



Glacial Hills Regional Trail

Long Range Plan

Washington
County

DF/ DAMON FARBER







Wildflowers at sunset, William O'Brien State Park

Glacial Hills Regional Trail

Long Range Plan

Washington County

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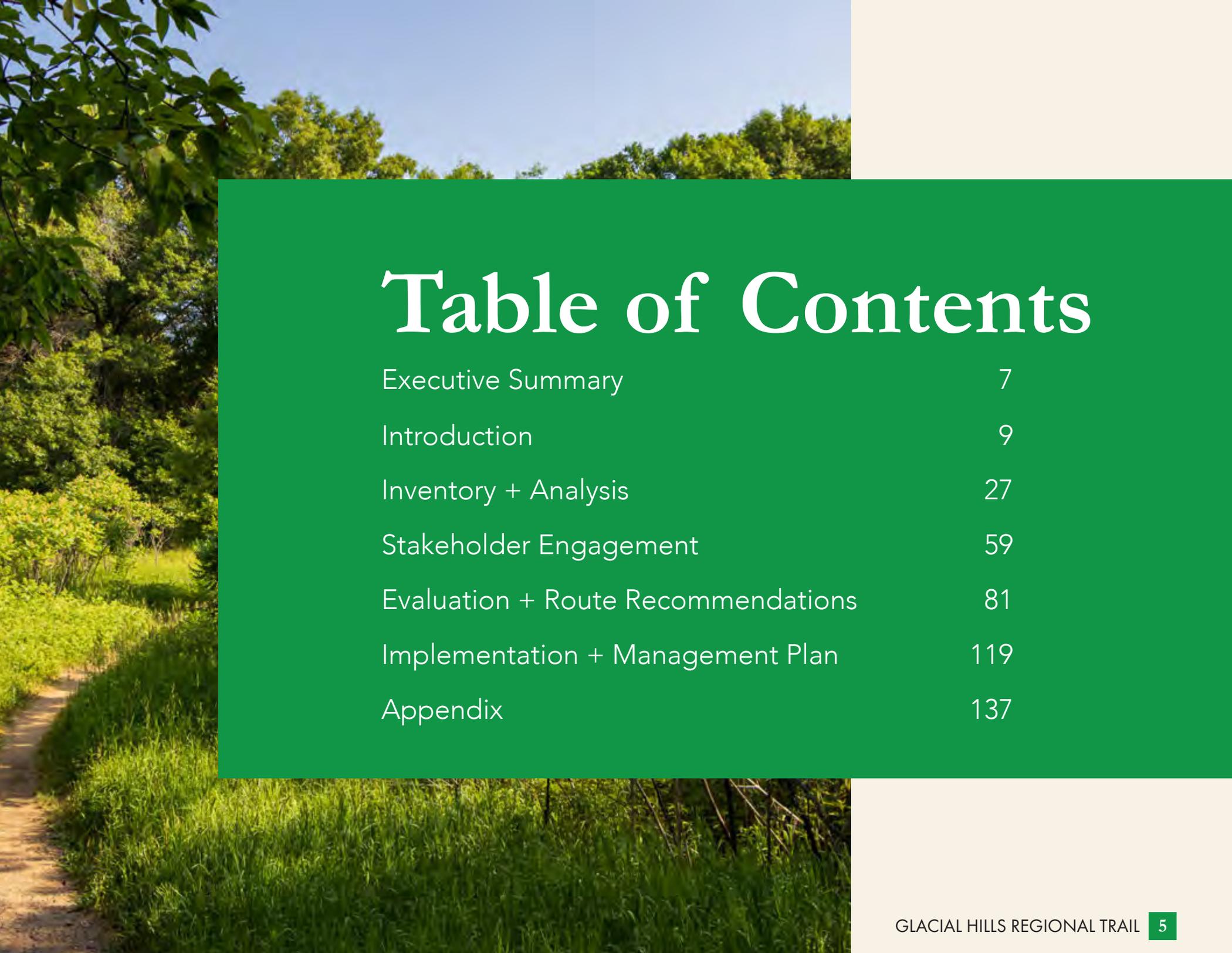
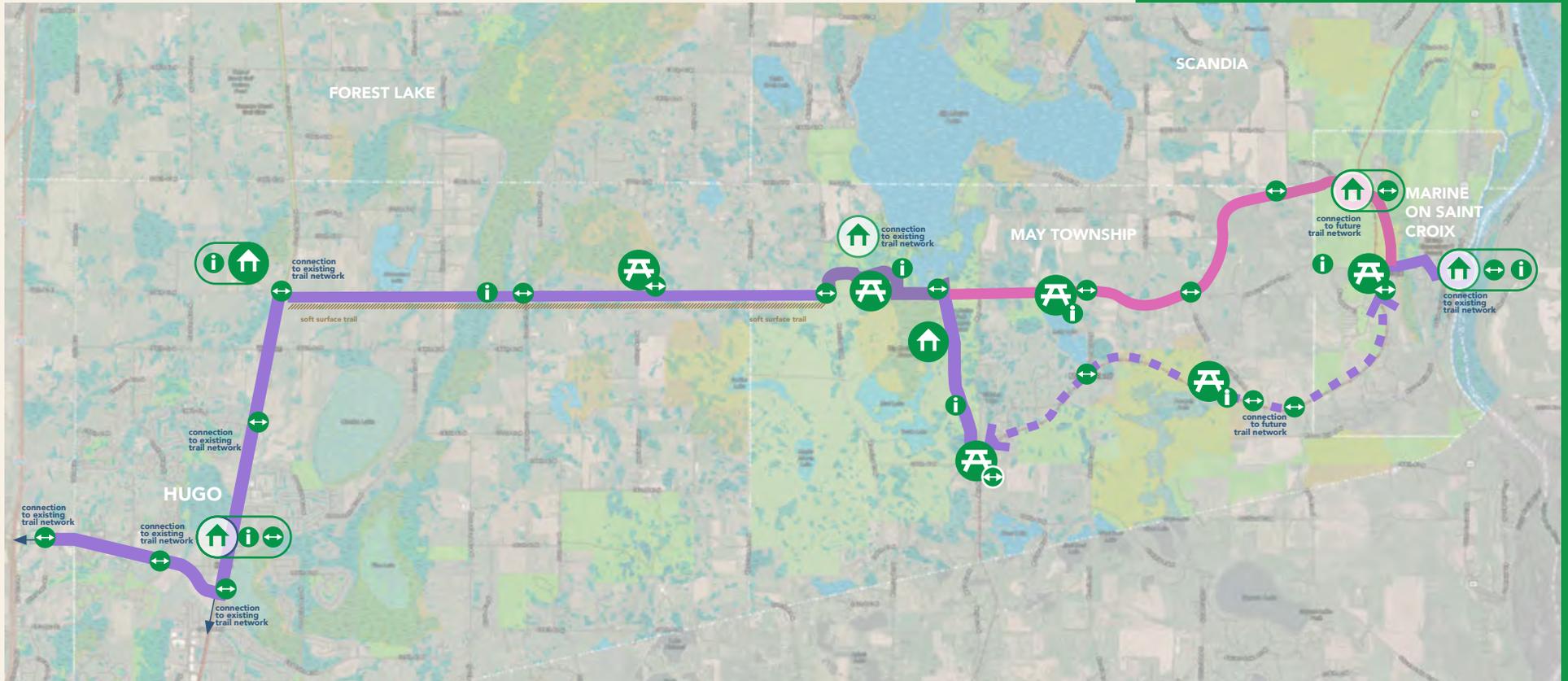


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Figure 1. Recommended Route Alignments

Executive Summary

The Glacial Hills Regional Trail (GHRT) Long Range Plan outlines the development of a significant east-west trail traversing northern Washington County, designed to enhance connectivity for pedestrians, bicyclists, and other trail users to key regional destinations such as Hardwood Creek and Central Greenway Regional Trails, Big Marine Park Reserve, William O'Brien State Park, and Cities of Hugo and Marine on St. Croix. This initiative aligns with the Metropolitan Council's 2040 Regional Park Policy Plan, which establishes a comprehensive vision for the Twin Cities metropolitan area's park and trail system.

Regional trails serve as integral components of the nonmotorized transportation network, acting as "tree trunks" that connect local trails and neighborhoods, while facilitating

recreational activities and active transportation. GHRT is designated as a "Linking" Regional Trail, which signifies its role in connecting various public interest destinations, regional facilities, and supporting local trail networks without duplicating existing trails.

This Long Range Plan was developed through a collaborative process involving a diverse group of stakeholders over the past year. Key participants included potential trail users and the communities adjacent to the trail, alongside their elected officials. Additionally, extensive input was gathered from a variety of technical advisors representing multiple federal, state, regional, and local agencies. This comprehensive engagement ensures that the plan reflects the needs and perspectives of all interested parties, fostering a sense of ownership and

support for the trail's development.

The plan adheres to established design standards that promote safety and accessibility, including specifications for trail width, surface materials, and surrounding zones. These design elements cater to a diverse range of users and ensure minimal environmental impact.

Ultimately, the GHRT aims to provide unique and engaging outdoor experiences while fostering greater community connectivity and access to natural resources, embodying the essence of a destination trail interwoven with vital links across the regional landscape. This comprehensive long-range plan sets a foundation for future trail alignment, design standards, and operational management, pending the approval and securing of necessary funding.



An aerial photograph showing a mix of green trees and paved roads in a downtown area. A road curves through the scene, surrounded by lush vegetation.

1

Introduction

Planning Framework

◀ *Overhead view of downtown Marine on Saint Croix*

The Glacial Hills Regional Trail will be an east-west trail that will run through northern Washington County. Once fully developed, it will connect pedestrians, bicyclists and trail users to regional destinations, including Hardwood Creek and Central Greenway Regional Trails, Big Marine Park Reserve and William O'Brien State Park.

Glacial Hills Regional Trail is considered a regional trail search corridor by the Metropolitan Regional Parks System and will address the criteria set forth in the Metropolitan Council's 2040 Regional Park Policy Plan.

Regional trails are multi-use facilities that serve as "tree trunks" to the overall trail network, allowing local trails to branch in and out making connections to neighborhoods and destinations. Regional trails are often initiated for recreational purposes, but also serve as an important active transportation facility with this "tree trunk" functioning similarly to highway and road systems; with local streets feeding into collector county roads, which feed into arterial highways. Regional trails expand the reach of viable nonmotorized connections throughout the region.

“Regional trails are multi-use facilities that serve as ‘tree trunks’ to the overall trail network, allowing local trails to branch in and out making connections to neighborhoods and destinations.

What is a regional trail?

Regional trails are multi-use facilities that serve as “tree trunks” to the overall trail network, allowing local trails to branch in and out making connections to neighborhoods and destinations. Regional trails are often initiated for recreational purposes, but also serve as an important active transportation facility with this “tree trunk” functioning similarly to highway and road systems; with local streets feeding into collector county roads, which feed into arterial highways. Regional trails expand the reach of viable nonmotorized connections throughout the region. The Hardwood Creek Regional Trail (Figure 2) exemplifies a regional trail constructed using preferred Washington County design standards.

Regional trails may occur along county highways or meander outside roadway rights-of-way. Most regional trails are separated from the road by a curb. In constrained locations, they may be part of a paved shoulder. Recreational uses for these trails include bicycling, walking, rolling, running, rollerblading/roller skiing, skateboarding, etc. In specific cases, these trails may be complemented by adjacent horseback riding and snowmobiling facilities. The design of a regional trail

can vary and must be right sized for expected use and community context. Trail design is intended to encourage and invite patrons of differing modes and abilities. Preferred characteristics include separation from roadways, sufficient width to accommodate multiple users, amenities to support trail use, and wayfinding to orient and direct users. While variations occur, generally a “typical” or preferred trail section will be implemented where conditions allow.

County trail design standards were identified as part of the 2021 MOVE Washington County Bike and Pedestrian Plan and outline the following characteristics:

Bituminous (asphalt) surfacing

10-foot width preferred, with 8-foot width at areas of site constraint, and 12-feet or more in areas of heavy use

2- to 5-foot fall zone (turf or gravel) on both sides of the paved trail with no vertical obstructions within 2-feet on either side of the trail.

2-5% running slope wherever possible, with a 1-2% cross slope

10-foot preferred buffer between the edge of the roadway and the trail

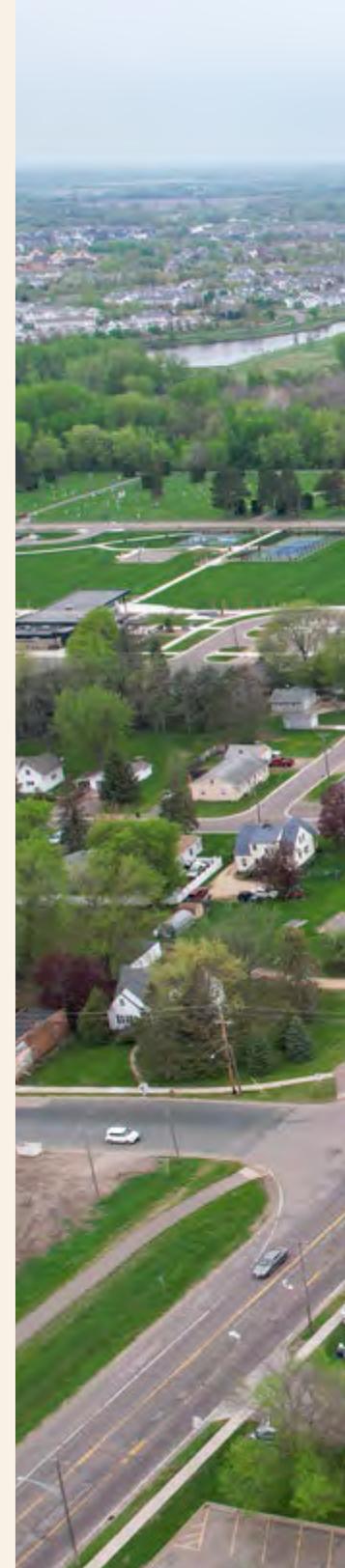
What is a regional trail?



Figure 2. Typical Features of a Regional Trail: Hardwood Creek Regional Trail north of Hugo, Minnesota



Downtown Marine on Saint Croix



2040 Regional Parks Policy Plan – Regional Designation

The Metropolitan Council’s (Met Council) 2040 Parks Policy Plan defines a unified vision for the park and trail system in the seven county Twin Cities metropolitan region and outlines the policies that apply to designate a park or trail as a regional facility.

For a trail to become regionally designated, a long range plan must be approved by the Metropolitan Council. It is up to each Regional Park Implementing Agency to develop individual long range planning documents for their regional facilities which support the larger vision. A long range plan is a long-range planning document which sets the vision for a trail and provides guidance on future alignment, design standards, implementation, management, and operations. A long range plan typically

precludes preliminary or final design; design and implementation of specific trail segments follow the approval of a long range plan once funding is secured. This long range plan designates Glacial Hills Regional Trail as a “Linking” Regional Trail. In the 2040 Regional Parks Policy Plan, The Metropolitan Council defines Linking Regional Trails as “...trails that connect Regional Parks System units with each other, with other regional trails, state and federal lands, and with other regional destinations.”

Destination/Greenway vs Connecting Trail

The long range railroad alignment has the opportunity to become a destination trail while east section will function primarily as a linking trail between Hugo and Big Marine Park.

“Destination trails provide high-quality natural resource-based experiences. They provide a scenic setting and a compelling sense of place. They often follow natural or linear features that traverse areas of scenic appeal and/or historical, architectural, and developmental interest.”



An approved long range plan will also offer additional funding opportunities. Acquisitions or trail development consistent with an approved long range plan are eligible for certain State and Metropolitan Council grant funding. Additionally, regional trails with approved long range plans are eligible for yearly operations and maintenance reimbursements. Lastly, long range planning processes provide opportunities to engage stakeholders across the County. Connecting with local agencies, organizations, and the public through this planning process creates a dialog about trails and non-motorized transportation across jurisdictional lines. Identifying a trail alignment and design representative of this dialog creates a unified vision, sets clear expectations for how the trail will develop, and mobilizes local groups to plan their projects accordingly.

◀ *Overhead view of the Highway 61 Corridor in Hugo*

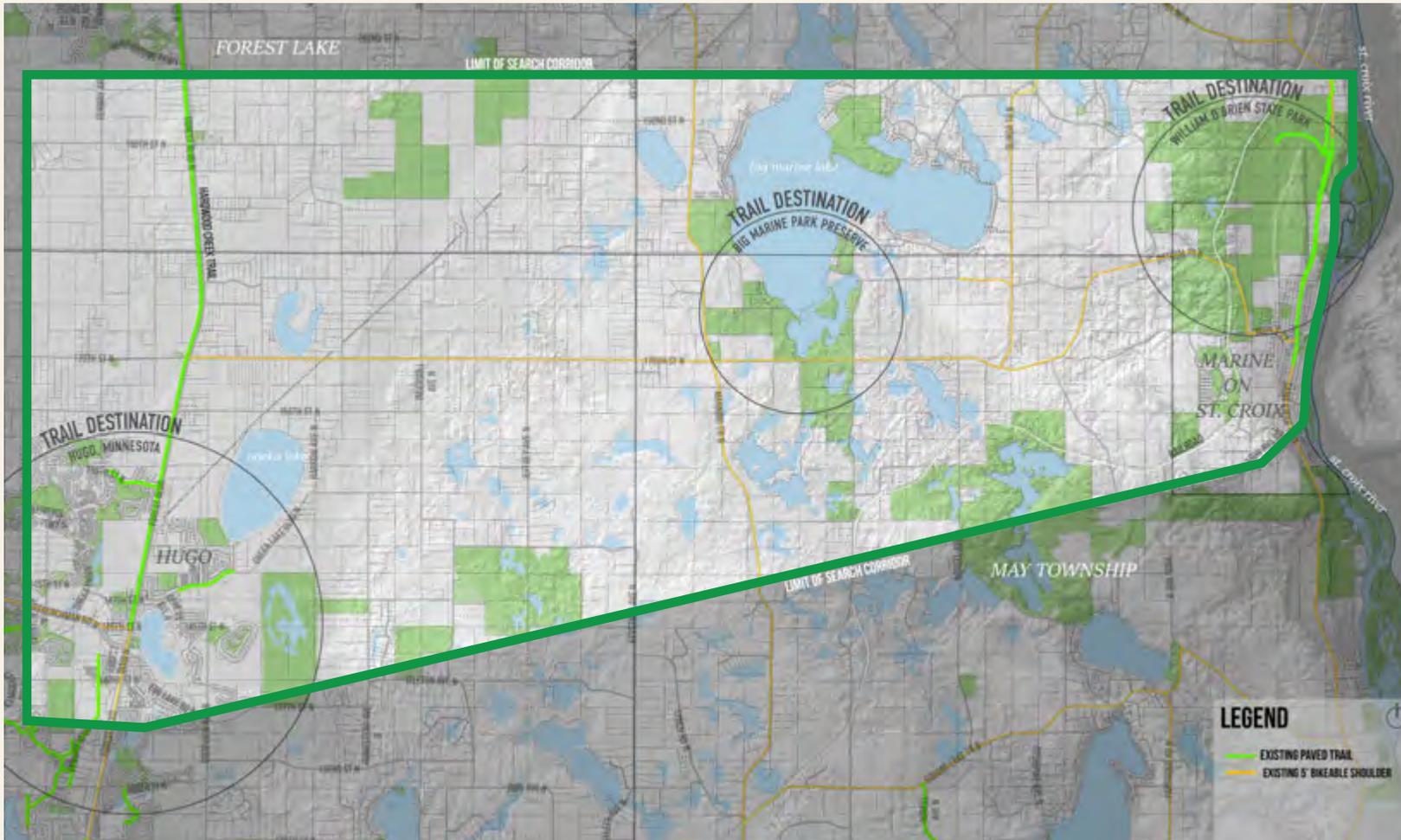


Figure 3. The Glacial Hills Regional Trail Search Corridor

Project Process

Washington County led the study in collaboration with the general public, local communities, and government agencies. Canadian National was also been a key stakeholder during the process and were involved in several coordination meetings surrounding alternatives that leveraged railroad right of way. The planning process began in early 2023 and concluded at the end of 2024 with the following general schedule.

A Project Management Team (PMT) and Technical Advisory Committee (TAC) were established for this project. The PMT included Washington County staff from different department

divisions, including Parks, Transportation, and Engineering. They offered insight on how the trail would integrate with existing and planned county infrastructure. The TAC included representatives from the City of Hugo, City of Marine on St. Croix, Metropolitan Council, MnDNR, and Carnelian Marine St. Croix Watershed District, Washington Conservation District, Hopkins Schoolhouse and Heritage Center, City of Lino Lakes, and Anoka County. They provided guidance before key milestones, including public open houses and engagement opportunities.

Zone
1

Zone
2

Zone
3

Zone
4

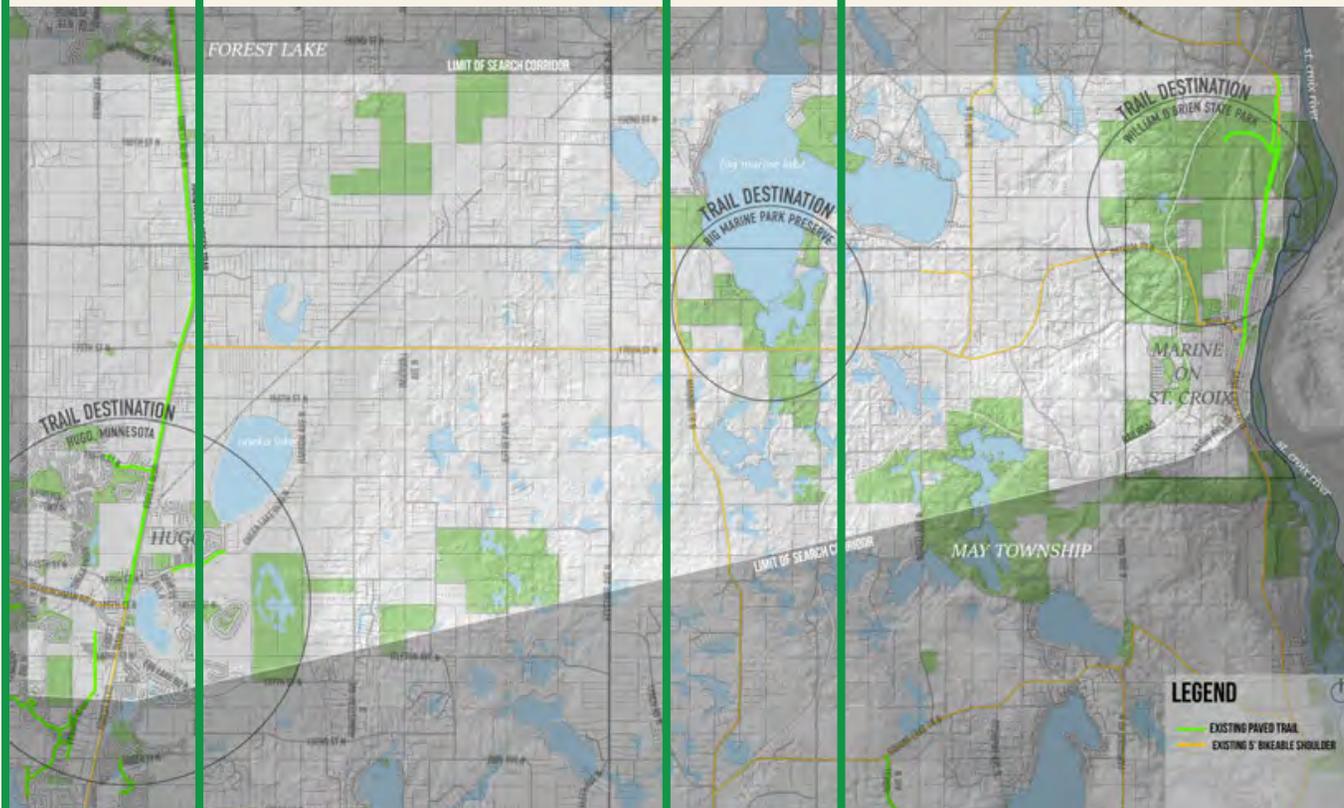


Figure 4. Diagram of Trail Corridor Zones

Trail Search Corridor

The Glacial Hills Regional Trail search corridor stretches from the western county limits in Hugo, through Big Marine County Park and on to Marine on St. Croix, and William O'Brien State Park before reaching its eastern boundary along the St. Croix River. The search corridor extends several miles north and south of County Road 4, aimed at connecting regional destinations through a scenic setting. The trail will connect to the existing Hardwood Creek Regional Trail, planned Central Greenway Regional Trail North Segment, and the planned Gateway trail extension.

Trail Corridor Zones

For purposes of this plan, the trail corridor has been divided into four planning zones, listed below, for ease of describing and discussing the unique resources and features along that portion of the trail. The four planning segments are defined as the following:

Zone 1: City of Hugo

Zone 2: West County Road 4

Zone 3: Big Marine Park Reserve

Zone 4: Marine on St. Croix

Project Goals and Objectives

The project goals, objectives, and performance measures were developed based on the insights gathered from public engagement and the input from the Technical Advisory Committee. These metrics and targets were designed to align with the priorities and distinctive features of the corridor. Once established and scrutinized, they served as the foundation for project planning and assessment.

Establishing goals, objectives, and performance measures was crucial as it provided a reference point for the project team during the planning stages and in critical decision-making processes.

A goal represents a broader, long-term achievement, while an objective is a specific, measurable step. Performance measures offer a means to gauge the extent to which these objectives are being achieved throughout the development and implementation phases.

Goal #1

Objectives

- Minimize exposure to vehicular traffic
- Minimize conflict between trail users
- Trail User Comfort
- ADA Accessibility
- Transit connections
- Opportunities for trailheads with parking
- Easy to navigate
- Clear and consistent wayfinding
- High quality trail amenities (restrooms, benches/kiosks, shade, water, etc.)



Create a safe and comfortable experience that is accessible to users of all abilities.

Goal #2



Connect users to destinations while expanding regional connectivity.

Objectives

- Tie-ins to regional/local trails and paths
- Connection to commercial areas
- Connections to park/open spaces (state, regional, local)
- Connection to historically, culturally and naturally significant sites
- Connection to education centers
- Connection to population centers

Goal #3

Objectives

- Avoid fragmenting of habitat
- Highlight natural features within corridor
- Foster stewardship of resources
- Experience of habitats



Feature and steward natural resources while promoting environmental resiliency.

Goal #4



Objectives

Trail experience welcoming to under-served populations

Trail experience is welcoming to under-served populations

Reaching underserved populations

Promote Equity and Inclusion.

Goal #5

Objectives

Publicly supported plan

Responsible implementation costs and effective use of existing resources

Funding eligibility and opportunities for implementation



Develop a trail alignment that is implementable, responsible, and supported by the community.

Project Foundational Documents

The Glacial Hills Trail Long Range Plan benefits from consulting various planning documents to gain insights and context for the search corridor. Comprehensive Plans, Bike and Pedestrian Plans, and Trail Long Range Plans for the area provide valuable context for understanding community goals and values related to transportation alternatives, multi-modal connections, and existing and future trail connections. This understanding is crucial in determining the trail alignment and design to align with local initiatives.

An essential part of the planning process involved reviewing various documents to ensure that the decision-making for the Glacial Hills Trail Long Range Plan aligns with the surrounding communities. The documents reviewed include:

Washington County 2040 Comprehensive Plan (Adopted 2019)

MOVE Washington County Bike and Ped Plan (Adopted 2021)

Washington County Big Marine Master Plan (Adopted 2010)

May Township 2040 Comprehensive Plan (Adopted 2019)

Metropolitan Council's 2040 regional parks policy plan (Adopted 2018)

City of Scandia 2040 Comprehensive Plan (Adopted 2019)

City of Hugo Comprehensive Plan (Adopted 2019)

Marine on Saint Croix Comprehensive Plan (Adopted 2019)

The plan's development was supported by a range of resources, including :

Metropolitan Council Regional Parks Equity Tool

2021 Metropolitan Council Regional Parks and Trails System Visitor Study

ESRI® Business Analyst

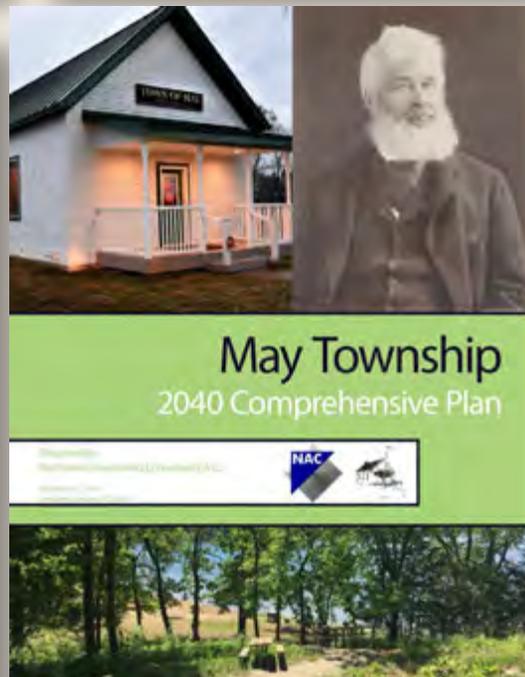
Regional Bicycle Transportation Network

Minnesota Geospatial Commons

MnDOT's Minnesota Best Practices for Pedestrian and Bicycle Safety



Figure 5. A sampling of foundational documents



Hugo, Minnesota

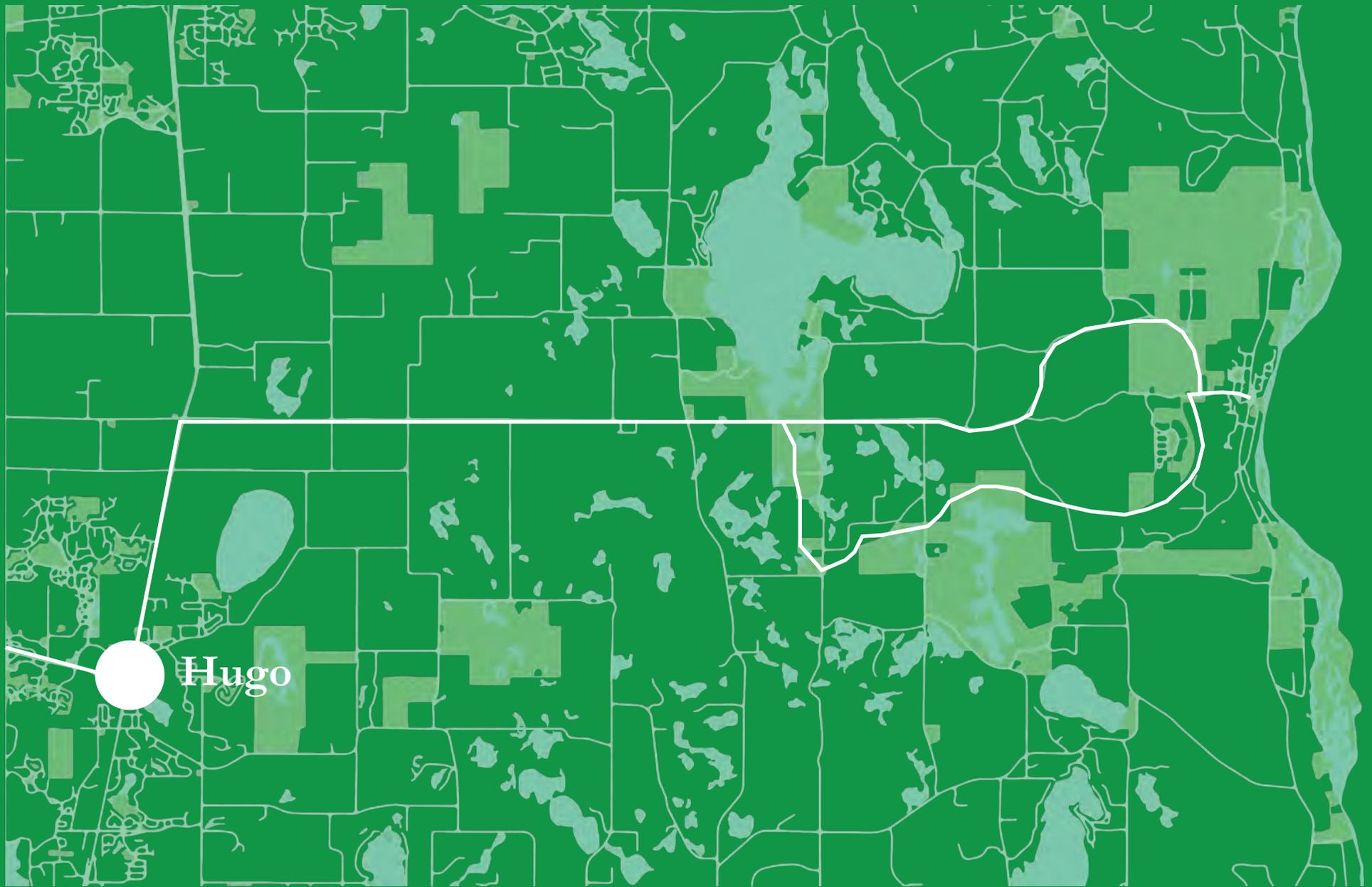
Destinations Along The Trail

Hugo, Minnesota, is a small but growing city located in Washington County, just northeast of the Twin Cities. Originally established in the 1850s, Hugo was primarily an agricultural community with strong roots in farming and logging. The city saw slow but steady growth throughout the 20th century, transitioning from a rural town to a suburban community as the Twin Cities metropolitan area expanded.

Today, Hugo is known for its family-friendly atmosphere, natural beauty, and a strong sense of community. It has become an attractive place for those seeking a balance between small-town living and easy access to the amenities of a larger urban area. The city's proximity to major highways makes it a convenient location for commuters, while its parks, lakes, and open spaces provide ample opportunities for outdoor recreation.

The trail network in Hugo is popular with locals, with the city offering a variety of trails and routes that cater to residents of all ages and abilities. The city is connected to the larger regional trail system, including the nearby Hardwood Creek Regional Trail, which runs through several communities in Washington County. This trail provides a scenic and safe route for biking, walking, and running, making it a favored choice for residents and visitors alike. With its commitment to preserving natural spaces and promoting healthy lifestyles, Hugo continues to develop its biking infrastructure, making it a welcoming destination for cycling enthusiasts.









2

Inventory & Analysis

Demand Forecast

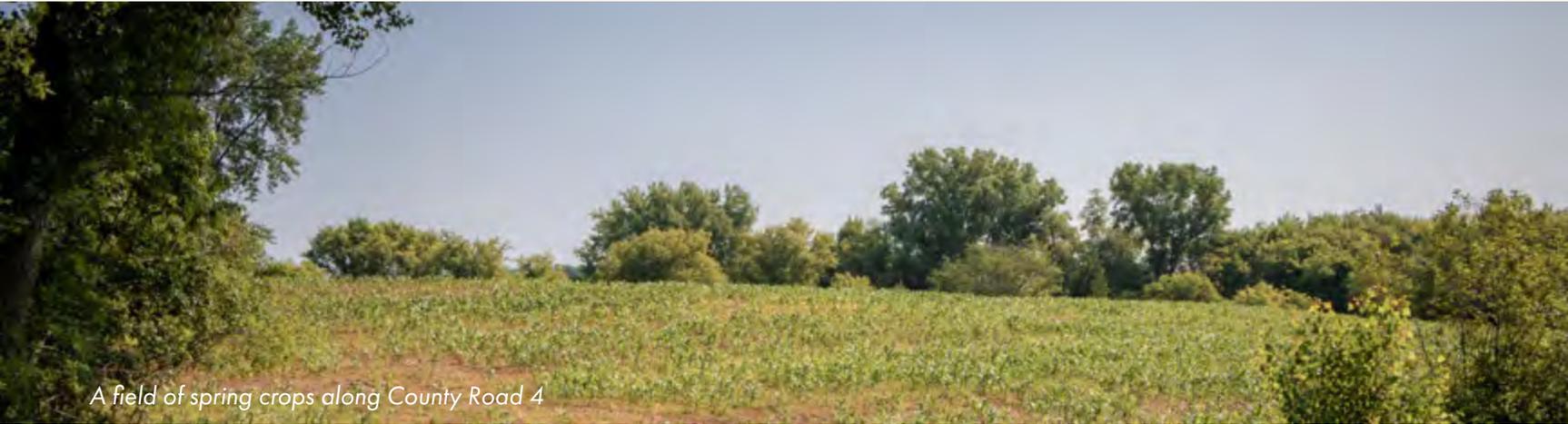
The Twin Cities Regional Park & Trail System serves the seven-county Twin Cities metro area, which is home to over three million residents. This regional park system encompasses more than 54,000 acres of parkland and reserves, features eight special recreation sites, and boasts nearly 400 miles of trails. In 2021, the Metropolitan Council estimated that there were 64.9 million visits to the Regional Parks System.

By analyzing population trends and planned trail alignments, we can evaluate how the Glacial Hills Regional Trail will integrate with the existing trail network. The Glacial Hills Regional Trail Search Corridor connects to several established

trail alignments. Key connections within the search corridor include the Hardwood Creek Regional Trail, Central Anoka Regional Trail, and Bunker Chain of Lakes Regional Trails in Anoka County, along with the future MnDNR Gateway Trail Extension and the future northern segment of the Central Greenway Regional Trail. These connections further enhance the potential reach of a regional trail in the area.

Within the search corridor, the population is projected to grow from 18,863 (based on the 2020 census) to 30,964 by 2040, representing a growth rate of 64.2%. This rate is significantly higher than the countywide average of 16.7%,

◀ *A wetland full of cattails outside of Marine on Saint Croix*



A field of spring crops along County Road 4

with the search corridor expected to accommodate 12,101 of the 44,577 new residents in Washington County.

This surge in population underscores the pressing need for enhanced and expanded trail infrastructure in the area. Improved trails not only facilitate safe and enjoyable recreational opportunities for residents but also encourage active transportation options, such as walking and cycling. As more people move into the region, the demand for accessible and well-maintained trails will likely rise, highlighting the importance of planning and investment in such infrastructures to support community well-being, promote an active lifestyle, and ensure sustainable growth in the area.

Corridor Context + Resource Review

The Glacial Hills Regional Trail corridor holds significant historical and environmental importance. Located in an area with a rich history of early settlement and development in Minnesota, it was once home to Native American tribes and later became sites of European-American settlement and trade. The trail will provide a link to the past, allowing visitors to experience and appreciate the historical and cultural heritage of the region, while also highlighting the important connection between the land, the environment, and the people who have inhabited and shaped this area over time.

In addition to its historical significance, the trail is also environmentally important, showcasing the natural beauty and ecological diversity of the region. Connecting visitors to surrounding natural environments, including wetlands, forests, and prairies, the trail and park play a crucial role in promoting environmental conserva-

tion and education. They offer important habitat for wildlife and contribute to the overall health and resilience of the local ecosystem. By preserving and providing access to these natural areas, the trail and Big Marine Park Reserve enable visitors to appreciate and learn about the unique natural features and ecological processes of the area.

Data Sources that were inventoried during the analysis phase:

Minnesota Land Cover Classification System (MLCCS)

DNR NHIS

Wetland Management Classifications

Anonymized Strava Data

AADT Traffic Volumes

Freight Routes

Existing and Proposed Bike Trails

Proposed and Existing Land Use

State Grant in Aid Snowmobile Routes

Presettlement Vegetation



Non-Automobile Routes & Trails

Understanding the existing non-automobile infrastructure was crucial during route alternative development to ensure that we were leveraging and considerate of existing infrastructure. The graphic to the right covers a diverse range of transportation and recreational facilities, including:

Hardwood Creek Regional Trail that connects into the Sunrise Regional Trail up to Stacy and Wyoming, MN.

Connections westward to Central Anoka Regional Trail and Bunker Chain of Lakes Regional Trails

City of Hugo existing and planned local bike trail and sidewalk network

Existing biking and hiking trails in Big Marine Park Reserve and William O'Brien State Park

The planned Big Marine Park Reserve and Keystone Wildlife Management Area expansion in the Kelley Farms property.

The planned Gateway Trail extension through William O'Brien State Park

National Park Service St. Croix National Scenic Riverway

Review of equestrian trail network, STAR network, and snowmobile trails

This in-depth analysis provided valuable insights into the connectivity, accessibility, and potential impact of these existing and planned trails on the local communities, outdoor recreational opportunities, and the natural environment. Additionally, it helped identify opportunities for enhancing the overall transportation network, promoting outdoor recreation, and preserving the ecological integrity of the region.

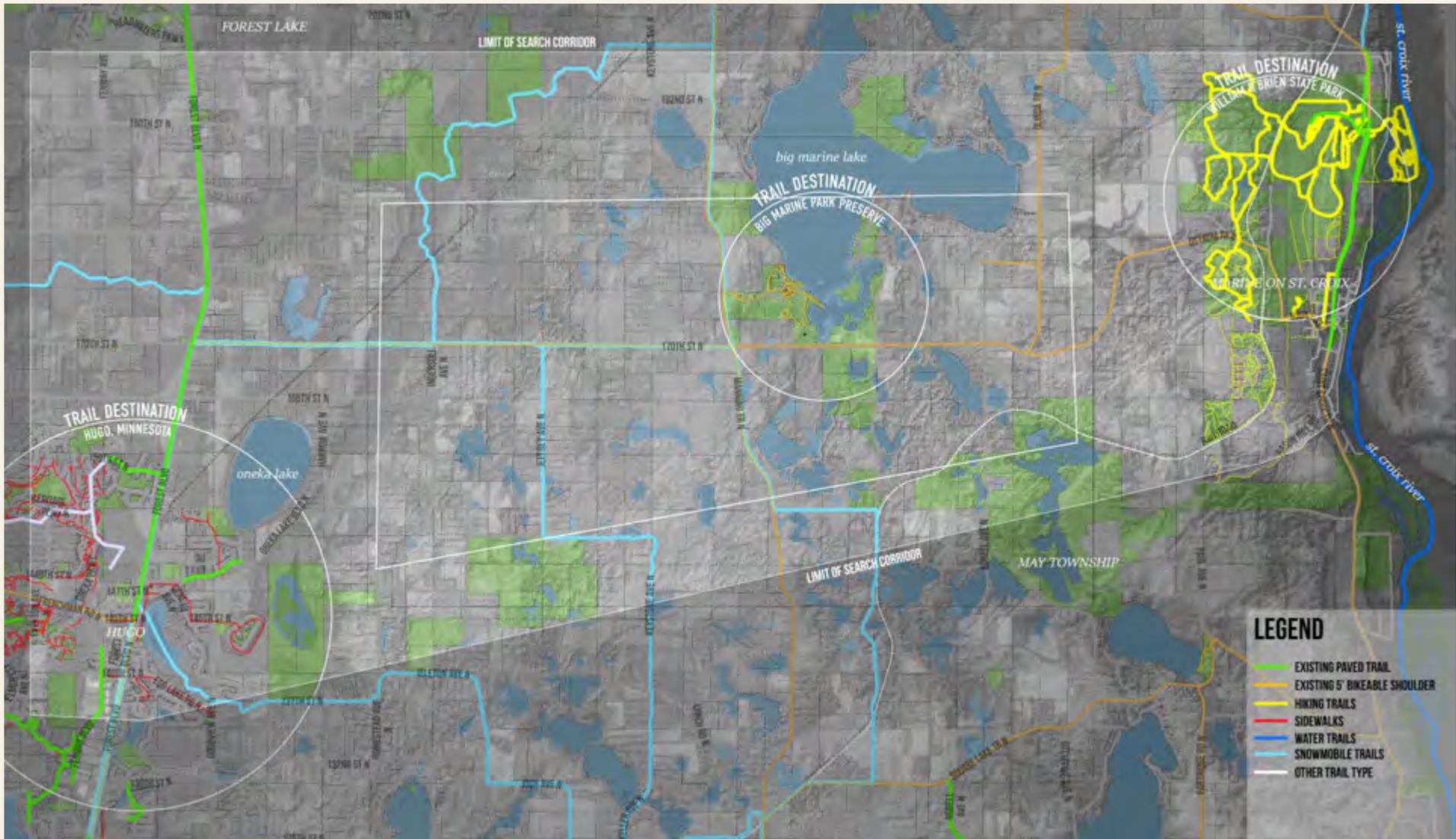


Figure 6. Non-Automobile Routes and Trails

Vehicular Traffic Patterns

The trail planning study was significantly influenced by the six major roadways that run through the trail search corridor, including:

Frenchman Rd – This serves as a minor connector between Interstate 94 and the city of Hugo. There is an existing bike facility on the north side of the road that already meets regional trail standards.

Forest Lake Blvd (Hwy 61) - This minor expander connects the north-south route between the communities of White Bear, Hugo, and Forest Lake. The existing Hardwood Creek Regional Trail follows the corridor in a vacated railroad bed.

170th St N (CR 4) - This minor connector links Hwy 61, Manning Tr, and Highway 95. It is worth noting that traffic volumes moving east-to-west drop significantly at the intersection of Olinda Trail with most traffic heading north from this junction.

The right-of-way varies between 100' and 150' with enough room to accommodate a regional trail. Overhead utilities and wetlands present challenges. County Road 4 also serves as a freight route receiving frequent traffic that services nearby quarries. A planned interchange at Interstate 35 will increase volumes on CR 4 between Hwy 61 and the interstate.

Manning Tr N (CR 16) - This minor connector links Stillwater, Big Marine Park Reserve, and Scandia.

Olinda Tr N (CR 3) - This minor connector links CR 4 and Scandia.

Highway 95 - This minor connector links Stillwater, Marine on St. Croix, and William O'Brien State Park.

Several other township roads were analyzed during the planning study, but limited right-of-way precluded them from further consideration.

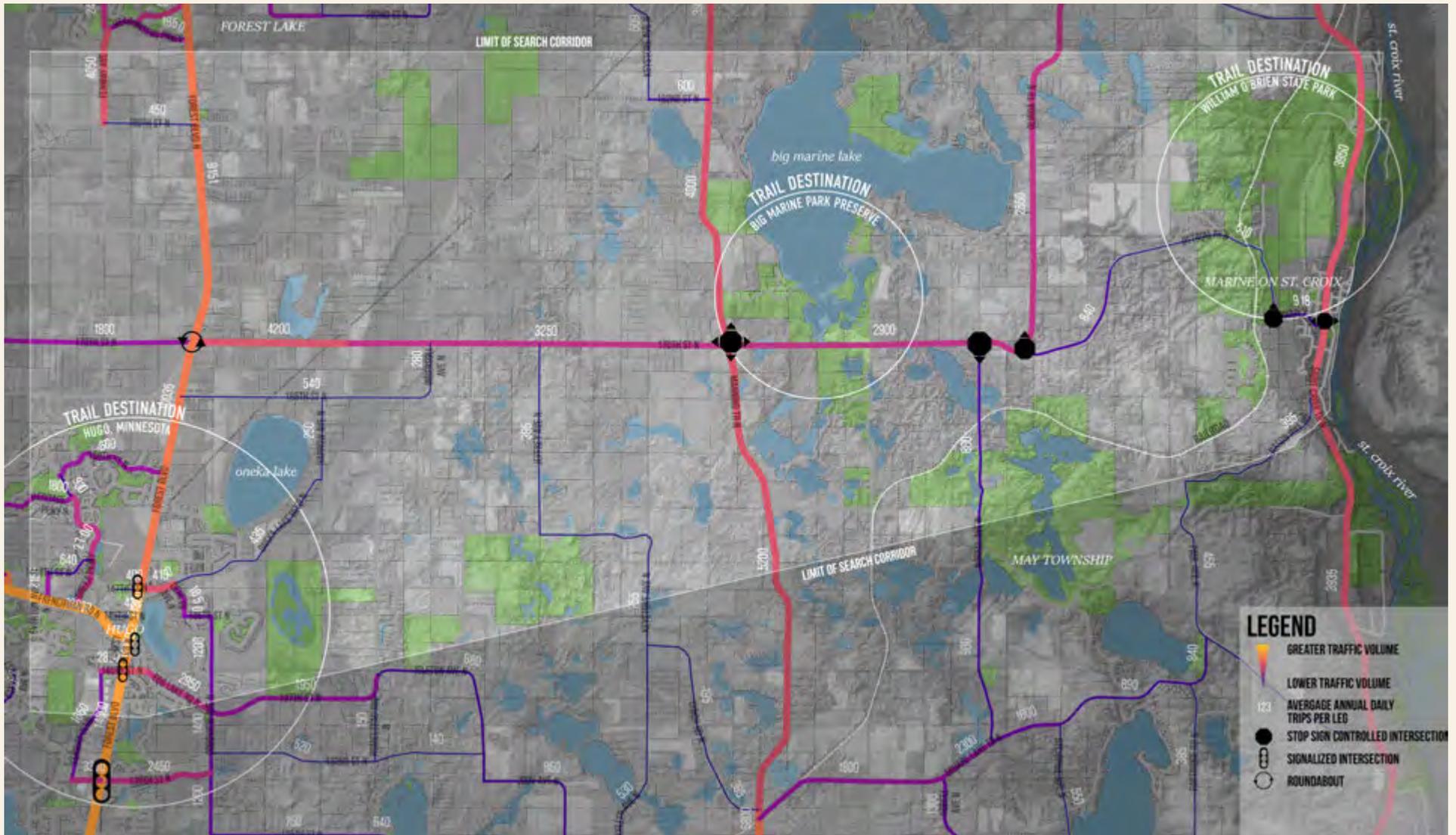


Figure 7. Vehicular Traffic Patterns

Cycling Heat Map

By analyzing anonymized cell phone data through Strava and RidewithGPS.com, the project team was able to gain valuable insights into the existing cycling use in the trail search corridor, revealing popular routes and peak usage times.

The existing cycling use in the trail search corridor indicates a strong demand for cycling infrastructure and underscores the importance of accommodating and promoting non-automobile forms of transportation. The map to the right also illustrates existing on street use. Additionally, intercept surveys revealed that many cyclists prefer lower volume roads, such as the route between Stillwater and Marine on St. Croix, avoiding Highway 95. Furthermore, we anticipate significant cycling traffic from the end of the Gateway State Trail at Pine Point Park up to Square Lake and then onward to Marine on St. Croix via Norrell Ave N.

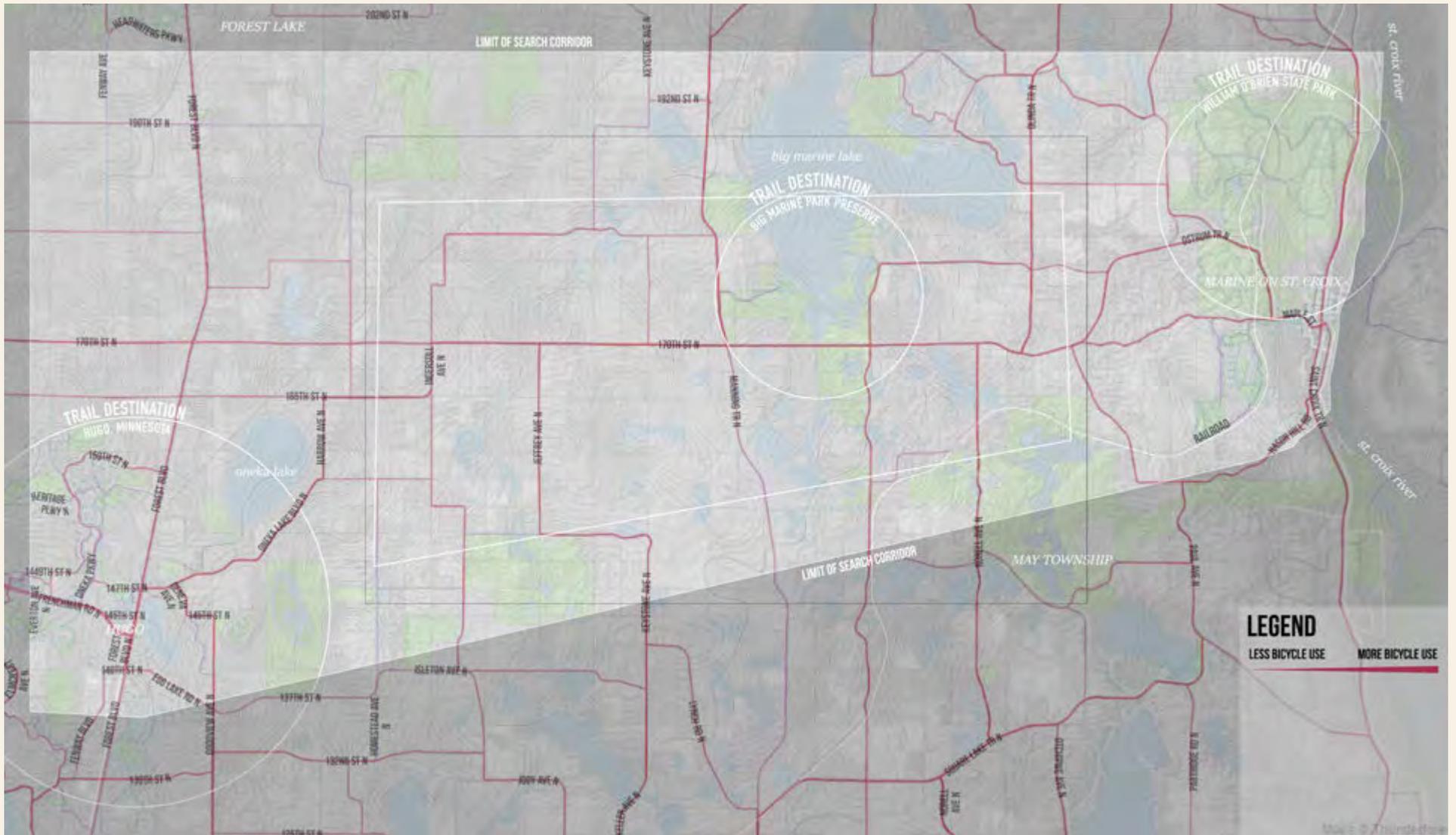


Figure 8. Cycling Heat Map

Land Use

The land use within the search corridor is mainly characterized by undeveloped areas and agricultural land, with the exception of population centers around the cities of Hugo and Marine on St. Croix. In addition, there is a patchwork of single-family residential areas that necessitated careful consideration when siting the trail in close proximity to homes. The graphic to the right shows land use colors that emphasize existing single family housing. A top priority identified during the planning process was to minimize impacts on existing vegetation near homes, ensuring that the trail development aligns with the surrounding residential landscape in a sensitive and thoughtful manner.

Future Land Use

The proposed land within the search corridor shows expansion of residential housing around existing population centers. This provides an opportunity to partner with private land developers to build out future trail segments. There is also a mixed use district planned in Hugo at the intersection of County Road 4 and Highway 61. Linking future trail facilities to this district will promote future redevelopment and connect residents to recreational amenities.

Public Lands

Trails serve as the crucial link between parks and natural resource amenities. Trail planning often involves carefully integrating a patchwork of public lands to create a cohesive trail segment. Fortunately, the Glacial Hills Regional Trail search corridor boasts an abundance of high-quality public lands, offering trail users a range of scenic settings to explore. Some of the more notable public lands include William O'Brien State Park, Big Marine Park Reserve, Keystone Woods Wildlife Management Area, and neighborhood parks in the cities of Hugo and Marine on St. Croix. The planned phased expansion of Big Marine Park Reserve will also increase public lands in the center of the search corridor.

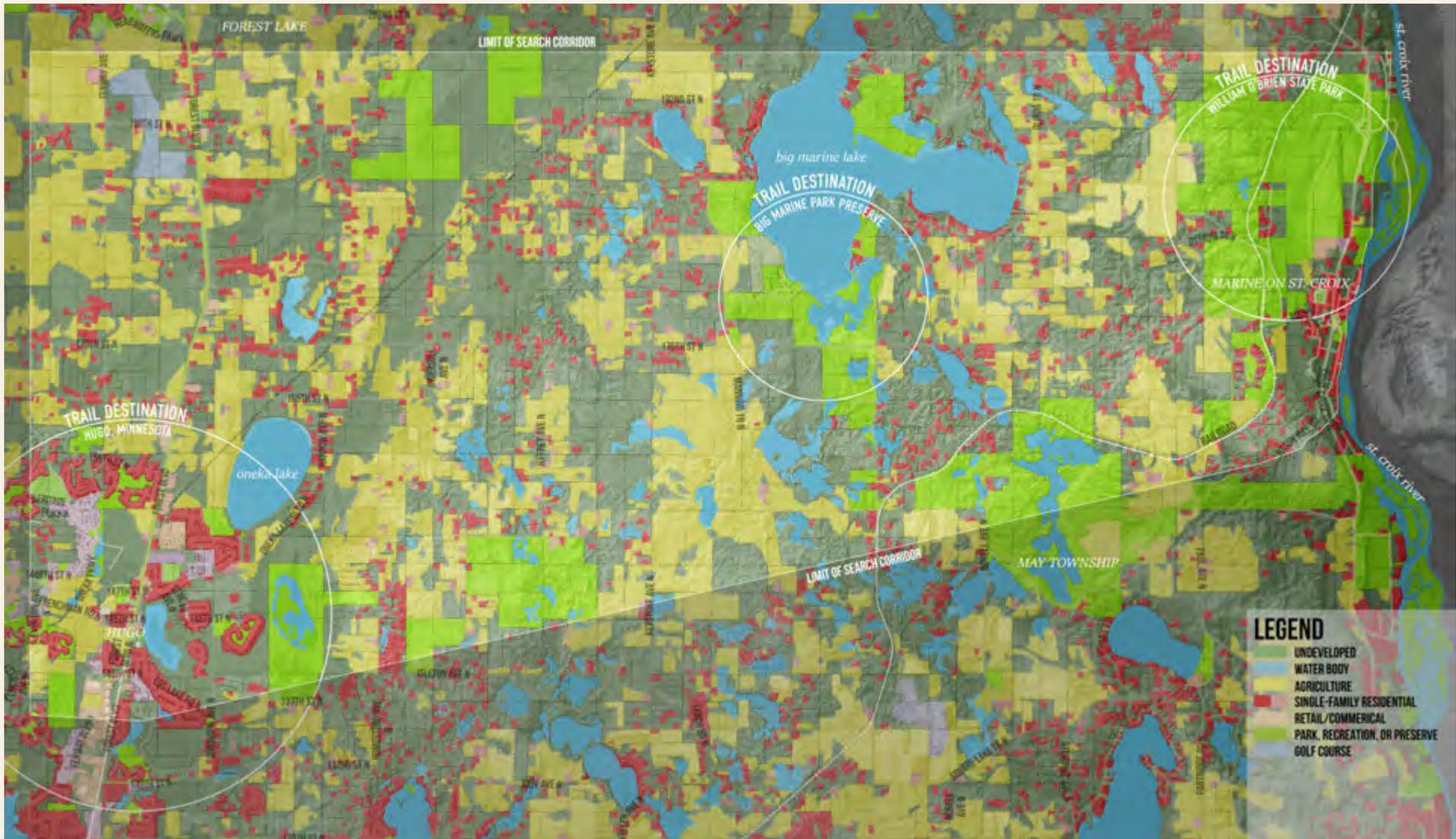


Figure 9. Land Use Analysis

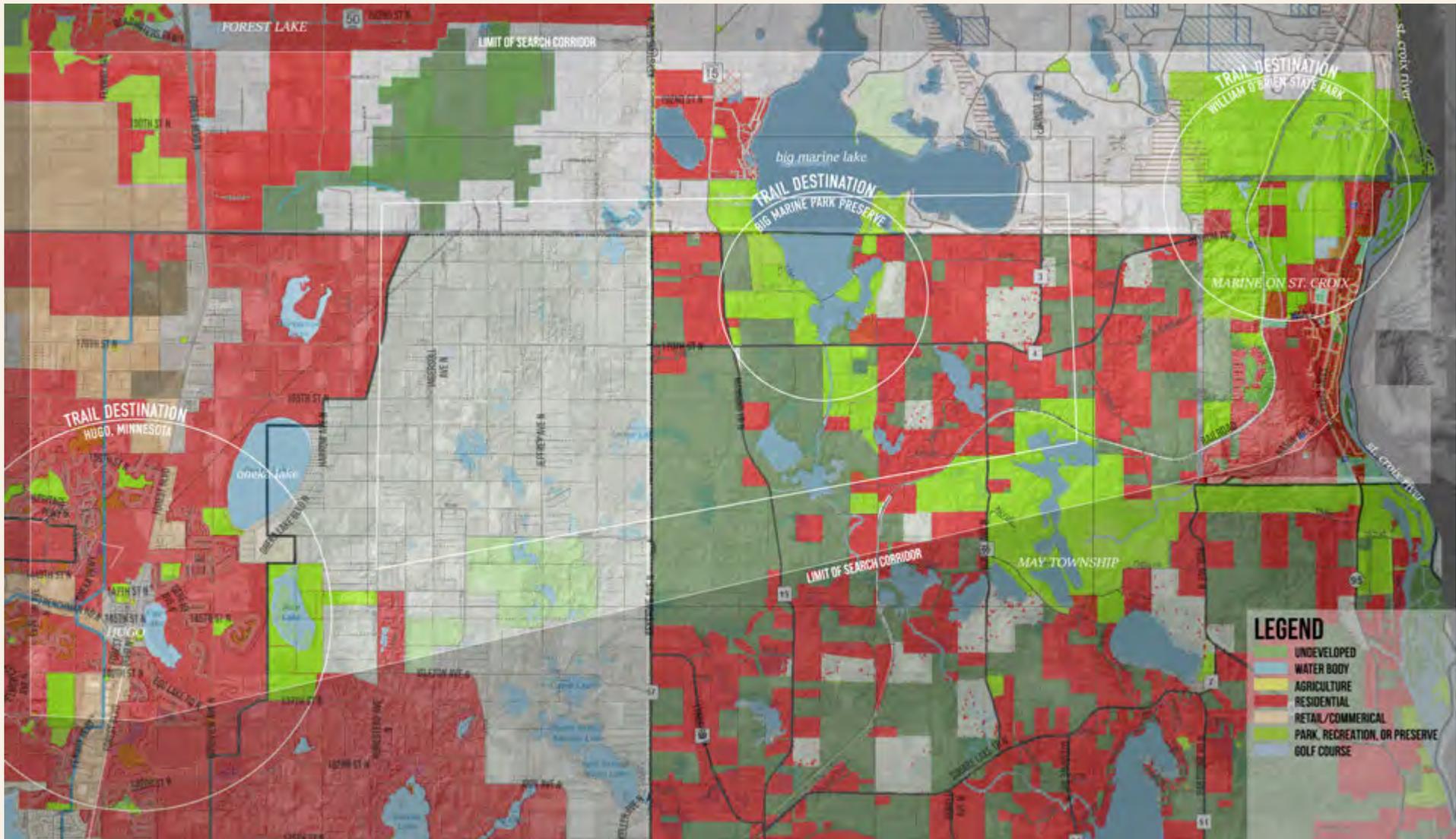


Figure 10. Future Land Use Analysis

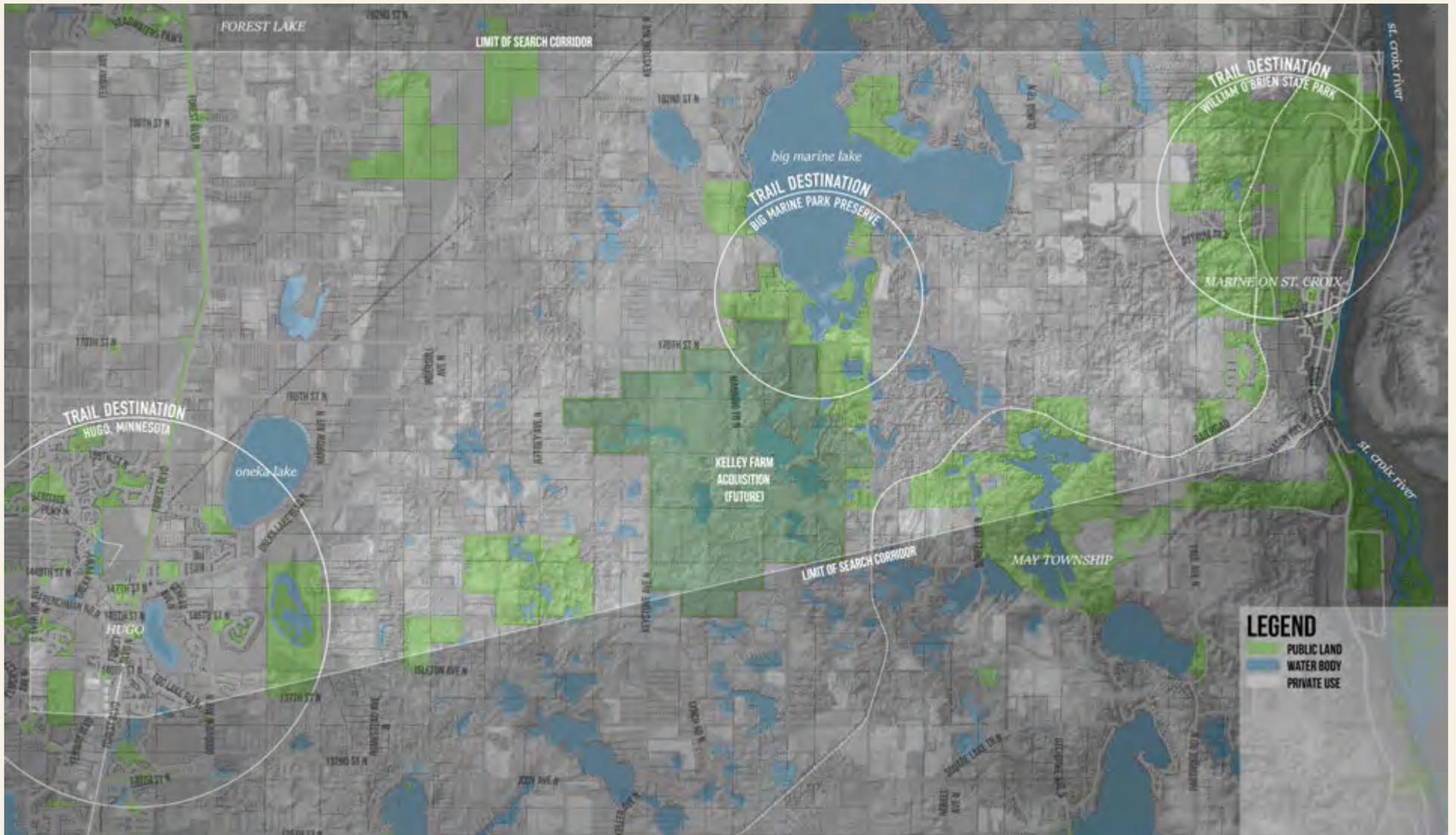


Figure 11. Public Land Analysis

Population Density

The trail search area encompasses the cities of Hugo, Forest Lake, Scandia, Marine on St. Croix, and May Township. The objective of the trail is to connect the population centers of Hugo and Marine on St. Croix while also providing access to recreational amenities and destinations for residents along the entire corridor. Over the next 10 years, Hugo's population is expected to increase by 5% annually from 15,000 residents to 17,000 residents. Forest Lake is projected to grow by 3% over the next 10 years, increasing from 20,000 residents to 21,700 residents. Marine on St. Croix, currently home to 670 residents, is expected to experience a 1% annual growth rate. May Township, with 2,670 residents, is expected to experience a .57% annual growth rate.

Amenities + Destinations

The trail planning effort aimed to connect population centers with recreational and natural resources. When evaluating routes, the project team carefully considered alternatives that would connect schools, job centers, and commercial districts. By prioritizing these destinations, we aimed to provide trail users with amenities such as hospitality, grocery, and dining opportunities, as well as safer routes to school and convenient commuter routes.

William O'Brien State Park and Big Marine Park Reserve offer camping and recreational amenities, as well as significant natural resources. These parks will serve as launching points for trail users and major destinations for those living along the corridor.

With designation and management under the Wild and Scenic River Act, the St. Croix River acts a significant destination on the east edge of the corridor.

Shade Availability

Shade is a crucial factor to consider during trail planning and was a recurring concern expressed by the communities reached during the engagement process. A lack of shade along a trail can lead to discomfort for users, especially during the summer, and may even pose a safety hazard. When assessing routes along roadways, it's important to make an effort to position the trail outside of clear zones, allowing for the planting of trees on both sides of the trail. This not only enhances the aesthetics of the trail but also provides much-needed shade for users. With the ongoing impact of a warming climate, the importance of this topic will only continue to grow.

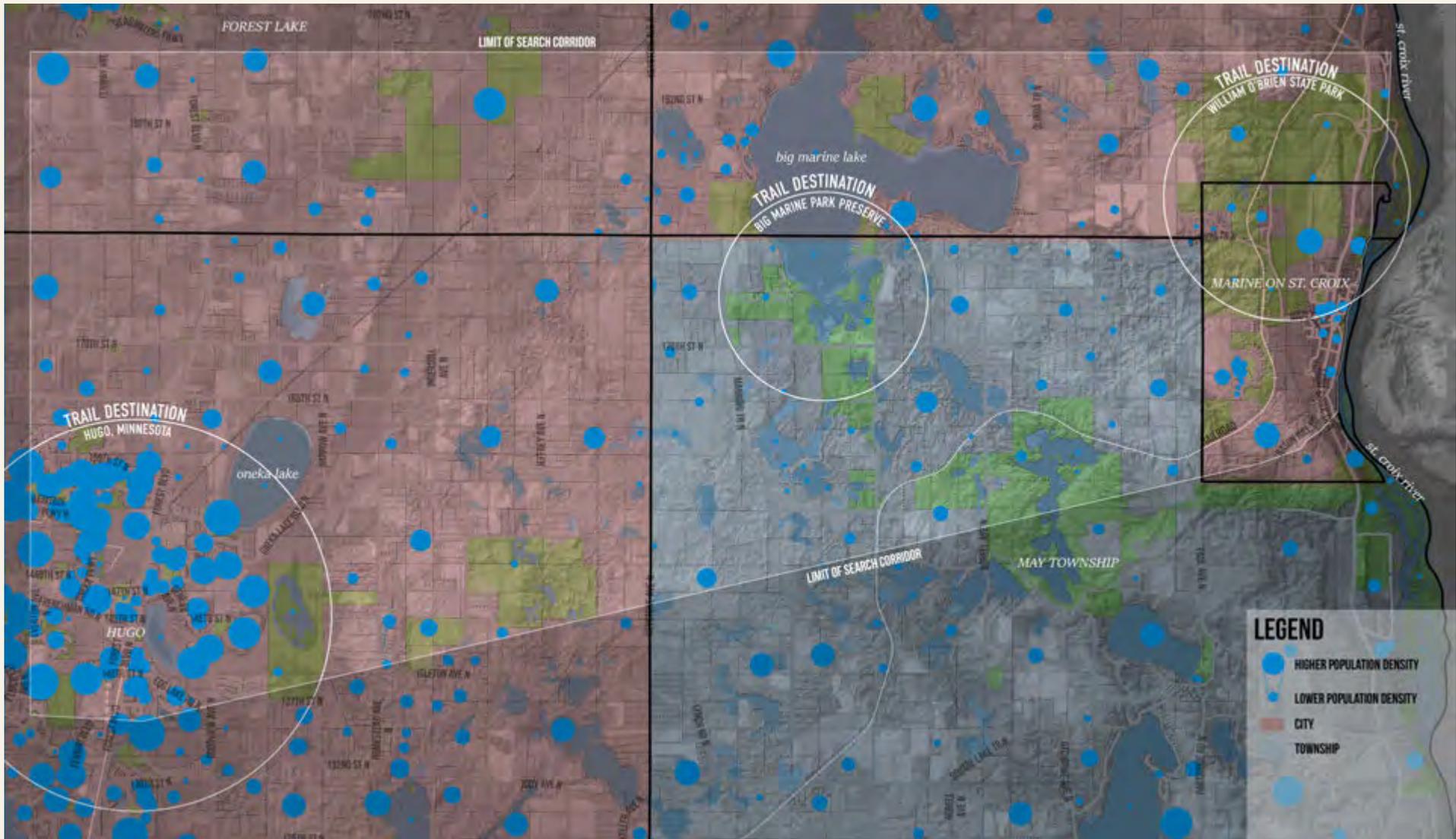


Figure 12. Future Land Use Analysis

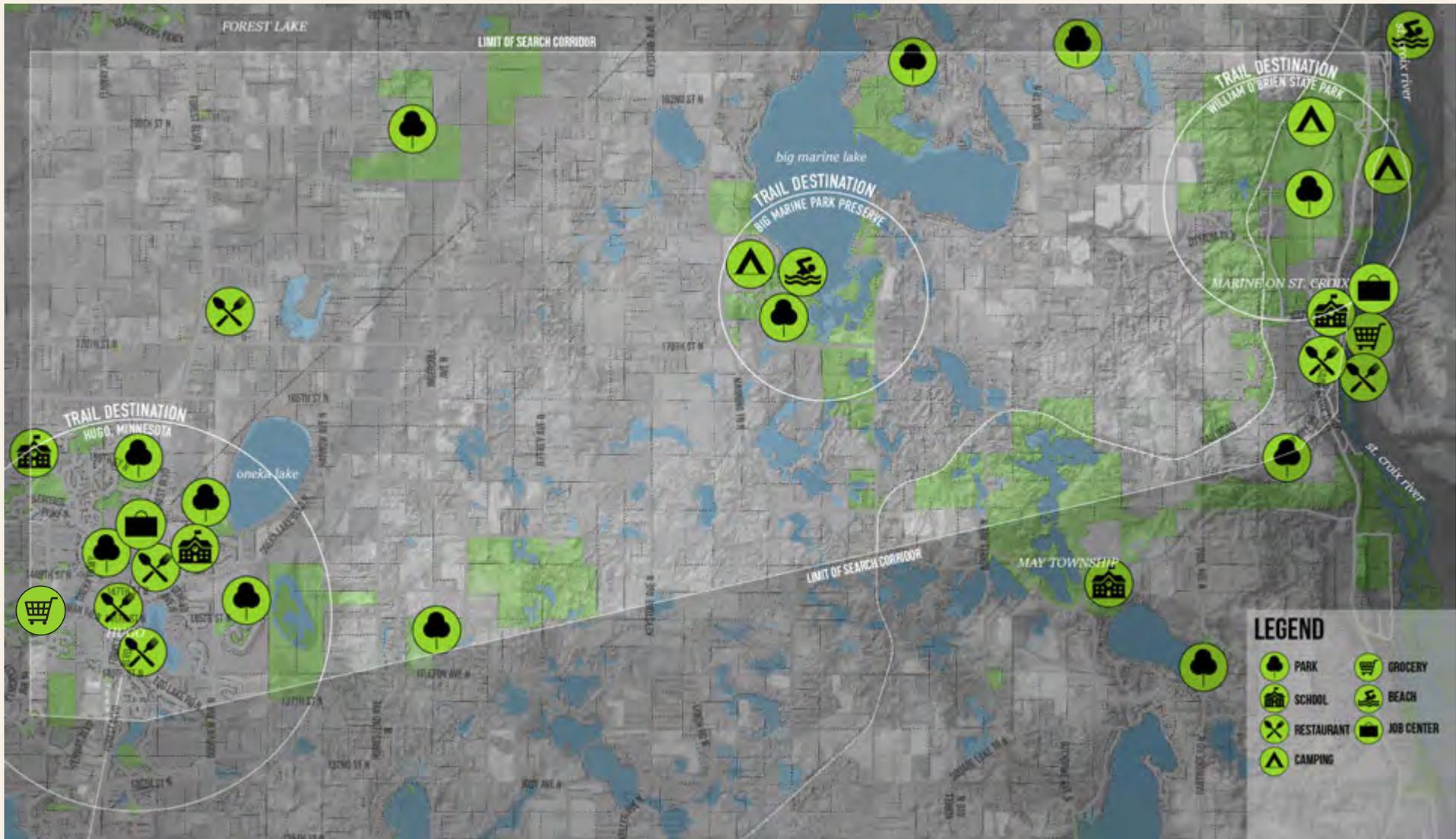


Figure 13. Amenities & Destinations Analysis

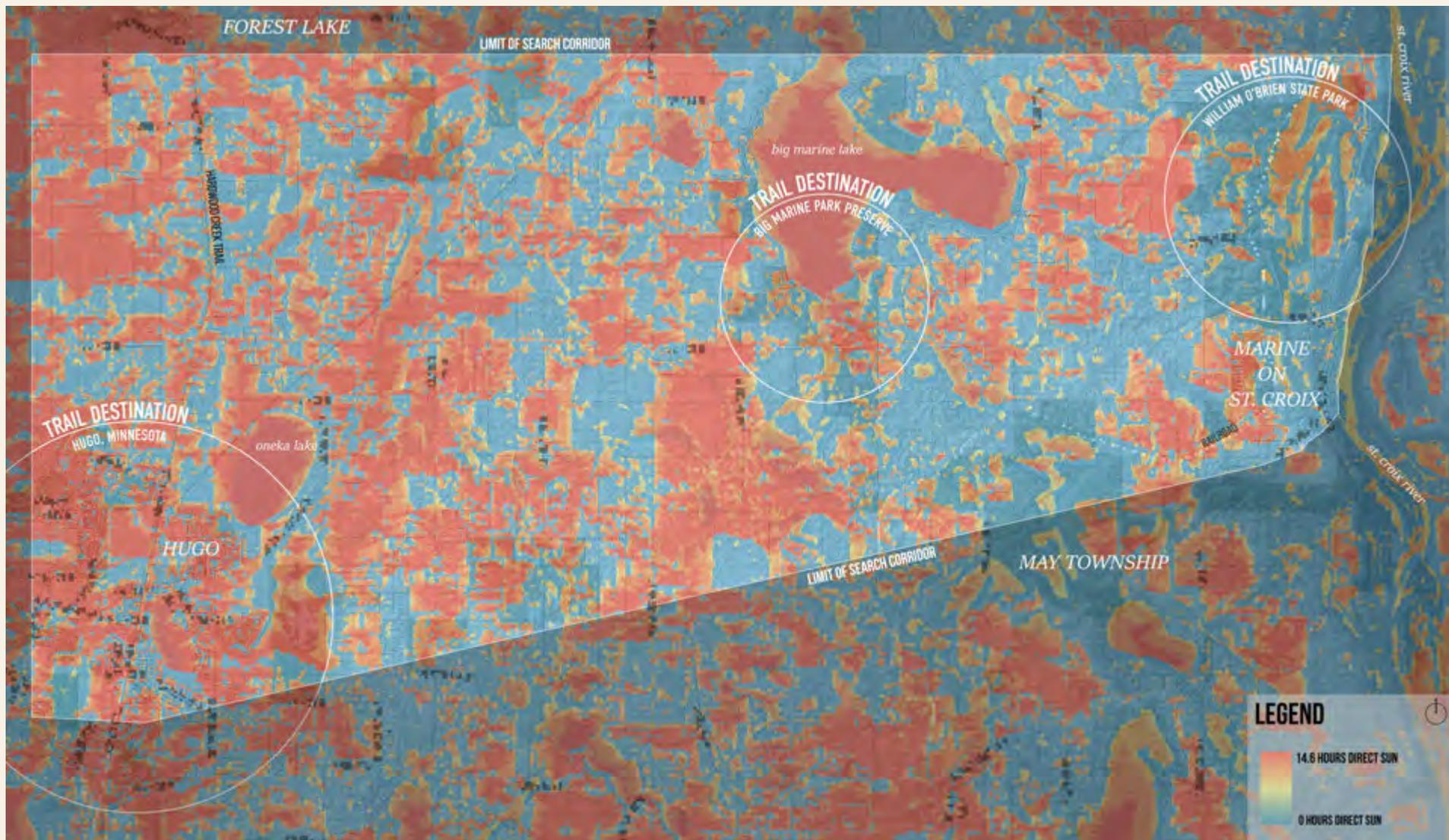


Figure 14. Sun Exposure Analysis

Land Cover

The Minnesota Land Cover Classification System (MLCCS) identifies the corridor as predominantly cultivated and urbanized, transitioning towards more forested woodlands and vegetated areas to the east. The area is rich with water resources, with lakes and ponds speckling the landscape. Hardwood Creek, a prominent stream that runs east of Hugo, and a large complex of wetlands surround Big Marine Lake.

Due to the prominence of water in the corridor, wetland mitigation strategies such as boardwalks will be necessary.

Wetlands are governed by the Wetland Conservation Act (WCA) and regulated by local government organizations. The WCA enforces a no-net loss protection rule for Minnesota's wetlands. It requires that anyone proposing to fill, drain, or excavate a wetland must first try to avoid wetland impacts at all costs. If avoidance is impossible, the second step is to minimize those impacts and finally, replacement is required for any unavoidable wetland excavations, fills, or drainage. Any activities in the wetland must undergo an application and review process before obtaining a permit.

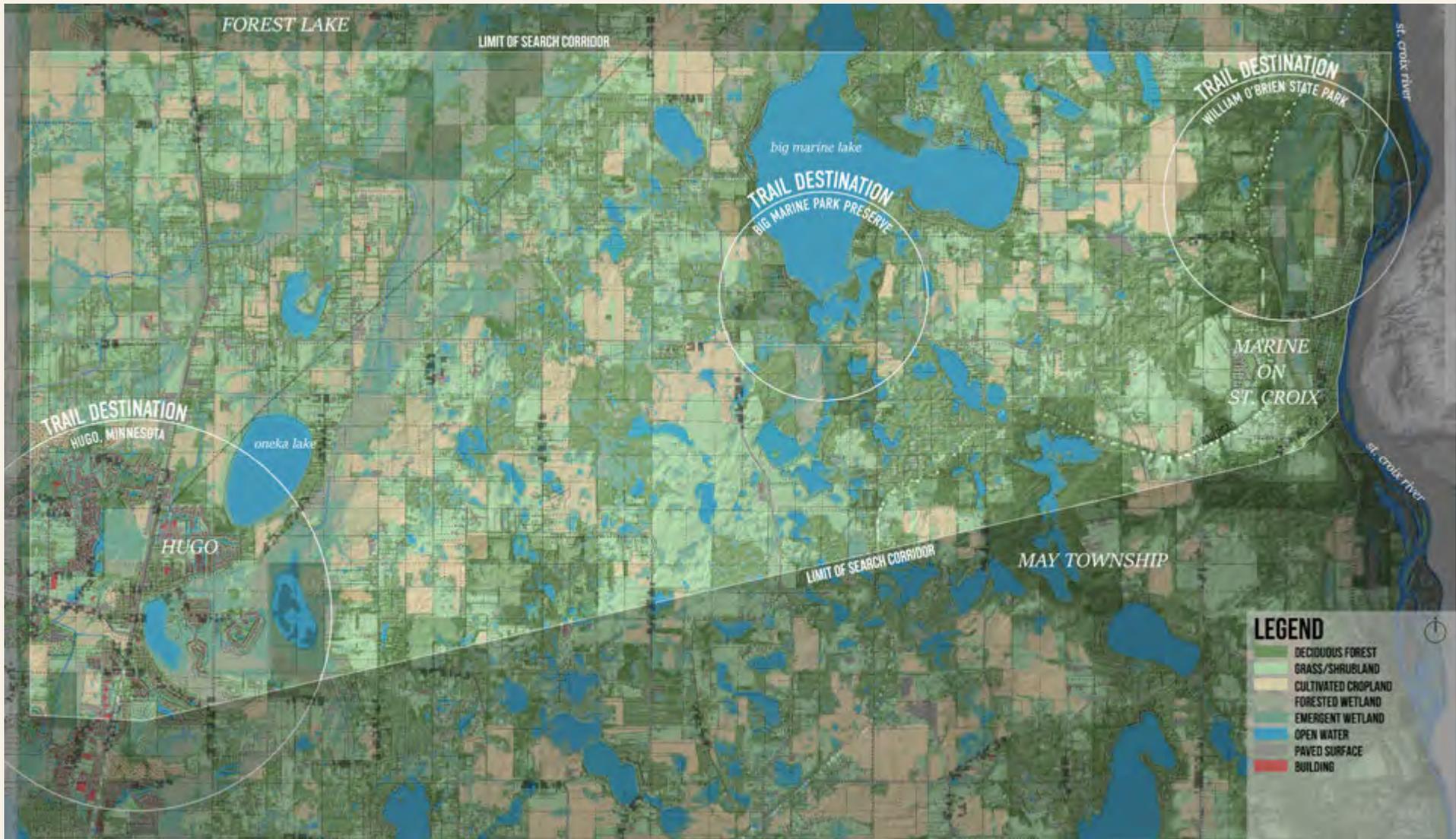


Figure 15. Land Cover Analysis

Pre-European Contact Vegetation

Before European contact, this area was mainly characterized by oak barrens and aspen in upland areas, along with a mix of hardwood forests. There were also pockets of wet prairie and coniferous bogs in low-lying areas. Along the banks of the St. Croix, there were undoubtedly hardwood pine forests that were logged around the turn of the century.

Washington County has a long agricultural history, and few of those

forests were spared the detrimental effects of cattle grazing. Many of the oak barrens have been cleared for agricultural production. Although much of the corridor has been impacted by human development, the trail corridor intersects publicly owned forests and associated streams, rivers, and wetlands that support a diversity of wildlife.

Sensitive Ecological Areas

The trail search corridor encompasses a rich mosaic of natural resources that required careful consideration during the planning process. The project team analyzed detailed wetland data provided by the watershed districts and factored in buffer setback requirements. Additionally, the project team took into account the priority areas identified by the County Soil and Water Conservation District, as well as the information from MnDNR's Natural Heritage Information System. Trail

alignments were designed to avoid areas with threatened or endangered species whenever possible. However, further investigation will be needed during the preliminary design phase around Quant Ave in Marine on St. Croix. Important wildlife observed within the corridor include Blanding's turtle (*Emydoidea blandingii*), the red-shouldered hawk (*Buteo lineatus*), and sandhill crane (*Grus canadensis*).

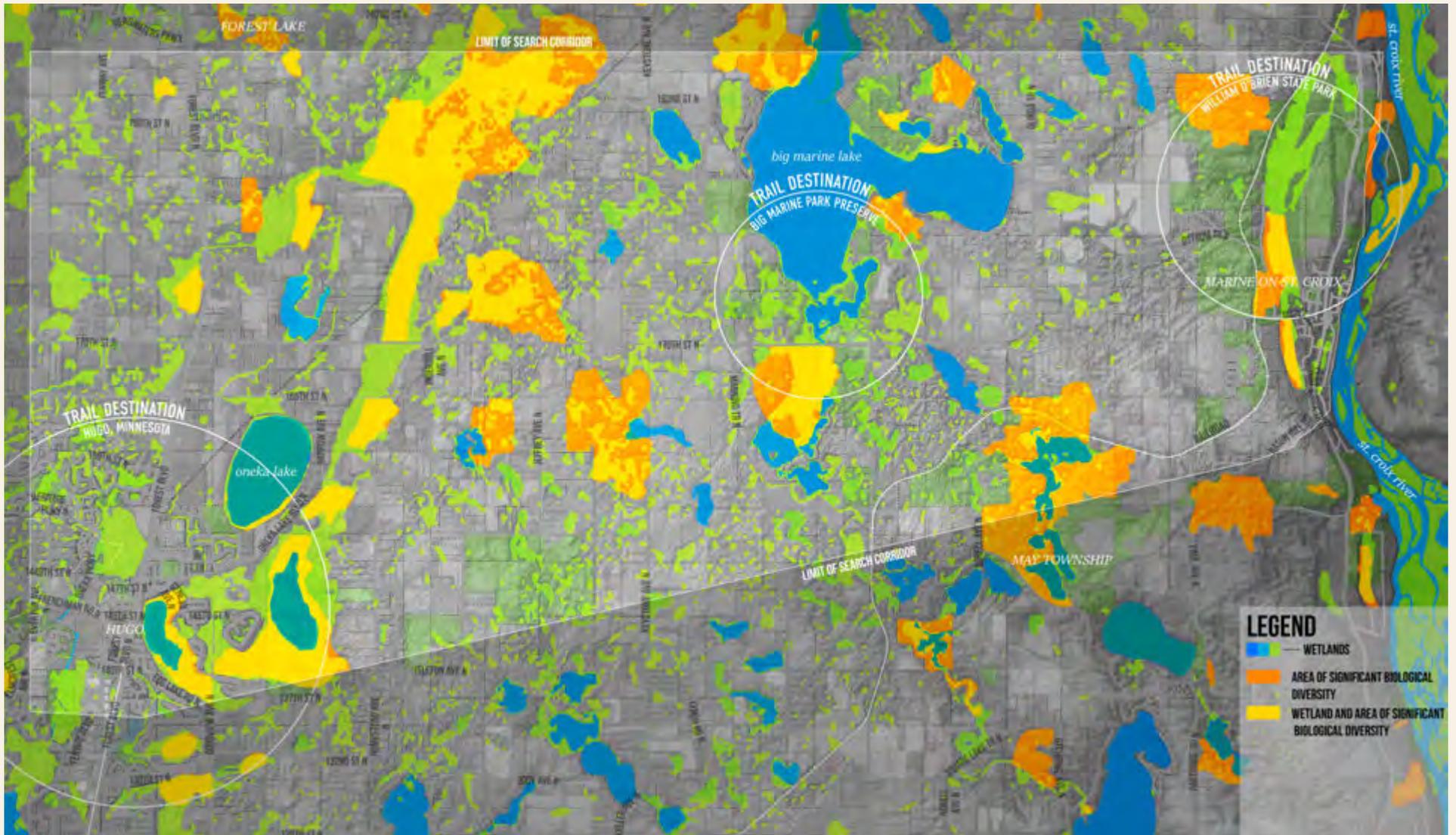


Figure 17. Sensitive Ecological Area Analysis

Slope + Topography

Ensuring that trail segments feature accessible slopes is essential for creating an inclusive experience for all users. The majority of the trail corridor is relatively flat, presenting few topographic challenges. Following road right-of-ways or railroad grades provides moderate slopes that necessitate minimal regrading. However, there are segments along County Road 4 with steep embankments that will require slope flattening techniques, such as retaining walls or elevated structures. The most challenging section of the trail corridor is navigating the descent into the St. Croix River valley at the eastern end of the corridor.

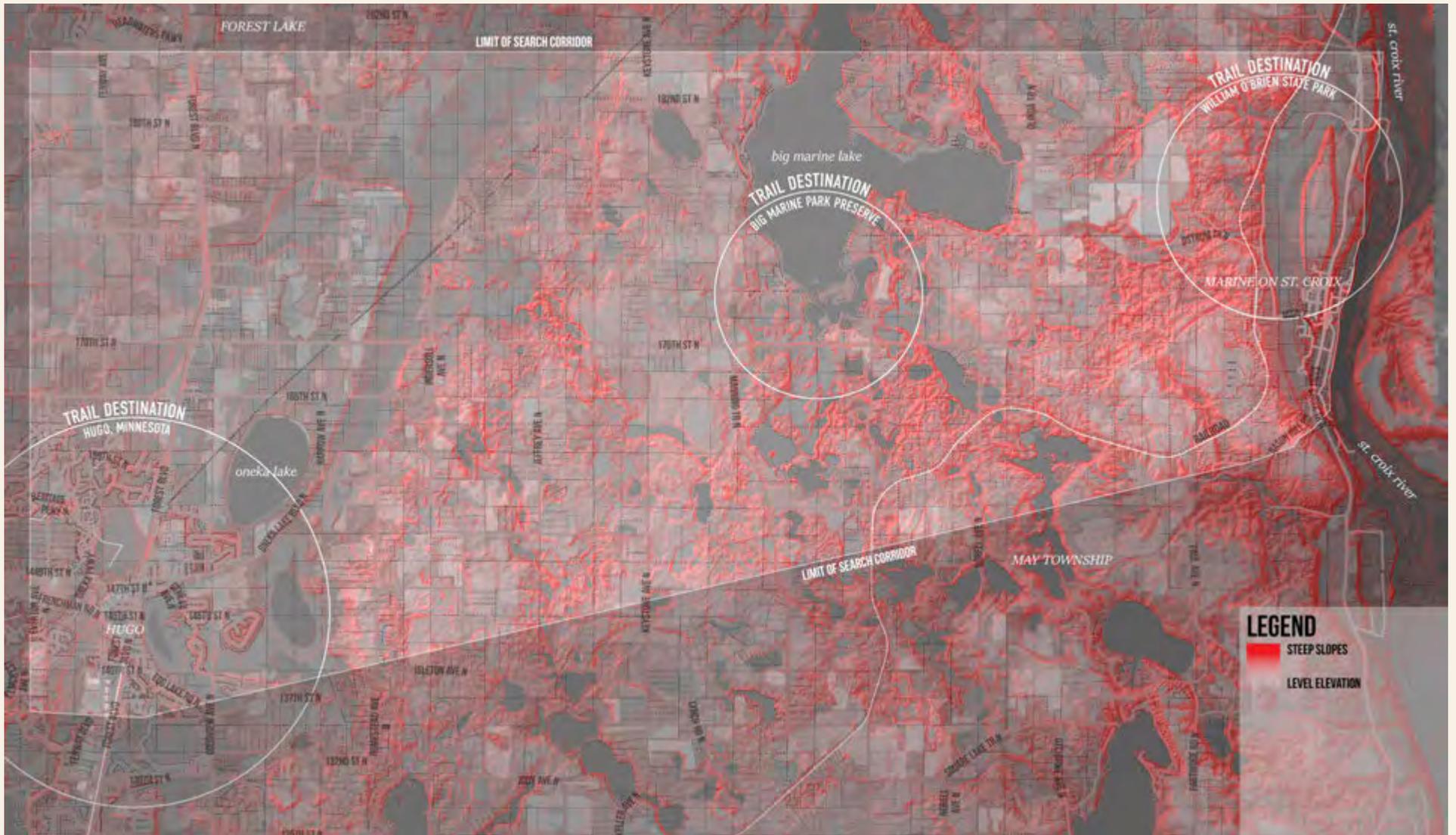


Figure 18. Topography Analysis



Demographics

The project team evaluated the following metrics throughout the route selection process:

Proximity to organizations serving underrepresented groups

Potential for interpretative features centered on underrepresented groups

Potential for event spaces along the corridor

Connections to senior housing

Affordable housing within 1/4 mile of the corridor

Trail connections to neighborhoods with young children

Transportation insecurity percentile rank

Percentage of Black, Indigenous, and People of Color (BIPOC) people living within 1/2 mile of the corridor

Within the search corridor, population is anticipated to grow from 18,863 (2020

census) to 30,964 (2040 projection) over the next 20 years. This 64.2% growth rate is significantly greater than the countywide average of 16.7%, with the search corridor projected to absorb 12,101 of the 44,577 new Washington County residents. The anticipated development in this area provides an opportunity to integrate portions of the trail into new neighborhoods as they are built, while ensuring non-automobile options for transportation and recreation are available to new and existing residents.

These census tracts within the search corridor have higher percentages of populations than Washington County as a whole:

Tract 701.06 (southern Forest Lake): Hispanic Latino people, multi-racial people, people under the age of 17

Tract 702.03 (northern Hugo): cost-burdened people, people living with a disability, people under the age of 17



Tract 702.04 (southern Hugo): people under the age of 17

Tract 702.05 (Scandia): people living with a disability, people over the age of 65

Tract 702.06 (Marine on Saint Croix & May Township): Indigenous people, people over the age of 65

The Glacial Hills Regional Trail will extend the regional bike network, connecting diverse communities both within and outside of the search corridor to recreation destinations such as the Hardwood Creek Trail, William O'Brien State Park, and Big Marine Park Reserve.

Several of these demographic indicators correlate with higher inability to own/operate motor vehicles (people under the age of 17, people over the age of 65, cost-burdened people, people living with a disability). The Glacial Hills Regional Trail can provide safe and accessible transportation routes that are

not reliant on automobile ownership. The trail will offer opportunities for these groups for transportation, recreation, and participation in community events, all of which are important to the health and wellbeing of individuals and their communities.

The transportation situation within the corridor is largely to be expected for the edge of a metropolitan area. Long commutes, low rates of zero-car households, and personal automobiles as the default transportation mode are all factors reported in this area. The average commuting distance in the corridor is 32.2 miles, with the highest reporting tract being Scandia at 39.7 miles. The county average is comparatively lower at 24.6 miles.

Given the high costs associated with auto-dependency at both the personal and community-wide levels, the trail has the opportunity to provide transportation

alternatives while alleviating some of these cost burdens. While the commuting pattern indicates trips to work may not be ideal for replacement with biking, more localized trips, especially those to local points of recreation, are ideal candidates for mode-shift away from personal automobiles within the corridor.

See appendix for more detailed demographic analysis.

Figure 19. Percent Population Under 17



Key

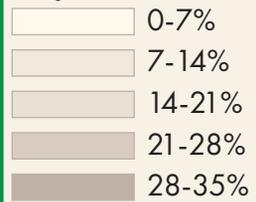


Figure 20. Percent Population Over Age 65



Key

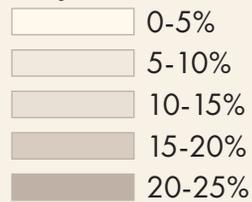


Figure 21. Regional Population Forecast

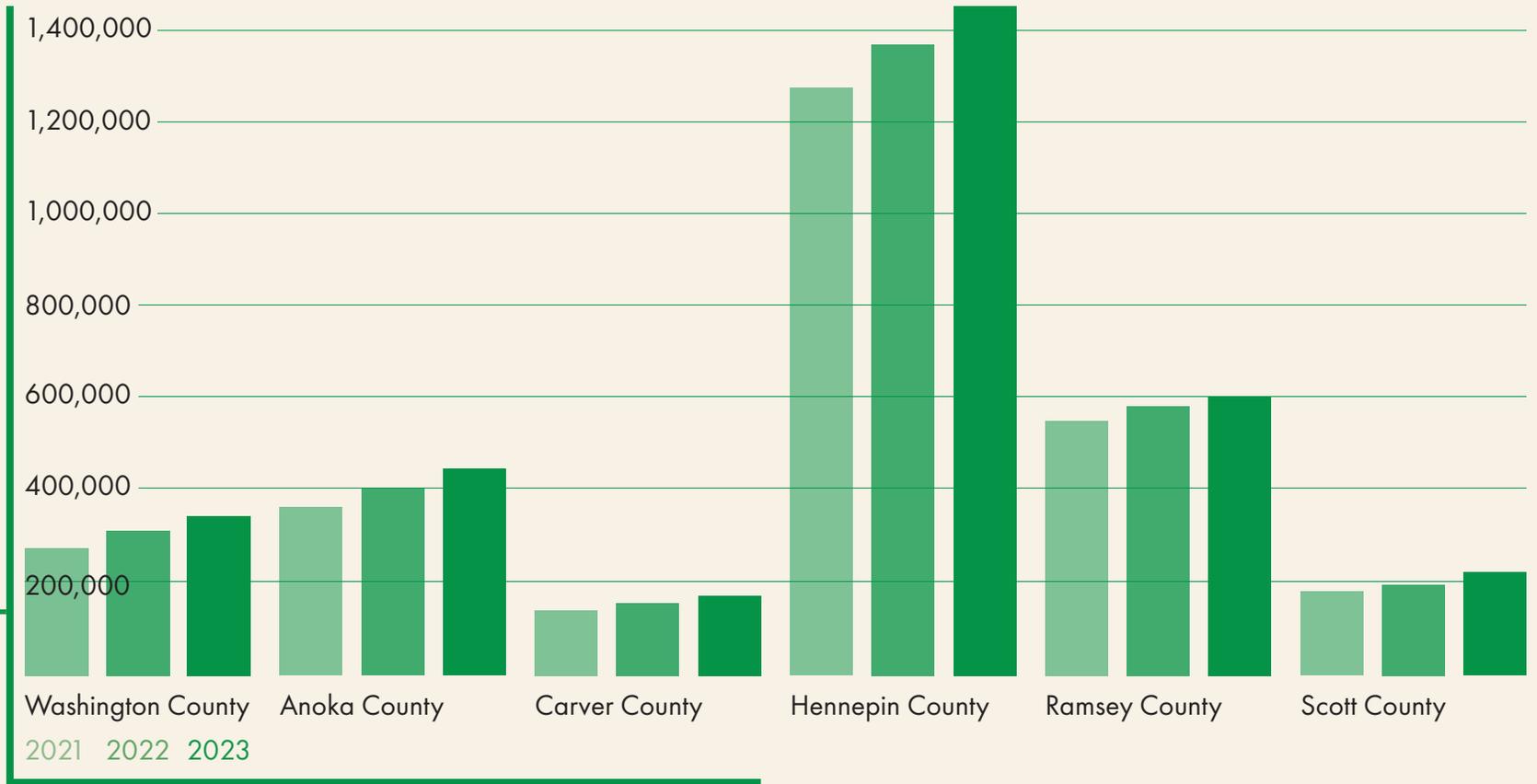
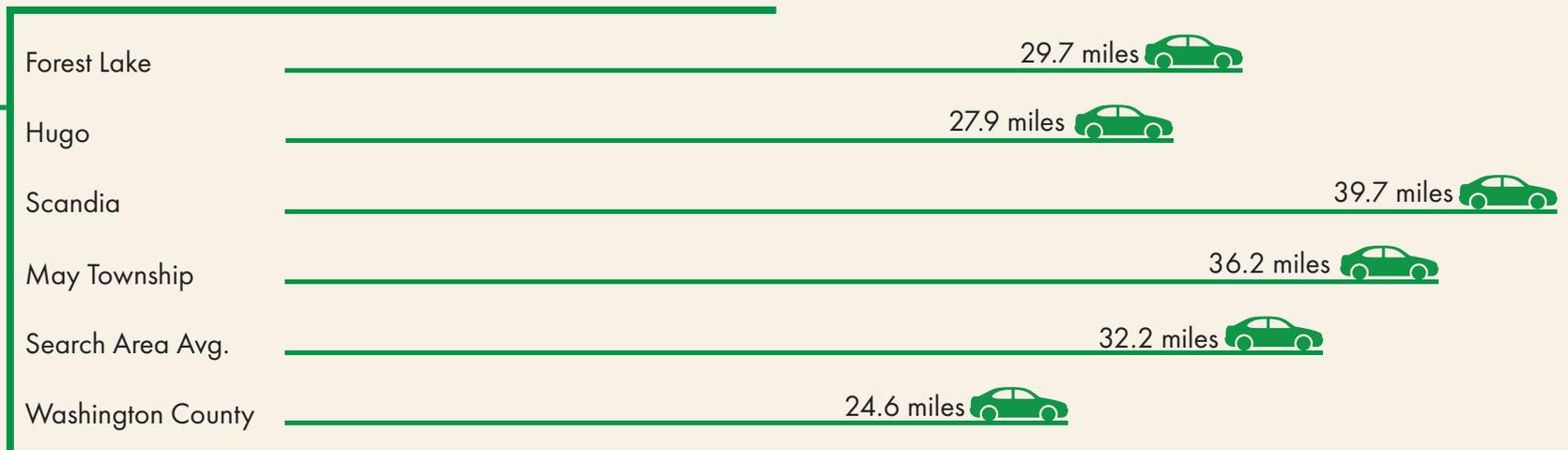


Figure 22. Average Length of Commute



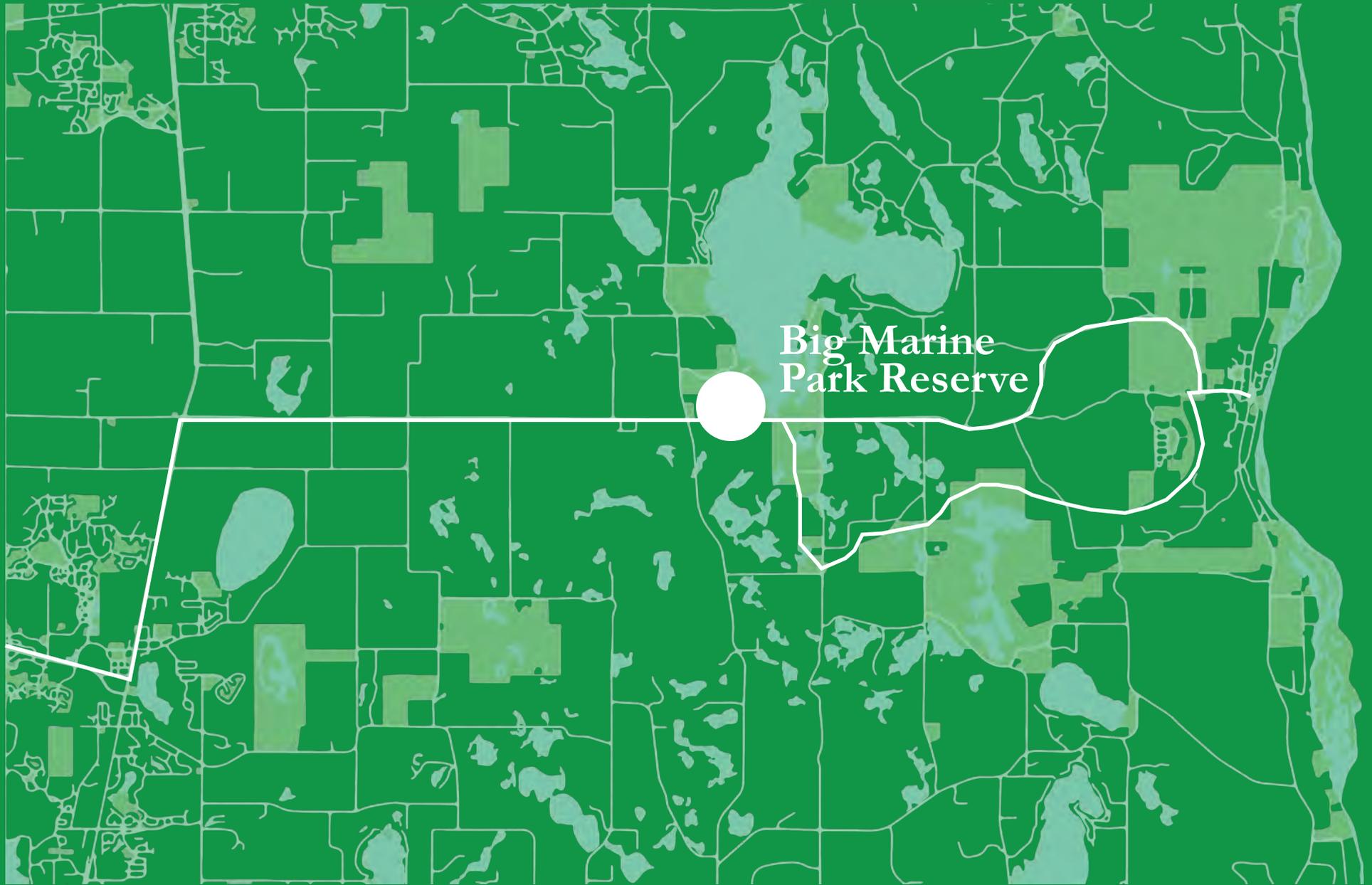
Big Marine Park Reserve

Destinations Along The Trail

Big Marine Park Reserve, located in Washington County, Minnesota, is a significant natural area that has a rich history tied to the region's natural landscape and outdoor recreation. The park reserve, planned in 1988 and established in the late 2000s, was developed as part of Washington County's efforts to preserve large tracts of natural land while providing residents and visitors with opportunities for outdoor activities. The reserve will one day encompass over 1,800 acres of diverse ecosystems, including woodlands, wetlands, and the pristine Big Marine Lake, which has been a popular spot for fishing, boating, and swimming for decades. The recent Kelley Farms addition will see the size of the park double in the coming years as considerable acreage south of County Road 4 is added.

Today, Big Marine Park Reserve is a key part of Washington County's park system, attracting visitors year-round for its scenic trails, picnic areas, and water-based recreation. It serves as a vital green space in a rapidly developing region, offering a tranquil retreat to the surrounding communities. The park is particularly known for its extensive trail network, which includes both paved and natural surface trails suitable for hiking, walking, and biking. The biking trails within the park offer a serene experience, allowing cyclists to ride through dense forests and along the shores of Big Marine Lake, with increasing connections to the broader regional trail system. This makes the park not only a destination for outdoor enthusiasts but also an important link in the county's efforts to promote healthy, active lifestyles.





Big Marine
Park Reserve





3

Stakeholder Engagement

Public Engagement Plan Process

◀ *Open House, Marine on Saint Croix Town Hall, June 2024*

Public engagement is the cornerstone of any strong planning effort. The Glacial Hills Regional Trail planning process took great care to ensure that a variety of public engagement forums and formats were set up across the entire span of the project timeline to ensure that local residents and potential trail users had ample opportunity to weigh in on the project. These included in-person events, online surveys, mapping exercises, workshops, and presentations.

The public engagement process ensured that the development of the Glacial Hills Regional Trail aligns with the needs, values, and desires of the local community. By actively involving residents, stakeholders, and local organizations

in the planning process, the project team gathered diverse perspectives and insights that will enhance the quality and usability of the trail. This participatory approach fostered a sense of ownership among community members, encouraging greater use and stewardship of the trail system when it is implemented. Moreover, engagement helped the project team address potential concerns early on, allowing the project team to create a more accessible, safe, and connected trail that serves a broader demographic, promotes public health, and supports sustainable transportation. The Glacial Hills Regional Trail Long Range Plan reflects the unique character and priorities of Washington County's residents.



Open House, Hugo, Fall 2023

Equity Analysis

An equity analysis is a required evaluation tool established by the Metropolitan Council for Regional Park and Trail Master Planning*. This analysis focuses on examining both the processes and outcomes through six equity lenses identified by the Met Council: race, ethnicity, national origin, age, ability, and income. The primary focus is to identify and address the needs of underserved stakeholder groups, ensuring that all community voices are heard and considered in planning efforts.

The Glacial Hills Regional Trail was developed with a strong commitment to equity, ensuring that all community members can access and benefit from the trail. As one of the project's five key goals, equity was prioritized throughout the evaluation process, route selection, and final trail design. Although the corridor itself has limited racial diversity, the equity strategy for the Glacial Hills Regional Trail aims to reduce reliance on automobiles,

enhance transportation options for individuals who may not own or operate personal vehicles, expand access to recreational opportunities, and create spaces for historically underrepresented communities to share and celebrate their stories.

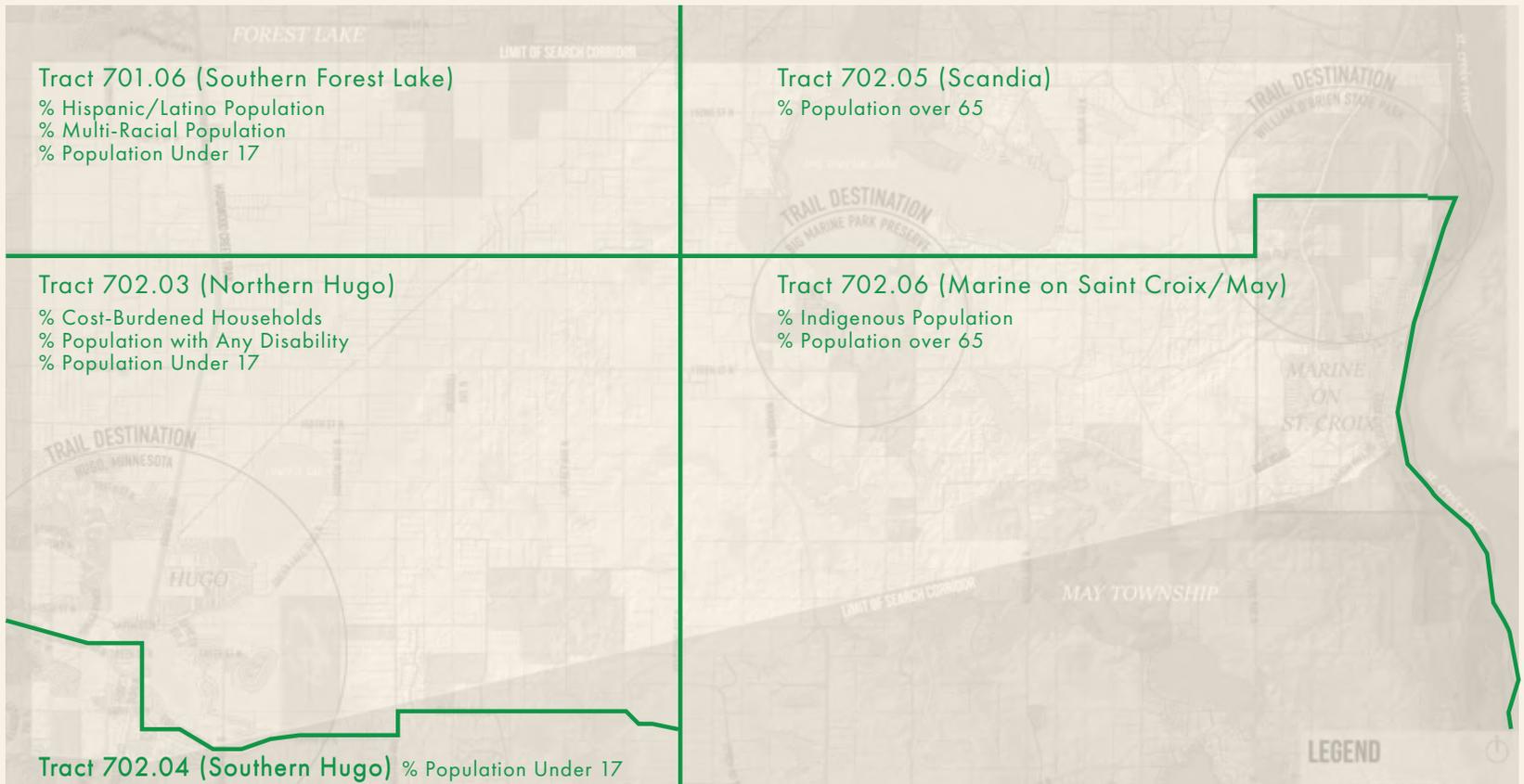
* <https://metro council.org/Parks/Planning/Equity/Toolkit.aspx>

Project Data

1a What are the boundaries and demographics of the public engagement area?

The equity analysis focused on five census tracts within the northern third of Washington County. This comprehensive approach was designed to incorporate nearby cities and townships into the engagement process, ensuring that residents living within a 3 to 5 mile radius of the trail corridor were included in the analysis. This distance aligns with one of

Figure 23. Higher-Than-County-Average Demographic Indicators Within Glacial Hills Regional Trail Search Corridor By Census Tract



the Metropolitan Council’s Equity Toolkit guideline metrics for regional trails, encompassing a 2.5-mile, 30-minute travelshed for bike access trips and a three-quarters of a mile, 15-minute travelshed for pedestrian access trips.

1b What is known about future stakeholders, underserved populations, and how the region’s history created present-day inequitable outcomes?

The demographic analysis of the study area indicates that it is a relatively homogenous corridor; however, there are trends suggesting that it is becoming

increasingly diverse in terms of race and age. Based on demographic analysis and engagement opportunities within the corridor, the project team identified three underrepresented groups: Seniors age 65+, youth with limited access to natural areas, and underrepresented women trail users.

Seniors and youth may be less likely to use regional trails for several reasons, often related to accessibility, mobility, and safety barriers. Many seniors face physical limitations that make navigating trails difficult, whether its distance, uneven

surfaces, or a lack of accessible amenities. Additionally, a lack of essential amenities such as benches, restrooms, and adequate parking can further discourage seniors from venturing out onto trails.

Youth, particularly from rural communities, may live in areas without easy access to trails. If regional trails are located far from where they live, lack safe transportation options, or are situated in less accessible areas, they may be less likely to visit. Safety can be a significant concern, especially for youth. If trails are perceived as unsafe due to crime or poorly

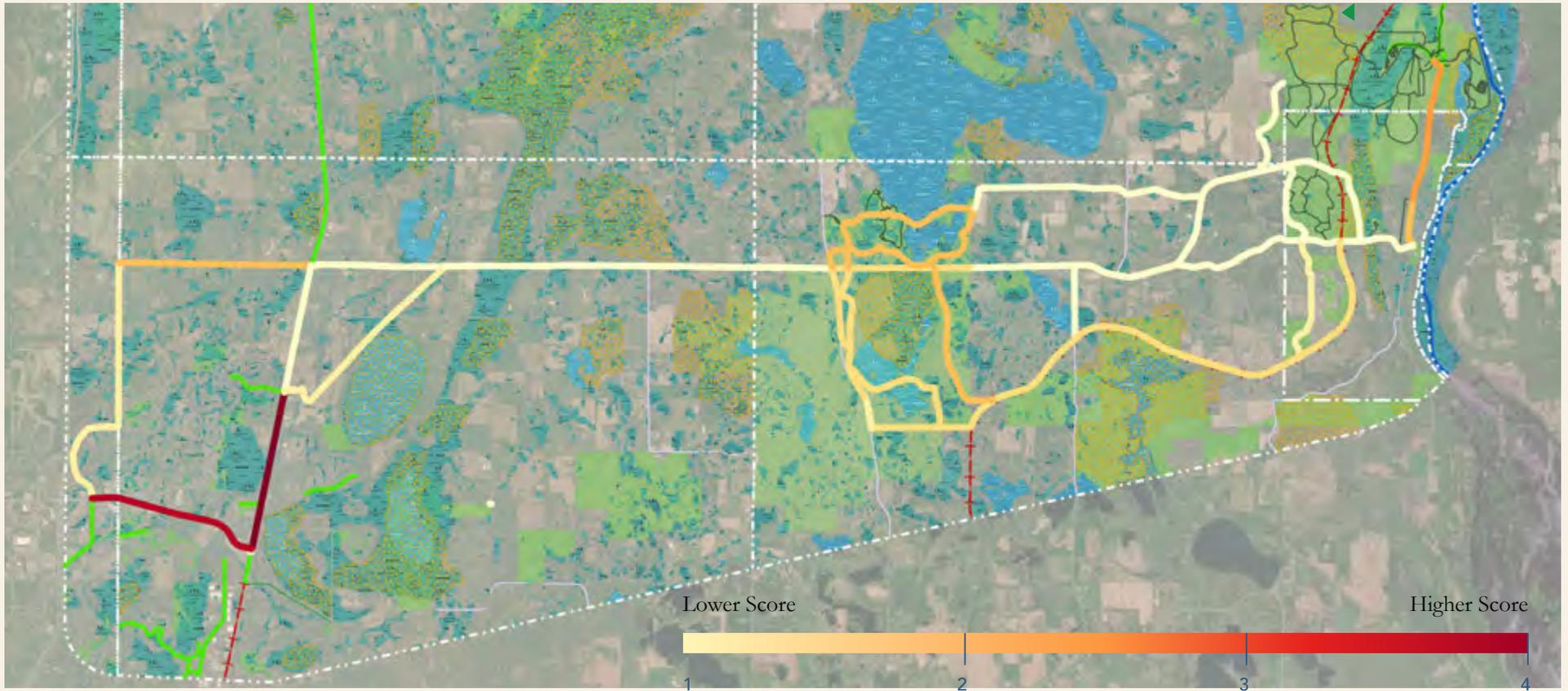


Figure 24. Route Segment Evaluation Scoring: Equity

maintained environments, both seniors and youth may be reluctant to use them. By actively incorporating feedback from these user groups in the planning process, regional trails can be designed to remove barriers and enhance accessibility for seniors and youth.

A 2021 Met Council parks and trails visitor study found that men and women visit parks equally, but women are underrepresented on trails. The study shows that park visitation was 49% men

and 50% women, about the same as the population. For trails, women are 43% of trail visitors; men are 57%. This shows a statistically significant underrepresentation of women was found for trails within park agencies. Diving deeper, women are less likely to visit trails than men (72%). Considering barriers to trail use, many women may feel unsafe in outdoor environments due to concerns about crime or harassment, which can discourage them from using trails, especially in isolated or

poorly maintained areas.

While there are no known racial covenants in the trail search corridor*, BIPOC homeowners face several barriers that discourage rural home purchases. Systemic inequities, such as discrimination in lending, often result in higher interest rates or loan denials for BIPOC individuals. Additionally, rural areas may lack cultural amenities and networks, fostering feelings of isolation. Historical racial tensions can create apprehension

about safety and acceptance in predominantly white communities. Moreover, limited access to employment and healthcare in rural settings may not meet the needs of BIPOC families.

* <https://mappingprejudice.umn.edu/>

Public Engagement and Participation

2a. Which stakeholders discussed in 1b contributed to the planning effort? The following list is illustrative of stakeholders to consider including youth, Black, indigenous, and people of color communities, people with disabilities, low-income populations, populations age 60 and over, and neighborhood/regional groups that participated as planning staff, community advisory committee members, outreach liaisons, and the general public.

Washington County is committed to fostering inclusive public engagement and participation in all its planning efforts. The project team designed and implemented a comprehensive public involvement plan that utilized various communication tools to ensure that information was accessible to the public throughout the planning process. This approach emphasized easy and meaningful participation for all stakeholders, aiming to gather input from a broad cross-section of the community. Throughout the project, the project team focused specifically on three underrepresented groups due

to the demographics and engagement opportunities within the corridor:

Seniors age 65+

Youth with limited access to natural areas

Underrepresented women trail users

2b. What engagement, outreach, and communication was conducted for stakeholders described in 2a? Please identify the level of public impact on the International Association for Public Participation' Public Participation Spectrum and requisite engagement strategies for each stakeholder group. Please consider culturally competent and community representative staffing, training, locations, times, public awareness, and input approaches.

To facilitate inclusive engagement, a range of strategies and opportunities were provided, including:

Advisory Committee consisting of local residents, representatives from non-profit organizations, public and regulatory agencies.

Open Houses (3)

Online engagement survey

Targeted stakeholder outreach

Listening sessions and site visits

Of the stakeholders identified in question 2a, a range of strategies and opportunities

were provided to reach underrepresented groups, including:

Pop up events: Pop up events: To better engage populations that may feel hesitant or unable to attend traditional open houses, the project team organized a series of pop-up events throughout the planning process. These included participation in the Senior Expo at the Forest Lake YMCA and a gathering at Big Marine Park Reserve. The Forest Lake YMCA event provided a valuable opportunity for the team to connect with seniors directly, allowing for focused discussions on trail design and addressing their specific needs and concerns. Similarly, the event at Big Marine Park Reserve enabled the project team to interact with families and children, fostering an inclusive dialogue about the potential trails.

These events connected potential trail users who might lack the time or interest in conventional county planning initiatives. By creating a relaxed atmosphere and meeting stakeholders in familiar settings, these events built trust between community members and the project team, ensuring that marginalized voices were valued. They facilitated immediate feedback and lowered barriers to engagement, effectively integrating the perspectives of underserved populations into the planning process.

This strategy demonstrates the principle of 'Involve' as outlined in the International Association for Public Participation's Public Participation Spectrum (IAP2).

Community events: Staff actively participated in community events such as the Washington County Fair, Forest Lake's Art in the Park, the Farmer's Market, the Marine Mills Folk School Fall Festival, and the Hugo Good Neighbor Days Festival to solicit input and engage with residents. These events provided a valuable platform for the project to reach underrepresented users, particularly seniors and youth. For instance, Art in the Park attracted many grandparents accompanied by their grandchildren, creating opportunities for conversations about community needs and aspirations. Attending these events facilitated meaningful interactions in familiar and comfortable environments, helping to break down barriers and encouraging participation from individuals who may be reluctant to engage in traditional forums. Through their presence in the community, the project team fostered trust and rapport, while also providing an opportunity for immediate feedback and dialogue. This approach allowed organizers to address concerns and collect diverse perspectives in real-time. Ultimately, it not only nurtured a sense of belonging

but also empowered underrepresented groups to take an active role in decision-making processes that impact their lives, leading to more equitable outcomes and strengthened community ties.

This strategy is an example of 'Consult' as included with the IAP2 Public Participation Spectrum

Listening Sessions: The project team actively engaged underrepresented groups through listening sessions and site visits. These sessions proved to be a highly effective method of engagement, providing individuals with a platform to share their personal experiences and perspectives. One notable event was a community conversation hosted by Washington County at the Forest Lake YMCA. This listening session drew a group of mostly retired women who regularly gather to enjoy rides together. The women shared their thoughts on the amenities and trail features that enhance their experiences and make their outings more enjoyable.

This strategy is an example of 'Involve' as included with the IAP2 Public Participation Spectrum

TAC Committee: The involvement of community members was facilitated through the inclusion of stakeholders in the Technical Advisory Committee (TAC). To harness local expertise

and insights throughout the planning process, the TAC comprised residents, representatives from the community, and members from local businesses and non-profit organizations. This group was instrumental in developing project goals and evaluating potential routes to finalize recommendations. The TAC collaborated closely with Washington County staff and the consultant team, providing critical guidance that shaped the plan's recommendations.

Additionally, they advised on broader outreach efforts to ensure that key stakeholders and affected communities were informed of planning advancements and given opportunities to contribute their input.

This strategy demonstrates the principle of 'Collaborate' as outlined in the International Association for Public Participation's Public Participation Spectrum (IAP2*).

* <https://organizingengagement.org/models/spectrum-of-public-participation/>

2c. What did you learn from the engagement conducted in 2b? Please summarize the advice you heard into themes and identify the contributing stakeholder.

The feedback gathered during engagement events and listening sessions was thoroughly synthesized into the plan recommendations, aligning with the themes

that shaped the project goals guiding the long range plan. Notably, 10 of the 21 goal objectives directly reflect the input received from underserved populations that the project team interacted with throughout the planning process. Below is a summary of each project objective and the corresponding stakeholder events that influenced the plan development.

1. ADA Accessibility

Contributing Stakeholder: Senior Expo participants, YMCA Community Conversation attendees

- Emphasize the need for trails to accommodate users with limited mobility, including the use of adaptive bikes and well-designed rest areas.

2. Opportunities for Rest

Contributing Stakeholder: Participants from various events

- Provide amenities such as regular restrooms, shaded seating, and drinking water to enhance user comfort and safety.

3. Tie-ins to Regional/Local Trails and Paths

Contributing Stakeholder: Hugo Good Neighbor Days, Washington County Fair participants

- Strong connections to local trails and parks like Square Lake and Big Marine should be established to facilitate seamless travel between different areas.

4. Connection to Commercial Areas

Contributing Stakeholder: Big Marine Park Reserve Pop-Up, Forest Lake – Art in the Park

- Create paths that link to local businesses, such as restaurants and shops, encouraging community engagement and convenience for trail users.

5. Connections to Parks/Open Spaces

Contributing Stakeholder: All participant groups

- Establish routes that connect to nearby parks and natural areas, enhancing recreational opportunities for families and individuals.

6. Connection to Education Centers

Contributing Stakeholder: Washington County Fair participants

- Consider integrating connections to educational facilities to promote safer routes to school.

7. Trail Experience Welcoming to Underserved Populations

Contributing Stakeholder: YMCA Community Conversation, all community participants - Focus on creating a supportive environment for underserved populations by ensuring the trail experience is welcoming and accessible.

8. Comfortable User Experiences

Contributing Stakeholder: Participants

across various events

- Ensure trail paths are off-road, scenic, with minimal inclines, and suitable for all user types, including families and seniors.

9. Minimize Conflict Between Users

Contributing Stakeholder: Marine Fall Festival participants, Senior Expo attendees

- Design trails to minimize potential conflicts between cyclists, pedestrians, and e-bike users, while ensuring clear navigation.

10. Minimize Exposure to Vehicular Traffic

Contributing Stakeholder: YMCA Community Conversation

- Prioritize safety at road crossings by implementing measures such as grade-separated crossings and ensuring off-road options to minimize interaction with vehicles.

Evaluation Summary

3a. How did the public participation from 2c impact the decisions and policies made? Please consider input that advances, supports, coincides, and diverges from the master plan.

The insights obtained from these engagement activities informed the creation of 21 project objectives, with 10 specifically shaped by the voices of

underrepresented communities. From these objectives, 68 performance metrics were established to assess various route alternatives. These performance measures played a crucial role in identifying a preferred route, ensuring that the priorities of the communities were integrated into the route recommendations and subsequent implementation. Alongside shaping the goals and performance metrics of the route evaluation process, the insights gathered from these various engagement activities led to several key findings:

Scenic Options: There was a strong preference for scenic trails that align with a rural and natural context. Participants expressed desires for connections to parks, natural areas, and local businesses.

Safety and Accessibility: Concerns about pedestrian safety, especially regarding e-bikes and busy road crossings (like Highway 61), were prevalent. There is a strong desire for well-maintained, flat, and wide trails that accommodate families, seniors, and cyclists.

Amenities and Facilities: Participants emphasized the need for amenities such as regular maintenance, restrooms, drinking water, shade, seating, and dog stations along the trails. Scenic rest areas and well-marked trails were frequently requested. Lighting and

safety measures were highlighted, especially for routes potentially used by women, seniors, and children.

Route Connectivity: Many participants identified the importance of connecting trails to key destinations, including restaurants, parks, and local businesses. This reflects a desire for trails that not only serve recreational purposes but also facilitate access to community services.

Use of E-Bikes: Interest in e-bikes was noted among seniors as a way to extend their biking opportunities, along with the necessity for etiquette and shared use considerations to minimize conflicts between different types of trail users. E-bike charging infrastructure was also highlighted as important to ensure ease-of-use.

Environmental Considerations: Participants expressed a desire to minimize environmental impact by preserving trees and vegetation along trail routes and incorporating interpretive opportunities related to local wildlife.

Complementary Uses: There are a diverse range of user groups interested in accessing the corridor. Notably, equestrian users expressed a strong desire to expand their opportunities for horseback riding, while snowmobilers emphasized the importance of

maintaining their existing access routes. The inclusion of a regional trail would also serve various recreational activities. By coupling complementary uses, the plan accommodates the needs of all users.

Overall, these findings illustrate a strong community interest in developing accessible, safe, and picturesque trails that cater to a diverse range of users and encourage family-friendly and pedestrian-friendly environments.

3b. How will the planning effort create better outcomes? Please consider outcomes related to regional and local access, quality of experience, facility rules/policy, and reporting back about 3a to stakeholders discussed in 2a.

The key findings presented in section 3a significantly influence the proposed trail corridor alignments outlined in the long-range plan. For example, insights gathered from seniors, youth, and women prompted the project team to incorporate specific metrics into the route evaluation criteria tailored to these demographics. These metrics include:

The number of trail connections to senior housing

Accessibility to neighborhoods with young children

The percentage of transportation-vulnerable populations (such as

those with disabilities, the elderly, or individuals with low income) within a ¼ mile travelshed.

The project also prioritized considerations such as the average slope along trail segments, achievable ADA-compliant slopes, and the inclusion of accessible destinations.

By incorporating these metrics into our evaluation criteria, we can significantly enhance trail accessibility for seniors, potentially leading to improved health outcomes and reduced social isolation. Addressing the unique safety and accessibility concerns of women also fosters equitable usage of regional trails. Furthermore, increasing children's activity levels on the trail will foster a love for the outdoors, enriching their experiences and promoting a lifelong appreciation for nature.

These targeted engagement strategies created a more comprehensive and inclusive plan, allowing Washington County to establish strong relationships and build trust with community stakeholders. To ensure all voices were heard, Washington County provided opportunities for underserved groups to review the final drafts of the long-range plan. Washington County is committed to ongoing community engagement throughout the future development and implementation of the long-range plan.



Summary Of Engagement Events

The project team used a variety of public outreach strategies during the project.

Open houses were held in Hugo (2) and Marine on Saint Croix (1). Open houses were broadcasted to the communities they took place in as well as the trail corridor at large. The Marine on Saint Croix open house jointly served the Glacial Hills Regional Trail and the Gateway State Trail planning processes, allowing residents to offer insights on both projects while limiting engagement fatigue.

Additional meetings were held with local organizations, community groups, and units of government. The engagement events were hosted by County staff and were supported by the consulting team. These events focused initially on gathering overall high-level feedback on trail goals, amenities, and overall character. Towards the end of the process, the open houses offered residents a chance to review evaluation results, route alternatives, and trail typologies.

A survey was distributed to the surrounding communities during the initial phases of the project, which allowed for those unable or uninterested in attending in-person events to participate in the process. The survey gathered 626 unique responses.

Open House, Marine on Saint Croix Town Hall, June 2024



Online Survey Results

A public survey was available to collect feedback beginning in November 2023 through December 2023 and publicized through mailers, social media, and at events. Respondents could participate online or via hard copies available at the open house hosted in November 2023.

In total, 626 people responded.

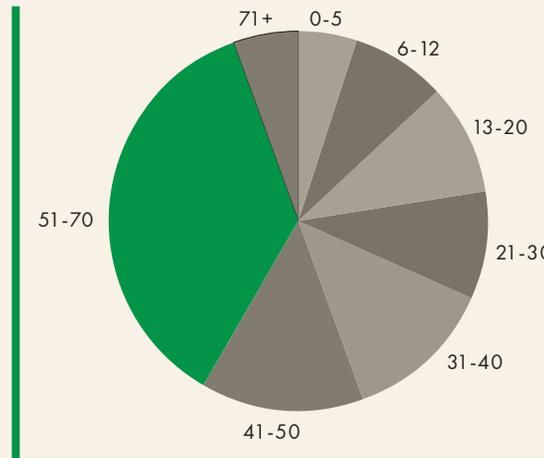


Figure 25. Survey Respondent Age

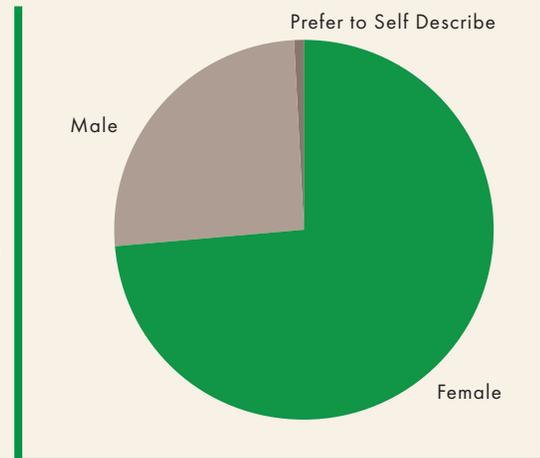


Figure 26. Survey Respondent Gender

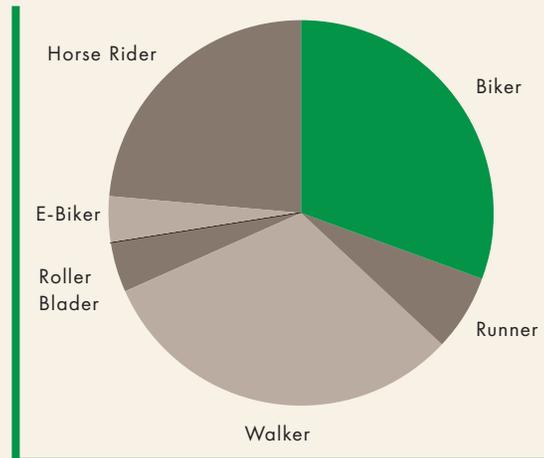


Figure 27. Survey Respondent User Type

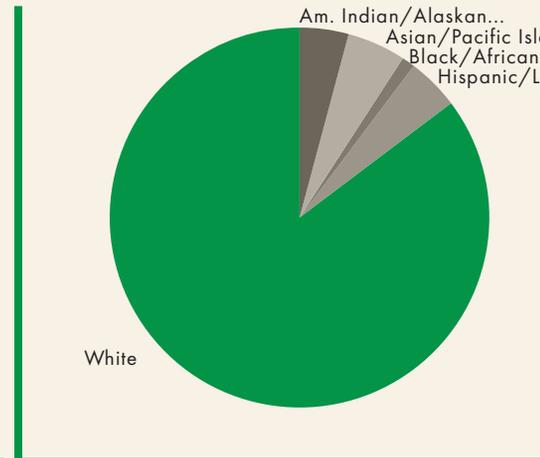


Figure 28. Survey Respondent Race/Ethnicity

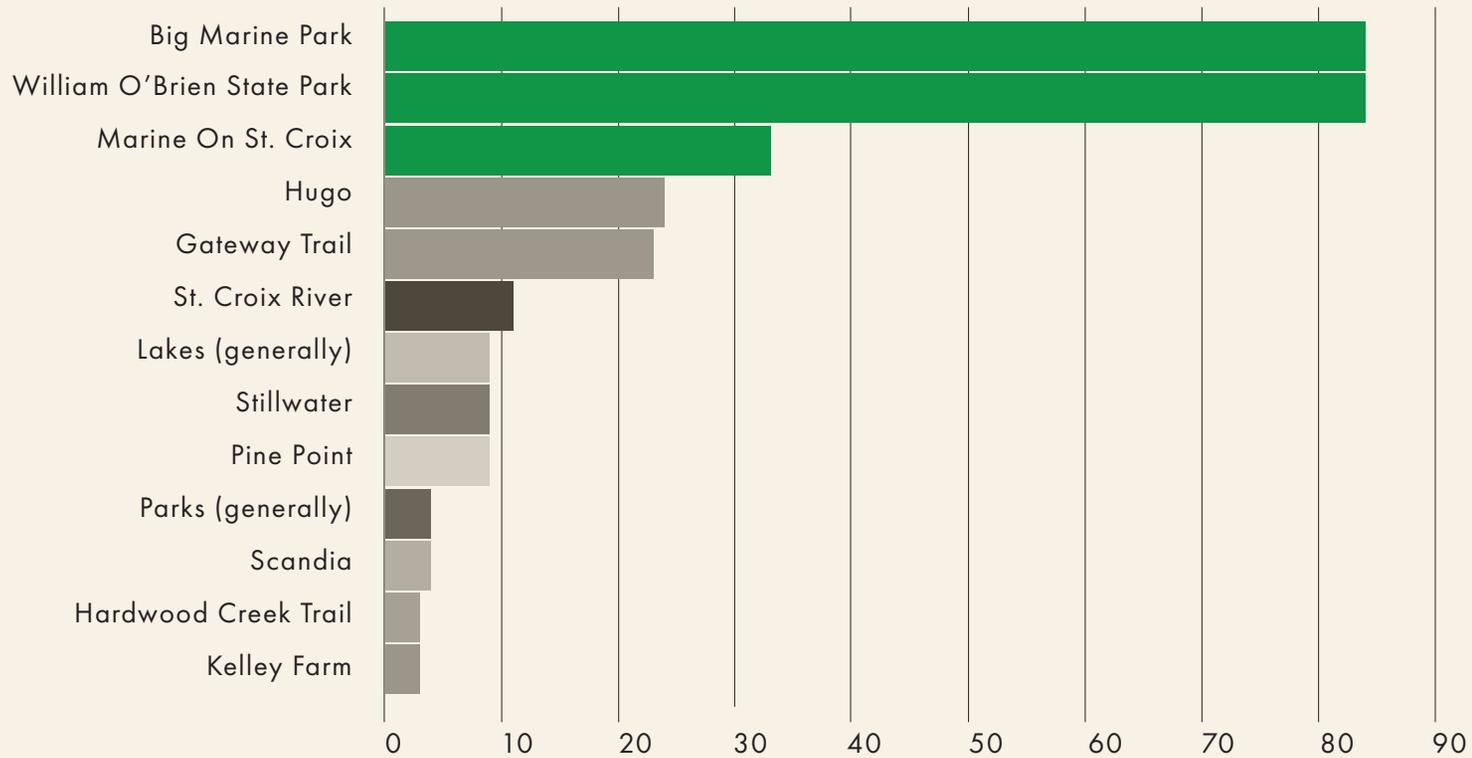


Figure 29. Survey Respondent Top Destinations

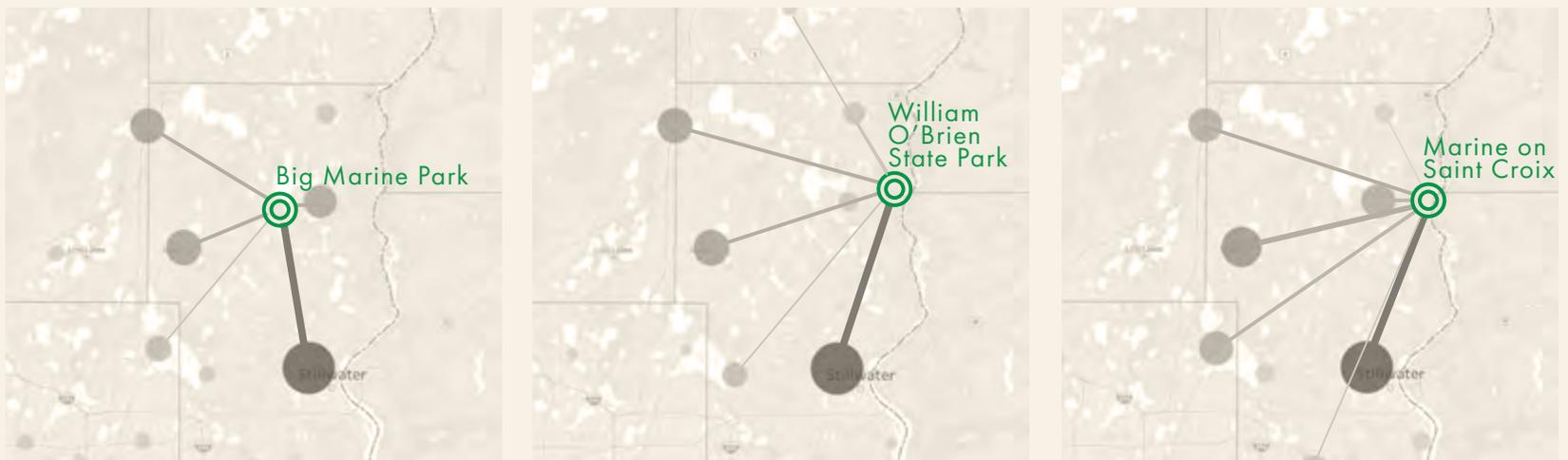


Figure 30. Top Three Destinations & Location of Residence for Survey Respondents Who Selected Given Destination

Figure 31. Survey Respondent ZIP Code

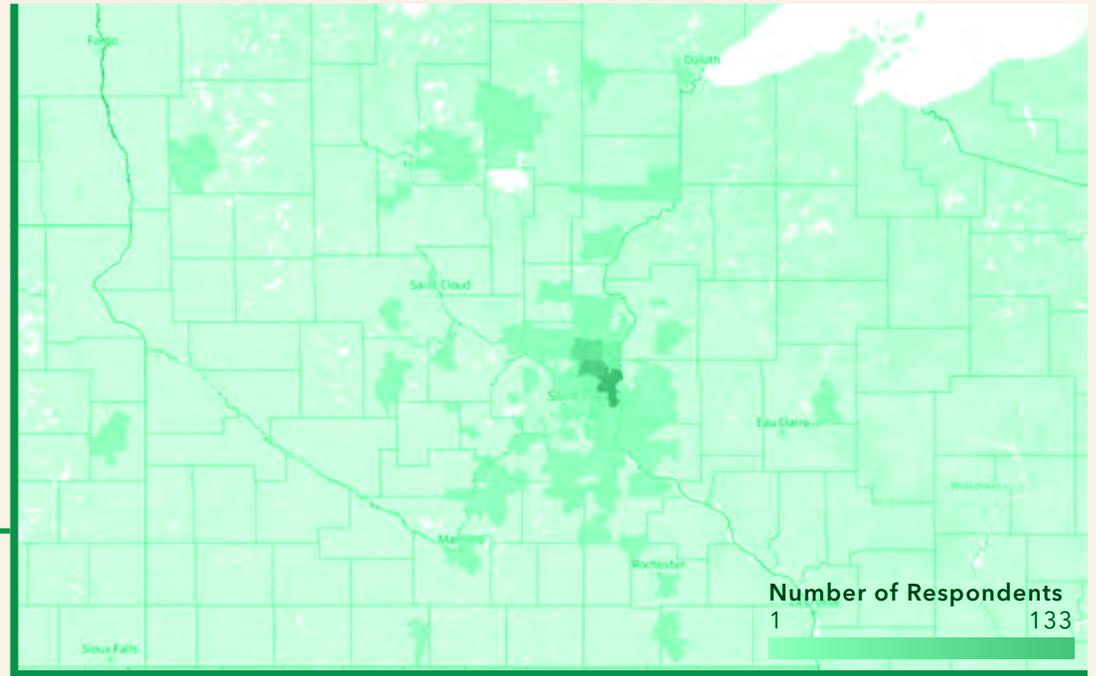
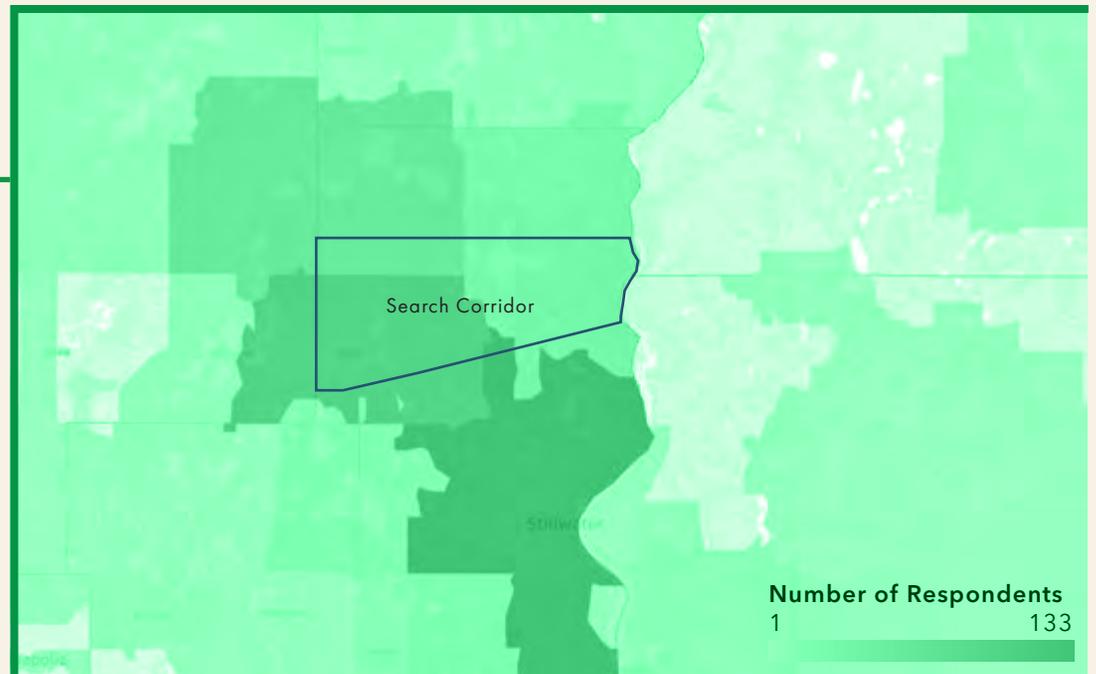


Figure 32. Survey Respondent ZIP Code (Inset)



Connector / Direct Trail

Identify a direct route between predetermined destinations along the corridor. Trail would likely follow road alignments.

Destination / Indirect Trail

Identify a distinct trail experience. Trail may deviate from direct roadway alignments to provide connections to less-direct destinations or resources.

Figure 33. Survey Respondent Preferences: Directness of Trail Route



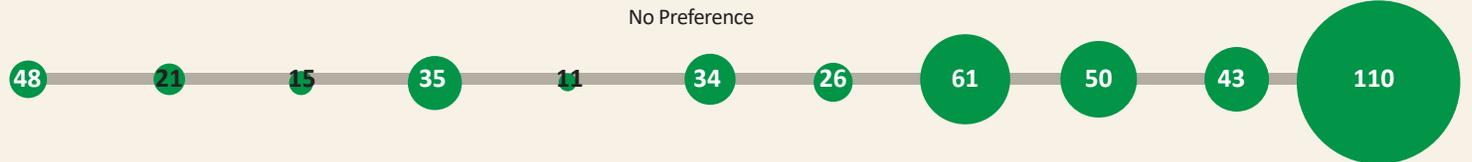
Utilizing Existing Trail Corridors

Prioritize designation of existing trail corridor - potential for reduced cost, expedited implementation.

Create New Trail Corridors

Prioritize new trail connections - potential for new trail facilities connecting areas in the County without an existing trail.

Figure 34. Survey Respondent Appetite for New Construction



Connect With Natural Areas

Route alignment prioritizes connections to parks, open space, and providing opportunities to experience natural areas

Connect With Downtowns

Route alignment prioritizes convenient connections to local businesses and downtowns.

Figure 35. Survey Respondent Preferred Urbanness of Trail Route



Photos from Open
Houses 1-3



Project team identifies all possible routes



Alignments negatively impacting sensitive ecosystems, wetlands, and private properties are eliminated



Community engagement further narrows alignment options and informs trail amenities

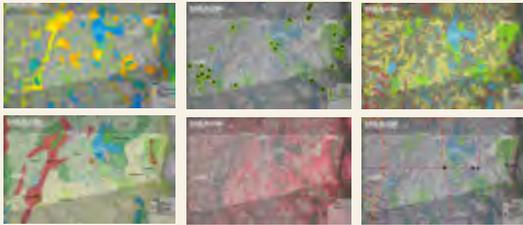


Spring 2023

Summer 2023

Fall 2023

Winter 2023



Corridor background & research completed



Site tours and field verification undertaken



Public open house #1 & online surveying

Municipalities and government partners aid in selecting routes to undergo evaluation process



Highest scoring alignments from evaluation matrix selected for recommendation



Plan document production begins



Winter 2024

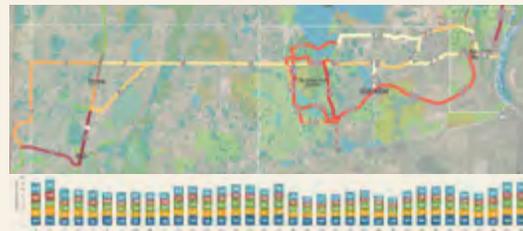
Spring 2024

Summer 2024

Fall 2024



Evaluation criteria set and scoring system developed



Alignments evaluated and scored



Public open house #2 & #3

Figure 37. Project Timeline

Marine on Saint Croix

Destinations Along The Trail

Marine on Saint Croix, Minnesota, is one of the oldest settlements in the state, with a rich history that dates back to the early 19th century. Established in 1839 as a logging town, it was the site of the first commercial sawmill on the St. Croix River, which played a crucial role in the development of the region's lumber industry. As the logging industry flourished, Marine on Saint Croix grew into a bustling community, with its mills driving economic activity and contributing to the expansion of the nearby Twin Cities. Over time, as the demand for lumber decreased, the town shifted from an industrial hub to a quiet residential community, preserving much of its historic charm and architecture.

Today, Marine on Saint Croix is a small but vibrant city known for its well-preserved historic buildings, scenic beauty, and strong community spirit. The city has a population of just over 600 residents, making it a close-knit community that values its history and natural surroundings. Marine on Saint Croix is part of the St. Croix National Scenic Riverway, which protects the river and surrounding areas from overdevelopment, maintaining the area's rustic charm and appeal.

Exploring Marine on Saint Croix offers a unique experience, with quiet, tree-lined roads and scenic trails that wind through the city's picturesque landscape. The combination of history, natural beauty, and well-maintained routes makes Marine on Saint Croix an appealing destination for both casual cyclists and history enthusiasts.





4

Evaluation & Route Recommendations

Route Alternatives Summary

The project team actively engaged with stakeholders throughout the project to identify all potential routes within the corridor. This involved a thorough consideration during project initiation of all potential routes based on the comprehensive site analysis outlined in Chapter 2. Following an initial review by the Project Management Team (PMT), Technical Advisory Committee (TAC), and agency partners, routes were eliminated if a stakeholder identified fatal flaws, allowing the project team to focus on the most viable alternatives. The remaining routes then underwent a rigorous evaluation process using a matrix of predefined goals and objectives. The evaluation process is based on data driven approach to systematically

eliminate route alternatives based on criteria covered later in this chapter. The evaluation process played a critical role in informing the recommended regional trail route, which was subsequently presented to the Technical Advisory Committee (TAC) and the wider community for review and feedback.

Some zones explored 10+ route alternatives. Summaries of explored route alternatives can be found in the appendix.

◀ *Sandhill Cranes in a field outside of Hugo*



Swim Beach at Big Marine Park Reserve

Route Alignment Evaluation Criteria + Metrics

The purpose of route evaluation is to assess and analyze the suitability, safety, and accessibility of trail alternatives to determine a preferred route recommendation. The project's evaluation process involved scoring route alternatives on 68 performance measures that ranged from safety, accessibility, comfort, equity, natural resources, connectivity, and feasibility. A full list of evaluation criteria can be found later in this chapter. Scores were assigned between 1 and 4 (with 4 being the highest possible score) to all potential trial segments for each performance measure. Those scores were then weighted and compiled to provide a composite score for each segment.

This method enabled the project team to make informed and defensible decisions that were directly aligned with the established project goals. This evaluation process has been successfully utilized in other Washington County long range trail

planning projects and played a crucial role in ensuring that the trail met established standards while providing a safe and enjoyable outdoor experience for all visitors. The trail route evaluation also offers the additional benefit of identifying areas for improvement and providing valuable insights for future maintenance and development efforts. This helps in understanding the specific areas that may require attention and guides the planning of future enhancements and maintenance activities, ensuring the ongoing development and upkeep of the trail route.

Goals Guiding Trail Evaluation

Create a safe and comfortable recreational experience that is accessible to all abilities.

Connect users to destinations while expanding regional connectivity.

Feature and steward natural resources while promoting environmental resiliency.

Promote equity and inclusion

Develop a trail alignment that is implementable, responsible, and supported by the community

Trail Zone Plans

For purposes of this plan, the trail corridor has been divided into four planning zones, listed below, for ease of describing and discussing the unique resources and features along that portion of the trail. The four planning zones are illustrated in the adjacent figure and are defined as the following:

Zone 1: City of Hugo (West of Hwy 61)

Zone 2: West County Road 4

Zone 3: Big Marine Park Reserve

Zone 4: Marine on St. Croix & May Township

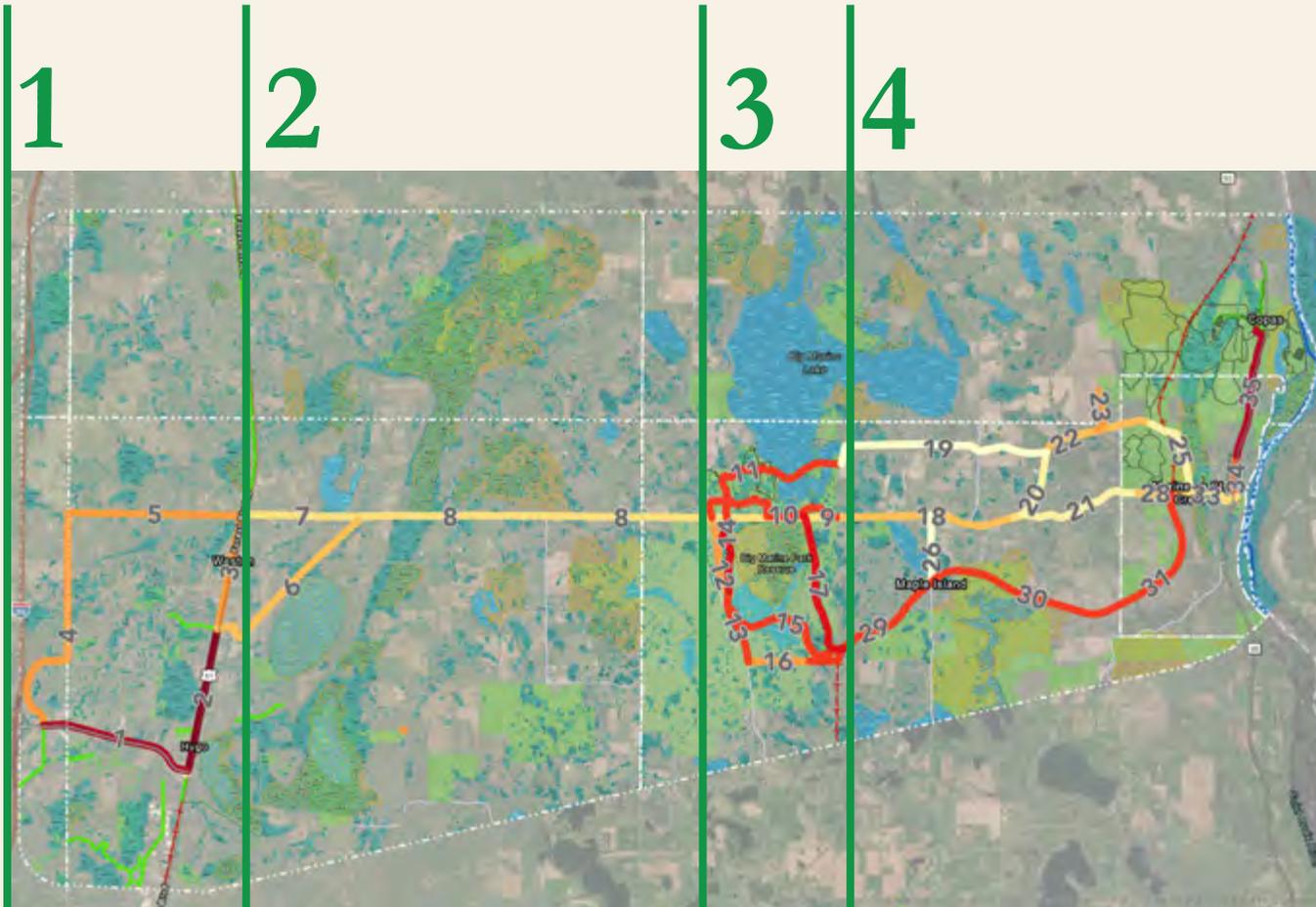


Figure 38. Diagram of Trail Corridor Zones

Zone 1:
City of Hugo
(West of Hwy 61)



Overhead View of Highway 61 Corridor, Hugo, MN



Overview

Zone 1 of the Glacial Hills Regional Trail (GHRT) begins at the western edge of Washington County within the city limits of Hugo. For the purpose of the study, the overview will be conducted from west to east. The GHRT will connect into the Central Anoka Regional Trail and Chain of Lakes Regional Trail in Ramsey County from the far west side of the study area. The regional trail will follow Frenchman Road, connecting to residential areas, natural areas, and the commercial areas of Hugo. The alignment will utilize the existing trail along Frenchmen Road, which is already largely built to regional standards. Crossing and wayfinding improvements may be needed. Trail users will have access to small businesses, restaurants, lodging, and other hospitality services.

Upon reaching Highway 61 (Hwy 61), the trail turns north to share an alignment with the Hardwood Creek Regional Trail up to County Road 4 (CR4). In addition to the paved multi-use trail, Hardwood Creek also includes a dedicated turf trail that provides a safe and important connection for additional trail users. The alignment connects to Hugo City Hall, the post office, Lions Volunteer Park, and NorthStar Elementary School.

Washington County is undertaking a comprehensive long-range vision plan for the Hwy 61 corridor, aimed at shaping

future improvements and facilitating a potential transfer of roadway jurisdiction from MnDOT to Washington County. This study will focus on enhancing pedestrian and bicycle safety, improving connectivity, and adding amenities and signage along the highway to better serve regional trail users. By prioritizing these elements, the plan seeks to create a safer, more accessible environment for all travelers.

On the north end of Hugo, the GHRT alignment turns east on CR4, and this zone is covered in more detail in the next zone overview.

Trailheads

Trailheads function as the gateways to the regional trail system and will be the first impression for many trail users. When locating trailhead facilities, the project team considered the overall trail experience for users while respecting the natural and built environment. Given the population density in Hugo, two trailheads are planned within this zone. An existing trailhead at Hugo City Hall may be enhanced to include amenities and the potential for EV charging stations. There are currently restrooms within City Hall that are accessible during business hours. An existing parking lot along the Hardwood Creek Regional Trail near Hugo Feed Mill & Hardware could also be enhanced.

An additional trailhead within the city limits is proposed near the intersection of Hwy 61 and CR4. The historic Hopkins Schoolhouse located on the northwest quadrant of the intersection is being renovated by the Forest Lake Historical Society and Hugo Historical Commission. The schoolhouse will be transformed into the Hopkins Schoolhouse and Heritage Center that has additional space on site to include parking and trailhead amenities.

Wayfinding + Signage

This section of the GHRT coincides with the Hardwood Creek Regional Trail and existing local trails that already have wayfinding kiosks in place. Existing trail kiosks and signage will be updated to reflect the new regional trail. Additionally, new wayfinding signage will be added at intersections with local trails that have been constructed since the Hardwood Creek Trail was built. New wayfinding signage will also be added where the GHRT and Hardwood Creek trails diverge.

Safety, Comfort, and Inclusivity

Since much of this zone already meets regional trail standards, many of the required traffic improvements have been completed. From a pedestrian comfort and safety perspective, the main challenge is crossing Hwy 61 and CR4. This intersection features a roundabout,

which offers safety benefits for all modes of transportation compared to traditional intersections. However, due to higher design speeds than most urban roundabouts, it is important to consider intersection improvements to facilitate safer crossings. This could include the installation of pedestrian crossing signs, rapid flashing beacons, and raised crossings for regional trail users where traffic volumes allow.

Safety enhancements along Frenchman Road are necessary to elevate the trail corridor to county standards. Proposed improvements should focus on intersection safety, increasing visibility for trail users, and ensuring that crosswalks are designed efficiently and effectively.

Natural Resources & Environmental Stewardship

Several route alternatives were explored during the evaluation phase that would have had a greater impact on existing wetlands and natural resources.

Designating GHRT along Hwy 61 coincident with Hardwood Creek Regional Trail utilizes an already impacted corridor. This approach minimizes the need for additional land acquisition and reduces the environmental impact of trail development.

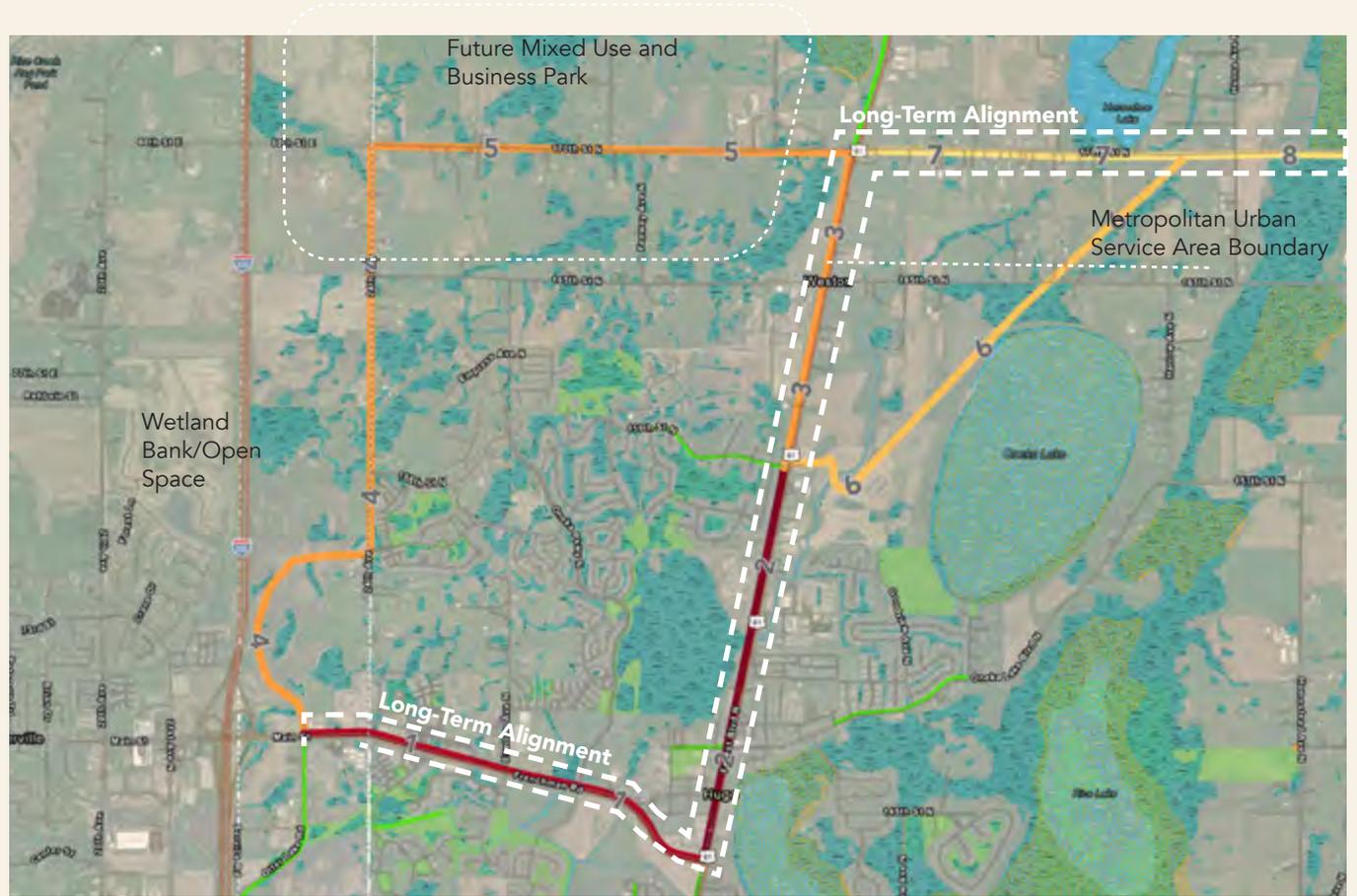
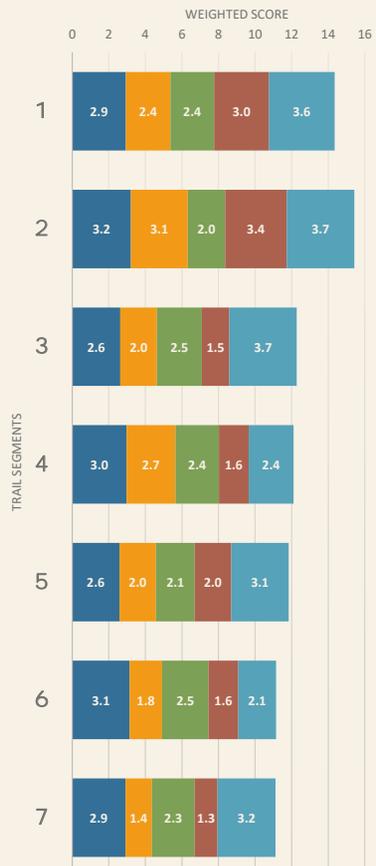
Connectivity

An additional interchange is in the early

exploratory phase at I-35 and CR4, which could impact traffic patterns along the north side Hugo. Should this modification be made, increased traffic along CR4 and redevelopment pressure along the county road, particularly at Hwy 61, should be expected. The city of Hugo's comprehensive plan identifies this area as a future mixed-use district. The regional trail would provide a convenient commuter route and connection to this area.

During the study, a local multi-use trail was explored along Otter Lake Road. Though not carried forward, a loop connection to the west of Hwy 61 along CR4 down to Otter Lake Road was identified as a potential benefit to the community. Loops are important recreational amenities and will connect more residents to the regional trail, enhancing the overall trail experience for the community. Given the context of the road and future development plans, the loop option makes more sense to be owned and implemented as part of the local bike and pedestrian network.

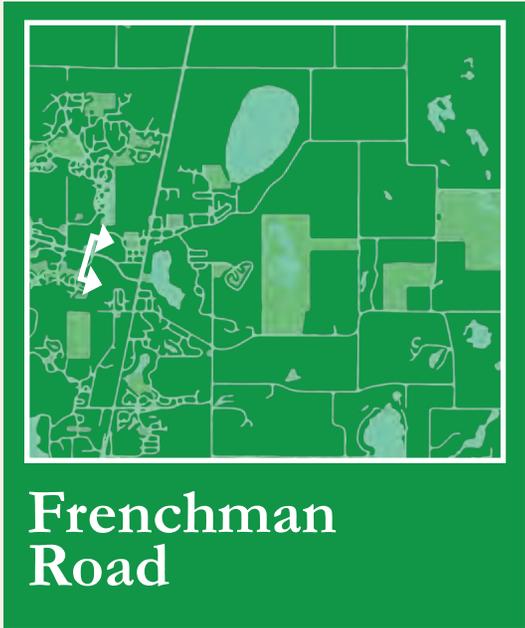
The GHRT will connect into the Central Anoka Regional Trail and Chain of Lakes Regional Trail in the greater regional network, effectively linking the trail systems of Washington County and Ramsey County. This important regional trail linkage will connect several population centers in the region, providing a valuable and convenient recreational and commuter route for residents and visitors.



- Safety, Accessibility, and Comfort
- Connectivity
- Natural Resources
- Equity
- Implementation



Figure 39. Trail Segment 1 Evaluation Scoring

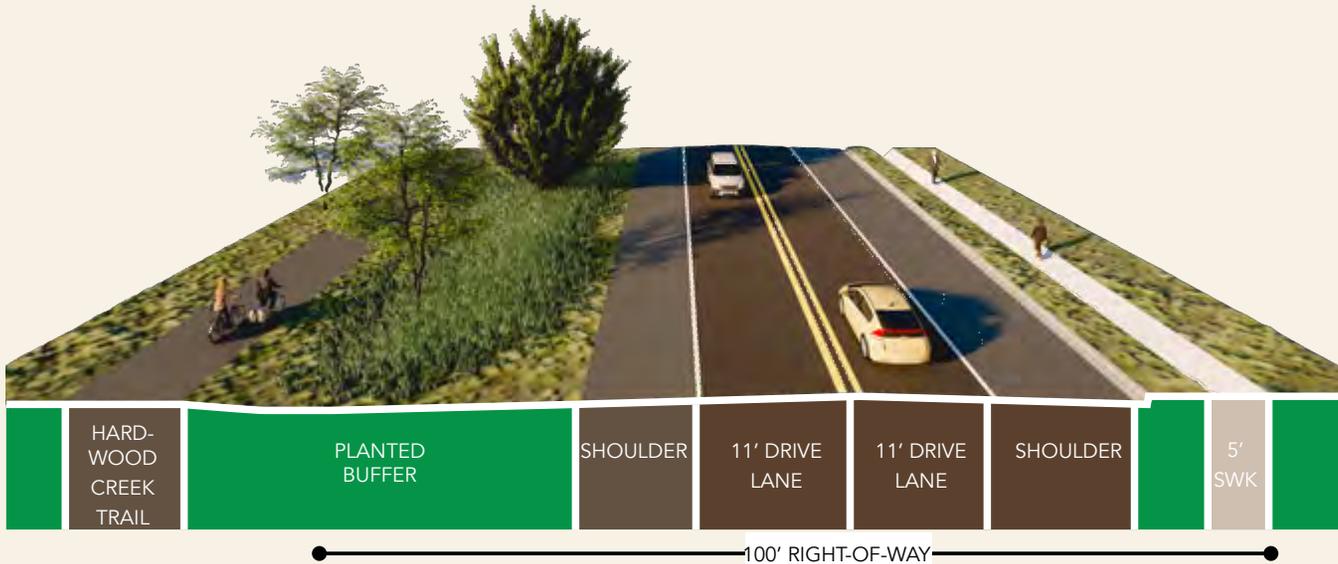


Existing

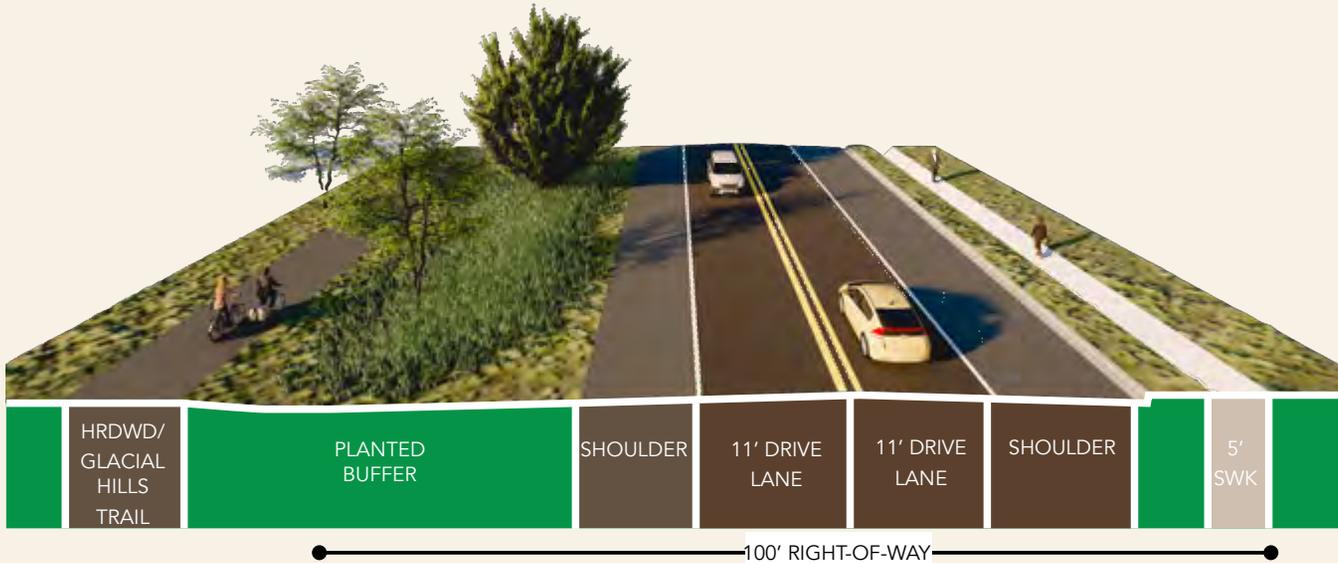
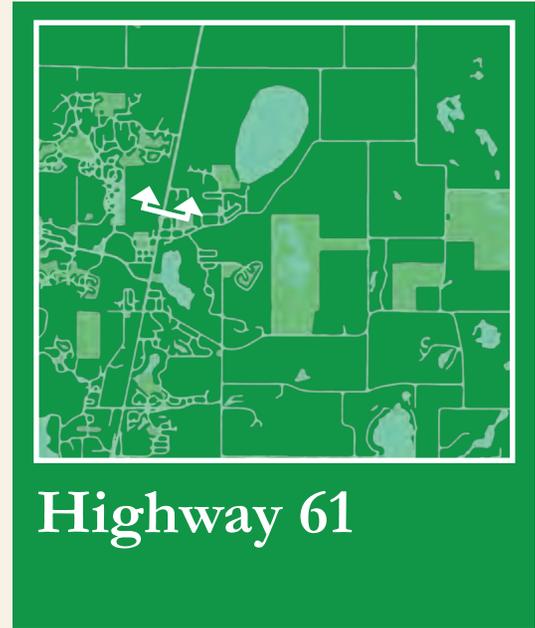


Proposed (no changes)

Figure 40. Existing & Proposed Sections: Frenchman Road



Existing



Proposed (no changes)

◀ *Figure 41. Existing & Proposed Sections: Highway 61*

**Zone 2:
West County
Road 4**



County Road Four in Hugo



Overview

Zone 2 begins at Highway 61 (Hwy 61) and extends to Manning Ave, which marks the western limits of Big Marine Park Reserve. This segment of trail follows County Road 4 (CR4) and is characterized by agricultural fields, single-family rural residential lots, and wetlands. While engaging with residents, the project team received feedback indicating the importance of preserving existing vegetation along the roadway to maintain a visual buffer from the road.

The available right-of-way varies between 100 to 150 feet, providing adequate space for a multi-use trail along the north or south side of the county road. In addition to the regional trail, there is a need for a dedicated equestrian/snowmobile seasonal trail. This soft-surface trail will need to be buffered from the regional trail or ideally located on the opposite side of the county road from the regional trail to ensure the safety and enjoyment of all trail users.

Waysides

The length of trail in this zone without any existing trail amenities or park connections warranted the development of a wayside at roughly the midway point between Hwy 61 and Manning Ave. This wayside would provide a resting point and additional facilities for trail users. Structured shade, bike fixit station, drinking fountain, e-bike

charging, and wayfinding should be considered.

Wayfinding + Signage

Currently, there are no existing or planned trail connections within this zone. However, it would be beneficial to provide wayfinding signage at waysides to help trail users orient themselves along the trail, anticipate the availability of amenities, and direct themselves to Big Marine Park Reserve.

Safety, Comfort, and Inclusivity

The topography in this area is generally rolling but maintains a favorable grade for meeting accessibility standards. However, there is a lack of shade, which should be addressed through tree planting where feasible or by providing structured shade at waysides. Access to water and restrooms is limited in this zone, so it is important to consider providing these amenities for trail users if feasible.

Natural Resources & Environmental Stewardship

The trail alignment follows CR 4 right of way, which significantly altered the existing landscape when the road was graded, resulting in the loss of much of the original pre-settlement vegetation and habitat within the trail corridor. An analysis of the National Wetlands Inventory (NWI) data has identified several wetlands

intersecting the trail alignment. The elevated road grade in these sections will help keep future trail development clear of the wetlands in some instances. Boardwalks should be considered as the primary approach in areas where the roadway grade is not wide enough to fit a trail. Any displaced wetlands would require approval and mitigation from relevant agencies. It's important to note that wetlands are governed by the Wetland Conservation Act (WCA) and regulated by local government jurisdictions.

The implementation of the trail in this zone presents several opportunities to improve the natural environment, including habitat restoration along the trail, planting native plants, and improving low-quality wetlands.

Connectivity

In response to feedback from the public, the county conducted an assessment to determine the feasibility of incorporating a parallel soft-surface trail that would accommodate equestrian and snowmobile use. This assessment included evaluating right-of-way acquisition opportunities, potential impacts on wetlands and vegetation, and the user experience, particularly in relation to the trail corridor possibly running alongside high-volume roads. The existing right-of-way may allow for the development of a soft-surface trail

on the south side of County Road 4/170th St, from Hardwood Creek Regional Trail to Big Marine Park Reserve. However, existing wetlands and vegetation impacts may warrant additional design and study.

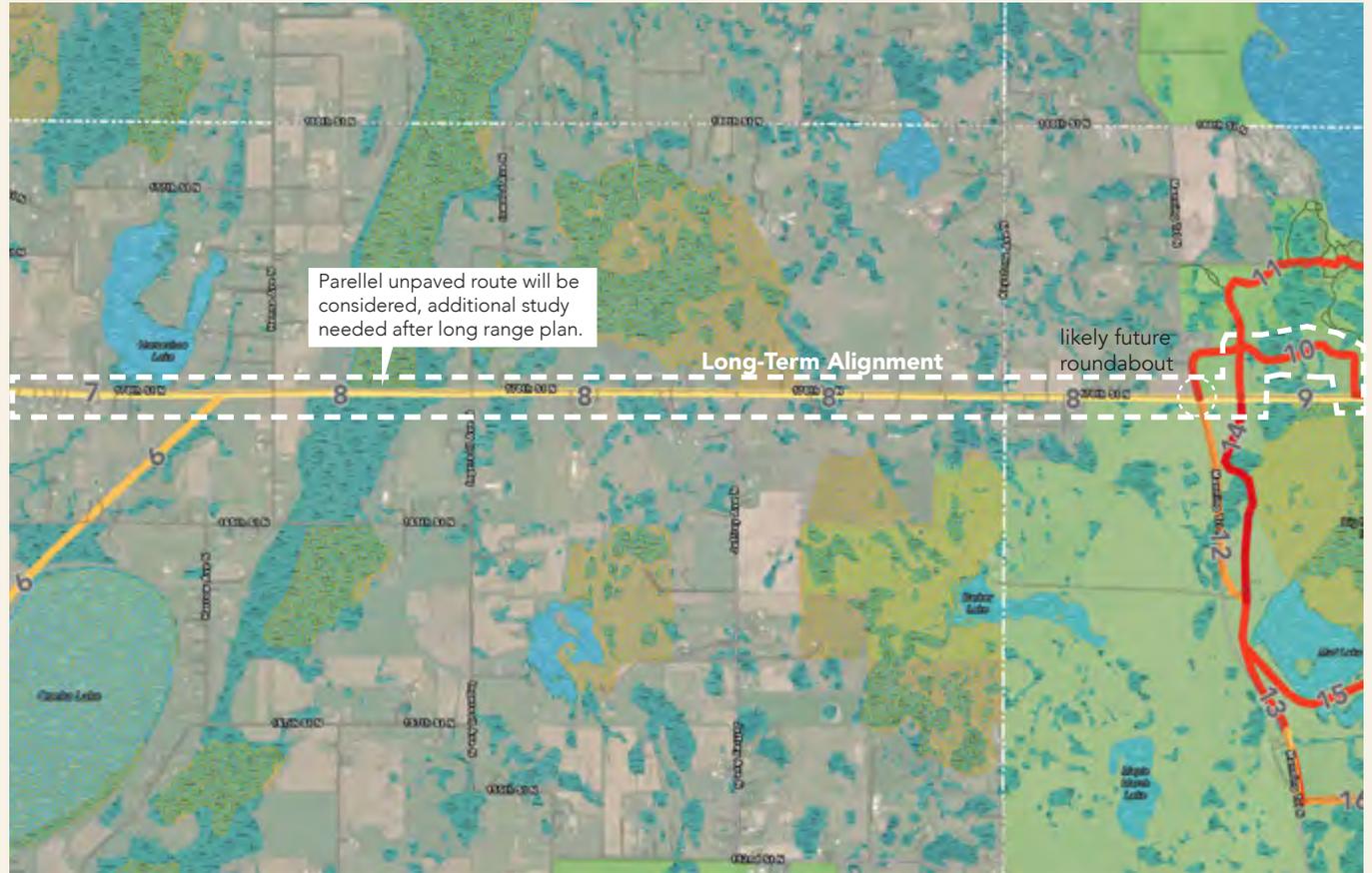
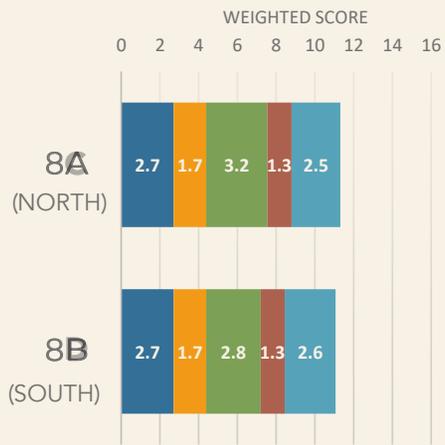
If implemented, this segment could serve equestrian and snowmobile users who have expressed interest in this trail, linking popular destinations with existing equestrian and snowmobile trails while enhancing the overall trail experience for a diverse range of trail users.

Trail Implementation Considerations

After conducting a comparative analysis, it was determined that locating the trail on the north side of the county road would be preferable. This alignment would provide a stronger connection into Big Marine Park Reserve on the west end of the corridor, and it would require fewer boardwalks and driveway crossings. A more detailed feasibility study should be undertaken once the project proceeds into preliminary design to finalize the alignment.

To improve efficiency in implementing the trail, construction should take place in tandem with other public and private projects. This includes reconstruction efforts on County Road 4, or any private development that may occur along the corridor. This will allow a holistic

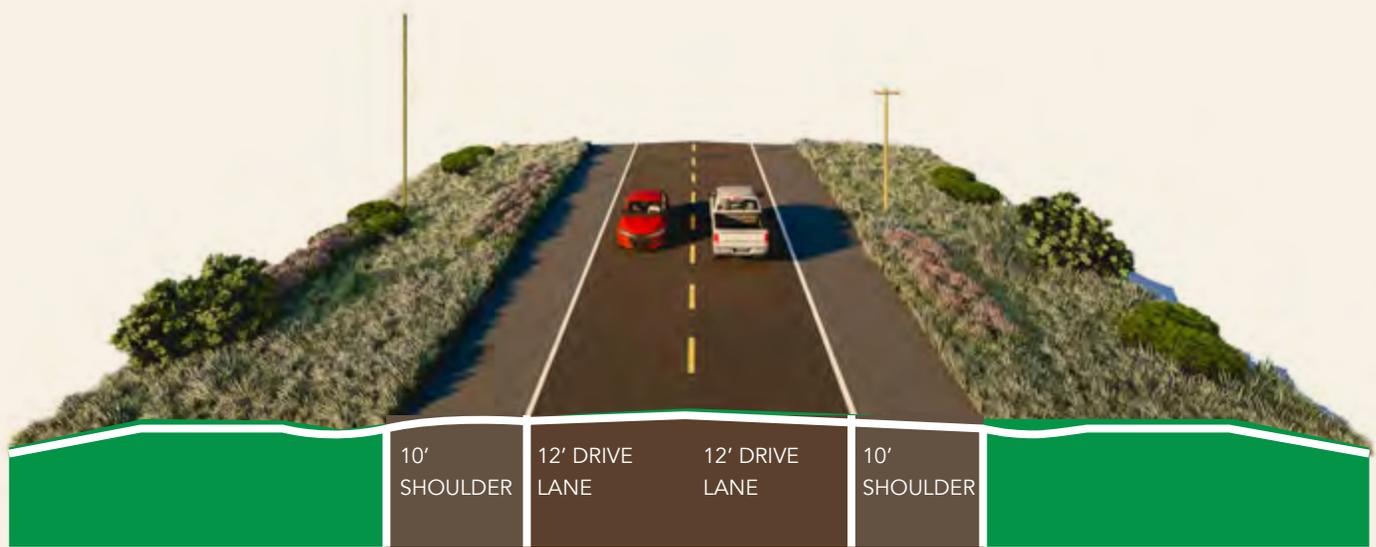
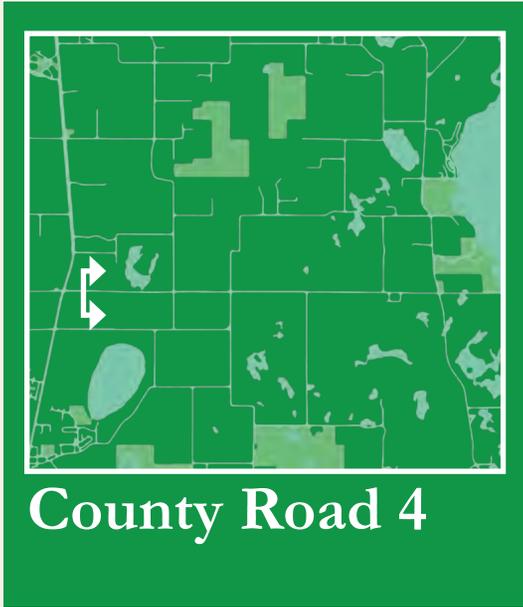
approach to be taken, ensuring the trail is well integrated with adjacent roads, water infrastructure, and neighborhoods.



- Safety, Accessibility, and Comfort
- Connectivity
- Natural Resources
- Equity
- Implementation



Figure 42. Trail Segment 2 Evaluation Scoring



100' RIGHT-OF-WAY

Existing



100' RIGHT-OF-WAY

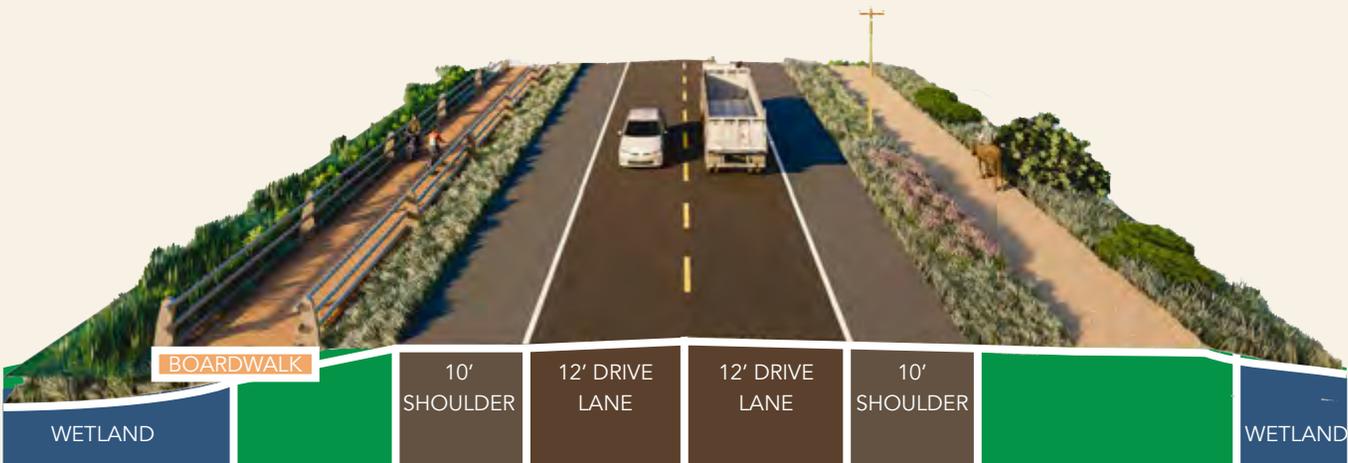
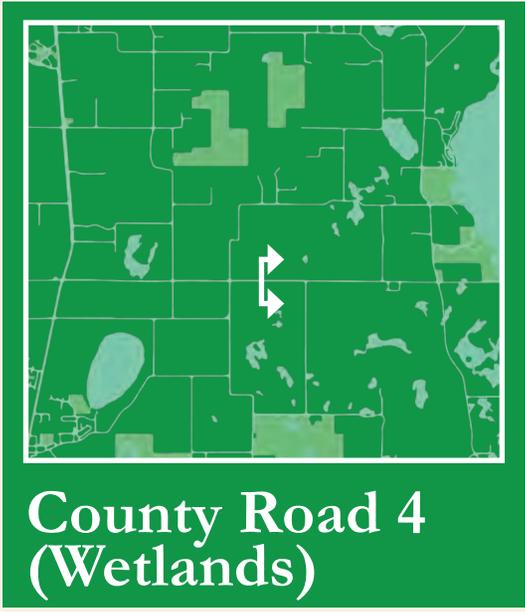
Proposed

Figure 43. Existing & Proposed Sections: County Road 4



Existing

100' RIGHT-OF-WAY

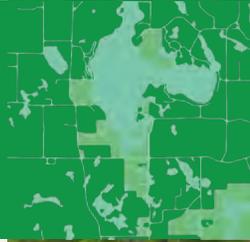


Proposed

100' RIGHT-OF-WAY

◀ Figure 44. Existing & Proposed Sections: County Road 4 (Wetland Condition)

Zone 3: Big Marine Park Reserve



Beachfront at Big Marine Lake



Overview

Zone 3 traverses Big Marine Park Reserve, offering trail users the chance to enjoy a scenic route through natural areas. The trail will link up with existing amenities within the park, such as drinking water, restroom facilities, beach access, playgrounds, and trailhead facilities. Washington County has begun a phased acquisition of the former Kelley Land and Cattle Co. property to expand Big Marine Park Reserve south of CR4. The park master plan for Big Marine Park Reserve identifies grade-separated crossings below CR4 in two locations, as shown in the plan above. These crossings would grant access to future park features on the south side of the park, including equestrian, camping, archery, and hiking facilities.

This zone presents two alternatives: a long-term alignment and an alternate alignment. The long-term alignment proposes converting the existing Canadian National rail line to a paved trail, a model that has proven to be very successful and popular across Minnesota and the nation. If realized, this trail offers a scenic experience through several miles of the corridor, featuring favorable grades and significant separation from vehicle traffic, with minimal crossings.

The Alternate Alignment (pink) is necessary if the opportunity to work with Canadian National doesn't present itself. In this scenario an alignment that parallels

CR4 is the most reasonable option. The additional county owned land within Big Marine Park Reserve allows for the trail to deviate from roadway to provide a more scenic experience. The prevalence of wetlands in this area will be challenging to negotiate. An upland route was identified that weaves its way between wetland areas. Several short segments of boardwalks will be required before the trail reconnects with CR4.

Trailheads + Waysides

The plan specifies two trailheads within this zone. One connection would be made to the existing Trailhead at Big Marine Park Reserve, where restrooms and other trail amenities are available. This will help alleviate parking pressure the trail may put on downtown Marine on Saint Croix. Additionally, a future trailhead is identified on the south side of CR4 where 165th St North enters the park. The Big Marine Park Reserve Master Plan designates this area for group and equestrian camp facilities, which are compatible uses with trailhead facilities.

Wayfinding + Signage

Big Marine Park Reserve is a key destination along the regional trail, and it is essential that users can easily access the variety of natural resources and amenities within the park. The regional trail will also serve as a crucial link for visitors

navigating through the park. Park signage within Big Marine will need to be updated to include the addition of GHRT. As park expansion occurs south of CR4, it will be important to update wayfinding and signage at trail intersections. This signage can also play a role in interpretation of the unique historic and contemporary context of the park and adjacent areas.

Safety, Comfort, and Inclusivity

Considering the planned and existing park infrastructure within Big Marine Park Reserve, the regional trail will be located within an amenity rich area. This zone features favorable grades, and meeting accessibility standards should be easily achievable. Inclusive amenities such as accessible restrooms, seating areas, and picnic facilities should be included to accommodate a diverse range of trail users. A future design phase should consider incorporating signage with universal iconography for non-English speakers, as well as braille or tactile signage for individuals with visual impairments. Signage should include information about accessible facilities and services.

Natural Resources & Environmental Stewardship

Big Marine Park Reserve features a variety of wetland types, including rich fen, wet prairie, sedge meadow, emergent marsh,

aquatic bed, alder swamp, and forested wetlands. These wetlands play a crucial role in filtering sediment and nutrients and replenishing the hydrology of the adjacent lakes. They also serve as vital habitats for wildlife, providing nesting, foraging, loafing, and travel corridors. Many of the wetlands within the Park Reserve have been identified by the Minnesota County Biological Survey for their exceptional diversity. These inventoried wetland remnants showcase plant communities reminiscent of pre-European settlement. Trail corridors should be inventoried by an ecologist to ensure that there are no adverse impacts on any endangered species or unique habitats.

The implementation of the trail in this zone presents several opportunities to improve the natural environment, including habitat restoration along the trail, planting native plants, and improving low-quality wetlands. These improvements should ideally be implemented in collaboration with the local watershed district.

Connectivity

GHRT will bring stronger regional connectivity to the surrounding community and a connective spine through the park. As park development occurs south of CR4, the regional trail will strengthen linkages between the north and south halves of the park. To help minimize the divide caused by CR4, grade-separated crossings

should be explored to minimize conflict between bikers, pedestrians, and vehicle traffic and provide seamless connectivity between the two halves. The regional trail will connect park visitors between archery, camping, hiking, and cross-country ski trails. There are also future equestrian trails planned in Big Marine Park Reserve that will need to be linked into the GHRT, and ultimately into the Hardwood Creek Regional Trail. There are several equestrian ranches between Big Marine Park Reserve and the City of Hugo that will benefit from an easier connection into the equestrian trail network.

GHRT will enhance regional connectivity and create a backbone for the future trail network through the park. As park development progresses south of CR4, the regional trail will link the north and south halves of the park, providing connectivity for park visitors to access archery, camping, hiking, and cross-country ski trails.

Future equestrian trails planned in Big Marine will need to be integrated into the GHRT and ultimately connected to the Hardwood Creek Regional Trail. This will benefit several equestrian ranches in the area by providing easier access into the equestrian trail network.

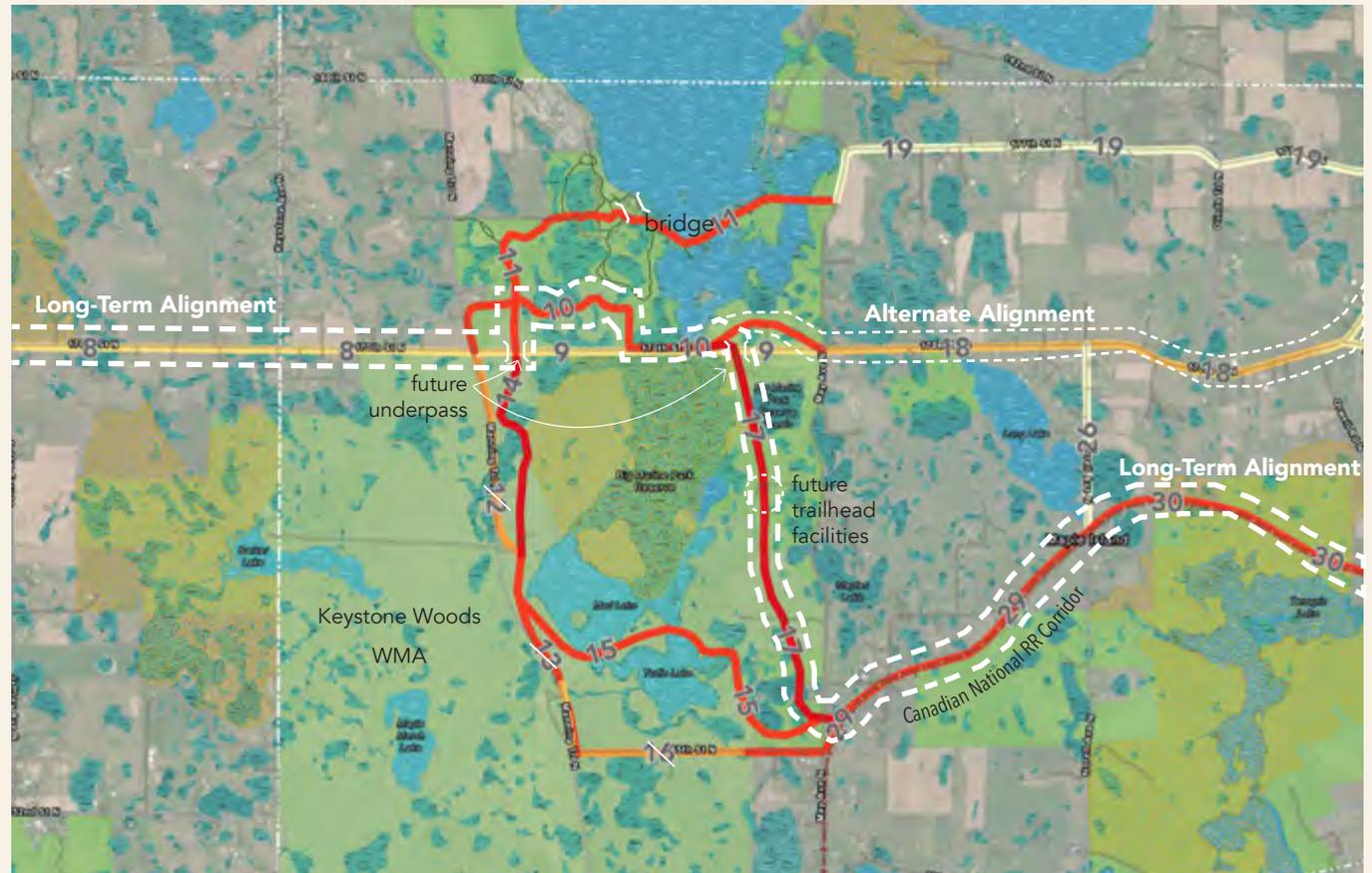
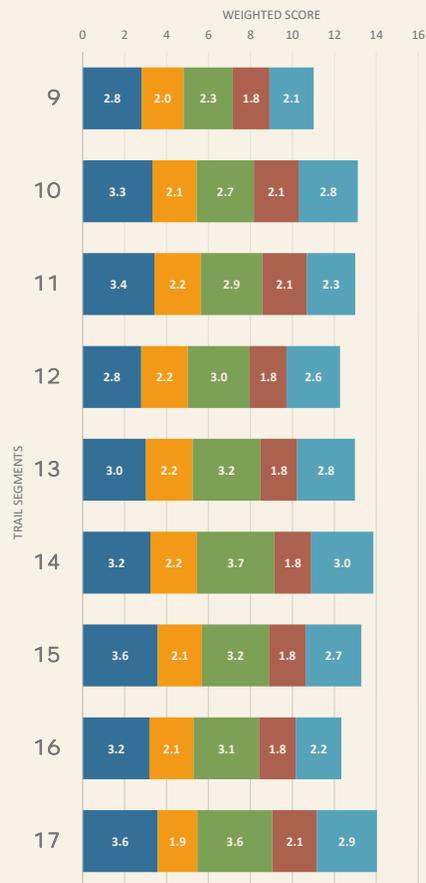
Implementation Considerations

There is a considerable amount of

wetlands and sensitive ecological areas identified within this section. Future phases should explore where it is appropriate for the trail to increase access to these resources and where they should be left undisturbed. In places where the trail will traverse these sensitive areas, boardwalks should be implemented to minimize impacts to habitat and ecology. Increased costs should be anticipated for these accommodations.

Opportunities to implement sections of the trail as Big Marine Park Reserve begins capital construction projects in the newly acquired lands south of County Road 4 should be taken advantage of. This will minimize disturbances to the park and allow costs to be shared.

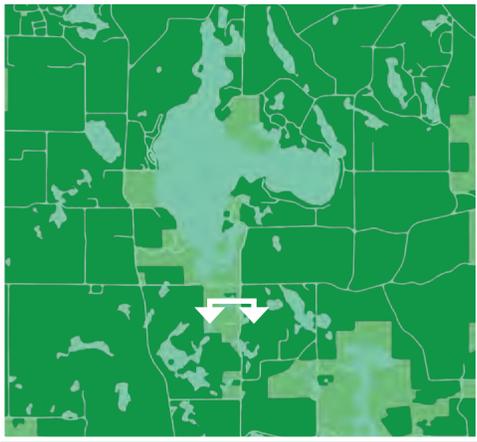
Once the validity of the railroad alignment is determined, regional funding will be eligible for either the long range route or the alternate route. As both routes are unable to receive regional designation, funding will only apply to one alignment. However, this does not prevent the implementation of both potential alignments through other funding opportunities. In fact, if fully developed, it would create a loop, which favored highly in comments heard from the public.



- Safety, Accessibility, and Comfort
- Connectivity
- Natural Resources
- Equity
- Implementation



Figure 45. Trail Segment 3 Evaluation Scoring



Big Marine Park Reserve



PARK PROPERTY

100' RIGHT-OF-WAY

Existing



COUNTY PARK PROPERTY

10' TRAIL

COUNTY PARK PROPERTY

100' RIGHT-OF-WAY

Proposed

Figure 46. Existing & Proposed Sections: Big Marine Park Reserve



Bike Trails, Big Marine Park Reserve

Zone 4: Marine on Saint Croix & May Township



The Saint Croix River Valley



Overview

Zone 4 links the eastern end of Big Marine Park Reserve to William O'Brien State Park and extends to Marine on St. Croix. This zone will create connections between these parks, enhancing opportunities for day excursions for park visitors. Additionally, the regional trail will strengthen connections for residents of Marine on St. Croix to the surrounding parks. Trail users will also benefit from convenient access to amenities in Marine on St. Croix, including drinking water, restrooms, restaurants, cafes, hospitality services, and access to the river.

Like zone 3, this zone presents two alternatives: a long-term alignment and an alternate alignment. The long-term alignment proposes converting the existing Canadian National rail line to a paved trail. This trail offers a scenic experience through several miles of the corridor, featuring favorable grades and significant separation from vehicle traffic, with minimal crossings.

The Alternate Alignment is necessary if the opportunity to work with Canadian National doesn't present itself. In this scenario an alignment that parallels CR4 is the most reasonable option.

Trailheads + Waysides

The plan proposes designating two trailheads within this zone that will

enhance existing facilities at William O'Brien State Park and in Marine on St. Croix. Given that downtown Marine is a major destination with limited parking, the plan includes strategies to address parking concerns. The proposed trailheads at William O'Brien and Big Marine Park Reserve are expected to alleviate parking demand, particularly in Marine on St. Croix. Additionally, the Gateway State Trail Extension will incorporate trailheads at suitable locations, further increasing parking availability in the area.

Currently, the trailheads within the county's system do not experience significant parking issues. Studies show that 50% of regional trail users live within $\frac{3}{4}$ mile of the trail, and 75% reside within 3 miles, suggesting that many users access the trail without relying on automobiles. The timeline for developing the trail in this area remains undetermined and is expected to take several years. In the meantime, no changes in bike and pedestrian usage are expected. The county is dedicated to working closely with the city to address these challenges during future design phases, especially as a construction timeline comes into focus.

Wayfinding + Signage

Wayfinding and signage will play a crucial role in guiding trail users to and from amenities throughout downtown Marine. Clear wayfinding markers

should be placed at trail intersections, particularly at key points like Ostrum Trail and Broadway Avenue. Since Broadway features an on-street trail segment, additional signage along this stretch will be essential to keep trail users on the designated regional trail. Due to limited right of way, safety and share the trail signage may be needed to avoid user conflicts and improve trail etiquette within William O'Brien State Park.

Cultural and natural resources within this zone should be highlighted through interpretive signage. Marine on St. Croix has a storied history as one of Minnesota's early logging towns, steeped in colonial heritage. The historical significance of the railroad, alongside its connections to mining and rail transport, adds another layer of history. Prior to its logging history, the area was home to fur traders and Native American communities, with known cultural resources present. Addressing these aspects will require thoughtful engagement and consultation with tribal representatives to ensure respectful and accurate representation.

Safety, Comfort, and Inclusivity

As we approach the river valley, the terrain presents challenging grades for trail development. The most challenging segment is on Broadway Avenue, uphill from Highway 95. The project team explored various route alternatives to

create an accessible route through this segment, but encountered obstacles with each option. A potential solution could be a trail extending north along Highway 95 from Marine to William O'Brien, which would serve as an accessible bypass once the Gateway Trail Extension is completed and connected into GHRT. Until the Gateway Trail is completed, the designated route for the GHRT will have a small portion of trail that requires compromises to typical trail standards in this area.

The plan recommends implementing painted bike lanes on Broadway Avenue where there is currently a wide shoulder. Although off-street facilities were considered, limited right-of-way widths currently prevent their development.

From a pedestrian comfort and safety standpoint, the primary challenge for trail users is crossing Highway 95. This intersection is currently unsignalized but features rapid flashing beacons and two marked pedestrian crossings. Marine on St. Croix has identified this intersection as a safety priority, and the county is committed to collaborating with all relevant agencies to explore potential improvements, including safety studies and enhancing crossing features.

Natural Resources & Environmental Stewardship

An NHIS review identified several sensitive areas within the trail corridor that were carefully avoided during the route evaluation process. Notably, the Carnelian Creek Corridor Priority Conservation Area and the southern end of William O'Brien, adjacent to Ostrum Trail, are recognized for their high biological significance. To safeguard these critical habitats, it is essential that trail corridors near Terrapin Lake and along Ostrum Trail adjacent to William O'Brien be thoroughly assessed by an ecologist during the design phase to help ensure the project team avoids adversely impacting endangered species and unique habitats.

Connectivity

The GHRT will offer a safe and enjoyable experience for many recreational cyclists already frequenting the area. Residents of Marine will particularly benefit from the regional trail, as it enhances access to key destinations like William O'Brien State Park and Big Marine Park Reserve. This improved connectivity will not only elevate the quality of life for local residents but also attract visitors, stimulating local economic activity and fostering outdoor recreation initiatives.

The completion of the DNR's Gateway Trail Extension will link trail users from the metropolitan area to this region and

integrate seamlessly with the GHRT. When combined with the Hardwood Creek Regional Trail at the western end, this creates a cohesive network with the potential for looped trail options in the future, further enhancing the cycling experience and expanding recreational opportunities in the area.

Implementation Considerations

Zone four presents significant challenges to implementing the GHRT. In the alternate alignment, Long Lake and numerous wetlands press up to the right-of-way of County Road 4. The right-of-way, already narrowed to 66' from 100' from Olinda Trail into Marine on Saint Croix, will require boardwalking. The alignment encounters significant slopes as it moves from west to east, and ditch banks along CR4 are steeper than elsewhere in the corridor. The trail here will require significant regrading. Visibility concerns are notable along the sharp descending curves in this zone as well. DNR coordination may provide opportunities for more space between the trail and CR4 through William O'Brien State Park.

The tunnel on CR4 just outside of Marine on Saint Croix presents another obstacle for the alternate alignment. Significant safety improvements will need to be implemented to ensure trail users feel they can safely utilize the tunnel. These may include flashing beacons, lane painting,

traffic control signage, and other traffic calming measures. An additional boring through the railroad grade would allow for trail users to avoid sharing the tunnel altogether.

The long-term alignment will be dependent on the Canadian National Railroad's willingness to part with their trackage and right-of-way. Should they opt to sell the line, demolition, regrading, and potential remediation efforts should be anticipated to bring the corridor up to regional trail standards.

Narrow right-of-ways in Marine on Saint Croix will require on-street bike facilities, and measures should be taken via wayfinding to help this portion present as a regional trail even if the design may suggest otherwise.

Lastly, coordination with the planned Gateway State Trail extension should be prioritized, as opportunities for shared construction and dual-designation can expedite the implementation of both of these projects.



At the Big Marine General Store, Marine on Saint Croix, MN

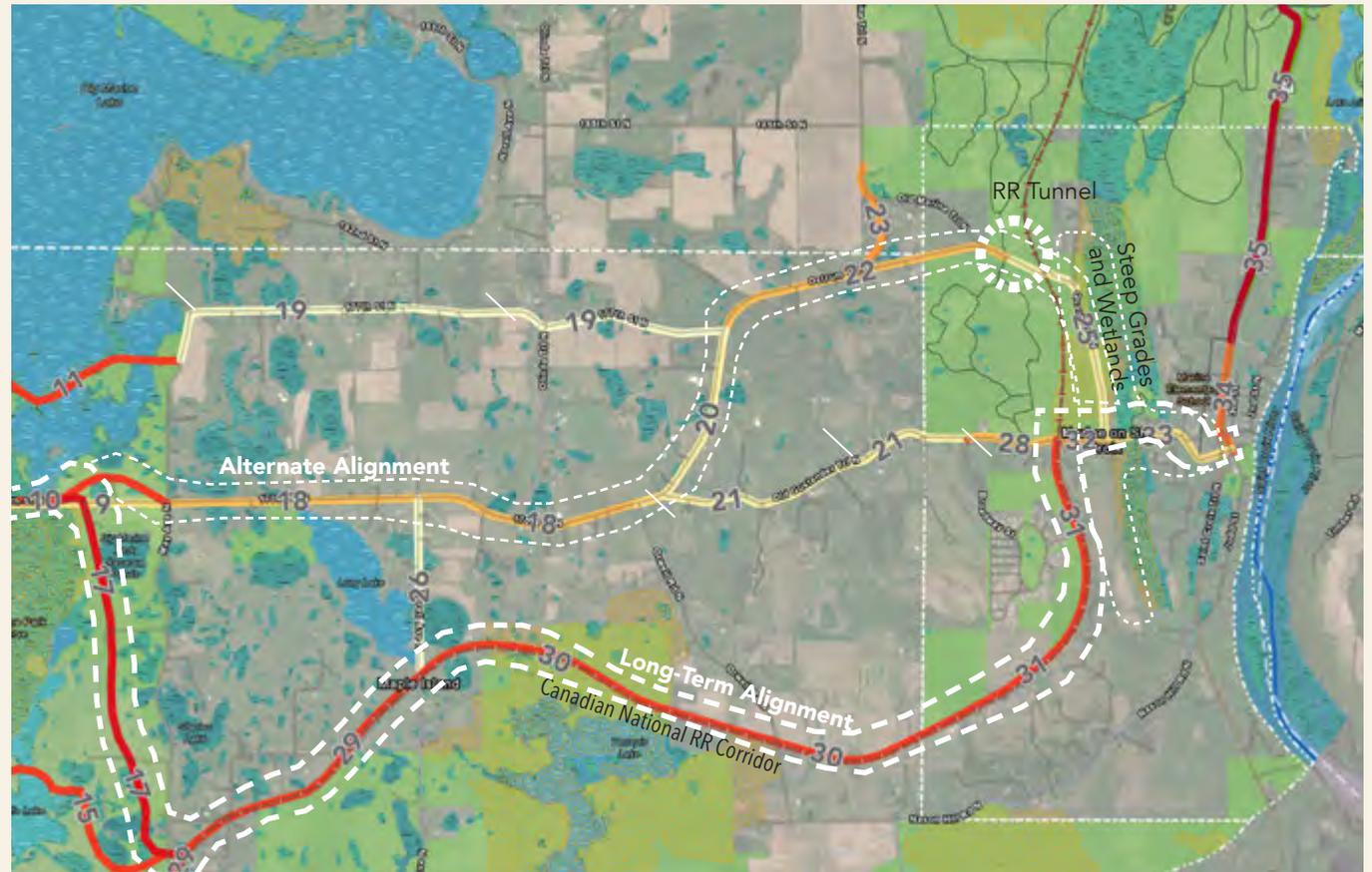
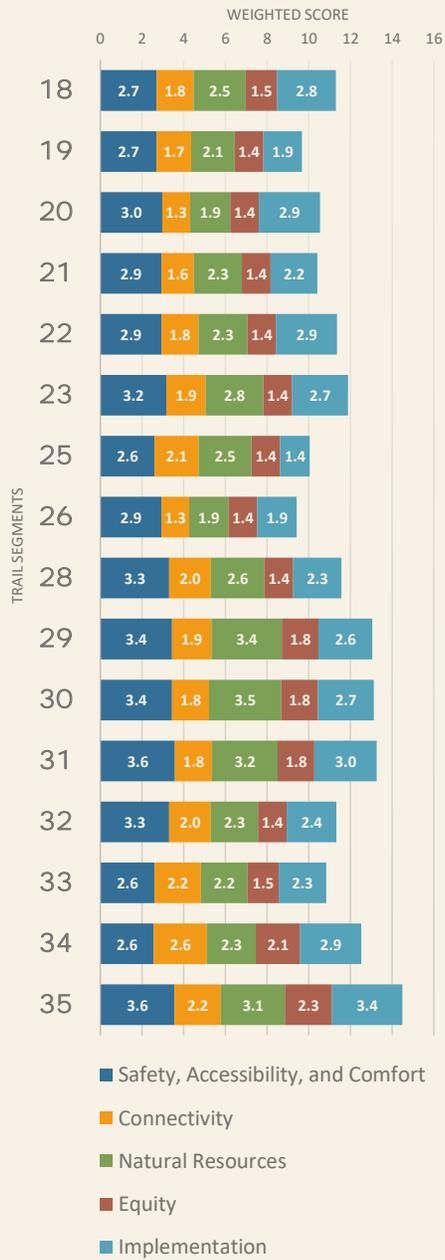
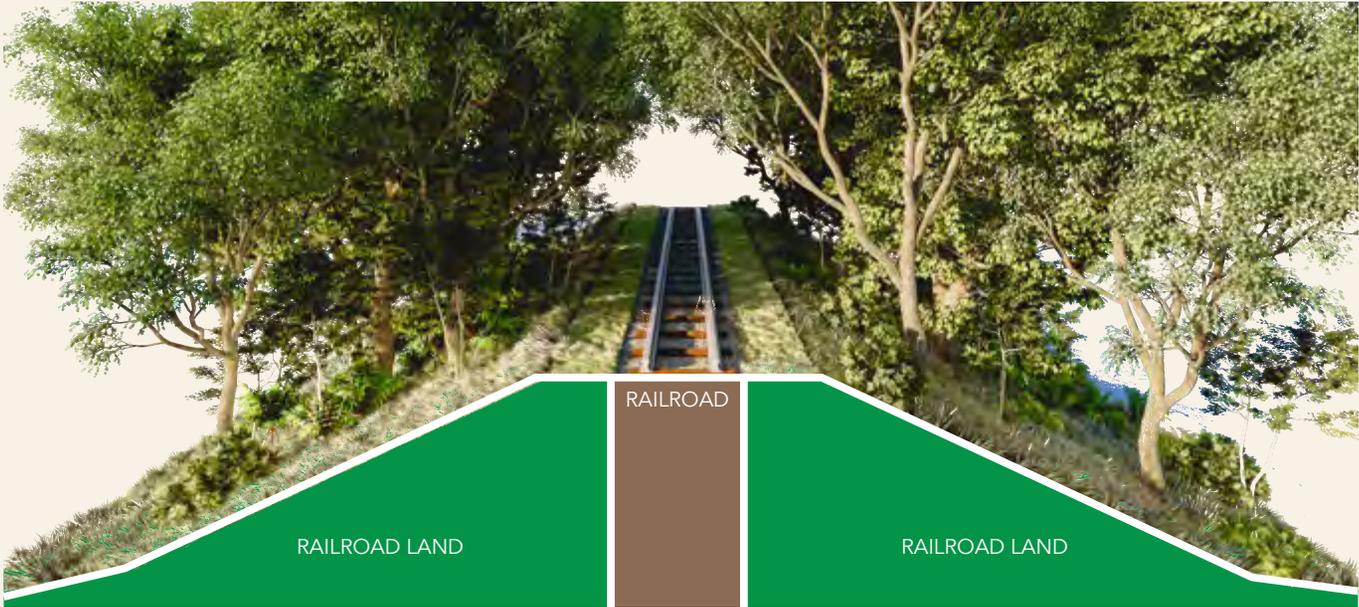
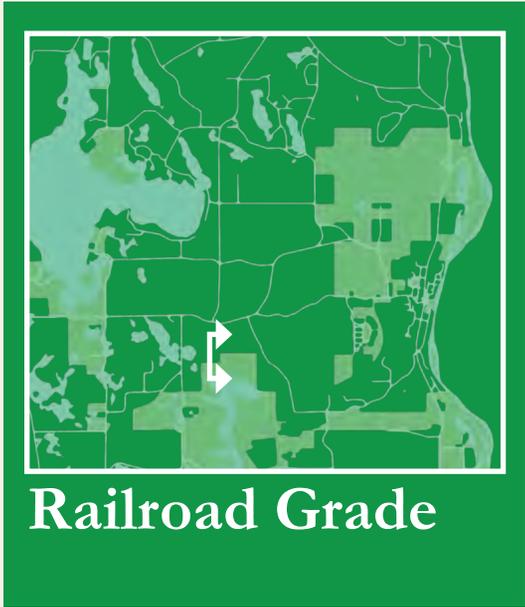


Figure 47. Trail Segment 4 Evaluation Scoring



Existing

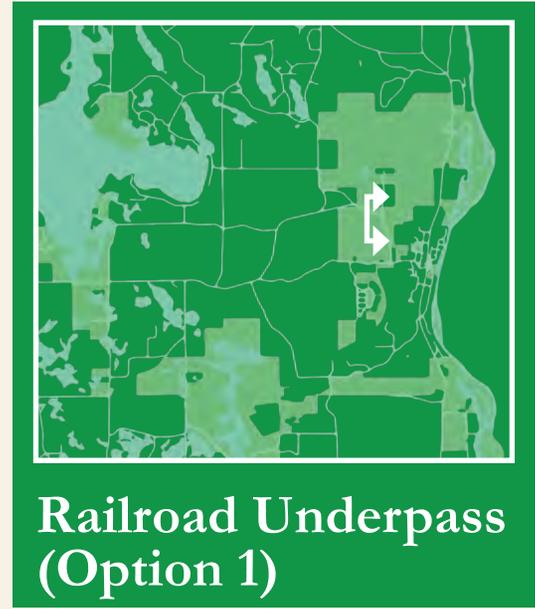


Proposed

Figure 48. Existing & Proposed Sections: Railroad Grade



Existing

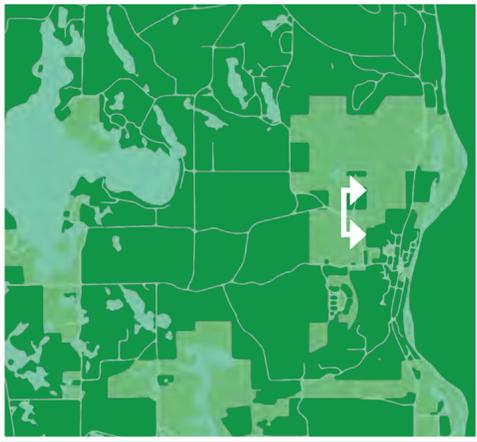


Railroad Underpass
(Option 1)

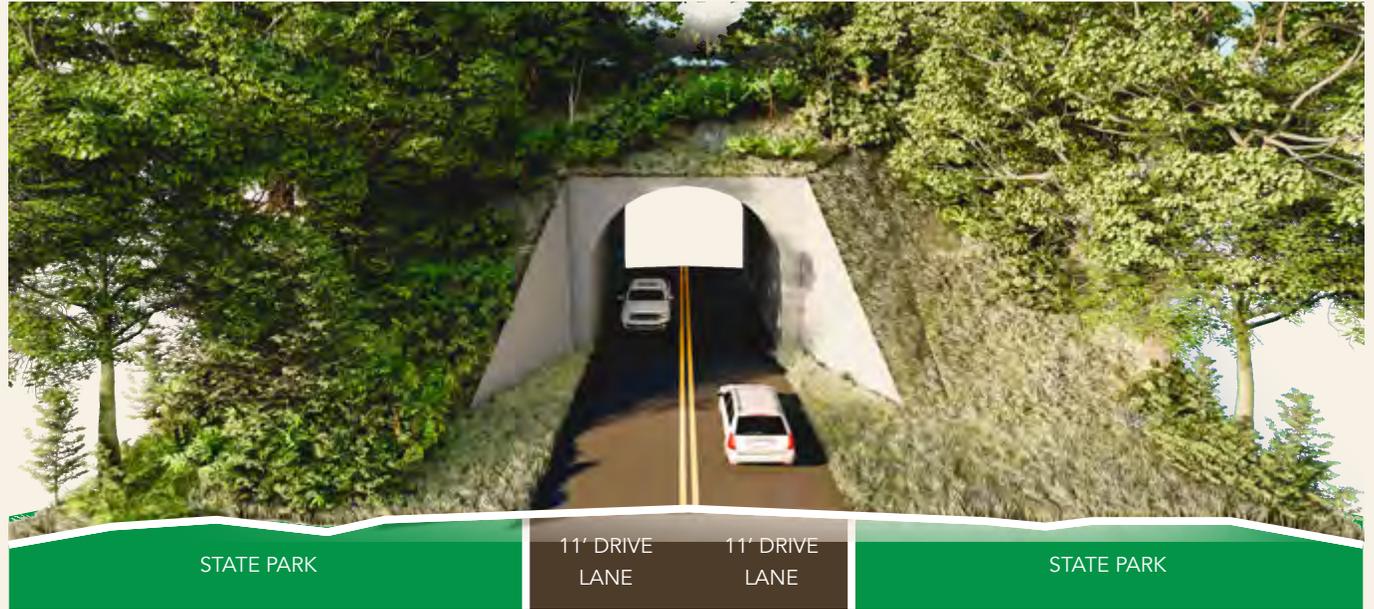


Proposed

◀ Figure 49. Existing & Proposed Sections: Railroad Underpass (Option 1)



Railroad Underpass (Option 2)



66' RIGHT-OF-WAY

Existing



66' RIGHT-OF-WAY

Proposed

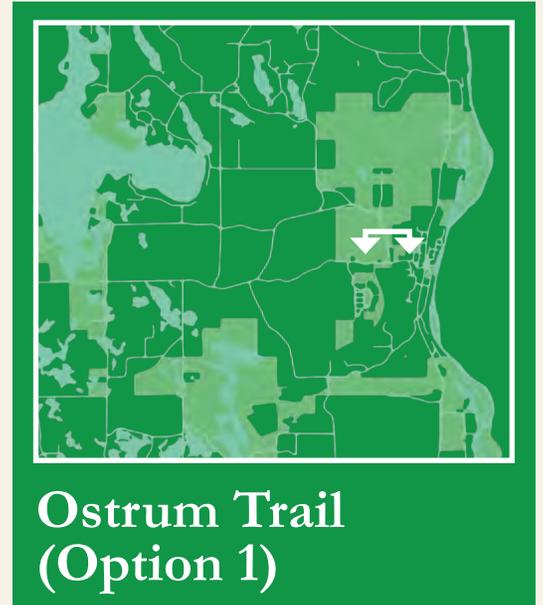
Figure 50. Existing & Proposed Sections: Railroad Underpass (Option 2)



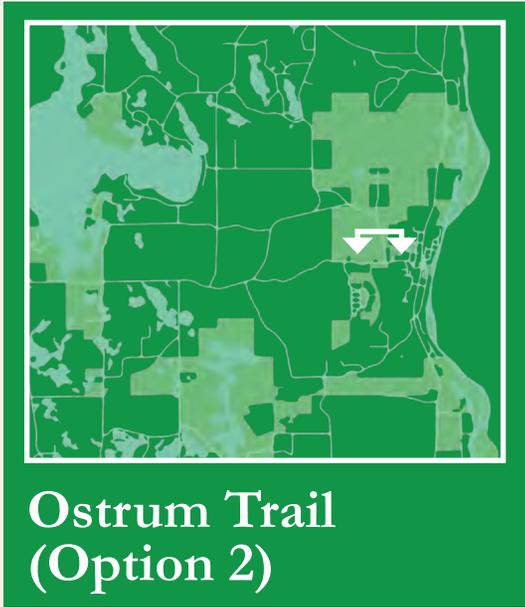
Existing



Proposed



◀ Figure 51. Existing & Proposed Sections: Ostrum Trail (Option 1)

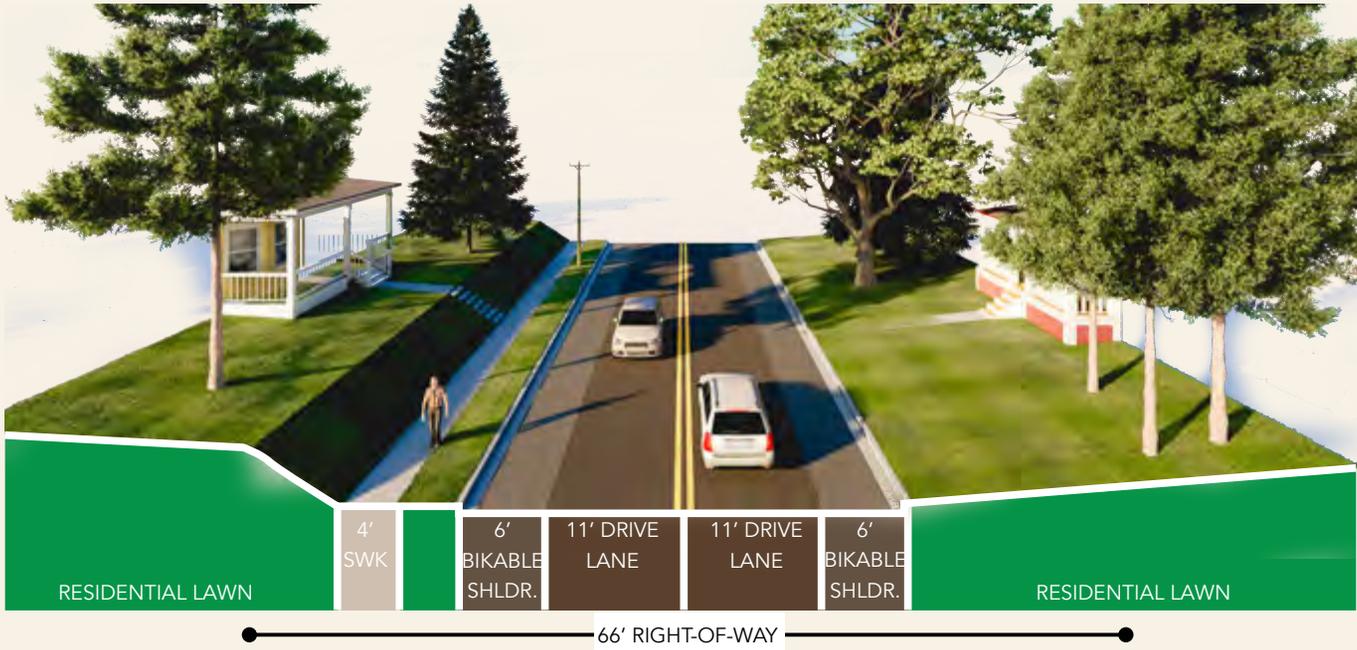


Existing



Proposed

Figure 52. Existing & Proposed Sections: Ostrum Trail (Option 2)



Existing



Proposed

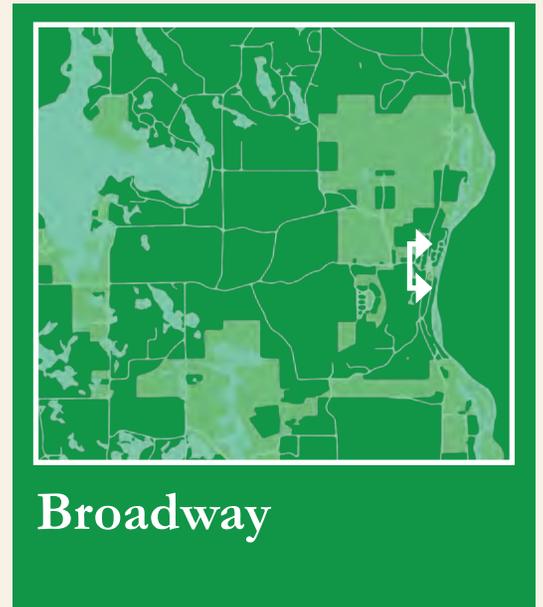


Figure 53. Existing & Proposed Sections: Broadway



View of the Railroad Grade, Marine on Saint Croix, MN

Evaluation

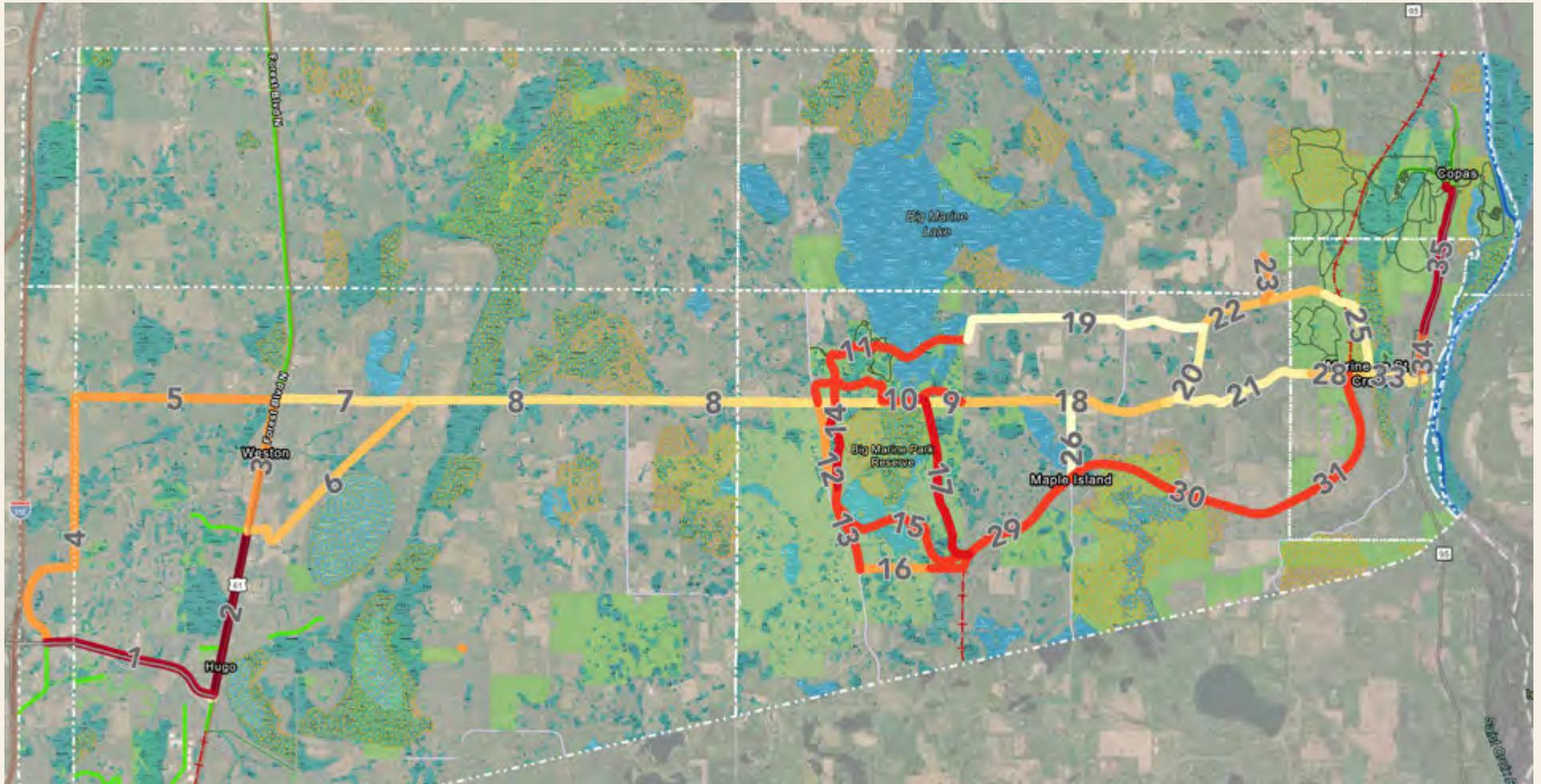


Figure 54. Overall Route Evaluation Scoring

Recommendation

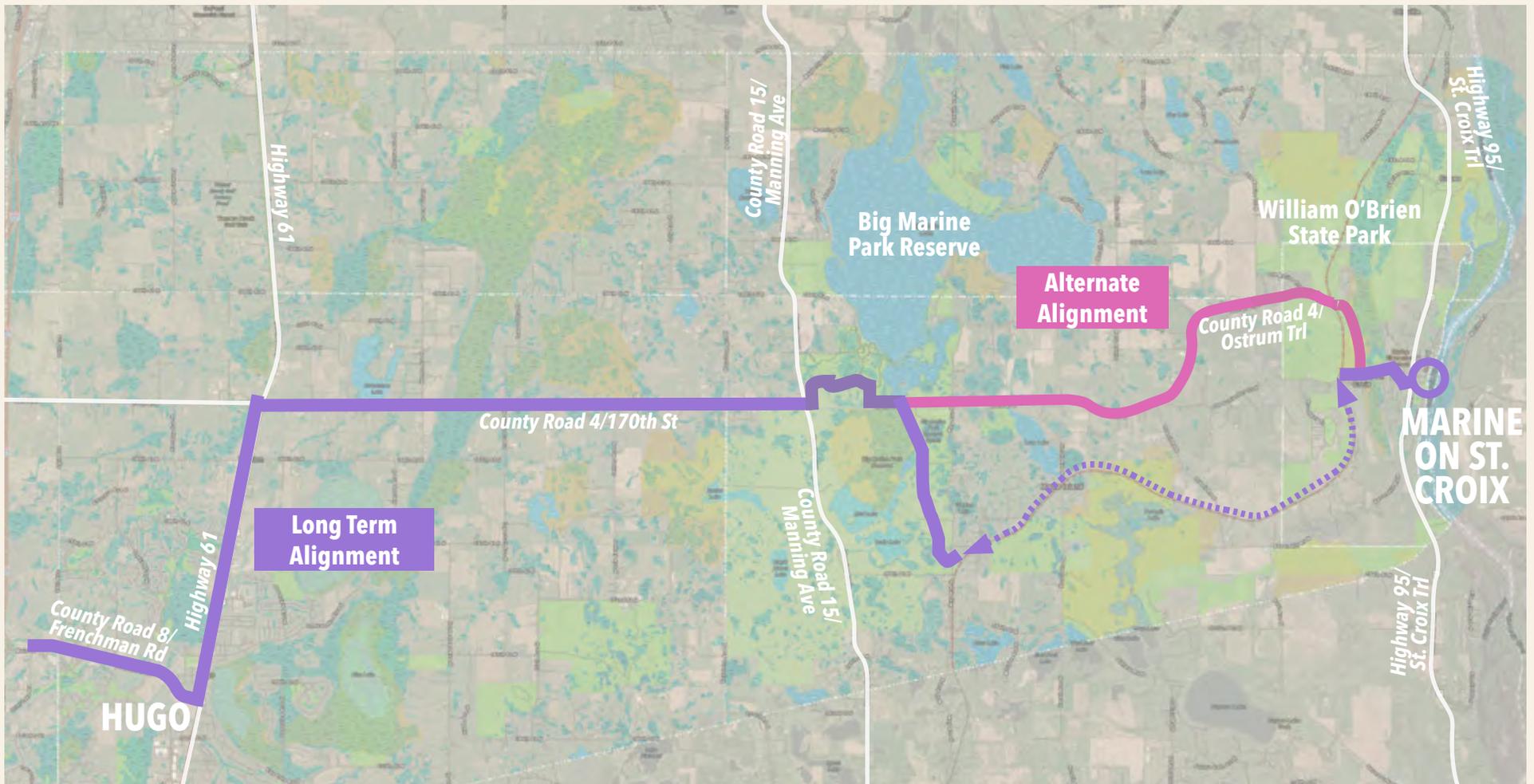


Figure 55. Preferred Route Alignments

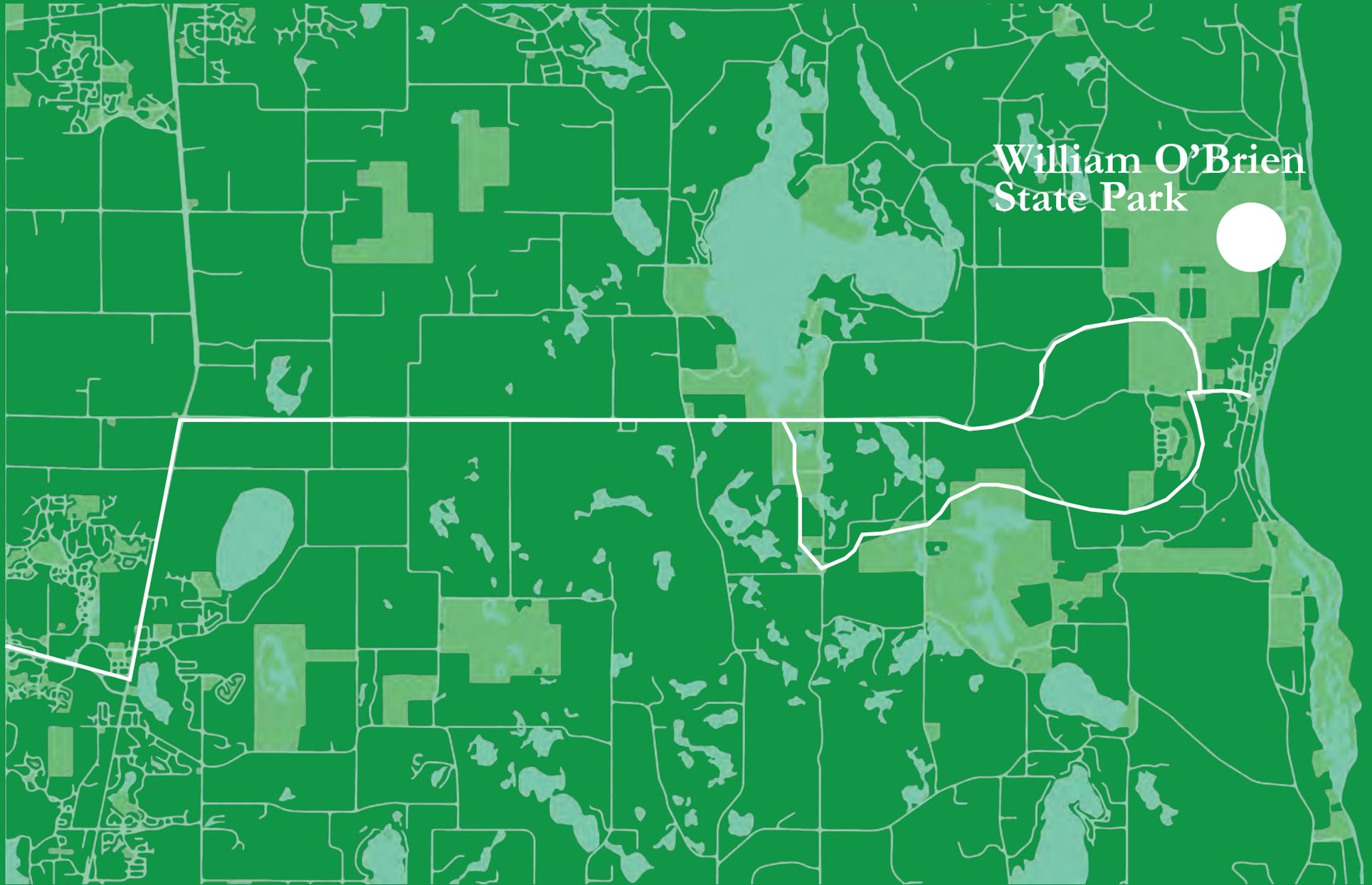
William O'Brien State Park

Destinations Along The Trail

William O'Brien State Park, located along the St. Croix River in Minnesota, has a rich history that reflects both the natural beauty of the area and the efforts to preserve it for public enjoyment. The park was established in 1947, thanks to a generous donation of land by Alice O'Brien in memory of her father, William O'Brien, a prominent St. Paul businessman and philanthropist. The park's establishment was part of a broader movement in the mid-20th century to protect and make accessible the scenic and ecologically significant areas along the St. Croix River. The park's history is deeply tied to the river itself, which has long been a vital waterway for transportation, trade, and recreation. Over the years, the park has grown in size and popularity, becoming a beloved destination for outdoor enthusiasts from the Twin Cities and beyond.

Today, William O'Brien State Park is a key part of Minnesota's state park system, known for its diverse landscapes, including woodlands, wetlands, and prairies, as well as its proximity to the St. Croix River. The park offers a wide range of recreational opportunities, from hiking and birdwatching to fishing and canoeing. Its natural beauty and well-maintained facilities make it a popular spot for families, nature lovers, and those seeking a peaceful retreat from urban life. The park is also a significant ecological area, home to various wildlife species and plant communities, which are protected and managed to maintain the region's natural heritage.





William O'Brien
State Park



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Implementation + Management Plan

Overview

The implementation and management of regional trails must strike a balance between conserving natural resources and improving access to natural areas. By offering trail users opportunities to experience various ecosystems, trails can help raise awareness of the natural environment. Conversely, careful consideration during the selection of trail alignments is needed to avoid environmental impact and habitat fragmentation. To achieve this balance, the project team examined routes that connect users to different natural settings while also aiding in the management and preservation of surrounding natural resources.

This chapter also focuses on the phasing and operations of the regional trail. It outlines the necessary steps for effective implementation, including cost estimates, operations planning, and maintenance strategies to ensure the long-term success and sustainability of the trail system. With forward thinking, regional trails can serve as valuable conduits for recreation and education while advancing the goals of ecological health and resilience.

◀ *County Road 4
Tunnel, Marine on
Saint Croix*



Big Marine Park Reserve

Natural Resources Stewardship Plan

The Natural Resources Stewardship Plan aims to guide the sustainable development, maintenance, and enhancement of natural resources along the regional trail. The strategies outlined in this plan focus on protecting and enhancing existing resources while minimizing the trail's environmental impact.

The goals and objectives outlined in Chapter 1 closely align with the strategies in the Natural Resources Stewardship Plan and became the basis for the plans route evaluation metrics. See Chapter 4 to see how the Natural Resource Stewardship Plan influenced the final route selection.

Natural Resource Inventory

A thorough inventory of natural resources was conducted along the trail search corridor, emphasizing its distinct ecosystems and the need for specific management strategies to address those unique characteristics. This inventory aims to support sustainable trail development

while ensuring compatibility with adjacent resources and infrastructure. For further information on the natural resource inventory, please refer to Chapter 2.

Wetland shapefiles provided by the governing watershed organization were integrated with data from the NHIS system to create a composite layer that highlights sensitive ecological areas. These areas were carefully considered during the selection of trail alignments to avoid environmental impact. Appropriate wetland buffers were calculated and considered when developing route alternatives. As funding becomes available and projects move into the final design phase, it will be necessary to reevaluate these sensitive areas, taking into account the elapsed time since the original long range plan.

Stewardship Recommendations

This plan brings forward five natural resource stewardship recommendations relating to the trail's development. These include the protection of natural habitats, preservation of wetlands, water resource management, biodiversity enhancements, and community education initiatives. The following sections will go into detail on these recommendations, highlighting specific approaches and considerations that will support effective natural resource protection during trail development.

Protect Natural Habitats

The majority of the trail will follow impacted corridors along existing county roads and will have minimal impact to natural systems. However, there are areas where the road and trail are near sensitive ecological areas that will require more detailed and careful consideration by an ecologist.

During the route evaluation process, multiple route alternatives were assessed, and the evaluation criteria guided the selection of an alignment that minimizes disruptions to existing natural systems. This approach prevented habitat fragmentation and subsequent impacts to wildlife migration and ecological integrity. As future projects progress into subsequent design phases, ongoing study of ecological resources will be necessary to ensure that the trail footprint has minimal

impact on wildlife habitats and ecological processes.

Preserve Wetlands

Considering the topography and hydrology of the search corridor, the trail will need to navigate several large wetland complexes. These crossings will need to be designed to protect the integrity of these important ecosystems while maintaining safe and accessible passage for trail users. Chapter 4 outlines proposed strategies to mitigate impacts to existing wetlands. Wetlands are governed by the Wetland Conservation Act (WCA) and regulated by local government jurisdictions. WCA provides a no-net loss protection rule to MN's wetlands. WCA requires that, "anyone who proposes to fill, drain or excavate a wetland must first try to avoid wetland impacts at all cost. If avoidance is impossible, the second step is to minimize those impacts and, finally, replacement is required for any unavoidable wetland excavations, fills, or drainage." Any activities in the wetland must undergo an application and review process prior to obtaining a permit.

If mitigation efforts are not feasible, wetland banking can serve as an alternative. This strategy allows for the restoration of wetland areas elsewhere, providing a means to offset any unavoidable impacts and ensuring the overall ecological balance is maintained.

Wetland banking is the process of restoring or creating wetlands to offset impacted wetland and contribute to the WCA's requirement of no-net loss in MN's wetlands. A wetland must be restored or created under a wetland banking plan approved in advance by the LGU before it can be deposited in the state wetland bank to provide wetland banking credits. Banking credits can be sold to entities & applicants as a replacement towards no-net loss efforts where other projects cannot avoid wetland impact. Replacement ratios, wetland types, and locations are factors in replacement requirements & suitable banking credits.

Water Resource Management

Managing runoff in an ecologically sensitive manner is crucial for establishing sustainable trails that minimize impacts on adjacent ecosystems. During trail development, the following recommendations should be considered:

- Implementing best management practices (BMPs) for stormwater management to reduce runoff and erosion.

- Natural infiltration strategies as the primary strategy for stormwater management, which utilizes passive overland routing of runoff.

- Establishing riparian buffers along waterways adjacent to the trail

Enhance Biodiversity

During trail development, it is important to consider restoration actions that support native plant communities. These actions should be tailored to the unique plant communities adjacent to the trail and will encompass a range of activities such as invasive species removal and seeding or planting to enhance and expand native populations. Restoring these impacted areas offers both biological and functional benefits, such as:

Promote Native Vegetation and Strengthen Biodiversity: Focus on eradicating invasive species and reintroducing native plants within restoration areas to strengthen local biodiversity.

Create Habitat Corridors: Establish corridors that facilitate wildlife connectivity and movement, allowing for a more robust ecosystem.

For example, restoring native prairies not only enhances habitat value but also adds visual appeal for trail users. Additionally, these prairies assist in retaining snow cover on the trail and provide permanent vegetative cover that slows wind speeds and filters runoff, thus reducing erosion.

and the importance of sustainable practices. By engaging the community in educational initiatives, individuals are better equipped to appreciate the value of natural resources and the role they play in protecting them. This knowledge empowers residents to participate actively in conservation efforts, whether through responsible trail use, volunteer restoration projects, or advocating for environmentally friendly policies.

Involve local communities and stakeholders in stewardship activities, such as volunteer days for habitat restoration and clean-ups.

Develop educational signage along the trail to raise awareness about local ecology, conservation efforts, and sustainable practices.

Community Education

Community education fosters awareness and understanding of the local ecosystem



Implementation + Funding

The implementation of the regional trail is expected to be phased out based on available funding and local considerations, such as the timing of nearby roadway enhancements and community interest in expanding the trail network. In the interim, there will be gaps within the regional trail. The final trail design will strive to follow county's regional trail standards.

Short Term Goals and Long Term Vision

At this point in the planning process, we can outline a general timeline for implementation. This schedule will require regular reassessment as project phases are completed and progress is made.

Phase 1 (0-10 years)

Designate existing trail segments along the GHRT corridor as the GHRT and make necessary crossing enhancements

where relevant in Hugo, at County Road 8, and in Marine on Saint Croix.

Phase 2 (10-20 years)

Complete Zones 1 and 2 to establish a connection between Hugo and Big Marine Park Reserve

Simultaneously finalize Zone 3 in conjunction with the expansion of Big Marine Park Reserve.

Phase 3 (20+ years)

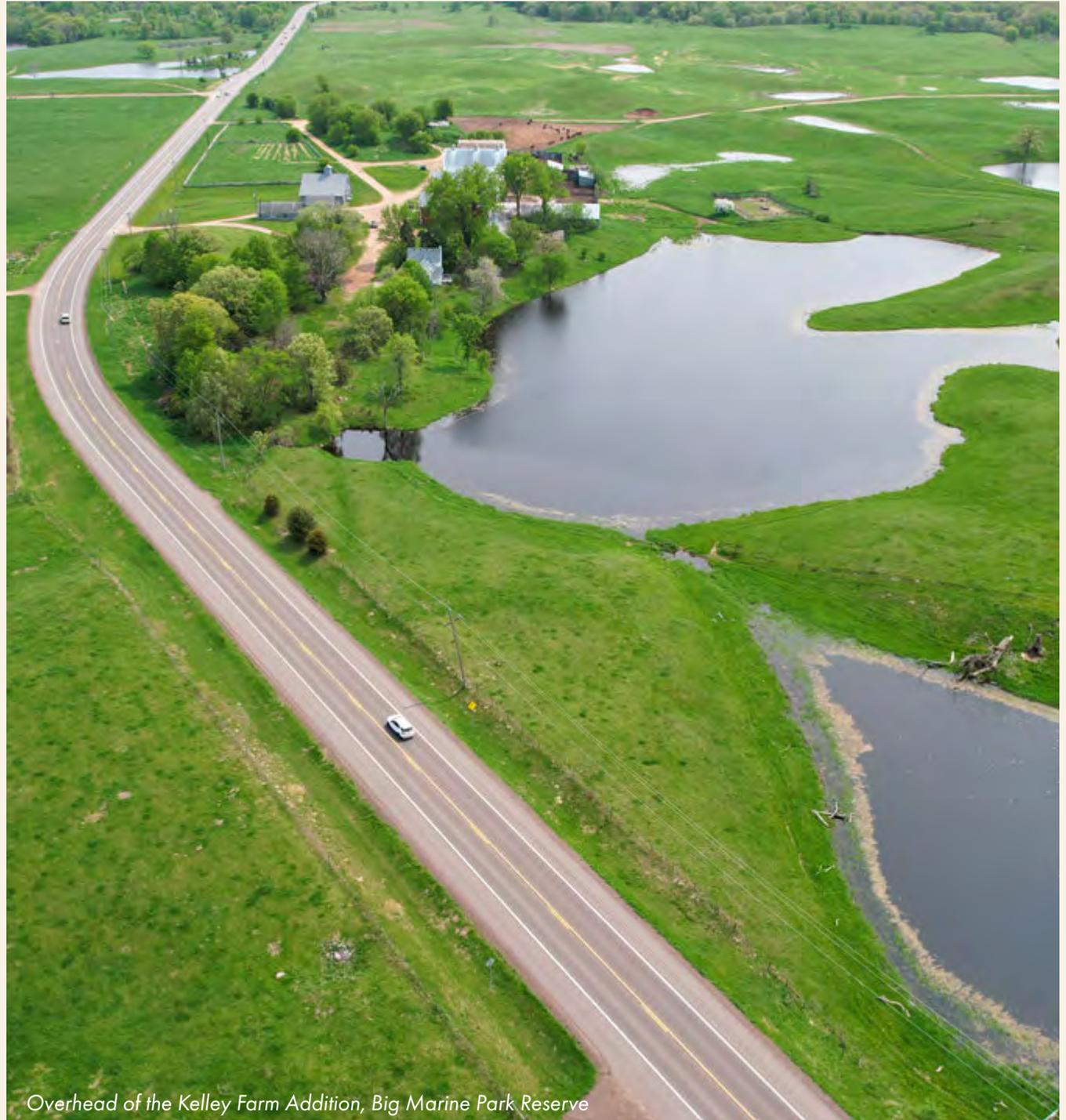
Complete one of the two alternatives within Zone 4, which is contingent upon coordination with the railroad authority. Depending on the progress of negotiations with Canadian National, this zone may be incorporated into an earlier phase.

Collaboration and Partnerships

This plan sets a framework for a long-term alignment that will require ongoing collaboration with agency partners during future phases of design. Realizing this vision relies on Washington County's ability to secure additional funding and form partnerships with agencies and organizations dedicated to advancing the regional trail goals. Collaborating strategically with local jurisdictions and organizations will be vital for efficiently funding and implementing projects.

Integrating trail development into private redevelopment initiatives, especially in areas within the Metropolitan Urban Service Area (MUSA) or zoned for future development, can create mutually beneficial opportunities. Furthermore, working with watershed organizations will not only help achieve water quality objectives but also support trail development, potentially providing additional funding for ecological enhancements.

Coordination with the Minnesota Department of Natural Resources (MnDNR) will also be crucial, particularly as the Gateway Trail extension aligns with segments of the long-range plan for the Green Haven Regional Trail (GHRT). This collaboration will aid in identifying alignment alternatives, ensuring effective integration with railroad coordination, wayfinding, and cost-sharing efforts as the project moves forward.



Overhead of the Kelley Farm Addition, Big Marine Park Reserve



Operations + Maintenance Planning

Each year, Washington County collaborates with the Metropolitan Council to budget for the effective operation of its parks and trails system. This budgeting process allocates essential resources for facility maintenance and natural resource management. The funding is derived from several primary sources, including:

- Vehicle passes
- County levy

Operations and maintenance grants from State general funds

Funds provided by the Metropolitan Council from lottery in-lieu sales tax proceeds

Looking ahead, the county anticipates that improvements and expansions of the regional trails will lead to increased usage, thus generating additional revenue. As new amenities, such as enhanced

Facility Type	Annual Operations + Maintenance Cost	Quantity	Estimated Annual O+M Cost
New 10' Bituminous Trail	\$2,500 per mile	14.4 miles	\$36,000
Existing 10' Bituminous Trail	\$2,500 per mile	1.8 miles	N/A (MNDNR)
New Boardwalk	\$20 per linear foot	2,640 feet	\$52,800
Bike Repair Stations	\$100 each	4	\$400
		Total	\$89,200

Table 1. Estimated Annual Operations and Maintenance Costs

Facility Type	Annual O+M Cost	Capital Costs	Estimated Life
Bituminous Trail (8' wide or less)	\$1,200 to \$2,000 / Mile	\$200,000 to \$250,000 / Mile	25+ years
Bituminous Trail (10' wide)	\$1,500 to \$2,500 / Mile	\$250,000 to \$350,000 / Mile	25+ years
On-Street Bikeways (8' wide)	\$1,500 to \$2,500 / Mile	\$500,000 to 700,000 / Mile	20 years
Sidewalks (6' wide concrete)	Minimal	\$45 / LF	25 to 40 years
New Boardwalk	\$15 - \$20 / LF	\$600 - \$800 / LF	15 to 20 years
Crossing Type	Annual O+M Cost	Capital Cost	Estimated Life
Pedestrian/Bicycle Tunnel	\$2,000 - \$5,000 / yr	\$600,000 - \$1,200,000	50 years
Pedestrian/Bicycle Overpass	\$10,000 - \$20,000 / yr	\$1,200,000 - \$2,500,000	50 years
HAWK (Pedestrian Hybrid Beacon Signal)	\$4,000 - \$6,000 / yr	\$100,000 - \$160,000	20 years
RRFB (Rectangular Rapid Flashing Beacons)	Minimal	\$15,000 - \$20,000	20 years
Signalized Intersection	\$6,000 - \$10,000 / yr	\$200,000 - \$350,000	20 years
Flashing Warning Sign	Minimal	\$4,000 - \$8,000	10 to 15 years
ADA Curb Ramp Retrofit	Minimal	\$1,000 - \$2,000 / Ramp	25 to 40 years
High Visibility Crosswalks	Minimal	\$800 - \$2,000	2 to 5 years
Median/Refuge Island (4' to 8' wide)	Minimal	\$20,000 - \$30,000 / 100 LF	25 to 40 years
Crossing Signs	Minimal	\$300 - \$1,200	10 to 15 years
Signage Type	Annual O+M Cost	Capital Cost	Estimated Life
Kiosk-Style Signs	Minimal	\$5,000 - \$25,000	20 years
Wayfinding Sign	Minimal	\$1,000 - \$1,500	20 years
Amenity Type	Annual O+M Cost	Capital Cost	Estimated Life
Bike Repair Station	\$50 - \$100	\$500 - \$1,500	5 years
Bench	Minimal	\$750 - \$2,000	10 years
Trash/Recycling Cans	Minimal	\$500 - \$1,500	10 years
Bike Parking Rack	Minimal	\$500 - \$1,000	20 years

Table 2. Assumed Material Costs

Capital Construction Costs

Zone 1: Hugo	
Distance (miles)	4.20
Cost	\$2,319,200
Zone 2: County Road 4 West	
Distance (miles)	4.88
Cost	\$9,532,923
Zone 3A: Big Marine Park Reserve Long Term Alignment	
Distance (miles)	1.71
Cost	\$2,265,705
Zone 3B: Big Marine Park Reserve Alternate Alignment	
Distance (miles)	2.30
Cost	\$2,404,883
Zone 4A: Marine on St. Croix Long Term Alignment	
Distance (miles)	4.75
Cost	\$10,269,905
Zone 4B: Marine on St. Croix Alternate Alignment	
Distance (miles)	4.76
Cost	\$6,132,955
Alignment Comparison	
Long Term Alignment Distance (miles)	15.55
Long Term Alignment Cost	\$24,387,734
Alternative Alignment Distance (miles)	16.15
Alternative Alignment Cost	\$20,389,961

Table 3. Project Cost Estimate by Segment

trails and facilities, are introduced, it will be crucial to explore and leverage new sources of revenue.

Currently, with over 4,700 acres in its park system, the Washington County Parks Department is responsible for the operation and maintenance of regional trail segments located on County-owned land, adhering to the policies, ordinances, and guidelines established by the Washington County Board of Commissioners.

Operations and maintenance are vital for ensuring that trails effectively meet public needs. Proper planning in these areas is essential to uphold high-quality amenities. Inadequate maintenance has consistently emerged as a major concern among trail users, demonstrated by various complaints about the safety, cleanliness, and overall condition of facilities. To address this, a robust and achievable operations and maintenance plan has been integrated into our long-range strategy. This plan aims to identify needs and ensure that maintenance and operational considerations are integrated into all aspects of trail planning, reinforcing their significance in the ongoing development of regional trails.

Operations Planning

Washington County trails are managed and maintained by a dedicated team of both full-time and seasonal staff based at

the Public Works North Shop. The Parks Division operates with an annual budget of approximately \$4 million, allocated for the comprehensive operation and upkeep of the entire parks and trails system. This funding allows the team to ensure that all facilities are well-maintained and accessible to the public throughout the year.

The policies and ordinances established by the Washington County Board of Commissioners outline regulations designed to ensure the safe public use of the county's parks, trails, and facilities. Regional trails are accessible to the public throughout the year, encouraging year-round enjoyment and recreation.

As of the writing of this master plan, the following rules are in place for users of Washington County parks and trails:

The consumption of alcoholic beverages is strictly prohibited.

Parking is allowed only in designated areas.

Pets must be kept on a leash at all times, with a maximum length of six feet.

Pets are not permitted on beaches, in campgrounds, picnic areas, or playgrounds.

Dog owners are required to clean up after their pets.

Trash and recycling should be disposed

of in designated waste and recycling containers.

Motorized vehicles are not allowed on bike trails.

Bicycles must be ridden on designated bike trails and roadways as close to the right-hand side as conditions allow.

Bicyclists are expected to operate their bikes in a safe and careful manner, maintaining a reasonable speed that ensures the safety of themselves and those nearby.

Maintenance

Washington County currently manages and maintains over 75 miles of both turf and paved trails, providing users with ample opportunities for a variety of outdoor activities, including walking, running, hiking, biking, cross-country skiing, horseback riding, and more. The county is committed to upholding its infrastructure at a level that minimizes future maintenance and replacement costs while ensuring the safety of residents. As a result, Washington County does not plan to plow or otherwise maintain the Glacial Hills Regional Trail during the winter season. However, local communities may choose to maintain segments of the regional trail during winter through a winter use permit.

This long range plan envisions the eventual additional mileage of the regional trail.

Once constructed, these additional trails will require ongoing maintenance, which will encompass:

- Maintaining the surfacing of new trails

- Upkeeping interpretive panels and wayfinding signage

- Maintaining trail amenities

- Managing vegetation along the regional trail routes and any connecting trails within County-owned rights-of-way

- Cleaning and maintaining stormwater best management practices (BMP)

Estimated annual costs for the operations and maintenance of the regional trails will cover upkeep for the trails, shoulders, and buffers, as well as support amenities such as kiosks, benches, and pedestrian/bike crossing infrastructure. The maintenance costs for roadway crossing infrastructure are expected to be split between transportation and recreation budgets. Anticipated annual operations and maintenance costs for the Glacial Hills Regional Trail are estimated in [“Table 1. Estimated Annual Operations and Maintenance Costs”](#) on page 125.

Estimated Costs

The costs in [“Table 2. Assumed Material Costs”](#) on page 126 are planning-level estimates based 2024 cost levels and should be adjusted by at least 5%

annually to account for inflation. The final section of estimated costs includes a 10% overall Design and Engineering (D&E) contingency for budget items that require design and engineering services. Furthermore, a 20% Construction/Implementation contingency has been applied to all pertinent budget items, which is a standard practice in cost estimation.

Unit Abbreviations: Each (EA), Linear Foot (LF), Acre (AC), Miles (MI).

[“Table 3. Project Cost Estimate by Segment”](#) on page 127 summarizes the anticipated overall construction costs detailed in this long-range plan. Further cost breakdowns by zone can be found on the tables in the pages that follow.

Funding Opportunities

(Insert Table Ref.) outlines potential grant funding opportunities that Washington County could pursue to support the development the regional trail. Since the availability and eligibility criteria for each grant may vary from year to year, the County should verify the specifics of each grant opportunity before finalizing any funding plans.

Segment 1: City of Hugo

Item	Quantity	Unit	Unit Price	Total	Notes
Trail Repaving for Existing Segments	23,900	LF	\$60	\$1,434,000	repaving
Trailhead (enhanced)	1	LS	\$50,000	\$50,000	see trailhead narrative in chapter 4
Trailhead (proposed)	1	LS	\$200,000	\$200,000	see trailhead narrative in chapter 5
Directional Signage	5	EA	\$4,000	\$20,000	mile markers and directional signage
Interpretive Signage	1	LS	\$10,000	\$10,000	interpretative signage or experiential design element
Enhanced crossing	3	EA	\$20,000	\$60,000	Rapid flashing beacon, tactile paving, striping
Bike Parking	5	EA	\$750	\$3,750	furnished and installed, with concrete pad and footing
Trash Receptacle	5	EA	\$500	\$2,500	furnished and installed, with concrete pad and footing
Bench	5	EA	\$750	\$3,750	furnished and installed, with concrete pad and footing
			10% Design and Engineering Contingency	\$178,400	
			20% Construction Contingency	\$356,800	
			Total (2024 Dollars)	\$2,319,200	

Table 4. Zone 1 Project Costs

Segment 2: County Road 4 West

Item	Quantity	Unit	Unit Price	Total	Notes
10' wide bituminous trail	25,792	LF	\$150	\$3,868,830	removals, mass grading, compacted base, paving, restoration, planting
Boardwalk	2,404	LF	\$1,000	\$2,403,500	includes helical piles, decking, and guardrail
Aggregate Trail	25,792	LF	\$40	\$1,031,688	
Rest Stop	1	EA	\$15,000	\$15,000	surfacing, benches, signage, bike racks with concrete pad and footing
Directional Signage	1	EA	\$4,000	\$4,000	mile markers and directional signage
Interpretive Signage	1	LS	\$10,000	\$10,000	interpretative signage or experiential design element
			10% Design and Engineering Contingency	\$733,302	
			20% Construction Contingency	\$1,466,604	
			Total (2024 Dollars)	\$9,532,923	

Table 5. Zone 2 Project Costs

Segment 3A: Big Marine Park Reserve (Long-Term Alignment)

Item	Quantity	Unit	Unit Price	Total	Notes
10' Wide Bituminous Trail	9,039	LF	\$150	\$1,355,850	removals, mass grading, compacted base, paving, restoration, planting
Grade separated crossing	2	EA	\$70,000	\$140,000	Assume \$3,000 LF and \$20,000 for end sections
Trailhead (proposed)	1	LS	\$200,000	\$200,000	see trailhead narrative in chapter 4
Rest Stop	1	EA	\$15,000	\$15,000	surfacing, benches, signage, bike racks with concrete pad and footing
Directional Signage	3	EA	\$4,000	\$12,000	mile markers and directional signage
Interpretive Signage	2	LS	\$10,000	\$20,000	interpretative signage or experiential design element
			10% Design and Engineering Contingency	\$174,285	
			20% Construction Contingency	\$348,570	
			Total (2024 Dollars)	\$2,265,705	

Table 6. Zone 3A Project Costs

Segment 3B: Big Marine Park Reserve (Alternate Alignment)

Item	Quantity	Unit	Unit Price	Total	Notes
10' wide bituminous trail	12,139	LF	\$150	\$1,820,910	removals, mass grading, compacted base, paving, restoration, planting
Rest Stop	1	EA	\$15,000	\$15,000	surfacing, benches, signage, bike racks with concrete pad and footing
Directional Signage	1	EA	\$4,000	\$4,000	mile markers and directional signage
Interpretive Signage	1	LS	\$10,000	\$10,000	interpretative signage or experiential design element
			10% Design and Engineering Contingency	\$184,991	
			20% Construction Contingency	\$369,982	
			Total (2024 Dollars)	\$2,404,883	

Table 7. Zone 3B Project Costs

Segment 4A: Marine on Saint Croix (Long-Term Alignment)

Item	Quantity	Unit	Unit Price	Total	Notes
10' wide bituminous trail	25,077	LF	\$150	\$3,761,535	removals, mass grading, compacted base, paving, restoration, planting
Trailhead (enhanced)	2	LS	\$50,000	\$100,000	see trailhead narrative in chapter 4
Rest Stop	2	EA	\$15,000	\$30,000	surfacing, benches, signage, bike racks with concrete pad and footing
Directional Signage	4	EA	\$4,000	\$16,000	mile markers and directional signage
Interpretive Signage	1	LS	\$10,000	\$10,000	interpretative signage or experiential design element
Enhanced crossing	1	EA	\$20,000	\$20,000	Rapid flashing beacon, tactile paving, striping
On Street Striping	3,866	LF	\$25	\$96,658	within existing right of way
Bike Parking	5	EA	\$750	\$3,750	furnished and installed, with concrete pad and footing
Trash Receptacle	2	EA	\$500	\$1,000	furnished and installed, with concrete pad and footing
Bench	4	EA	\$750	\$3,000	furnished and installed, with concrete pad and footing
			10% Design and Engineering Contingency	\$404,194	
			20% Construction Contingency	\$808,389	
Acquisition or Easement Purchase	25,077	LF	\$200	\$5,015,380	100' wide easement
			Total (2024 Dollars)	\$10,269,905	

Table 8. Zone 4A Project Costs

Segment 4B: Marine on Saint Croix (Alternate Alignment)

Item	Quantity	Unit	Unit Price	Total	Notes
10' wide bituminous trail	25,148	LF	\$150	\$3,772,230	removals, mass grading, compacted base, paving, restoration, planting
Trailhead (enhanced)	1	LS	\$50,000	\$50,000	see trailhead narrative in chapter 4
Rest Stop	2	EA	\$15,000	\$30,000	surfacing, benches, signage, bike racks with concrete pad and footing
Directional Signage	3	EA	\$4,000	\$12,000	mile markers and directional signage
Interpretive Signage	1	LS	\$10,000	\$10,000	interpretative signage or experiential design element
Enhanced crossing	1	EA	\$20,000	\$20,000	Rapid flashing beacon, tactile paving, striping
Railroad Tunnel	1	EA	\$750,000	\$750,000	Assumed 150' lateral bore 14'x10' tunnel
On Street Striping	2,937	LF	\$25	\$73,428	within existing right of way
			10% Design and Engineering Contingency	\$471,766	
			20% Construction Contingency	\$943,532	
			Total (2024 Dollars)	\$6,132,955	

Table 9. Zone 4B Project Costs



Hopkins Schoolhouse, Hugo, MN



Appendix.



Geese taking off, William O'Brien State Park