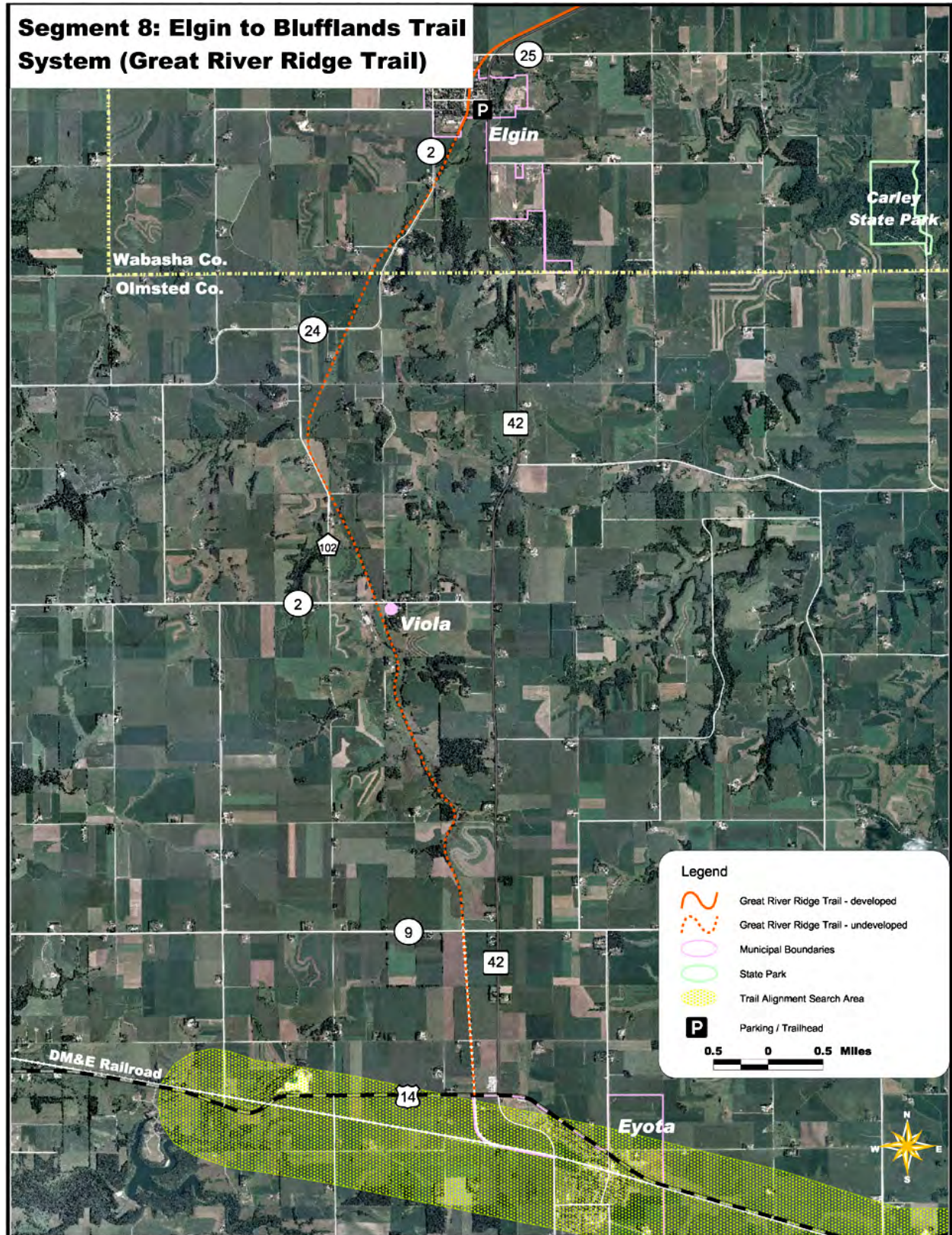
Trail Alignment

The Great River Ridge State Trail will utilize the abandoned railroad line through Viola. A trail access will be located in Viola, but a final location has not been determined.

Viola Map



Segment 8 Map



Projected Trail Use

The Whitewater Country Loop State Trail will be an important link between the Douglas State Trail, the Rochester city trail system and the proposed Blufflands State Trail System of southeast Minnesota. Data from a survey done on the Douglas State Trail can be used to make estimates of the volume of trail users expected on the Whitewater Country Loop State Trail. The Whitewater Country Loop State Trail can be expected to have a use pattern similar to the Douglas State trail due to the similarities in location and surrounding population.

The most recent data on trail use for the Douglas State Trail is from the analysis, State Trail Use Survey that was published in July 2000 by the Minnesota DNR. Data for the Douglas State Trail was gathered in the summer of 1997 and is reported in "user hours." One user hour is defined as one person using the trail for one hour. Two people using the trail for one hour is reported as two user hours. User hours are an effective way to combine and compare trail activities that have varied outing lengths.

From that survey trail activities accounted for the following user hours⁹:

- bicycling 25,922 user hours
- walkers 10,978 user hours
- in-line skating 2,559 user hours
- runners 2,533 user hours
- horseback 832 user hours

The intensity of summer use on the Douglas State Trail is 3,433 seasonal hours per trail mile, which is about average when compared to the other state trails.

While it is difficult to predict future trail use, it would be safe to conclude that there would be a high percentage of local use on the Whitewater Country Loop State Trail, similar to that found on the Douglas State Trail. We could also expect that trail users from the Rochester city trail system and the Great River Ridge State Trail would continue their trail activity by utilizing the Whitewater Country Loop State Trail loop. This would be economically valuable for all the communities on the Whitewater Country Loop State Trail as trail users typically spend money in the communities they pass through.

Trail Maintenance

Maintenance of the Whitewater Country Loop State Trail is critical to provide and sustain the experience trail users appreciate. Maintenance activities are numerous and diverse, as the following list illustrates.

- Monitoring trail conditions, which includes scheduling and documentation of inspections; monitoring the condition of railings, bridges, trail surfaces, and signage; hazard tree inspection; and debris removal (i.e. down trees)
- Scheduling of maintenance tasks
- Mowing of vegetation: shoulders, rest areas, parking lots
- Winter grooming and plowing
- Tree and shrub pruning
- Trash removal
- Trail repair - fixing washouts and controlling erosion
- Maintaining bridge decking and railings
- Trail drainage control
- Trail surface maintenance
- Repair of animal damage to trail or facilities
- Checking and repairing fence lines, gates and cattle crossings
- Mowing and brushing farm crossings
- Cleaning out ditches and culverts, replacing failing culverts
- Vegetation management – restoration/enhancement
- Controlling noxious weeds
- Maintaining equipment
- Painting posts and picnic tables
- Maintaining boundary signs and working to resolve encroachment issues
- Coordination of volunteer efforts
- Training and supervision of employees, Minnesota Conservation Corps, or Sentence-to-Service crews doing maintenance work
- Any future sections of the trail developed with asphalt will require sweeping.

Recommendation 1: The Department of Natural Resources will require additional maintenance funds as the trail is developed.

Recommendation 2: The Division of Trails and Waterways is responsible for maintenance and management of designated state trails. However, a portion of this trail may be located within Whitewater and Carley State Parks. To ensure appropriate protection of state park resources, view sheds and facilities immediately adjacent to the trail, trail managers will work with park staff to establish standards and parameters for maintenance activities on state trails within, or segments of state trails passing through, state parks. Local trail managers will plan, schedule and coordinate maintenance activities following these guidelines with the appropriate park manager.

Recommendation 3: An agreement will be negotiated that will define the responsibilities of both Minnesota Department of Natural Resources and the Wabasha County Regional Rail Authority. During the 2006 Legislative Session a law was passed designating Great River Ridge Trail as a state trail and stating that: “The commissioner of natural resources shall enter an agreement with the Wabasha County Regional Rail Authority to maintain and develop the Great River Ridge Trail as a state trail.”¹⁰ The legislation stipulates that this agreement be completed in a timely manner.

Information and Education

Identification of Services

Trail users benefit from knowing where they can obtain services (medical assistance, gasoline, food, lodging, rest rooms, campgrounds, repair facilities, other retail) and local businesses benefit from an increase in customers. A listing of the services available in each community should be developed in cooperation with local businesses and community groups and be displayed on information boards in each community. A standardized sign indicating the distance to services should be put up in the trail right-of-way. Currently, state trail rules and regulations prohibit commercial advertisements and concessions in the trail right-of-way.

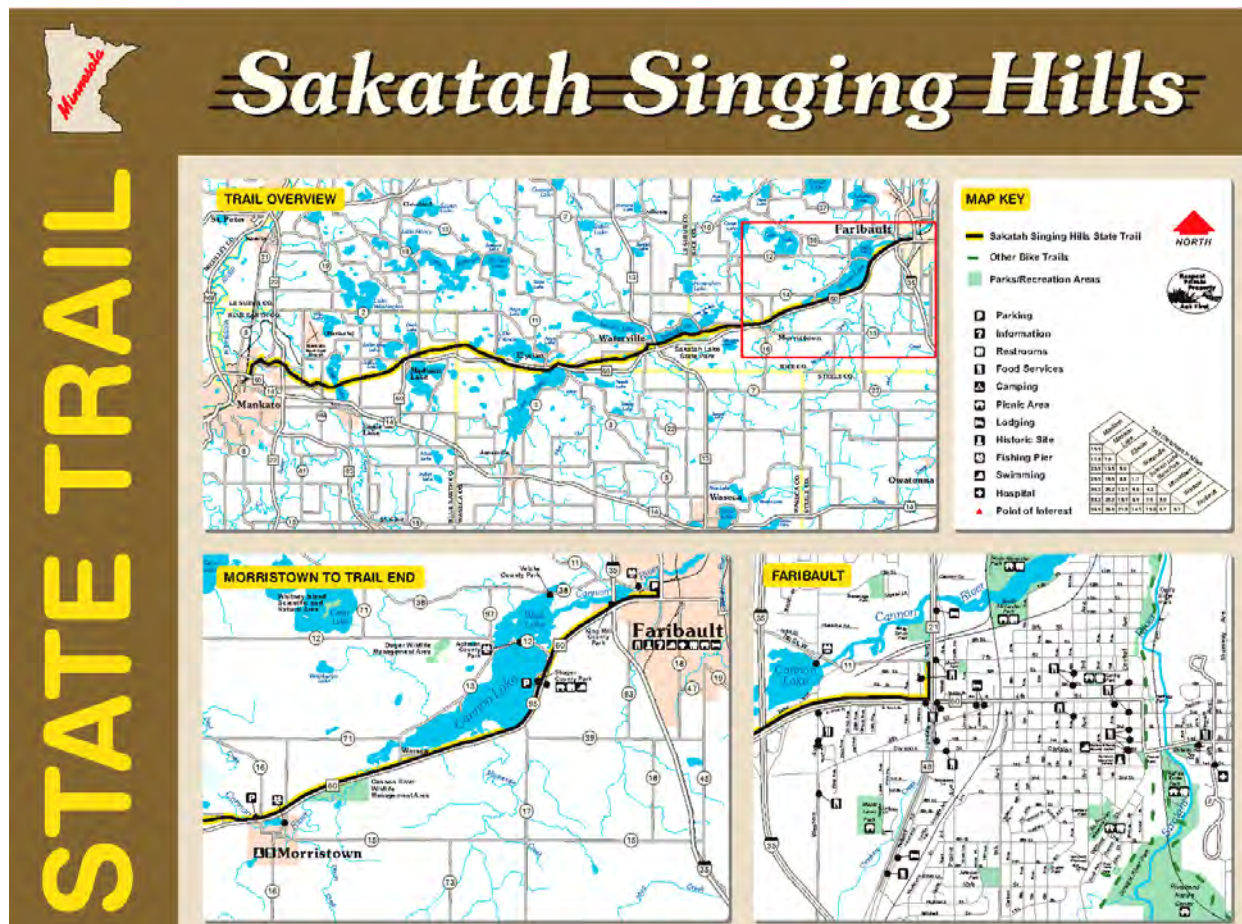
Directional Signs

Directional Signs for Trail Users should be installed to provide information at decision points along a trail. They are used to sign city street crossings, identify where connecting trails lead, and identify major destinations in the vicinity of the trail.

Trail User Orientation

A mile marker system should be established along the trail. Mile markers will serve to orient trail users to their location as well as assist emergency responders in locating trail users in need of medical assistance.

Information boards at parking areas and in communities should be installed to provide an overview of the trail and to orient trail users. The Department of Natural Resources is in the process of developing standardized "You Are Here" signs for each of the state trails. A sample from the Sakatah Singing Hills State Trail can be seen below.



A standard kiosk design should be used in host communities and at other locations where wayside exhibits are proposed.

Trail Rules and Regulations

Trail courtesy and safety display boards that are intended to educate trail users about appropriate behavior, promoting safe trail use and protecting the quality of the trail environment should be posted at information kiosks along the trail. This type of information is currently being incorporated into the newly designed “You Are Here” signs to minimize the clutter of regulatory signs that can occur at trailheads.

Trail users are legally responsible for obeying the rules and regulations provided in Minnesota Rules, State Recreational Trails, 6100.3000 through 6100.4300. They are available on the web at www.leg.state.mn.us/leg/statutes.asp.

Interpretation of Natural and Historical Resources

Interpretive signs and displays should be located along the trail to provide information about natural resources of significance and interest and at places that tell the history of the region. Some potential themes for the trail would include:

- The connection between land use and water and how humans interact with water. The three forks of the Whitewater River circle through the plains and into the limestone bluffs before they enter the Mississippi River, encircling the trail corridor. The loop trail follows the North and South forks of the river for much of its length. Dakota Indians named the river Whitewater because it turned milky white in the spring as high water eroded light-colored clay deposits along its banks.
- Settlement history, historic sites & buildings, St. Charles historic district, other National Register properties
- Farming history: garden crops, horse breeding (Plainview), dairy farms and creameries, cooperative farming movement
- Water quality: Most of the area is in the Whitewater river watershed; what happens on the land and water in the area affect the river
- Flooding, erosion: How they have shaped the land & influenced development

Potential interpretive themes by trail segment can include:

Trail Segment 1 - Rochester to Chester Woods County Park

- the trail as a connection between the city, prairies and bluffs.
- A gateway to the countryside.
- A loop trail following the forks of the Whitewater Rivers.
- A path to the area’s history (early farmers, creameries, railroads) and its natural history:
- Whitewater River watershed, leading to the Mississippi.

Trail Segment 2 - Chester Woods County Park to Eyota

The character of this segment differs from Segment 1 as the city is left behind and the vistas open up to the level to gently rolling glacial till plains of the Rochester Plateau. Farms dominate the landscape.

- Railroad history & significance: Chicago Great Western Railroad Company; Illinois Central; Dakota, Minnesota and Eastern.
- Area history: early settlement, dairy farms, agricultural transportation center
- Walking/biking route to city attractions

Trail Segment 3 - Eyota to Dover

The trail will generally parallel US Highway 14 and the railroad through this corridor.

- Railroad history, and its significance to the area's residents, from early settlement days to the present
- Dairy farming history in the area

Trail Segment 4 - Dover to St. Charles

- City history, as represented by the National Register Historic District and other historic buildings, 1891 fire
- City parks and trail system

Trail Segment 5 - St. Charles to Elba-via Whitewater State Park

The dramatic change in terrain provides an opportunity to interpret the differences between the Rochester Plateau and Blufflands ecological types at a transition point in the trail. Themes could include:

- The Gateway to Whitewater: the river, valley/watershed, and its characteristics
- Water, its role in shaping the terrain,
- Water quality—for trout and humans
- Geology and soils—fertile loess on the plains, exposed bedrock bluffs
- The edge of flora and fauna habitats

Trail Segment 6 - Elba to Plainview via Carley State Park

This segment will pass through the Whitewater Valley, adjacent to the Whitewater Wildlife Management Area, climb out of the valley to Carley and across the plateau to Plainview.

- History of the Whitewater Wildlife Management Area
- Wildlife and trout fisheries management
- Water erosion & land practices
- Land ethic.

Trail Segment 7 - Plainview to Elgin (Great River Ridge State Trail)

Much of this segment is open and parallel to TH 42. This would be a good area to address:

- Historic and present farming practices and the role of the railroad.
- Railroad & creamery connection: the "milk run" (route with lots of stops)
- Farmers Cooperative Creamery history & significance

Trail Segment 8 - Elgin to Blufflands Trail System (Great River Ridge State Trail)

This segment highlights the upper watershed of the Whitewater River system.

- Landform and its effect on land use.
- History of dairy farming in the vicinity.

Environmental Education

The trail has potential for environmental education. The Chester Woods trail group, Wabasha County Regional Rail Authority, Whitewater/St. Charles trail group, local citizens, nature centers, local colleges and the Department of Natural Resources will work together to advocate appropriate environmental education programs along the trail.

Recommendation 1: Develop a kiosk design that reflects the character of the Whitewater Country Loop State Trail. Design it in such a way that it can be used in all the communities along the trail. Use of the same design helps build an identity for the trail and alerts users to trail information.

Recommendation 2: Community services information, trail orientation, trail rules and trail courtesy information should be developed and installed on kiosks at the same time the trail is developed.

Recommendation 3: Interpret the natural, historical and cultural features along the trail.

Recommendation 4: Interpret the natural communities in relation to the Blufflands and Rochester Plateau ecological landscapes. Consult the Department of Natural Resources Blufflands landscape team for assistance.

Trailside Art

The use of sculpture within the trail right-of-way can be an effective way to provide interpretive information about the resources and the history of the trail. Practical and functional objects such as benches, gateways, bridges, water fountains and tables can be designed in such a manner that they are aesthetically attractive and at the same time provide information about the area through design and use of materials. Sculpture for purely aesthetic purposes can also fulfill this purpose.

Impact of the Trail

It is essential that the trail be located, developed, and maintained in a way that does not detract from the natural landscape. Both site and landscape level impacts of the trail will be assessed when a specific alignment is determined. It is a goal to minimally impact existing natural and cultural resources. Preliminary groundwork, pertaining to inventory of natural and cultural resources, has been completed to assess any potential impacts the trail may have. These impacts, both positive and negative, need to be evaluated on both a site and landscape level so that we can minimize the negative and accentuate the positive impacts.

We know that the trail will attract additional people to experience the area as well as provide a recreational opportunity for the residents of the area. Trail users will come to the trail to enjoy the landscape and the natural and cultural resources it has to offer. By providing people with access and opportunities for recreation, as well as education about the landscape they will be experiencing, trail users will develop an appreciation for the resources, which will translate into stewardship and appreciation for the landscape.

Enforcement

During the planning process enforcement is often raised as a key concern by the public. Minnesota State Trails are very safe and generate very few complaints. However, adequate enforcement is an important aspect of maintaining a safe and secure trail environment. Enforcement of state trail rules and regulations, information and education, trail design, trail maintenance and the mix of trail uses are all factors that contribute to the maintenance of a safe, secure trail environment. The DNR has the primary responsibility for law enforcement on DNR owned and operated recreation areas. Enforcement assistance will also be sought from the local Police Departments and the County Sheriffs as necessary.

Funding for law enforcement on state trails has not kept pace with the need created by new trail development. When miles are added to the system, funds for the additional law enforcement needed have not been appropriated. A negative impact on public safety and natural resources can result due to the lack of sufficient law enforcement. A solution promoting law enforcement coverage with trail development must be found.

Our goal is to deal with issues as they arise, and provide an adequate level of enforcement to maintain a safe and secure trail environment, to encourage trail users to understand and obey trail rules and respect other trail users and adjoining properties.

As the Minnesota State Trail System is expanded, the following enforcement actions are recommended on a statewide basis:

- Additional enforcement officers are required to address the enforcement needs of the expanding trail system in Minnesota.
- Develop on-site information that targets important trail courtesies and rules necessary for a safe and enjoyable experience, specific to uses of a particular segment and problems and conflicts occurring there.
- Use increased visibility of DNR-Trails & Waterways staff during peak use times for an enforcement effect.
- The Department of Natural Resources will include the cost of enforcement when providing information to legislators, trail advocates and local government officials about the overall cost of the trail.

Ecological Classification System

Minnesota lies at the center of North America where three major biomes meet, the prairie, boreal forest and eastern deciduous forest. This unique location on the continent created a natural heritage rich in wildlife resources. From timber wolves in the north to timber rattlesnakes in the south, Minnesota's wildlife diversity is renowned. Minnesota's conservation community has been working to maintain and enhance this rich wildlife heritage that provides so many benefits to our economy, ecology, and society.

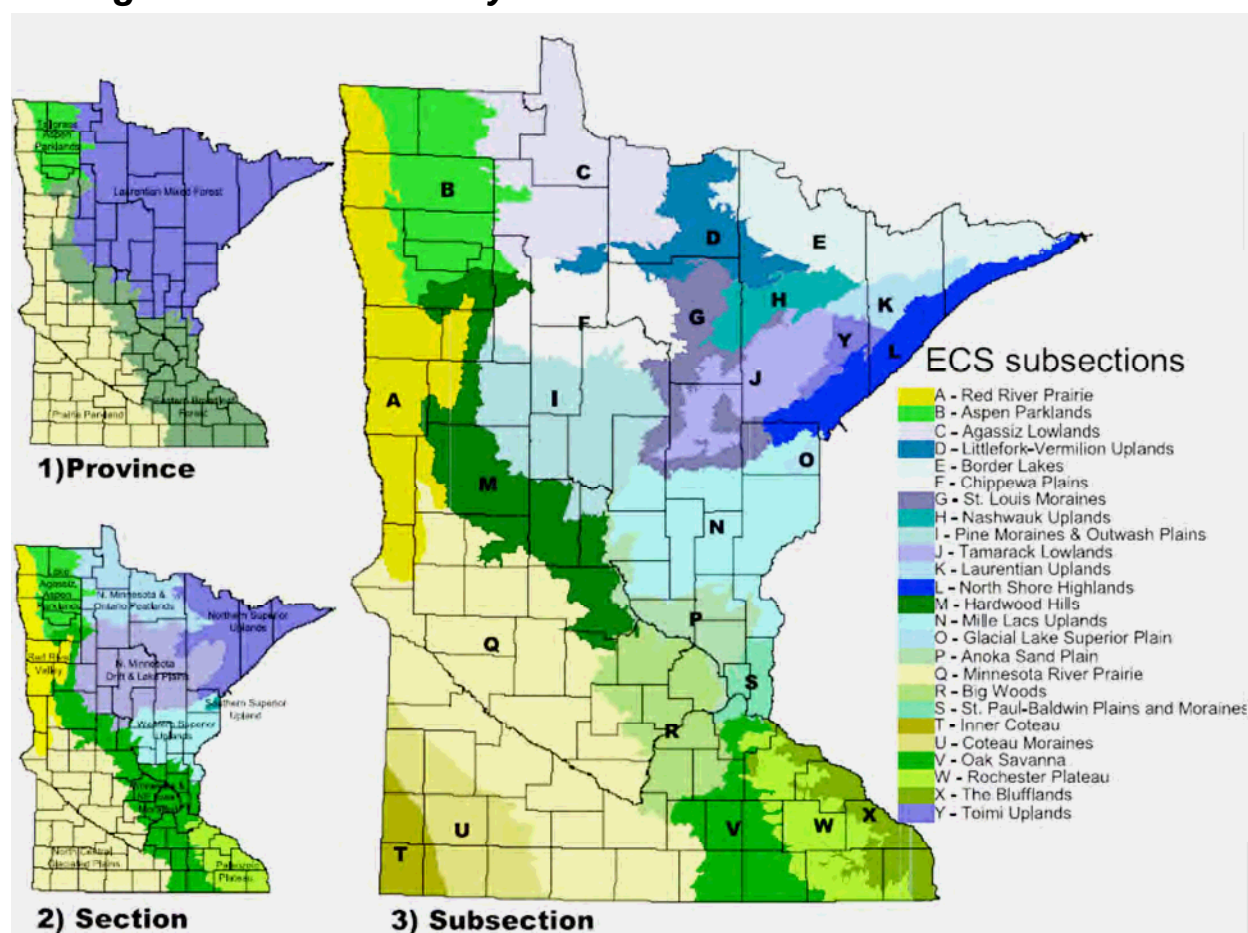
Province

There are four major ecological provinces in Minnesota: the Eastern Broadleaf Forest, the Laurentian Mixed Forest, the Prairie Parkland, and the Tallgrass Aspen Parklands. All four are parts of much larger systems that cover major areas of central North America. The Eastern Broadleaf Forest Province, primarily made up of deciduous forest, extends eastward from Minnesota all the way to the Atlantic Ocean. The Laurentian Mixed Forest Province, largely consisting of coniferous forest, extends northward into Canada. The Prairie Parkland Province extends westward into the Dakotas and across the Central Plains of the United States. The Tallgrass Aspen Parklands Province represents the southern tip of a large province that extends north and west into the Canadian Prairie Provinces. (<http://www.dnr.state.mn.us/ecs/index.html>)

Ecological Classification System (ECS) Subsections

The Whitewater Country Loop State Trail will traverse two ECS subsections: Rochester Plateau and Blufflands.

Ecological Classification System Subsection MAP



The Rochester Plateau Subsection

The Rochester Plateau Subsection is an area of level to gently rolling terrain where several rivers and streams begin. Before conversion to agriculture, the predominant vegetation was tallgrass prairie and bur oak savanna.

Today, agriculture dominates the landscape. Water quality is a concern in the subsection because of agricultural and urban development. In the center of the subsection, the city of Rochester and the corridor to the Twin Cities metropolitan area are projected to grow rapidly over the next decade.

Hydrology

There are few lakes in this subsection. The drainage network is well developed and dendritic in nature. Major rivers include the headwaters of the Root, Whitewater, Zumbro and Cannon. There are some coldwater trout streams in the eastern part of this subsection.

Present vegetation and land use

Prior to European settlement, tallgrass prairie and bur oak savanna were major vegetation communities. Now, the majority of this unit is heavily farmed, with 69 percent in cropland and 21 percent in pasture.

Natural disturbance

Fire was important on the upland prairie and oak savanna dominated ecosystems. Recent records of tornados and ice storms indicate that they locally impacted forest vegetation.

Conservation concerns

One major concern is groundwater quality. The groundwater has high amounts of nitrates and phosphates. These pollutants are mainly the result of agricultural activities. Another concern is the loss of red oak coverytype through cutting and lack of reproduction.

Highlights

- Significant portions of this subsection have been developed for agriculture, but publicly owned forests and associated streams, rivers and wetlands support a diversity of wildlife.
- Wildlife present in this subsection include a variety of reptiles, such as timber rattlesnakes, western fox snakes, racers, Blanding's turtles and wood turtles; birds, including Louisiana waterthrushes, prothonotary warblers, cerulean warblers, blue-winged warblers, peregrine falcons; fish, including American brook lampreys and suckermouth minnows; and mussels, such as ellipse mussels.
- Areas important for species in greatest conservation need include the Richard J. Dorer Memorial Hardwood SF; Oronoco Prairie, Racine Prairie, and Cherry Grove Blind Valley SNAs; and Carley and Forestville Mystery Cave SPs.

The Blufflands Subsection

The Blufflands Subsection in southeastern Minnesota, dominated by the Mississippi River, is characterized by bluff prairies, steep bluffs, and stream valleys, often 500 to 600 feet deep. This subsection has numerous cold water trout streams that feed major rivers. Rich hardwood forests grow along the river valleys, and river-bottom forests grow along major streams and backwaters.

Agriculture, both row crops and pastures, takes place in former savanna and prairie areas and is the most prominent land use in this subsection. Forestry is also an important land use, and outdoor recreational opportunities abound, with significant amounts of public lands along the river corridor. Retaining or restoring the health of stream systems is an important conservation objective in this subsection.

Hydrology

There are no lakes in this subsection. The drainage network is well developed and dendritic in nature. Major rivers include the Mississippi (which forms the eastern boundary), Root, Whitewater, Zumbro, and Cannon. There are numerous coldwater trout streams throughout the subsection.

Present vegetation and land use

Prior to European settlement, tallgrass prairie and bur oak savanna were major vegetation types on ridge tops and dry upper slopes. Red oak-white oak-shagbark hickory-basswood grew on moister slopes, and red oak-basswood-black walnut forests in protected valleys. Prairie was restricted primarily to the broader ridge tops, where fires could carry, but also occurred on steep slopes with south or southwest aspect.

About 30 percent of this subsection is now cropped, 20 percent is in pasture and 50 percent is in woodland (Dept. of Soil Science, Univ. of Minnesota 1973). In Minnesota, Wheeler et al.

(1985) found species characteristic of oak openings and barrens to be abundant (based on herbarium collections). People are finding good recreational opportunities in this subsection.

Natural disturbance

Fire was important on the upland prairie and oak dominated ecosystems. Recent records of tornados and ice storms indicate that they locally impacted forest vegetation.

Conservation concerns

A major concern is groundwater quality. The groundwater has high amounts of nitrates and phosphates. These pollutants are mainly the result of agricultural activities. There are numerous high quality coldwater trout streams in the subsection. Many individuals are working to make sure that their quality is not degraded. Control of soil erosion is another conservation concern.

Highlights

- The Blufflands provides a critical migratory corridor for forest songbirds, raptors, and waterfowl. It is the most important subsection for reptiles and one of the most important subsections for mollusks.
- It is an important area for birds such as Henslow's sparrows, prothonotary warblers, red-shouldered hawks, Louisiana waterthrushes, and peregrine falcons. It is also an important area for Karner blue butterflies and Blanding's turtles.
- Reptiles, amphibians, snails, mussels, and fish are special features of this landscape, including timber rattlesnakes, milk snakes, paddlefish, shovelnose sturgeon, pallid shiners, American eels, pirate perch, skipjack herrings, and several Pleistocene snails.
- Areas important for species in greatest conservation need include the Whitewater, Gores Pool, and McCarthy Lake WMAs; Upper Mississippi River NWR; Kellogg- Weaver Dunes, Great River Bluffs, John Latsch, Whitewater, and Frontenac SPs; and Cannon River Turtle Preserve and Mound Prairie SNAs.

Presettlement Vegetation

Presettlement vegetation in the vicinity of the proposed trail corridor options, based on Marschner's *Original Vegetation of Minnesota* map, consisted of the following types: Prairie, wet prairie, brush prairie, aspen-oak land, oak openings and barrens, big woods-hardwoods (oak, maple, basswood, hickory), and river bottom forests¹¹.

Typical vegetation found in the prairie mapping unit was big bluestem, little bluestem, Indian grass, prairie clover, goldenrods, and asters. Roses and wolfberry were the typical shrubs found in this unit. Wet prairies consisted of blue joint grass, big bluestem, cattails, bulrushes, many sedges, wild rice, willows, speckled alder and bog birch.

The wet prairie mapping unit comprised a wide range of wetlands, from seasonally inundated grasslands to cattail marshlands to wild rice areas. Prominent species were bluejoint grass, big bluestem, many sedges, common reed, cattails, bulrushes, wild rice, iris, willows, speckled alder and bog birch.

Aspen-oak land consisted of young, dense stands of quaking aspen and big tooth aspen, northern pin oak, northern red oak, bur oak, elms, ash and basswood.

Oak openings and barrens were usually a buffer between prairies and big woods. This mapping unit was characterized by oak groves or single bur oak mixed with tall grass prairie.

The big woods-hardwoods mapping unit was believed to be a sugar maple-basswood forest with a diverse shrub and ground layer. It consisted of bur oak, white oak, red oak, elm, basswood, ash, maple, hornbeam, aspen, birch, hickory, butternut and black walnut.

The river bottom forest mapping unit was used by Marschner to describe nearly all major floodplain and valley-bottom forests. Typical vegetation included elm, ash, cottonwood, boxelder, basswood, willow, aspen, hackberry and oaks.

Present Day

Vegetation along the proposed trail corridor is a mixture of deciduous forest, cropland and grassland. The Natural Heritage Information database was used to obtain species that are threatened, endangered or of special concern and are reported to be within the vicinity of the proposed trail corridor options. The inventory and evaluation of threatened, endangered and special concern vegetation, that may be found in the vicinity of proposed trail alignments, will be consulted during the planning and design of specific segments. Appendix 1 contains the data.

Three guiding principles provide the rationale for actions related to managing and restoring native plant communities on Trails and Waterways sites¹².

1. Restoration and management of natural plant communities:
 - Enhances the ecological quality of all sites
 - Contributes to the integrity and aesthetic quality of the regional landscape
 - Improves the quality of the recreational experience
 - Reduces air and water pollution.

2. New development should occur primarily in environments already influenced by human activity, with emphasis on restoring and re-establishing native vegetation in these environments for the benefit of people and remaining natural communities.
3. New development must avoid:
 - Critical habitat of endangered, threatened and special concern species as identified by the Natural Heritage Program
 - Remaining high quality natural plant communities and habitat.

Recommendation 1: Avoid high quality plant communities, as defined by the Minnesota County Biological Survey (MCBS) maps.

Native habitats surveyed by MCBS contribute to a sustainable economy and society because they¹³:

- Provide ecological services that contribute to the quality of air, soil, and water.
- Provide opportunities for research and monitoring on landscapes, native plant communities, plants, animals and their relationships within the range of natural variation.
- Serve as benchmarks for comparison of the effects of resource management activities.
- Are part of natural ecosystems that represent Minnesota's natural heritage and are sources of recreation, beauty and inspiration.
- Provide reservoirs of genetic materials potentially useful in agriculture, medicine, and industry.

Recommendation 2: Avoid threatened, endangered and special concern species. Data from the Natural Heritage database was used to assess the location of threatened, endangered and special concern species. Trails & Waterways staff will keep current with this data and perform on-the-ground surveys when an exact alignment is proposed.

Recommendation 3: The Trails and Waterways Natural Communities Coordinator will be responsible for conducting an inventory of existing plant communities. A vegetation management plan containing goals, objectives, and actions should be developed and implemented.

Recommendation 4: Native plant species, from a locally collected seed source, consistent with the native plant communities of the area should be used to revegetate existing natural plant communities as well as areas disturbed by erosion, overuse and construction. Native plants should also be used in windbreak plantings and in the landscaping of parking areas and waysides.

Recommendation 5: Restore, or if necessary, establish native plant communities along the trail to minimize maintenance, minimize the use of pesticides, control noxious weeds, and increase natural species abundance and biodiversity for enhanced user experience.

Recommendation 6: Plant native species to screen unsightly areas, deter encroachment by adjoining landowners, deter trespassing by trail users as well as improve the quality of the trail corridor.

Recommendation 7: Efforts will be made to avoid impacting wetlands, however, a wetland mitigation plan will be prepared to address and identify impacted wetlands.

Recommendation 8: Avoid planting and try to eradicate any of the plants listed below; all of these plants are aggressive introduced species that will crowd out native species.

Carduus nutans (Musk thistle)
Centaurea maculosa (Spotted knapweed)
Cirsium arvense (Canada thistle)
Cirsium vulgare (Bull thistle)
Euphorbia esula (Leafy spurge)
Lythrum salicaria (Purple loosestrife)
Rhamnus cathartica (Common buckthorn)
Rhamnus frangula (Glossy or Alder buckthorn)
Robinia pseudoacacia (Black locust)
Sonchus arvensis (Sow thistle)
Acer ginnala (Amur maple)
Acer platanoides (Norway maple)
Berberis thunbergii (Japanese barberry)
Bromus inermis (Smooth brome grass)
Cannabis sativa (Hemp or Marijuana)
Chrysanthemum leucanthemum (Oxeye daisy)
Caragana arborescens (Siberian peashrub)
Convolvulus arvensis (Field bindweed)
Alliaria petiolata (Garlic mustard)
Berteroia incana (Hoary alyssum)
Butomus umbellatus (Flowering rush)
Daucus carota (Queen Ann's lace)

Elaeagnus angustifolia (Russian olive)
Elaeagnus umbellata (Autumn olive)
Glechoma hederacea (Creeping Charlie)
Hieracium aurantiacum (Orange hawkweed)
Lonicera tartarica (Tartarian honeysuckle)
Lotus corniculatus (Birdsfoot trefoil)
Melilotus alba (White sweet clover)
Melilotus officinalis (Yellow sweet clover)
Digitalis lanata (Grecian foxglove)
Morus alba (Mulberry)
Phalaris arundinacea (Reed canary grass)
Iris pseudacorus (Yellow iris)
Linaria vulgaris (Common toadflax, Butter & eggs)
Pastinaca sativa (Wild parsnip)
Polygonum cuspidatum (Japanese knotweed)
Tanacetum vulgare (Common tansy)
Taraxacum officinale (Dandelion)
Ulmus pumila (Siberian elm)
Vicia cracca & *Vicia villosa* (Cow & Hairy vetch)
Coronilla varia (Crown vetch)
Miscanthus sacchariflorus (Amur silver grass)

Water Resources

The Whitewater Country Loop State Trail lies within the Zumbro River and Mississippi River-Winona Watersheds, which are part of the Lower Mississippi River Basin. These two major watersheds drain over 1.3 million acres and eventually flow into the Mississippi River.

Water quality, soil erosion and land use are major concerns in the watersheds. Many elements contribute to the degradation of the water quality including, but not limited to, farming practices, animal manure, urban runoff, development of shorelines, degradation of stream banks and phosphorous use.

Trout streams in area (Mainly in the St. Charles to Elba to Plainview segment)

- *Whitewater River*
- *South Branch Whitewater River*
- *Middle Branch Whitewater River*
- *North Branch Whitewater River*
- *Trout Run Creek*
- *Beaver Creek*

Recommendation 1: Minimize trail development and maintenance impacts to adjacent water resources through the use of trail design, storm water best management practices, mulching, geo-textiles, silt screens and seeding to establish vegetation.

Recommendation 2: Strive to limit water crossings and obtain appropriate permits for any crossings.

Wildlife

The proposed corridor of the Whitewater Country Loop State Trail traverses an area with a rich natural history of prairies and savannas and is in the Rochester Plateau ecological subsection. Most wildlife species common to farmland areas of Minnesota can be found here.

Common mammals in the mix of agricultural lands and woodlots of the proposed corridor include white-tailed deer, coyotes, red fox, striped skunks, opossum, fox and gray squirrels, cottontail rabbits, and white-footed mice. Thirteen-lined ground squirrels, pocket gophers and meadow voles are common inhabitants of pastures and meadows. Other grassland species include jack rabbit, badger, jumping mouse and prairie vole. Forest denizens include gray fox, southern flying squirrel, eastern chipmunk, southern red-backed vole, eastern pipistrel, and silver-haired, red and big brown bats. Watch for signs of muskrats, beaver, raccoons and mink and otter along the waterways.

A rich legacy of bird life is found in this part of southeast Minnesota. Over 300 bird species are considered regular or casual in Minnesota and a large percentage of these species have been observed in or near the proposed trail corridor. Only a small number of birds are year-round residents. Examples include American crow, blue jay, hairy, downy and red-bellied woodpeckers, white-breasted nuthatch, blacked capped-chickadee, American goldfinch, northern cardinal, mourning dove, red-tailed hawk, and great horned owl. Other less common resident species include pileated woodpeckers, barred and eastern screech owls in larger patches of forested lands.

Three upland game birds are common in the proposed Whitewater Country Loop State Trail corridor, non-native ring-necked pheasant, ruffed grouse and wild turkey. Of the four native gallinaceous birds, the prairie chicken and sharp-tailed grouse have been extirpated. Natural populations of bobwhite quail are probably extirpated.

The majority of birds in the proposed Whitewater Country Loop State Trail corridor are migrant species that are found in the area seasonally. This leads to an ever-changing bird assemblage throughout the year. A few species travel here for the winter including dark-eyed junco, snow bunting, Lapland longspur, northern shrike and rough-legged hawk. Spring is the best season for bird observation. Belted kingfishers, green herons, spotted sandpipers, wood ducks and hooded mergansers can be seen along the Root and the Zumbro Rivers. The rare Northern water thrush utilizes trout streams such as the Whitewater River, Mill Creek and Trout Run. Forests and woodlands host a wide variety of migrant and breeding birds including vireos, flycatchers, American robin, wood thrush, warblers, scarlet tanager and Baltimore oriole. Birds dependent on grasslands include northern harrier, meadowlark, bobolink, dickcissel, several species of sparrows such as the vesper sparrow, savannah sparrow, and grasshopper sparrow and the rare loggerhead shrike. Shrikes use grassy, open areas with scattered trees and shrubs such as pasture, prairie patches and grassy roadsides. It would be valuable to manage and enhance shrike habitat along the proposed trail corridor.

A number of amphibians and reptiles are found along the proposed Whitewater Country Loop State Trail corridor. Several of these species are considered sentinels of environmental quality or are of special conservation concern. Tiger salamanders, American toads, leopard frogs, western chorus frogs, and Cope's gray tree frog may be found associated with many water habitats in the corridor. Gray tree frogs, wood frogs and spring peepers are associated with

forested habitats. Green frogs and bullfrogs require more permanent water in lakes and marshes.

Painted and snapping turtles are the most frequently encountered turtles in the proposed corridor. One state-listed threatened turtle, the Blanding's turtle, is found in the general corridor. Blanding's turtles favor marsh habitats. Turtles are vulnerable to habitat losses and fragmentation, excessive nest losses to predation, mortality due to vehicle collisions and being collected for pets.

Garter snakes are common snakes in the proposed Whitewater Country Loop State Trail corridor. Fox snakes also utilize a broad range of habitats. Prairie skink and several snakes including the racer, bull snake and smooth green snake are associated with grasslands. Milk snake, red-bellied snake and brown snake prefer deciduous forest habitats. Snakes are vulnerable to collecting and excessive human-caused mortality especially when basking on roads and trails.

Other important sentinel wildlife species include invertebrates. A handful of species are known as pests, important pollinators or because they are large or colorful (e.g., butterflies, dragonflies) but most species are generally overlooked. Invertebrates perform important ecosystem services such as pollination, decay and nutrient cycling, and water purification. Invertebrates are sensitive to pesticides, many have specific hosts and others have aquatic life stages and serve as indicators of water pollution. As with reptiles and amphibians many species have limited dispersal abilities and may be disproportionately impacted by habitat changes and fragmentation.

Freshwater mussel species are of particular conservation concern. The Zumbro and Root Rivers and their tributaries host many species that are rare or declining. Water pollution, dams and other habitat changes impact mussels. Mussels depend on host fish species for reproduction and dispersal. River dams that block fish migration or other habitat alterations that affect host species can limit the distribution and abundance of mussels.

As in much of the Midwest, natural habitats have been significantly reduced and altered since European settlement. Natural communities are found in a small percentage of the landscape. As a consequence, fauna with habitat requirements requiring large patches and/or those that were considered competitors with human endeavors are no longer found free ranging in the area or at best exist as transients. Examples include prairie chickens, elk and bobcat. Nevertheless, a rich legacy remains and a variety of wildlife can be observed in appropriate habitats.

The Natural Heritage Information database was used to obtain species that are threatened or endangered or of special concern and are reported to be within the vicinity of the proposed trail corridor options. An inventory and evaluation of threatened; endangered or special concern animals that may be found in the vicinity of proposed trail alignments will be made during planning for the design of specific segments. Appendices 2 and 3 contain the data.

Recommendation 1: Avoid threatened, endangered or special concern species. Data from the Natural Heritage database was used to assess the location of threatened, endangered and special concern species. Trails & Waterways staff will keep current with this data and perform on-the-ground surveys when an exact alignment is proposed.

Recommendation 2: Wildlife may be affected by the trail and recreational uses. Species with limited mobility, sensitive habitat requirements, or that are vulnerable to disturbance or exploitation require consideration in trail planning. Design considerations may include avoiding critical habitats, installing bridges or culverts in upland settings to provide wildlife travel ways, considering fish and wildlife needs when designing water crossings, managing and enhancing habitats along the proposed trail corridor and using native species, consistent with the natural communities of the area, when re-vegetating areas disturbed by trail construction and maintenance.

Geology/Topography

The Whitewater Country Loop State Trail will traverse two ECS subsections: Rochester Plateau and Blufflands.

The Rochester Plateau Subsection

Landform

This subsection consists of level to gently rolling older till plains. Topography is controlled by underlying glacial till along the western edge of the subsection, where loess is several feet thick. As glacial drift thins to the east, topography is largely bedrock controlled¹⁴.

Soils

Loess thickness is variable: loess deposits are as thick as 30 feet on broad ridgetops, to less than a foot on valley walls. The predominant soils are Udalfs, with localized Aquents along the floodplains of major rivers (Cummins and Grigal 1981). Cambrian siltstones, sandstones, and shales influence soil properties.

The Blufflands Subsection

Landform

The area is a loess-capped plateau, deeply dissected by river valleys. The greatest amount of relief occurs along the Mississippi River, where relief is up to 600 ft. In the east, loess lies directly on bedrock. In the southeast, loess overlies red clayey residuum that was formed directly from limestone and/or sandstone. Paleozoic sedimentary rocks crop out in valley walls, but are generally mantled with colluvium or loess. Topography is controlled by underlying glacial till along the western edge of the subsection, where loess is several feet thick. As glacial drift thins to the east, topography is largely bedrock controlled¹⁵.

Bedrock geology

Depth of drift over bedrock varies from 0 to 50 feet. Bedrock is exposed in river and stream valleys. In general, sediment thickness varies by landscape position. Large exposures of bedrock occur in the steep ravines. These exposures are primarily Ordovician dolomite, limestone, and sandstone with Cambrian sandstone, shale, and dolomite exposed along the valley walls of the Mississippi River (Morey 1981, Sims et al. 1966). Devonian dolomite and limestone are more locally exposed along the western edge of the subsection.

Soils

Loess thickness is variable: loess deposits are as thick as 30 feet on broad ridgetops, to less than a foot on valley walls. The predominant soils are Udalfs, with localized Aquents along the floodplains of major rivers (Cummins and Grigal 1981). Cambrian siltstones, sandstones, and shales influence soil properties.

Climate

The area has a continental climate with large variations in temperature, from summer to winter. Winters are cold and summers are mild, with occasional hot and humid days. Individual variations may arise across the landscape due to differences in vegetation, soil, urbanization and topography. Precipitation in the area also varies from month to month, as would be expected for this climate. The recordings from the Rochester Station (1971-2000) are listed in the following tables¹⁶.

Precipitation Data
1971-2000 Averages Rochester Airport Station

Month	Precipitation (inches)	Snowfall (inches)
January	0.94	12.0
February	0.75	8.1
March	1.88	9.0
April	3.01	4.3
May	3.53	0.0
June	4.00	0.0
July	4.61	0.0
August	4.33	0.0
September	3.12	0.0
October	2.20	1.0
November	2.01	7.1
December	1.02	11.7
Annual	31.40	53.2

Temperature Data
1971-2000 Averages Rochester Airport Station

Month	Max (Fahrenheit)	Min (Fahrenheit)
January	19.9	3.7
February	26.2	10.6
March	38.7	22.6
April	54.8	34.6
May	67.7	46.1
June	76.6	55.6
July	80.1	60.1
August	77.5	58.0
September	69.2	48.7
October	56.9	37.1
November	38.7	23.7
December	24.5	10.1
Annual	52.6	34.2

Park, Recreation and Open Space Resources

A variety of recreational opportunities exists within or near the proposed Whitewater Country Loop State Trail corridor. See individual city maps for the location of city parks, trails and open spaces.

Parks

Chester Woods County Park
Rochester city park system
Whitewater State Park
Carley State Park

Wildlife Management Areas

Whitewater Wildlife Management Area

Trails

Rochester city trail system
St. Charles city trail system

Historical Resources

National Register of Historic Places

There are eleven structures or groups of structures listed on the National Register of Historic Places in or near the communities that the Whitewater Country Loop State Trail will pass. This list does not include the many historic places in Rochester.

Bush, John G., House

(added 1980 - Building - #80004531)

Center St., Dover

Historic Significance: Bush, John G., Architecture/Engineering

Significant Year: 1877

Area of Significance: Architecture, Commerce

Period of Significance: 1875-1899

Owner: Private

Coan House

(added 1980 - Building - #80004532)

118 W. 5th St., Eyota

Historic Significance: Architecture/Engineering

Area of Significance: Architecture

Period of Significance: 1875-1899

Owner: Private

Eyota Farmers Cooperative Creamery Association

(added 1980 - Building - #80004533)

Also known as Eyota Cooperative Creamery

222 Washington Ave., S., Eyota

Historic Significance: Event, Architecture/Engineering

Area of Significance: Architecture, Social History, Industry

Period of Significance: 1900-1924

Owner: Private

Krause, Christoph, Farmstead

(added 1980 - Building - #80002097)

Co. Hwy. 30, Dover

Historic Significance: Architecture/Engineering

Area of Significance: Architecture

Period of Significance: 1850-1874, 1875-1899

Owner: Private

Viola Cooperative Creamery

(added 1999 - Building - #99001310)

10500 Viola Rd. NE, Viola

Historic Significance: Event

Area of Significance: Commerce

Period of Significance: 1900-1924, 1925-1949

Owner: Private

Hemmelberg, William, House

(added 1986 - Building - #86002916)

Also known as Stone House

Co. Hwys. 26 and 37, Elba

Historic Significance: Event

Area of Significance: Exploration/Settlement

Period of Significance: 1850-1874

Owner: Private

Marnach, Nicholas, House

(added 1978 - Building - #78003406)

Off Co. Hwy. 26 in Whitewater Wildlife Management Area, Elba

Historic Significance: Event, Architecture/Engineering

Architect, builder, or engineer: Marnach, Nicholas

Area of Significance: Architecture, Exploration/Settlement

Period of Significance: 1850-1874

Owner: State

St. Charles City Bakery

(added 1984 - Building - #84001723)

Also known as H.C.A. The Cartoonist

501 Whitewater Ave., St. Charles

Historic Significance: Event

Area of Significance: Commerce

Period of Significance: 1875-1899

Owner: Private

Trinity Episcopal Church

(added 1984 - Building - #84001726)

805 St. Charles Ave., St. Charles

Historic Significance: Architecture/Engineering

Architectural Style: Late Gothic Revival, Other

Area of Significance: Architecture

Period of Significance: 1850-1874

Owner: Private

Whitewater Avenue Commercial Historic District

(added 1984 - District - #84001736)

900-1012 Whitewater Ave., St. Charles

Historic Significance: Architecture/Engineering

Area of Significance: Architecture

Period of Significance: 1875-1899, 1900-1924

Owner: Private

Whitewater State Park CCC/WPA/Rustic Style Historic Resources

(added 1989 - District - #89001661)

Also known as Whitewater State Park

Off MN 74, SW of Elba, Elba

Historic Significance: Event, Architecture/Engineering

Area of Significance: Architecture, Entertainment/Recreation, Politics/Government,
Landscape Architecture
Period of Significance: 1925-1949
Owner: State 17

See the National Register of Historic Places website for further information
<http://www.nationalregisterofhistoricplaces.com/> or the Minnesota Historical Society website
<http://www.mnhs.org/places/nationalregister/stateparks/#RUSTIC>.

Socioeconomic Resources

Demographics

According to the US Census Bureau and the State Demographer¹⁸, the three counties involved with the Whitewater Country Loop State Trail are experiencing growth and are projected to continue growing. The cities are also growing rapidly, with the exception of Elba. It is essential to provide open space and recreational opportunities now while the opportunity exists and before development increases land values to the point where land is too expensive to purchase for recreation. Below are tables with the city and county population data¹⁹.

City	1980 Population	1990 Population	2000 Population	% Population Change 1990-2000
Rochester	57,890	70,729	85,806	21.3%
Eyota	1,244	1,448	1,644	13.5%
Dover	312	416	438	5.3%
St. Charles	2,184	2,703	3,295	21.9%
Elba	198	220	214	-2.7%
Plainview	2,416	2,768	3,190	15.2%
Elgin	667	733	826	12.7%

County	1980 Population	1990 Population	2000 Population	% Population Change 1990-2000
Olmsted	92,006	106,470	124,277	16.7%
Wabasha	19,335	19,744	21,610	9.5%
Winona	46,256	47,828	49,985	4.5%

Financial Impacts of Trail Development

Communities that support trails and respond to the needs of trail users have seen stimulation in their local economies²⁰. In *State Trail Use*, (July 2000, prepared by the DNR, Trails and Waterways Unit) the DNR reports on surveys taken of State Trails in 1996, 1997, and 1998²¹. These publications present data and identify references that provide several facts about the economic impact of trails:

Trail users spend money

Tourists attracted to the trails use local facilities for eating, shopping, and lodging. This input to the local economy tends to increase jobs and local revenues. For example:

- The DNR estimates that over \$5 million was spent by trail users on all state trails in Minnesota between Memorial Day and Labor Day. The July 2000 DNR report notes that 83% of spending by trail users is by tourists that directly impacts local economies, and the bulk of this (80-85%) is spent on food, lodging, and transportation. Surveys showed that use on the Sakatah Singing Hills State Trail was a mix of local and tourist use and that spending by tourists was \$271,000 compared with \$97,000 spent by local users.

- Completion of the Root River State Trail increased lodging opportunities in Lanesboro, increased food and drinking receipts by 84%, and lodging receipts by 800% between 1986 and 1992.
- A study by the DNR found that 69% of landowners living along the Heartland and Douglas State Trails in Minnesota feel the trails have benefited local economies.

Bird watching is a popular activity that is often done from trails. In the United States, according to the 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation. Forty-six million people, age 16 and older, participate in bird watching. This activity is a major economic benefit to the nation and the state of Minnesota, as many birders will travel locally and nationally to pursue their activity. When it comes to birding participation rates, Minnesota is above the national average of 22%, with 36% of the population participating. The Whitewater Country Loop State Trail area could be an attraction for local and out-of-state birders.

The following statistics are from the report, "Birding in the United States: A Demographic and Economic Analysis. Addendum to the 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation," published by the U.S. Fish and Wildlife Service.

- In 2001, birders spent an estimated \$32 billion dollars to pursue their activity. This includes trip-related expenditures as well as any equipment purchases.
- The \$32 billion dollars spent by birders generated \$85 billion dollars in economic benefits for the United States.
- The \$85 billion dollar economic benefit produced \$13 billion dollars in state and federal income taxes and helped create 863,406 jobs.

Trails increase property values

- A Minnesota study of two trails found that 87% of the homeowners along the trail felt the trail either had no effect, or increased their property value.
- A National Park Service funded study of three trails found that 87% to 97% of those surveyed felt a trail either increased the value of their home, or had no effect on its value. The study found that 89% of real estate professionals concurred.

Trails provide other savings

- Public monetary savings from lower air pollution, congestion, and oil imports have been calculated to be between 5 cents and 22 cents for every bicycle mile traveled on trails.
- An undetermined amount of additional savings result from the environmental and health benefits of outdoor recreation. As we fight the obesity epidemic, providing trail facilities for walking, jogging and bicycling becomes imperative.

Appendix 1: Special Concern, Threatened, or Endangered Plants²²

Scientific Name	Common Name	Status
<i>Panax quinquefolius</i>	American Ginseng	SPC
<i>Sanicula trifoliata</i>	Beaked Snakeroot	SPC
<i>Solidago sciaphila</i>	Cliff Goldenrod	SPC
<i>Oxypolis rigidior</i>	Cowbane	NON
<i>Juniperus horizontalis</i>	Creeping Juniper	SPC
<i>Napaea dioica</i>	Glade Mallow	THR
<i>Hydrastis canadensis</i>	Golden-seal	END
<i>Dryopteris goldiana</i>	Goldie's Fern	SPC
<i>Cirsium hillii</i>	Hill's Thistle	SPC
<i>Sedum integrifolium ssp. leedyi</i>	Leedy's Roseroot	END
<i>Liparis lilifolia</i>	Lilia-leaved Twayblade	NON
<i>Adoxa moschatellina</i>	Moschatel	SPC
<i>Diplazium pycnocarpon</i>	Narrow-leaved Spleenwort	THR
<i>Allium cernuum</i>	Nodding Wild Onion	THR
<i>Baptisia bracteata var. leucophaea</i>	Plains Wild Indigo	SPC
<i>Eryngium yuccifolium</i>	Rattlesnake-master	SPC
<i>Agalinis gattingeri</i>	Round-stemmed False Foxglove	END
<i>Athyrium thelypteroides</i>	Silvery Spleenwort	NON
<i>Arabis laevigata</i>	Smooth Rock-cress	NON
<i>Carex laxiculmis</i>	Spreading Sedge	THR
<i>Carex sterilis</i>	Sterile Sedge	THR
<i>Cacalia suaveolens</i>	Sweet-smelling Indian-plantain	END
<i>Jeffersonia diphylla</i>	Twinleaf	SPC
<i>Eupatorium sessilifolium</i>	Upland Boneset	THR
<i>Valeriana edulis ssp. ciliata</i>	Valerian	THR
<i>Actaea pachypoda</i>	White Baneberry	NON
<i>Aster pilosus</i>	White Heath Aster	NON
<i>Baptisia alba</i>	White Wild Indigo	SPC
<i>Poa wolfii</i>	Wolf's Bluegrass	SPC
<i>Poa sylvestris</i>	Woodland Bluegrass	NON
<i>Carex woodii</i>	Wood's Sedge	SPC
<i>Taenidia integerrima</i>	Yellow Pimpernel	NON

SPC – Special Concern

THR – Threatened

END – Endangered

NON – a species with no legal status, but about which the Natural Heritage and Nongame Research Program is gathering data for possible future listing.

Appendix 2: Special Concern, Threatened, or Endangered Animals

Scientific Name	Common Name	Status
<i>Empidonax virescens</i>	Acadian Flycatcher	SPC
<i>Lampetra appendix</i>	American Brook Lamprey	NON
<i>Haliaeetus leucocephalus</i>	Bald Eagle	SPC
<i>Emydoidea blandingii</i>	Blanding's Turtle	THR
<i>Dendroica cerulea</i>	Cerulean Warbler	SPC
<i>Elaphe vulpina</i>	Eastern Fox Snake	NON
<i>Heterodon platirhinos</i>	Eastern Hognose Snake	NON
<i>Pipistrellus subflavus</i>	Eastern Pipistrelle	SPC
<i>Coluber constrictor</i>	Eastern Racer	SPC
<i>Seiurus motacilla</i>	Louisiana Waterthrush	SPC
<i>Lampropeltis triangulum</i>	Milk Snake	NON
<i>Myotis septentrionalis</i>	Northern Myotis	SPC
<i>Falco peregrinus</i>	Peregrine Falcon	THR
<i>Rana palustris</i>	Pickerel Frog	NON
<i>Crotalus horridus</i>	Timber Rattlesnake	THR

SPC – Special Concern

THR – Threatened

END – Endangered

NON – a species with no legal status, but about which the Natural Heritage and Nongame Research Program is gathering data for possible future listing.

Appendix 3: Special Concern, Threatened, or Endangered Invertebrate Animals

Scientific Name	Common Name	Status
<i>Cicindela patruela patruela</i>	A Tiger Beetle	SPC
<i>Vertigo meramecensis</i>	Bluff Vertigo	THR
<i>Vertigo hubrichti</i>	Hubricht's Vertigo	NON

SPC – Special Concern

THR – Threatened

END – Endangered

NON – a species with no legal status, but about which the Natural Heritage and Nongame Research Program is gathering data for possible future listing.

End Notes

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- ¹ Minn Stat. § 85.015, subd. 7 (1971)
 - ² Minn Stat. § 85.015, subd. 7 (1995)
 - ³ Minn Stat. § 85.015, subd. 7 (1996)
 - ⁴ Minn Stat. § 85.015, subd. 7 (2006)
 - ⁵ Private correspondence with Iris Clark Neumann, February 10, 2007.
 - ⁶ Private correspondence with Iris Clark Neumann, February 10, 2007.
 - ⁷ MN DNR website. Division of Parks and Recreation.
http://www.dnr.state.mn.us/state_parks/whitewater/narrative.html
 - ⁸ Private correspondence with Iris Clark Neumann, February 10, 2007.
 - ⁹ *State Trail Use: Summary of Summer Trail Use and User Surveys Conducted in 1996, 1997 and 1998*. MN DNR, July 2000.
 - ¹⁰ Minn Stat. § 85.015, subd. 25 (2006)
 - ¹¹ Marschner, Francis J. *The Original Vegetation of Minnesota*. North Central Forest Experiment Station, Forest Service, US Department of Agriculture. St. Paul, 1974.
 - ¹² MN DNR, Guidelines for Managing and Restoring Natural Plant Communities Along Trails and Waterways. MN DNR, 2004.
 - ¹³ MN DNR website. Division of Ecological Services. <http://www.dnr.state.mn.us/ecs/index.html>
 - ¹⁴ Dept. of Soil Science, Univ. of Minnesota 1973
 - ¹⁵ Dept. of Soil Science, Univ. of Minnesota 1973
 - ¹⁶ Midwestern Regional Climate Center
http://mcc.sws.uiuc.edu/climate_midwest/mwclimate_data_summaries.htm#
 - ¹⁷ National Register of Historic Places website <http://www.nationalregisterofhistoricplaces.com/> 12/2006
 - ¹⁸ United States Census Bureau website. <http://www.census.gov>
 - ¹⁹ Minnesota State Demographic Center. <http://www.demography.state.mn.us/>
 - ²⁰ *Benefits of Trails*, July 1996, prepared by the DNR, Trails and Waterways Unit, as part of the DNR's Cooperative Trail Development Series
 - ²¹ *State Trail Use: Summary of Summer Trail Use and User Surveys Conducted in 1996, 1997 and 1998*. MN DNR, July 2000.
 - ²² MN DNR website. Division of Ecological Services. <http://www.dnr.state.mn.us/ecs/index.html>