Vermillion River Greenway
(Hastings)
MASTER PLAN

County Board Adopted—October 29, 2019

Dakota COUNTY

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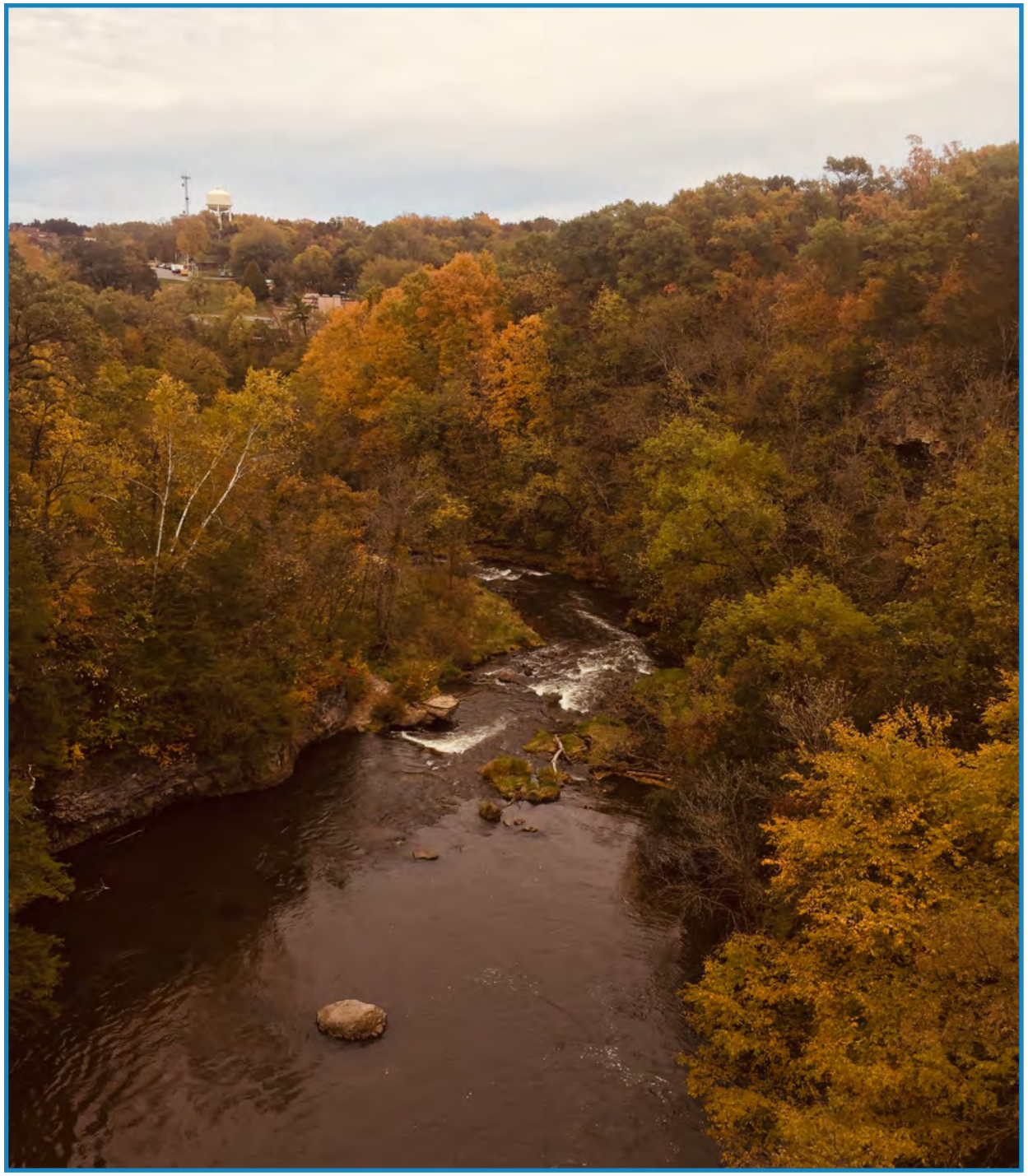


The Vermillion River gorge through Hastings feeds into the Mississippi River just south of downtown.

Introduction

1

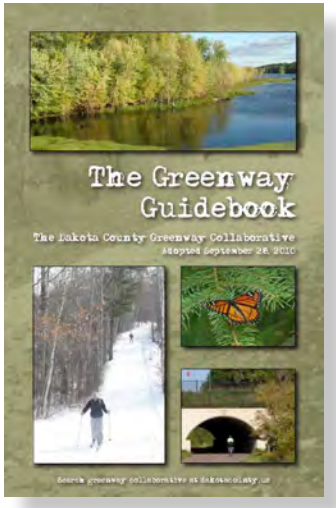
OVERVIEW

The Vermillion River Greenway (Hastings) is a proposed regional trail and open space corridor that will provide a link between southwestern Hastings neighborhoods, Vermillion Falls Park, the Mississippi River Greenway in eastern Dakota County, and the new Point Douglas Regional Trail connecting Hastings to Prescott, Wisconsin. Much of the greenway corridor has an existing City trail facility along it today. The regional greenway designation will provide improvements, such as natural resources restoration projects, trailhead and gateway facilities, and overlooks. The greenway will serve as a destination trail for the larger surrounding area and connect to the Dakota County Greenway network. The five-mile corridor stretches east and west within southern Hastings and then north to the Mississippi River and downtown Hastings. A one-mile portion of the trail corridor will be newly designed and constructed in southwestern Hastings connecting to Marshan Township. The greenway corridor's surrounding land use includes single-family residential, downtown business district, and public open space.

The Vermillion River Greenway Master Plan:

- Identifies the preferred trail and greenway alignment
- Envisions improvements to water quality, habitat, recreation, and non-motorized transportation along the corridor
- Provides strategies for interpretation, resource stewardship, development, land acquisition, and operations
- Estimates project costs
- Satisfies requirements for Metropolitan Council Thrive 2040 regional destination trail and greenway planning

The Vermillion River Greenway is circled in red on the map above.



Dakota County Greenway Vision

In the 2008 Dakota County Park System Plan and the 2010 Dakota County Greenway Guidebook, the County has established a vision for an interconnected system of open space corridors – greenways. Greenways provide many benefits but require little land.

Greenways can protect natural areas, habitat, stream corridors, and water quality. As green corridors landscaped with native plants, greenways offer a more natural experience than traditional roadside trails.

Greenways are a great way to "bring parks to people" in developed areas, where opportunities for large regional parks may no longer exist.

Dakota County Park System Plan

The 2008 Dakota County Park System Plan established the foundation for a county-wide greenway network by envisioning regional greenways that connect parks, schools, local trails, and libraries through the non-rural portions of the county.

Dakota County Greenway Collaborative: The Greenway Guidebook

In 2010, Dakota County adopted the Dakota County Greenway Guidebook, which guides the process for greenway planning and development. The guidebook establishes a framework for a collaborative approach to governance, stewardship, design, and operation of greenways.

PLANNING CONTEXT

The Vermillion River Greenway travels through the city of Hastings and a small portion of Marshan Township. Several planning efforts guide the greenway's development:

- Metropolitan Council Thrive 2040 Regional Parks Policy Plan
- Dakota County Park System Plan, 2008
- Dakota County 2030 Transportation Plan
- Dakota County Greenway Guidebook, 2010
- City of Hastings 2030 Comprehensive Plan
- Dakota County Visitor Services Master Plan, 2017

Mississippi River Corridor Critical Area

A small portion of the trail corridor less than half a mile long falls within the Mississippi River Corridor Critical Area. This is an existing paved trail that is part of the Mississippi River Regional Trail and City of Hastings trails. See map on following page.

This master plan recognizes the purposes of the Mississippi River Corridor Critical Area (MRCCA) designation as detailed in Minnesota Statutes, section 116G.15, subd. 1, which are as follows:

- (1) protect and preserve the Mississippi River and adjacent lands that the legislature finds to be unique and valuable state and regional resources for the benefit of the health, safety, and welfare of the citizens of the state, region, and nation;
- (2) prevent and mitigate irreversible damages to these state, regional, and natural resources;
- (3) preserve and enhance the natural, aesthetic, cultural, and historical values of the Mississippi River and adjacent lands for public use and benefit;
- (4) protect and preserve the Mississippi River as an essential element in the national, state, and regional transportation, sewer and water, and recreational systems; and
- (5) protect and preserve the biological and ecological functions of the Mississippi River corridor.

This master plan also acknowledges the standards and criteria set forth in the State Statute that establish guidelines for the preservation, protection, and management of lands within the MRCCA. These standards apply to public facilities, private facilities, vegetation management, land alteration and storm water management, subdivision and land development, and exemptions.

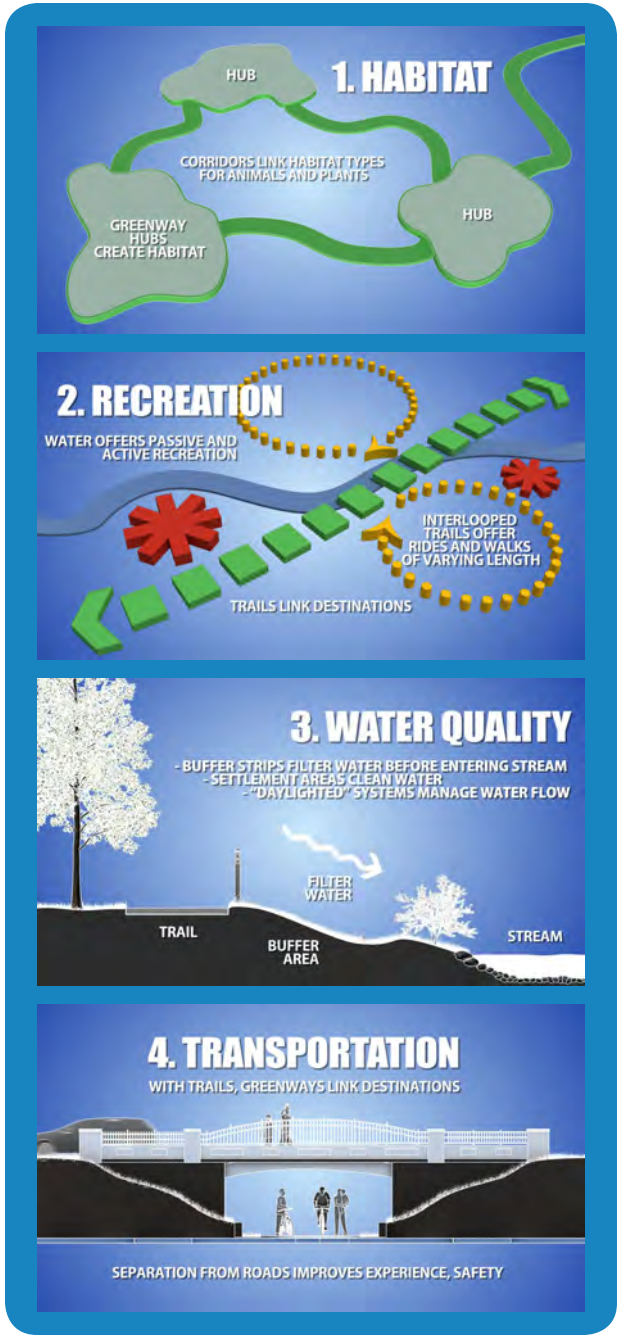
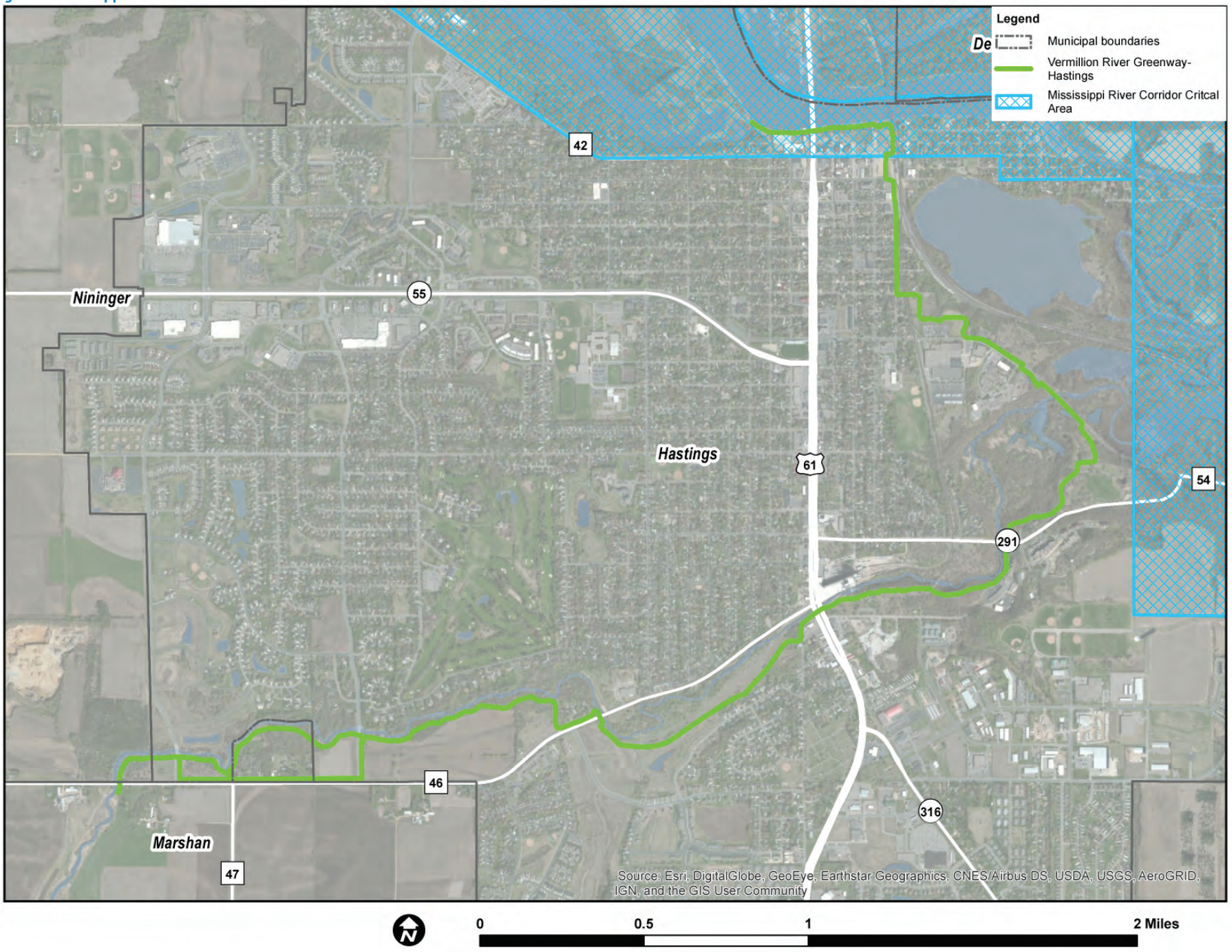


Figure 4. Mississippi River Corridor Critical Area



This master plan recognizes that the design and construction of trail facilities must comply with the standards contained in Minn. Rules 6106.0130. This master plan also acknowledges that trails and trail facilities must be designed and constructed in a manner that protects primary conservation areas and public river corridor view identified by the City of Hastings 2040 Comprehensive Plan.

Multicultural Outreach and Input

Prior to the greenway planning process, Dakota County completed an in-depth multicultural outreach process as part of its Visitor Services Master Plan (see full outreach report here: https://www.co.dakota.mn.us/parks/Planning/VisitorServices/Documents/ParkVisitorSurveyReport.pdf), which resulted in valuable information regarding recreational interests and preferences from minority cultural groups, non-native English speakers, and immigrants.

Influence of Input on the Plan

Some of the information obtained through the Visitor Services Master Plan influenced this greenway plan; for example, the County will provide marketing information about regional park and recreation facilities, safe and accessible facilities, and clear signage and other amenities along trails and in parks. Additional input from minority and low-income residents and potential trail users in the area was sought by contacting several local organizations, such as Artspace Hastings River Lofts, a development meant to provide affordable housing to artists; Hastings Community Education; United Way; the Tilden Community Center; 360 Communities; and Hastings Family Service. The contacts were informed of the process and directed to the website and online survey to provide input.

Responses to the requests for input were limited. The following includes comments received from the above sources:

- "We have bikers, walkers/hikers that would certainly use the trails. I've heard bikers say that it isn't safe to be on the streets anymore. And, for the older adults, places to stop, rest, look around is a great way to keep them out more."

Technical Advisory Group

A technical advisory group provided input on the project, including representatives from:

- City of Hastings
- Dakota County Office of Planning
- Dakota County Parks
- Vermillion River Watershed JPO

GREENWAY MASTER PLANNING PROCESS

The planning process was a collaborative effort of multiple agencies and jurisdictions. Dakota County led the process with advice from a technical advisory group formed to guide the master plan. Key stakeholders were engaged during the process to inform planning decisions and recommendations. Public outreach included an open house, email outreach, posting information on a project website, online questionnaires, and targeted efforts. Following is a summary of the input process.

Technical Advisory Group

A technical advisory group met twice during the master planning process to provide guidance, provide insight into technical questions, explore options, identify partnership opportunities, and discuss concurrent projects. In addition to providing specific guidance, the TAG institutionalized a collaborative planning process and established relationships across agencies with a stake in implementing the master plan. TAG meetings were held on October 4, 2018, and February 5, 2019.

Stakeholder Input

Specific outreach was made to engage and seek input from key land owners within the corridor area. A questionnaire was distributed at several locations asking for feedback on the greenway alignment, trail accessibility, connections, and amenity enhancements. The following outreach efforts were made:

- Information posted on project website
- Information posted on City of Hastings website
- Mailers to every property owners within 500 feet of the trail corridor
- Email inquiries to: Artspace Hastings River Lofts, Hastings Community Education, United Way, and Hastings Family Service
- A presentation was made to members of the Hastings Senior Center, which included at least 40 members in attendance. Comments included the desire for fishing docks/piers along the Vermillion River, emergency phones/lights along the more isolated areas of the trail, and questions about if the trail will be rebuilt in some areas. The attendees were interested in and supportive of the project.

More detailed feedback can be found in the Appendix A of this report.

Public Open House

One open house was held as part of the Vermillion River Greenway (Hastings) Master Plan process. The open house was held on March 14, 2019, at Hastings City Hall. The purpose of the open house was to gather input on the draft recommendations for trail alignment alternatives, greenway features, the draft approach to interpretation, and the draft approach to natural resources. Ten to 15 people attended the open house with interest in different aspects of the greenway planning. Most of the comments were positive, and attendees were generally in favor of the greenway recommendations. Comments and questions received at the open house and on the comment forms include the following topics and issues:

- Property owners along the undeveloped portion of the trail attended the meeting to learn more about the planned alignment and how it might affect their properties.
- There were concerns expressed about the darkness through the heavily wooded section of the trail from Vermillion Falls to Vet Park and then the heavily wooded areas around the disc golf park. Lighting is desired in the wooded areas.
- There is interest in making the trail corridor more inviting around Vermillion Falls, which will help keep out vandalism or inappropriate behavior.
- There was interest expressed in keeping the undeveloped trail alignment along the river as is shown in the City of Hastings Comprehensive Plan rather than along Co. Rd 46 where there is heavy traffic traveling at high speeds.

Project Website

A project website at www.hkgi.com/projects/dakota was established for the North Creek and Minnesota River greenways in 2010 and was continued as a resource for the Vermillion River Greenway (Hastings). Materials from the open houses were posted online, and an online questionnaire was available as a way to provide feedback for those interested.

Public Review

The public review draft master plan was posted on Dakota County's website and the greenway website from July to August, 2019.

The public review draft was also made available to all project stakeholders: Dakota County Planning Commission, City of Hastings, Marshan Township, the Vermillion River Watershed JPO, and the Metropolitan Council. In addition, a summary presentation was prepared for technical advisory group members to present to their organizations. The Dakota County Board adopted the master plan on _____.

VISITOR SERVICES PLAN MULTICULTURAL OUTREACH

A previous Dakota County project to the Vermillion River Greenway-Hastings master planning process, the Dakota County ***Parks Visitor Services Plan***, conducted detailed multicultural outreach, which provided the following input that can be associated with general recreation, trails, and Dakota County park facilities:

- Lack of awareness is a major factor in people not using Dakota County park facilities
- Lack of time to visit parks is an issue, people tend to visit neighborhood parks that are close to where they live before visiting larger County parks and facilities
- Concerns about personal safety, which would especially be a concern if walking or biking alone along a secluded trail
- Lack of transportation precludes people from visiting parks and facilities far from their homes
- Informational and welcome signage and safety amenities, such as lighting, were cited as items that could be added to parks and park facilities to attract more visitors

RECREATION NEEDS

The Vermillion River Greenway will enhance access to natural areas, trails, and cultural resources. These resources are important for quality of life and accommodate the high-demand recreational activities of walking, biking, jogging, inline skating, dogwalking, and more. Respondents to Dakota County's 2015 park survey cited these among the top activities residents would like to see in the County's park system. Current recreation and demographic trends suggest these needs will increase well into the future.

The Dakota County 2015 Park Visitor Survey indicated the following findings:

- "Nearly all survey respondents strongly or somewhat agreed that benefits of parks and trails include that they improve physical or mental health and fitness; protect natural resources and water quality; improve quality of life in the county; create places for scenic landscape views,and preserve large areas of open space. About 9 in 10 agreed that parks and trails increase property values while 8 in 10 agreed they provide opportunities for people to be with other people and cultures."
- "About three-quarters of residents would be somewhat or very likely to use benches and scenic overlooks along trails while two-thirds would be likely to use improved park trail signs for way-finding."

A previous project to the Vermillion River Greenway master planning process, the Dakota County Parks Visitor Services Plan, conducted detailed multicultural outreach regarding parks, facilities, and open spaces. Dakota County worked with a community engagement specialist, *Putting Change in Motion*, in order to reach out to diverse stakeholders. The following underrepresented groups were engaged in nine dialogues and six interviews: two (2) Hispanic/Latino groups (one immigrant and one US born); Somali; Vietnamese; Indian/South Asian; African American; Youth; Seniors; and Persons living with Disabilities. The groups represented all ages from elderly individuals to youth and couples plus several children; a broad range of income levels. Many had a rich breadth of knowledge, wisdom and much experience, and easily offered very creative ideas for the Parks System. A series of questions was used to guide the conversations. Some of the questions included: asking the meaning of the term "park," asking how participants choose which parks and facilities to visit, asking about awareness of parks and facilities, and asking about barriers to visiting and using parks and facilities. The sidebar to the left includes some of the input received from this process. This input influenced the planning of the Vermillion River Greenway by providing rationale for the following recommendations: welcoming and informative signage and wayfinding to provide awareness and accessibility along the trail; frequent access points along the trail to provide convenience and alleviate safety and security concerns; connections to community destinations such as schools, parks, and commercial areas so the greenway can serve as an alternative transportation route.

Visitors

A broadly generalized profile of greenway visitors was created based on input from existing visitors to Dakota County parks and trails from stakeholders in the master planning process and from demographics of the population within 30 miles of Dakota County (see sidebar on page 9).

The following observations can be made about potential visitors based on comparative census data from 1990, 2000, and 2010.

- The people served by Dakota County parks and trails are becoming increasingly diverse. As recreation, interpretation, and education are developed, outreach should be considered.
- There are more than half a million children enrolled in schools in the area served by Dakota County parks; more than one-quarter of the population is younger than 17. Schoolchildren and families are a large group of potential greenway users.
- At the 2010 U.S. Census, 10 percent of the population in Dakota County was older than 65, and this age group is projected to increase dramatically in number and proportion in the next 20 years. The influx of baby boomers into this age category will influence interpretive and education program development.
- Based on the 2013–2017 American Community Survey, the average per capita income for the U.S. was $31,177. The average per capita income for Dakota County was more than 24 percent higher, at $38,900, while the average per capital income for Hastings was $33,000. Higher incomes have historically been associated with greater participation in recreation activities, while lower incomes have higher needs for alternative transportation options.

Trends

Active living, popularity of trail-based activities, interest in nature, history, and culture, transportation and connectivity, aging actively, and population growth are all current trends that indicate that interest in and visits to Dakota County greenways are likely to increase.

Trail Use

Trails are the number one desired recreation facility in poll after poll. Trails can be enjoyed by people of all ages and abilities, they are inexpensive for users, and they are often close to home. The Minnesota Statewide Comprehensive Outdoor Recreation Plan notes that the interest and demand for more trails is being felt at all levels of government. According to the November 2016 ***Metropolitan Council: Regional Parks System***

In 2010 members of the Greenway Collaborative identified the following groups as current visitors to Dakota County Parks:

- Wildlife/bird watchers
- School groups
- Senior citizens
- Non-motorized commuters
- Hikers, walkers, runners, cyclists
- Regional users
- Anglers
- Park users (Athletics and community events/activities)
- Residents
- Families
- Disabled users
- Bicycle fitness riders
- Boaters

Stakeholders also identified groups of visitors they would like to see as greenway users in the future:

- Groups needing increased activity
- Corporate users
- Foragers (fruit, flowers)
- Commercial and business connections
- Art community

Visitor Study Report, hiking, walking, and biking are the most popular activities and most commonly mentioned primary reason for visiting a regional park or trail.

Active Living

In 2010, 60 percent of adults in Dakota County were either overweight or obese. If the current trend continues, the percentage is expected to be 76 percent by 2020. Nationally, the obesity rate in children has tripled over the past 30 years. Today about 20 percent of school-age children are overweight or obese (Source: Dakota County Public Health).

Regular moderate physical activity can help prevent a host of disorders, including heart disease, obesity, high blood pressure, Type 2 diabetes, and osteoporosis. More physical activity at a population level can reduce health care costs and other costs to society.

Walking and biking are two of the simplest and most popular ways to integrate regular physical activity into daily routines, referred to as active living. Places that have physical infrastructure such as trails and programs to promote walking and biking tend to have more physical active and healthier populations.

Interest in Nature and Sustainability

Increased sensitivity to ecological issues and the benefits of healthy ecosystems has led to people seeking more natural experiences. There also is increased interest in and opportunities for environmental stewardship such as stream and riparian restoration and the removal of invasive species. People also desire educational and interpretive programs and seek a balance of environment and recreation.

Transportation and Connectivity

Health benefits, concerns about climate change, and rising energy costs have increased demand for trails and bikeways as preferable transportation options. Regional trails with grade-separated crossings offer cyclists the advantages that motorists enjoy on freeways.

Connectivity to local trails is essential. The more connected the trail system, the more use it will see. Connecting trails reduce the need for vehicle parking at trailheads. In 2008, half of all regional trail users arrived by bicycle or on foot (***Metropolitan Council Regional Parks and Trails Survey***).

Engaged Aging

Trail users tend to be older than park users. In 2008, 54 percent of Big Rivers Regional Trail users polled were between the ages of 45 and 64. Trail use likely will remain high as the baby boomer generation ages and remains physically active — or gets more physical activity with increased leisure time — by walking, hiking, or biking on trails.

Interest in History and Culture

As society has become more mobile, interest in local culture and history has increased. The ability to integrate cultural, historic, and environmental interpretation into the greenway will add richness to the greenway experience.

Population

Metropolitan Council studies indicate half of regional trail users live within three-quarters of a mile of a trail, and 75 percent of trail users live within three miles of the trail used. The three-quarters-mile area around the trail is considered the core service area and the three-mile area the primary service area. Communities that fall within the Vermillion River Greenway (Hastings)'s core and primary service areas are all expected to see growth within the next 10 years. Those communities include Hastings, Marshan Township, Ravenna Township, Nininger Township, and Vermillion Township. A small portion of Cottage Grove and Denmark Township in Washington County are included in the service area, as well as the city of Prescott in Wisconsin. These three latter communities are all located across the Mississippi River, which may serve as a barrier to significant use for these populations.

Use Forecasts

According to the Metropolitan Council's 2018 report, ***Annual Use Estimate of the Metropolitan Regional Parks System for 2017***, an estimated 151,400 visits were made in 2017 to the Big Rivers Regional Trail. Using the Big Rivers Trail as a guideline, the Vermillion River Greenway (Hastings) Trail, if opened today, could expect approximately 72,495 annual visits. This estimate was calculated by considering the 2017 estimated use of the Big Rivers Regional Trail, adjusting for the lower population of the cities in the primary service area of the Vermillion River Greenway (Hastings) trail, while also considering the tourist draw that the downtown Hastings area, the Mississippi River Regional Trail, and the Vermillion River have in the region. The Vermillion River Greenway is also more accessible to residential neighborhoods than the Big Rivers Trail.

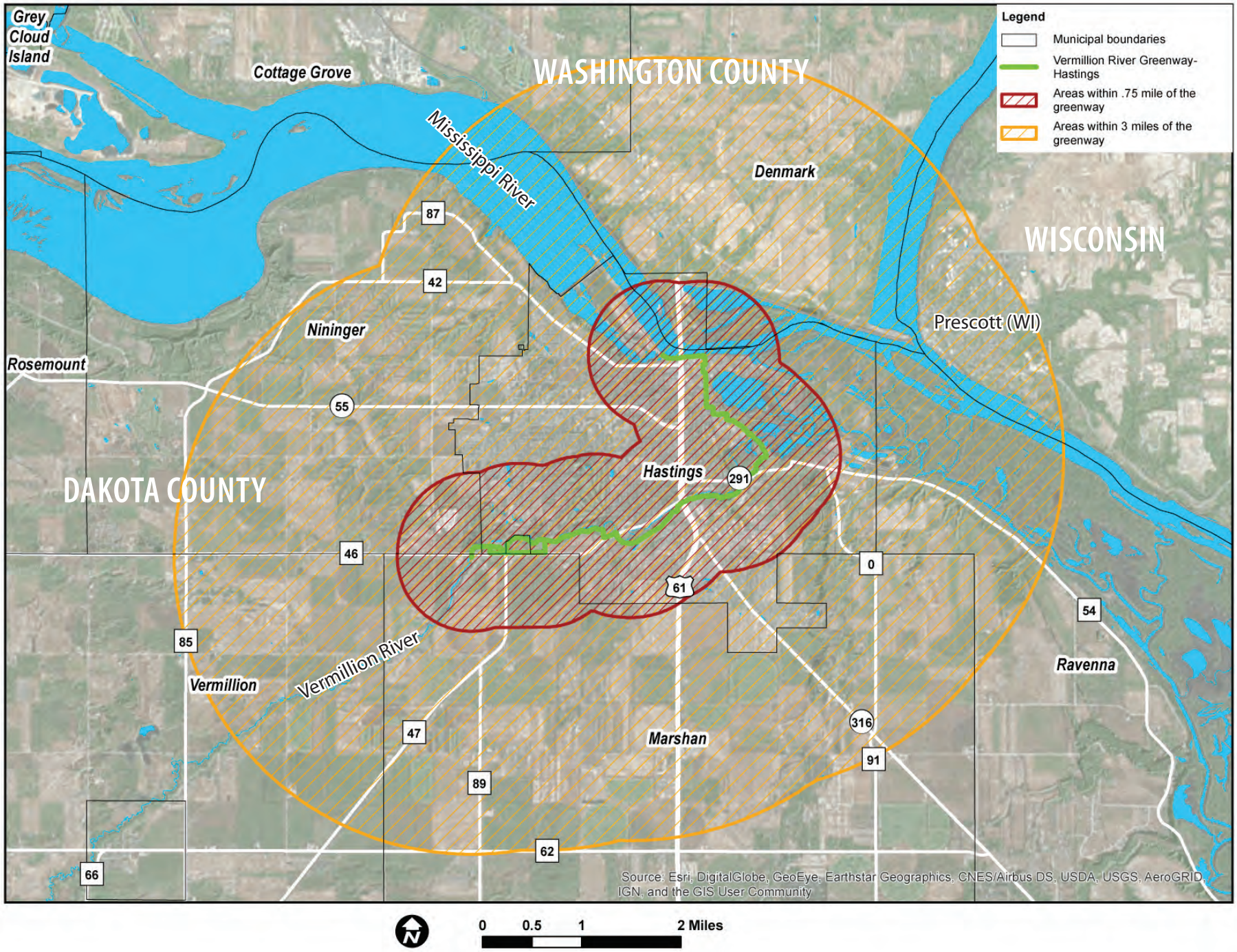
The 2030 population of the communities touching the greenway's three-mile service area is expected to be 15% percent greater than in 2017. Assuming use rates are stable—a conservative assumption—in 2030, annual visitation can be expected to be at least 83,369. The estimate does not take into account increased use based on population increases in communities outside the primary service area, current recreation trends, and increased use resulting from better connectivity to other regional and local trails.

Table 11. Population forecasts for communities adjacent to the Vermillion River Greenway.

Sources: Metropolitan Council Community Profiles (http://stats.metc.state.mn.us/profile) and City of Prescott website (http://www.prescottwi.org) *population estimate from 2015

MUNICIPALITY	2017 ESTIMATE	2030 FORECAST	% CHANGE
Core Service Area (areas within 3/4 mile of greenway)			
Hastings	22,640	26,000	15%
Marshan Township	1,124	1,200	7%
Denmark Township	1,782	2,160	21%
Nininger Township	892	960	8%
Total Core	**26,438**	**30,320**	**15%**
Primary Service Area (areas within 3 miles of greenway)			
Vermillion Township	1,233	1,240	0.5%
Ravenna Township	2,373	2,430	2.4%
Denmark Township	1,782	2,160	21%
Cottage Grove	36,399	42,200	16%
Prescott, WI	4,350*	4,870	12%
Total (Core + Primary)	**72,497**	**83,220**	15%
Dakota County	411,507	474,670	15%

Figure 12. Core and Primary Service Areas



Existing Conditions

2

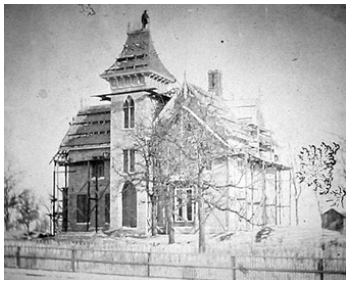
OVERVIEW

The Vermillion River Greenway (Hastings) travels five miles from the Mississippi River Greenway in downtown Hastings south through Hastings residential neighborhoods and along the Vermillion River to southwestern Hastings and Marshan Township. The greenway links destinations including: the Mississippi River Greenway, downtown Hastings shops and restaurants, Vermillion Falls Park, Vermillion River Linear Park, Rivertown Dog Park, C.P. Adams Park, Old Mill Park, and the Point Douglas Regional Trail.

The greenway area contains a rich cultural history with stories of the milling industry, historic Hastings' families and events, agriculture, transportation corridors, and geologic features.

This chapter presents:

- Existing Greenway corridor character and land use
- Relationship to the larger transportation system
- Existing cultural resources
- Existing natural resources



Historic images include: flooding in Hastings, Gardner Mill, Le Duc Mansion, 1905 postcard of Vermillion Falls, trestle bridge

GREENWAY CHARACTER AND LAND USE

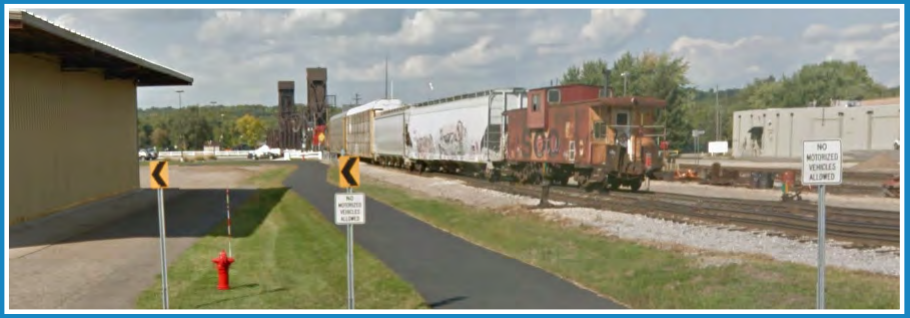
Today the land along the greenway corridor consists of historic downtown Hastings retail district, early and mid-twentieth century residential neighborhoods, suburban residential neighborhoods, agricultural lands, and park land. The land most likely will maintain its historic urban character well into the future. The greenway can be broken into four segments:

Existing Trail: Mississippi River Greenway/Downtown Hastings to C.P. Adams Park *(Urban Section)*

A new trailhead for the Mississippi River Greenway and the Vermillion River Greenway serves as the beginning of the trail. The trail runs south, through downtown Hastings and alongside Bailey Street and the railroad corridor. At 8th Street, the trail meanders through an open field and Rivertown Dog park., crossing Ravenna Trail at Progress Drive and continuing across the Vermillion River to the north parking lot at C.P. Adams Park.

Existing Mississippi River Greenway under the recently constructed Hwy 61 bridge over the Mississippi River (looking north)

Mississippi River Greenway through Levee Park (looking east)



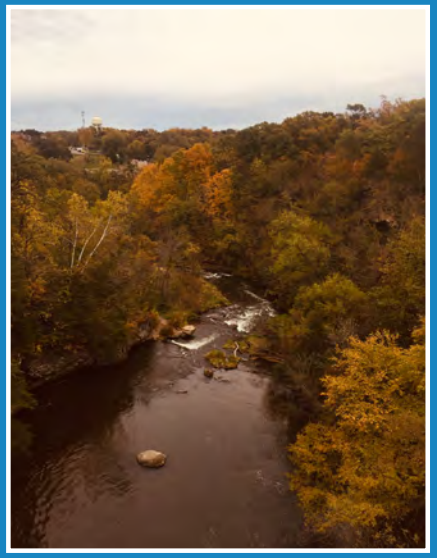
Existing trail along Bailey Street, adjacent to rail line

Existing Trail: C.P. Adams Park to Highway 61 / Vermillion Street *(River Gorge Section)*

C.P. Adam's Park north parking lot will serve as a neighborhood gateway for the trail. From here, the trail will follow the southern bluff of the Vermillion River, passing by the Veteran's Home and former (historic) mental hospital. The trail connects to Old Mill Park's Oak Savanna with a former rail bridge and continues through Vermillion Falls Park, and the future site of a trailhead.

Existing parking lot at CP Adams Park to serve as neighborhood gateway

View of Con Agra and Falls from observation shelter at Vermillion Falls Park



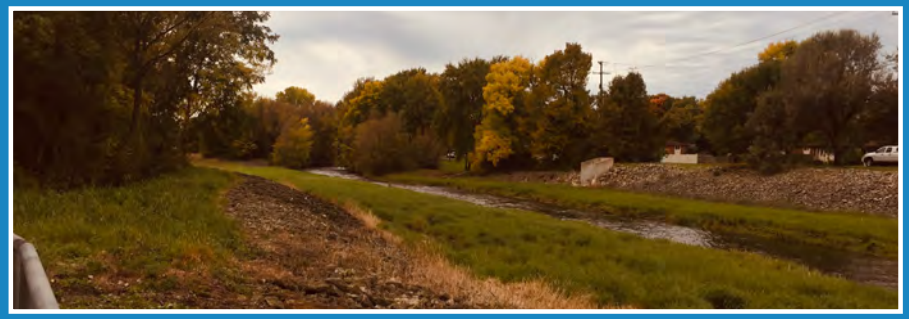
View from the historic trestle bridge at Old Mill Park of the Vermillion River

Existing Trail: Highway 61 / Vermillion Street to Pleasant Drive *(Floodplain Section)*

A grade-separated crossing under Highway 61/Vermillion Street begins this trail segment, which is characterized by the native plantings along the restored floodplain of Vermillion River Linear Park. Another existing grade-separated crossing under Vermillion Road near 31st Street transitions the trail from parkland to a rural/ agricultural landscape along the southern bluff of the Vermillion River to Pleasant Drive.

Grade-separated crossing under Highway 61 at Vermillion Falls Park

Neighborhood gateway of existing trail at Cannon Street



Existing trail alongside restored floodplain

New/Future Trail: Pleasant Drive to Marshan Township *(New Rural Section)*

At Pleasant Drive, the existing trail ends. Here, the trail will follow the Vermillion River closely on the north side of a handful of rural residential properties. An alternative alignment shows the trail travelling parallel to CR 46 between Pleasant Drive and General Sieben Drive. Long-term completion of the trail will connect General Sieben Drive to the boundary of Marshan Township. Potential grade-separated crossings will complete the trail network at Pleasant Drive, General Sieben Drive, and 160th Street.

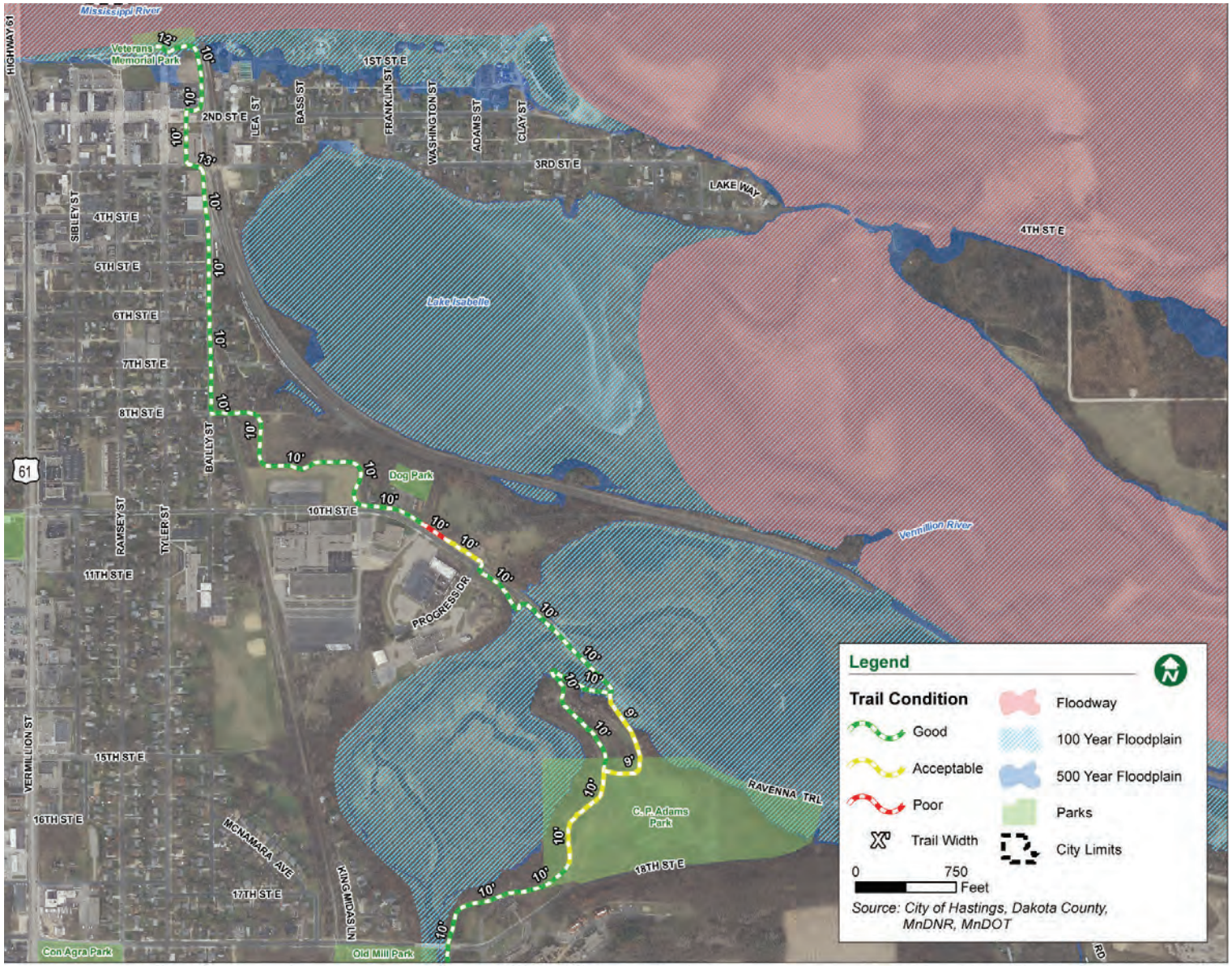
Entry to existing trail at Pleasant Drive

Rural / residential area along 160th Street

EXISTING TRAIL CONDITIONS & ISSUES

The following pages include detailed analysis of the existing City of Hastings trail conditions, such as surface condition, trail width, curve radii, trail slope, and potential flooding issues. This analysis was completed by site analysis, video recording, and measurement by professional engineers.

Figure 16. Existing Trail Conditions (north segment)



Most of the existing trail is in good condition and at least ten feet wide. Some portions of the trail are in acceptable or poor condition and some are less eight to nine feet wide. These sections are mainly in C.P. Adams Park, Vermillion Falls Park, Vermillion River Linear Park. These sections of the trail will need to be widened to meet regional trail standards.

Known and suspected contaminated sites or disposal areas are located in this section of trail. Review of available information and evaluation of the potential for impacts to the trail and planned construction activities should be conducted.

Figure 17. Existing Trail Conditions (south segment)

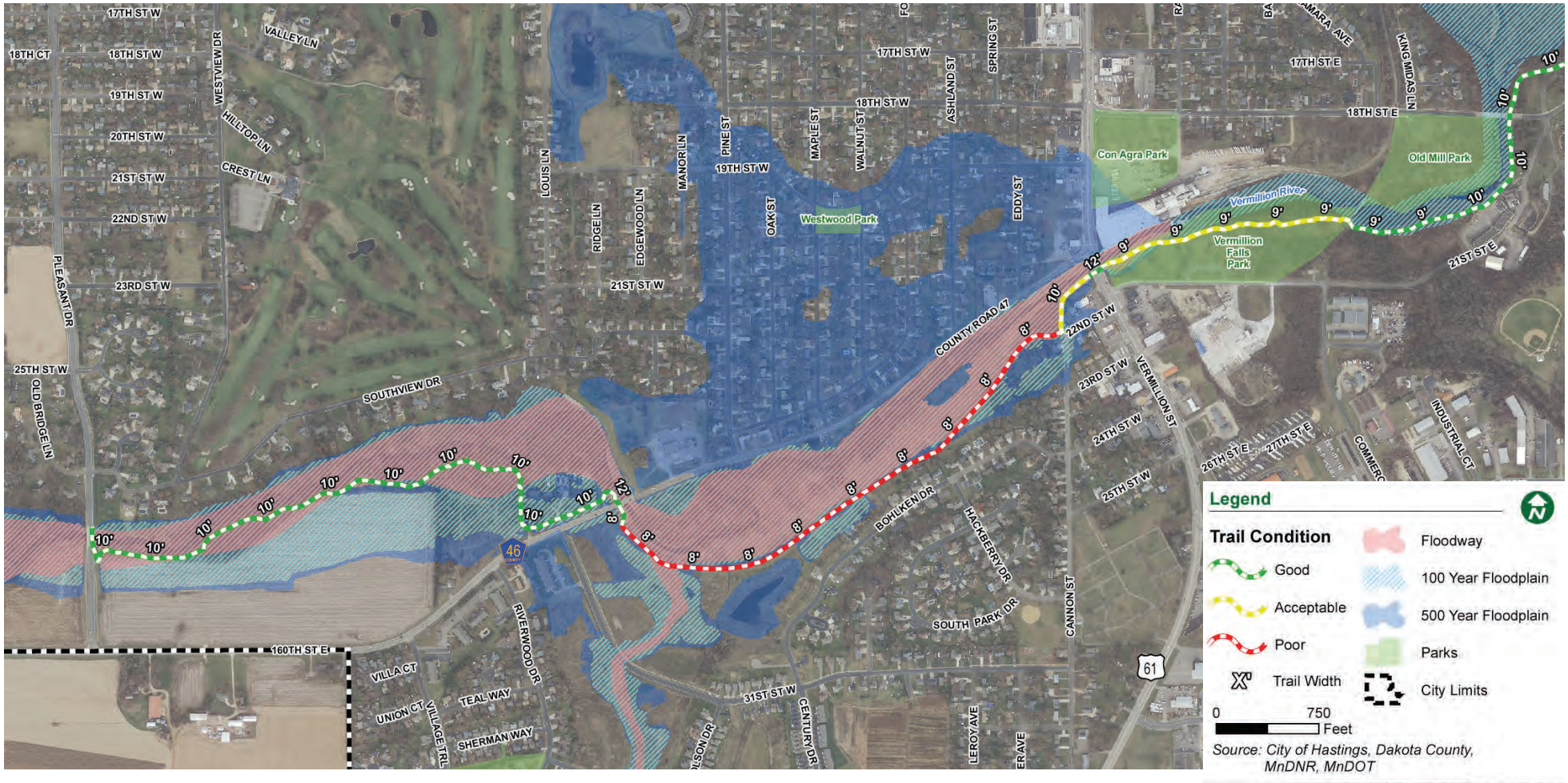
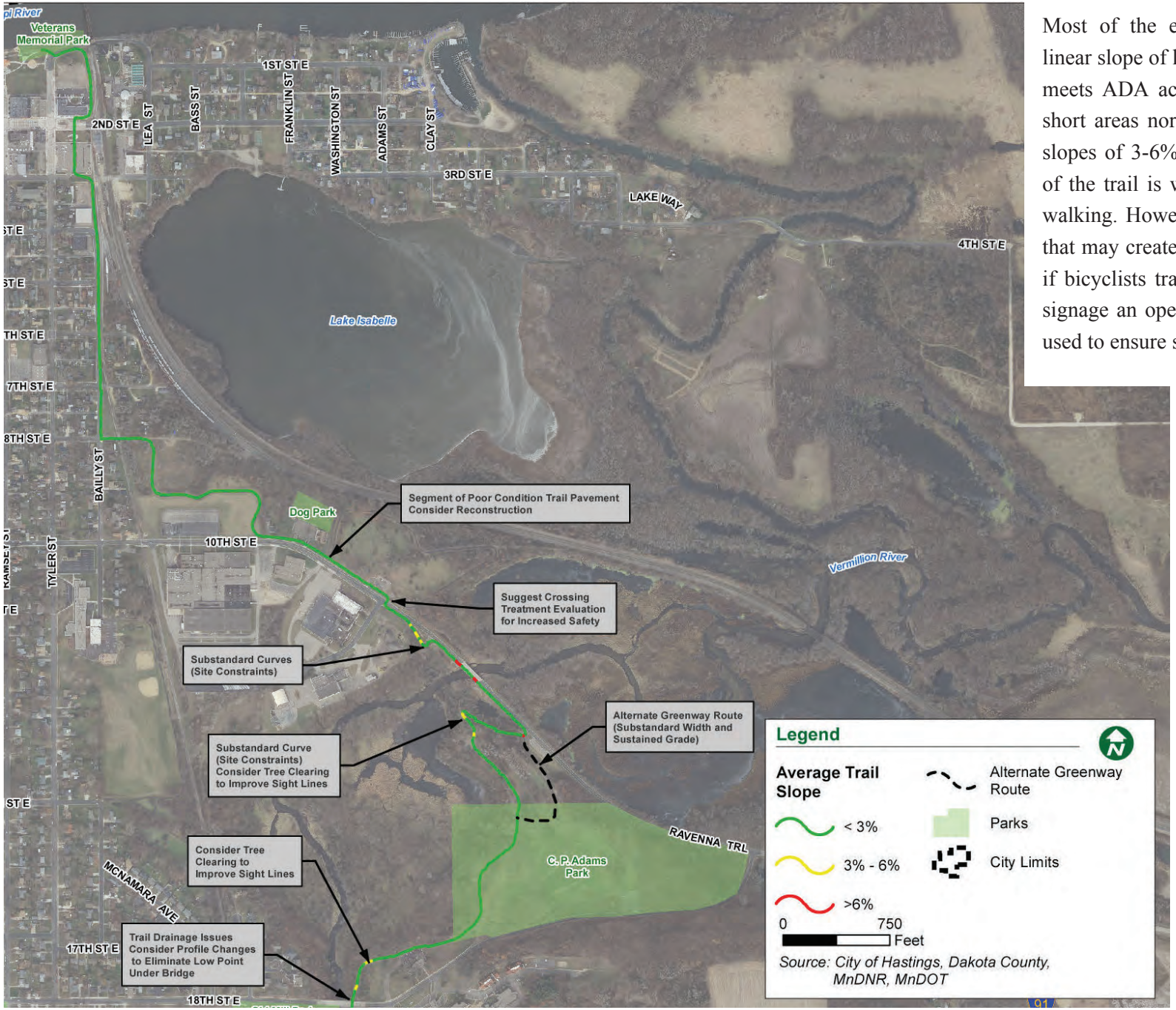
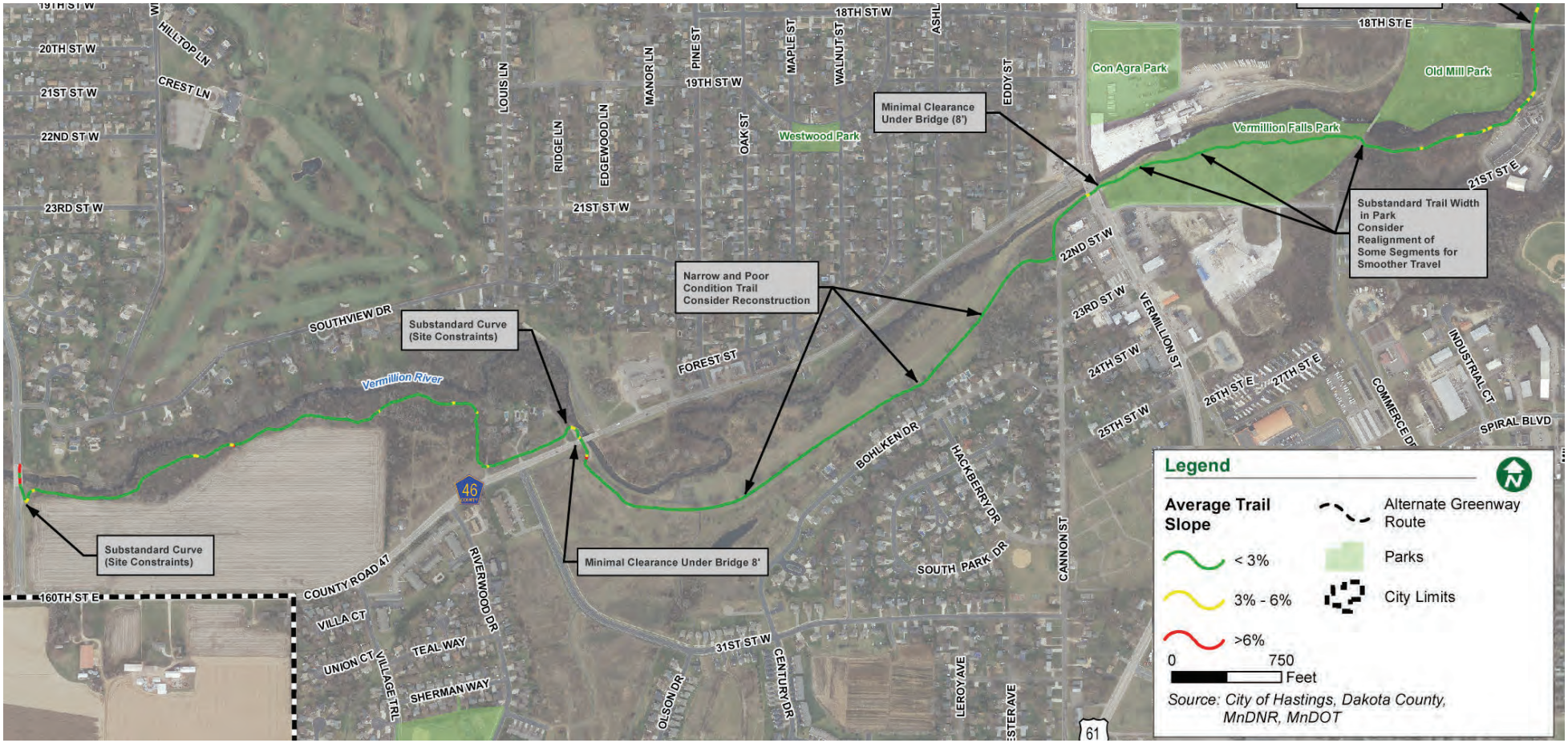


Figure 18. Existing Trail Issues (north segment)



Most of the existing trail has a existing linear slope of less than three percent, which meets ADA accessibility standards. A few short areas north of C.P. Adams Park have slopes of 3-6% or above 6%. The majority of the trail is well suited for bicycling and walking. However, a few tight curves exist that may create conflicts between trail users if bicyclists travel at high speeds. Warning signage an open sight lines will need to be used to ensure safety along the trail.

Figure 19. Existing Trail Issues (south segment)



EXISTING NATURAL RESOURCES

The Vermillion River Greenway corridor connects forested and prairie/herbaceous parks and open spaces through rural and suburban areas. The overall quality of plant communities within the corridor is moderate to high quality, as identified by the Minnesota County Biological Survey (MCBS) and the Minnesota Land Cover Classification System (MLCCS).

Vegetative Cover – Minnesota Land Cover Classification System (MLCCS) and Minnesota County Biological Survey (MCBS)

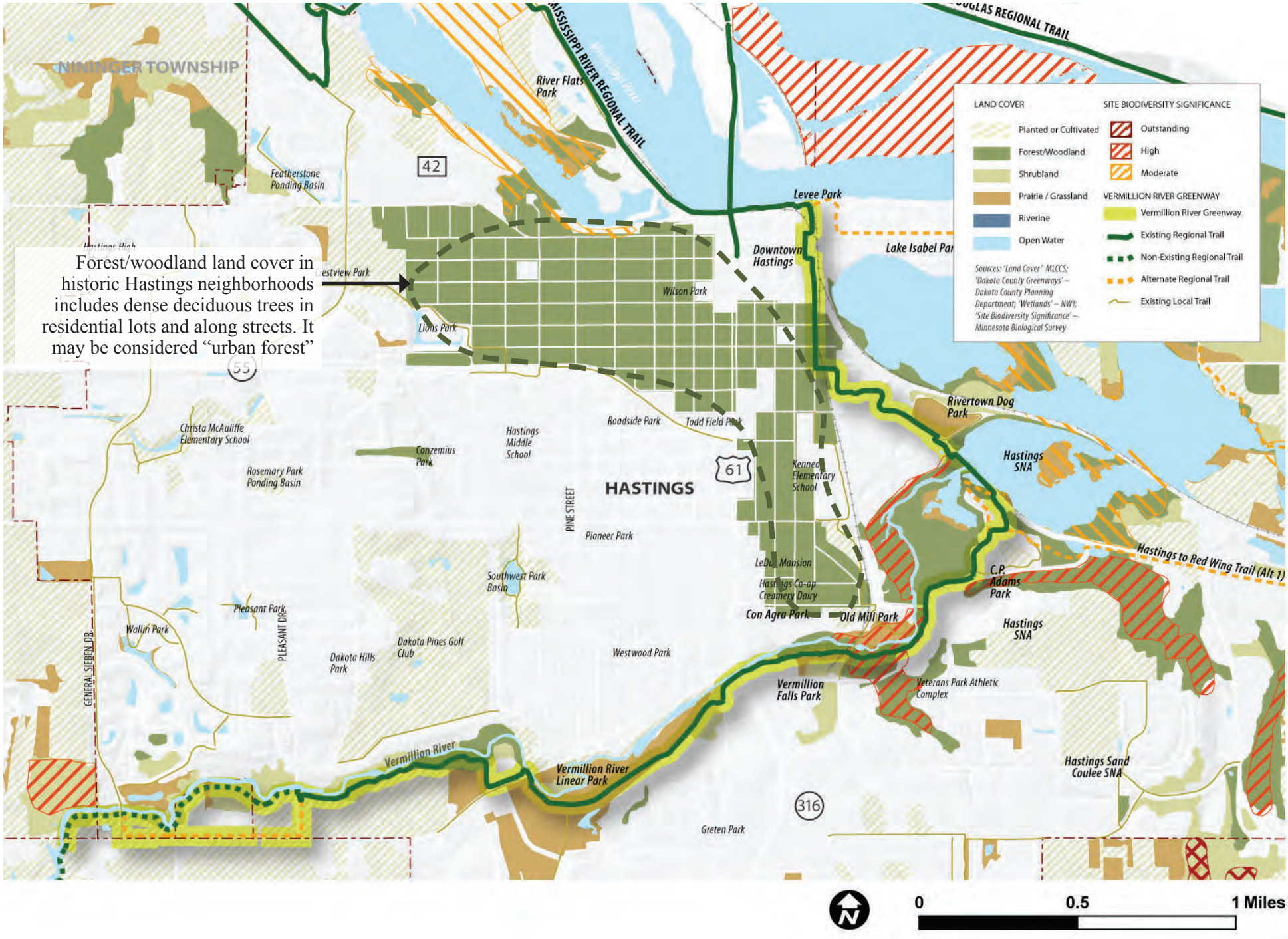
High and moderate condition plant communities exist along the Mississippi River Greenway, in the Hastings Scientific and Natural Area, and throughout Vermillion Falls Park, as well as at the west end of the future rural trail segment at General Sieben Drive.

The Vermillion River Greenway traverses a variety of land cover, from urban/developed land with forest and woodland species in the northern section of the trail to primarily prairie/grassland and agricultural land in the south and west portions of the trail.

It is important to link these core habitat areas with habitat corridors, such as the Vermillion River Greenway, which will provide a wide linking corridor of conserved open space and habitat.

Existing Natural Resources Map Sources (next page): Forest / Woodland – Minnesota Land Cover Classification System (MLCCS); Prairie / Grassland – MLCCS; Shrubland – MLCCS; Wetland – NWI; Open Water / Streams – MLCCS and Dakota County; High ecological condition – Minnesota County Biological Survey (MCBS) high biological diversity areas and native plant communities combined with MLCCS high quality plant communities; Moderate ecological condition – MLCCS moderate condition plant communities

Figure 21. Existing Natural Resources (MLCCS & MCBS)



Water Resources

Beginning at Levee Park, the Vermillion River Greenway connects to the Mississippi River, runs close to the wetland complex at Lake Isabel and Bullfrong Pond. At the crossing of the Vermillion River at Ravenna Trail, the greenway then follows the Vermillion River throughout southern Hastings.

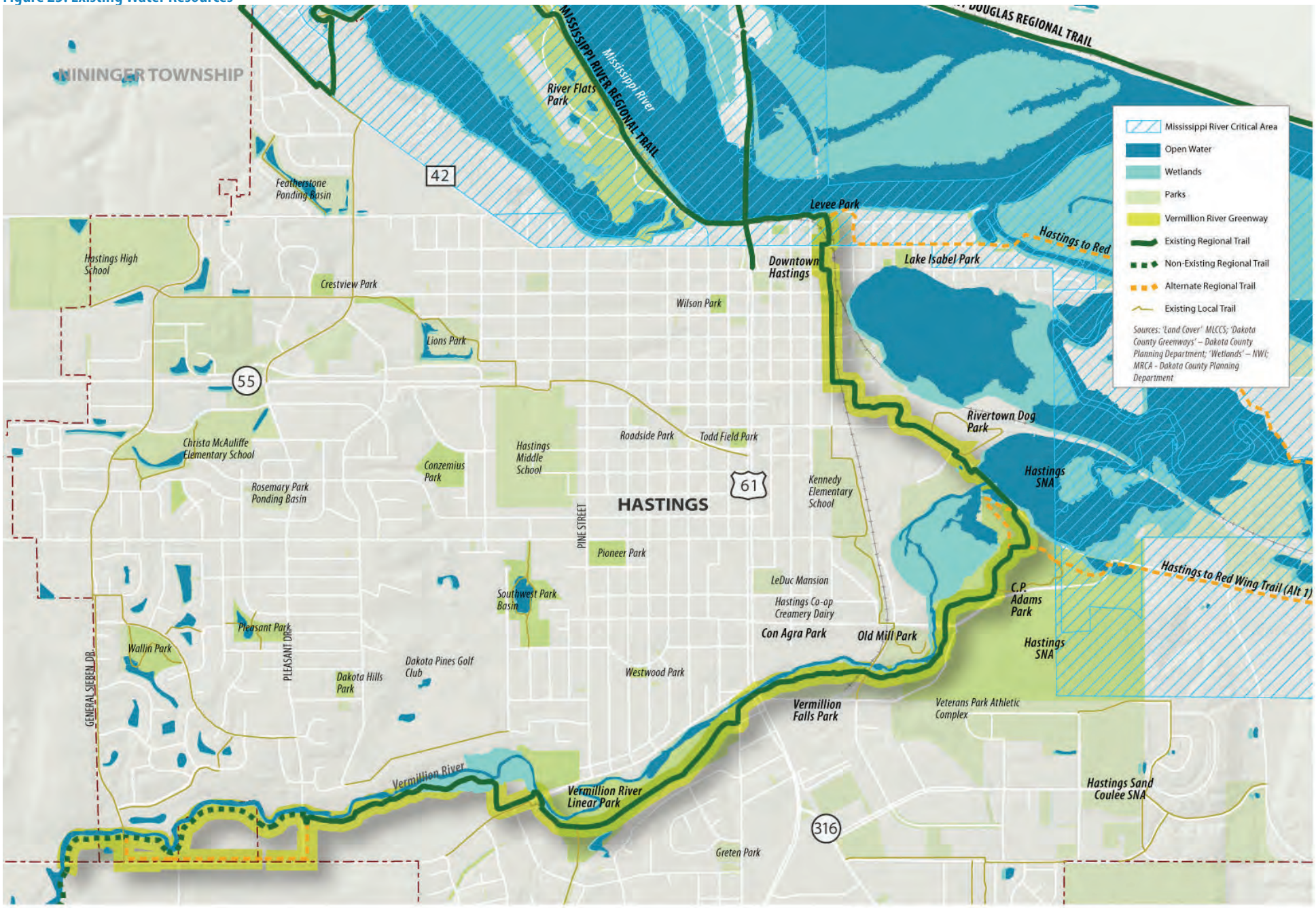
The Vermillion River is part of the Vermillion River Watershed, which is managed by the Vermillion River Watershed Joint Powers Organization (VRWJPO). This organization provides collaborative education, science, and support to restore and protect the watershed's natural resources for all who live, work, and play within it's boundaries.

The Vermillion River Greenway is part of the Mississippi River watershed. The Mississippi River Critical Area Program is a DNR coordinated planning effort to collaborate and report on local land and water management that affects the Mississippi River. The latest report was published in 2008 and addresses the status of plans and ordinances, community plans for revisions to their plans and ordinances, the types of variances sought and issued, and perceptions of the state of the Corridor. It also includes options and recommendations for changing how the Mississippi River Corridor Critical Area is managed. The report can be found on the DNR website at the following link: http://files.dnr.state.mn.us/waters/watermgmt_section/critical_area/mississippi_river_corridor_critical_area_report.pdf

TRANSPORTATION SYSTEM

The Vermillion River Greenway-Hastings will support non-motorized transportation by providing a regional corridor for bicycle and pedestrian transportation. The greenway will intersect with existing regional and local trails that connect residential areas, commercial destinations, schools, and employment destinations. The Mississippi River Greenway provides links north to Saint Paul, which connect to many more destinations in the Twin Cities metropolitan area.

Figure 23. Existing Water Resources



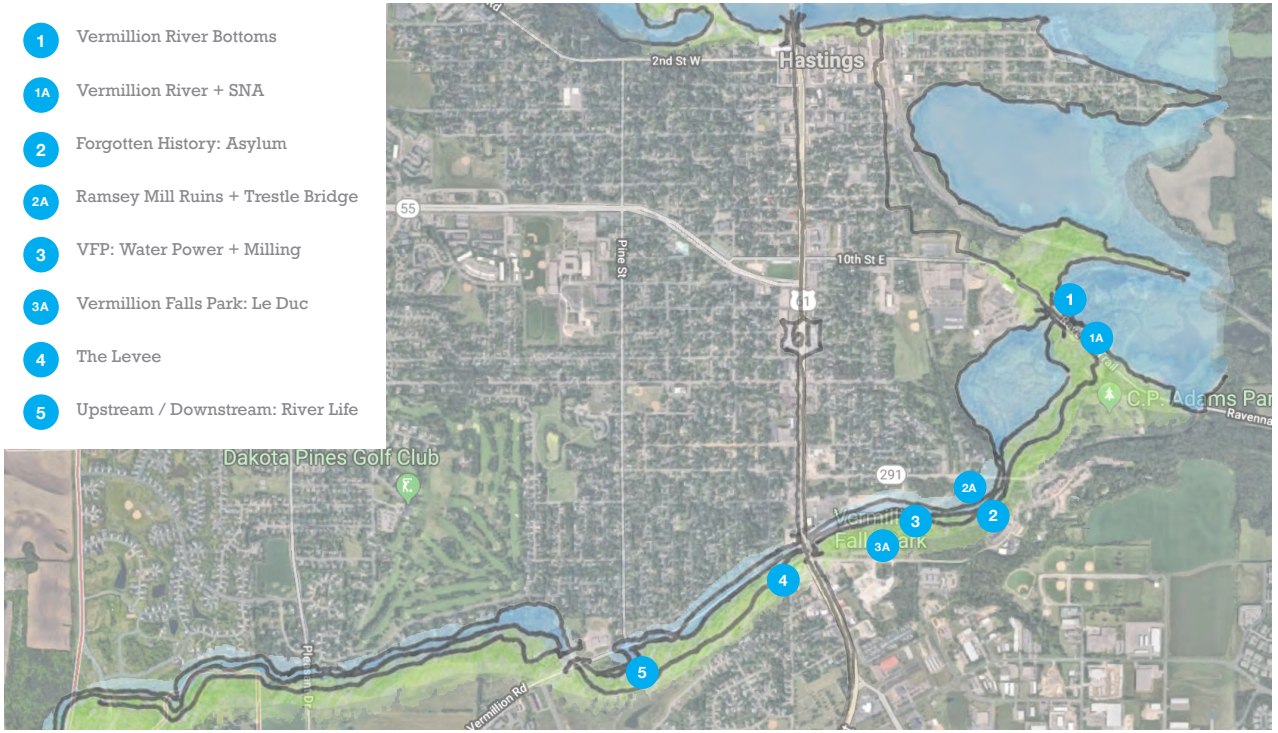
EXISTING CULTURAL RESOURCES

The City of Hastings contains a rich history of cultural resources, some of which can be seen today in mill ruins and geologic formations. Within the greenway corridor, there are parks, historical and cultural features, and recreational and community resources, both historical and current, that have provided people with access to nature for generations. These historic and cultural resources are an important part of the landscape to the people along the greenway corridor and to visitors.

Some of the featured historic resources and stories along the corridor include:

- LeDuc Mansion
- Milling along the Vermillion River
- Flooding in Hastings and the levee
- Wildlife in the Hastings Scientific and Natural Area and within the Vermillion and Mississippi River corridors
- Historic rail trestle bridge
- Veterans Home

Figure 24. Existing Cultural and Historic Resources



The Plan

3

OVERVIEW

The Vermillion River Greenway will integrate linear recreation, non-motorized transportation, water quality improvements, habitat preservation, and interpretation. Much of the corridor today contains an existing city trail and several city parks. The surrounding land use context consists of historic Hastings downtown and neighborhoods along with newer single-family housing development at the west end of the corridor. The plan identifies the preferred greenway alignment, alternative alignments, trailheads, gateways, and grade-separated crossings.

This chapter includes four sections:

A. Development plan — Outlines the defining recreation and transportation features of the greenway

B. Key initiatives — Describes specific development and natural resource projects for each greenway segment

C. Interpretive plan — Identifies interpretive themes and subthemes for the greenway and provides a framework for cultural and environmental interpretive elements

D. Stewardship Plan — Addresses habitat stewardship and water resources

DESIGN FRAMEWORK

The Greenway Guidebook provides the framework for the greenway enhancements:

- Has regional trail for recreation and transportation that follows water and natural features
- Is maintained as a year-round facility
- Provides frequent trailheads and access points
- Has grade-separated crossings of major roads
- Has a consistent design with natural signature and high-quality support facilities
- Has lighting for evening use in appropriate locations
- Links recreation destinations and activity centers
- Acts as a spine for local loop trails
- Maximizes borrowed views
- Uses wayfinding as a systemwide unifying element
- Is universally accessible
- Incorporates sustainability by using recycled materials, pervious pavement, and energy efficient lighting and enabling non-motorized transportation

A. Development Plan

Access to recreation and non-motorized transportation are two of the four foundational elements of Dakota County greenways. The primary recreation/transportation feature of the greenway is a continuous regional destination trail. While the greenway varies in width from 100 feet to more than 300 feet throughout the corridor, this section focuses on the design of the 30-foot trail corridor to create a safe, amenity-rich trail for year-round use.

Design consistency is critical in developing Dakota County greenways to create a high-quality, unified, and legible system. The Greenway Guidebook identifies the elements that will be signatures of the greenway system, listed in the sidebar on the previous page. How the Vermillion River Greenway addresses each of these topics is discussed in this chapter.

TRAIL CORRIDOR FEATURES AND DESIGN

This section addresses design features that are signatures of Dakota County's greenway system. Design touches many facets of the trail alignment, including: the relationship of the trail alignment to the larger greenway corridor; the ability to connect destinations; the presence and location of grade separated crossings, trailheads, and support facilities; the style and location of furnishings and wayfinding; accessibility; and sustainability. Consistent, high-quality design will elevate the greenway experience above that of a utilitarian trail to a first-class regional destination.

TRAIL CORRIDOR

The regional trail within the greenway corridor will be a continuous multipurpose bituminous trail designed in accordance with applicable American Association of State Highway Transportation Officials guidelines, Minnesota DOT bicycle design guidelines, and Dakota County trail standards. The trail will be a minimum of 10 feet wide with a two-foot grass clear zone on each side.

Anticipated uses include walking, jogging, inline skating, and bicycling. The trail will be maintained as a dry surface for winter use and, where appropriate, lit for evening use.

Figure 26. Typical Greenway Trail Corridor Section

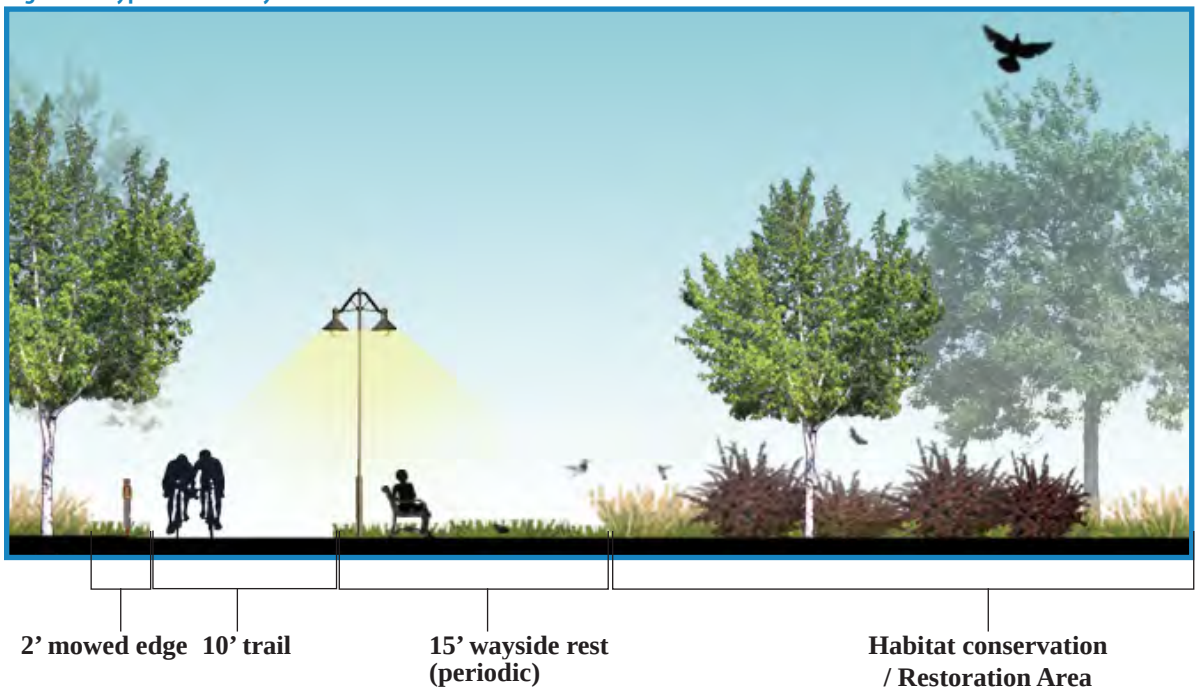


Figure 27. Regional and Local Trail Connections

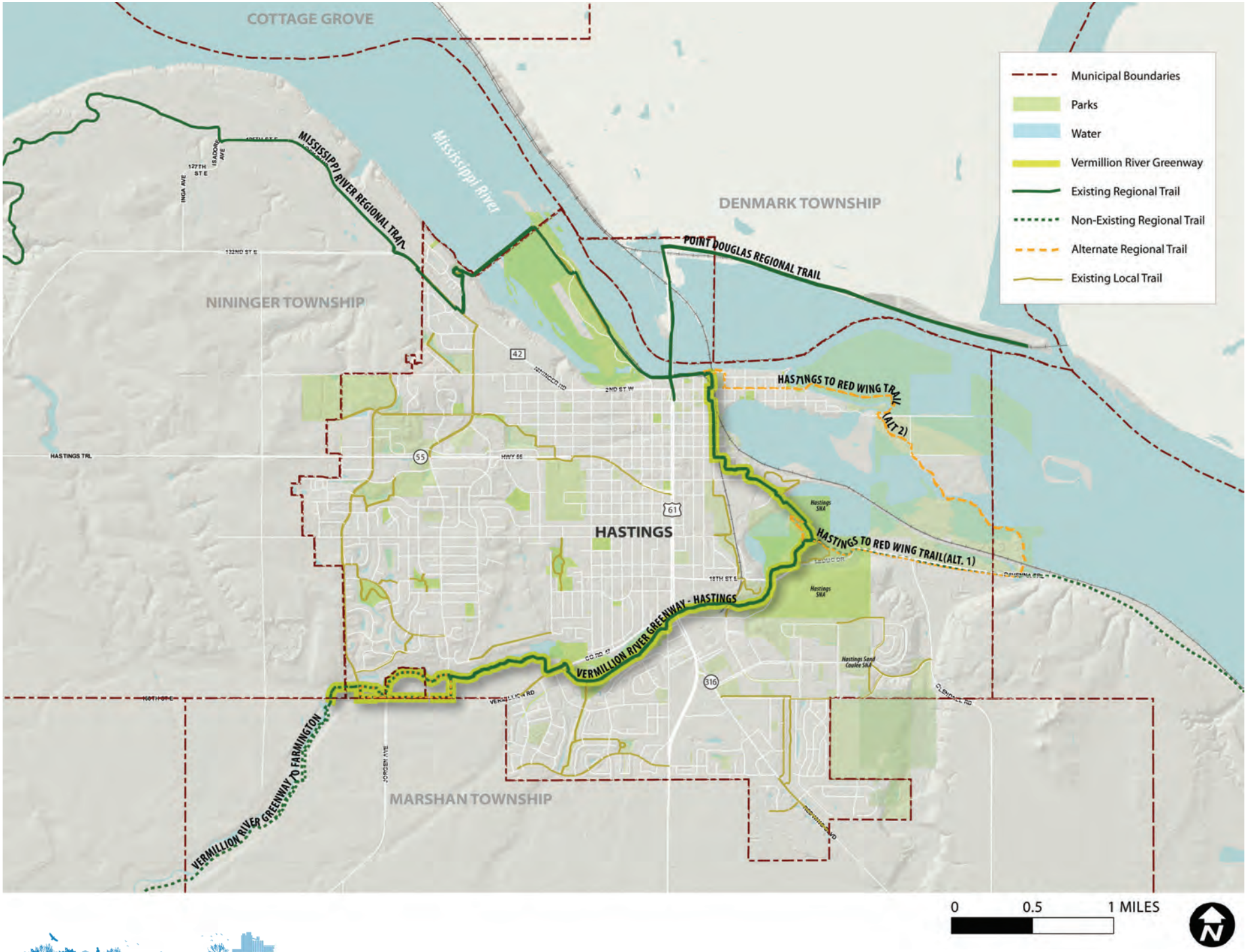
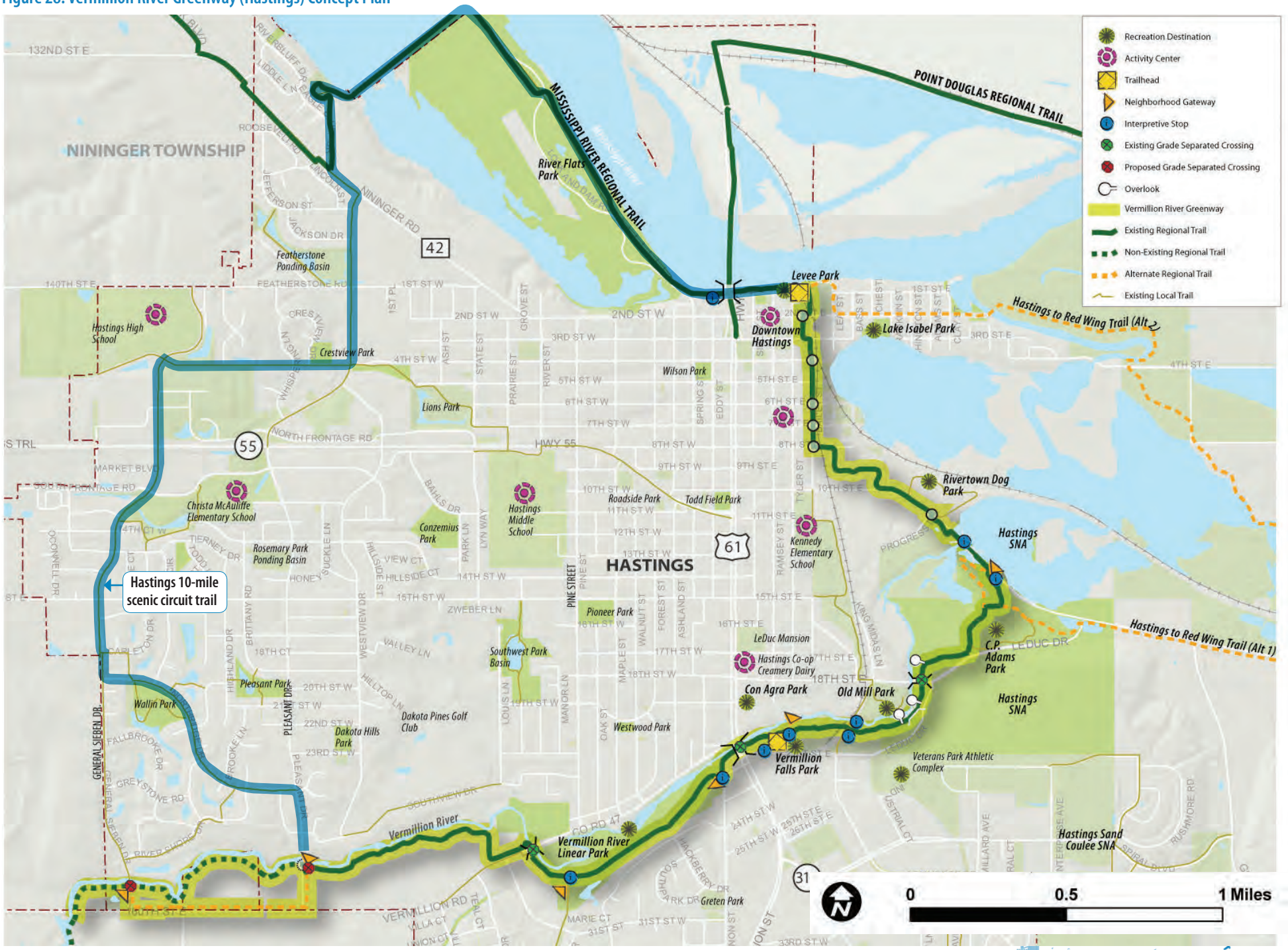


Figure 28. Vermillion River Greenway (Hastings) Concept Plan



RECREATION DESTINATIONS


Vermillion River Linear Park


C. P. Adams Park


Vermillion Falls


Levee Park

ACTIVITY CENTERS


Downtown Hastings

80/20 TRAIL ALIGNMENT

A primary goal of the greenway trail alignment is for the greenway corridor to be at least 80 percent off-street with a maximum of 20 percent of the greenway adjacent to roads. The corridor today is mostly developed, and the existing trail exceeds the 80 percent goal for off-road trail. The preferred alignment for the undeveloped portion of the trail identifies the trail along the Vermillion River. However, an alternate alignment for the undeveloped portion of the trail is parallel to CR 46, where efforts would be made to ensure an enjoyable greenway experience through the placement of the trail as far from the road edge as possible and the addition of landscaping to increase buffer space and to slow traffic.

Table 29. Parallel to Road, Off-Road Trail Alignment

	Parallel to Road	*Off-Road*	*Total*
Existing Trail	*0.74 mile (11%)*	*3.96 miles (89%)*	*4.7 miles*
Undeveloped Trail (preferred)	*-*	*0.9 mile (100%)*	*0.9 mile*
Undeveloped Trail (alternate)	*.75 mile (75%)*	*.25 mile (25%)*	*1.0 mile*
Vermillion River Greenway (pref.)	***13%***	***87%***	***5.6 miles***
Vermillion River Greenway (alt.)	*26%*	*74%*	*5.7 miles*

RECREATION DESTINATIONS, ACTIVITY CENTERS, AND TRAIL CONNECTIONS

Inherent to greenways are the trails linking recreation destinations and activity centers, the social gathering places along the trail. Opportunities to stop along the trail to fish, observe wildlife, or eat lunch are some of the features that will make the Vermillion River Greenway a regional destination drawing people from a broad area. The greenway trail will be a spine for loop trails, connect to regional and local trails and roads, and will itself serve as an important transportation route. Recreation destinations along the Vermillion River Greenway corridor include Rivertown Dog Park, C.P. Adams Park, Veteran's Park Athletic Complex, Vermillion River Linear Park, Vermillion Falls, the Old Trestle bridge, and Vermillion Falls Park.

Activity Centers are social gathering points along the greenway, which may include schools, food, entertainment, and retail opportunities. Examples include Hastings Co-Op Creamery Dairy, LeDuc Mansion, and Downtown Hastings.

TRAILHEADS & NEIGHBORHOOD GATEWAYS

Frequent access is a priority for the Vermillion River Greenway. Two generalized types of greenway and trail access points are recommended: trailheads are intended for regional and local access; neighborhood gateways primarily are for local access at opportune locations. Typically, access points will be at recreation destinations, activity centers, and trail intersections. Here trail users will find support facilities such as water and restrooms as well as greenway information.

Trailheads are the primary greenway access points and will serve people who drive, walk, bike, or take transit to the greenway. They will occur every three to five miles and share facilities such as parking and restrooms with other facilities. Neighborhood Gateways are more frequent, local access points. They will be at convenient intervals between primary trailheads (two-to-three miles apart or closer at logical locations). Wherever possible, facilities are shared with other uses and ideally are located where there is a complementary recreation destination or activity center.

Trailheads will include:

- Water
- Motor vehicle parking
- Secure bicycle parking
- Picnic areas and/or facilities
- Wayfinding and traffic control
- Restrooms
- Interpretation
- Benches
- Food where opportune
- Shelter and shade
- Local and/or regional trail connections

Neighborhood gateways will include the following elements:

- Benches
- Local and/or regional trail connections
- Secure bicycle parking
- Wayfinding and traffic control
- Water
- Interpretation

Neighborhood gateways may also include shared facilities:

- Restrooms
- Picnicking
- Food
- Motor vehicle parking

Swing Bridge Trailhead in Inver Grove Heights

The parking lot off of Ravenna Trail at C.P. Adams Park is recommended to be a neighborhood gateway for the Vermillion River Greenway.

RAILROAD CROSSINGS

Trail crossings of railroads require designation and coordination with the rail line companies. The Vermillion River Greenway crosses a rail line at 8th Street, where there is an existing trail crossing.

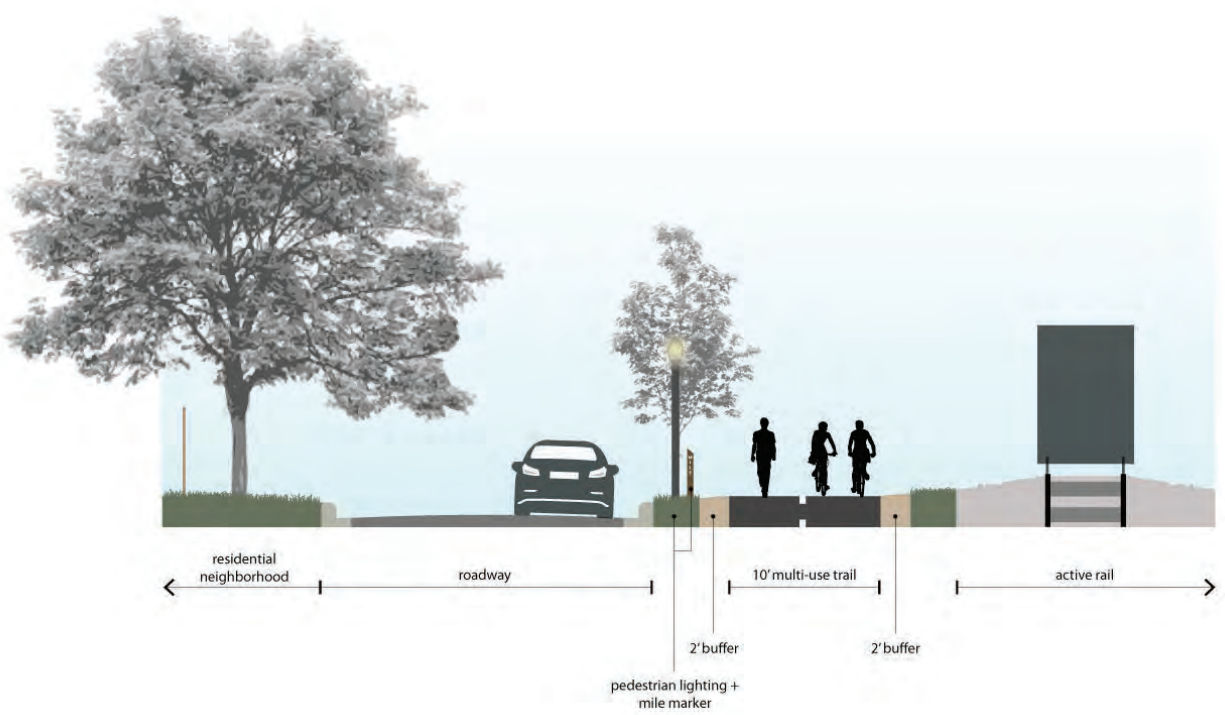
From this point, north to Levee Park, the Vermillion River Greenway runs along the west side of a rail line. Figure 31 shows a typical trail section along this portion of the trail.

GRADE-SEPARATED CROSSINGS

Grade-separated crossings are a critical component of Dakota County's greenway system. Grade separation promotes safety by reducing conflicts with motorized traffic and allows for more efficient and enjoyable trail experience for users of all abilities. To that end, grade-separated crossings are suggested at the major intersections along the Vermillion River Greenway, shown in Figure 32 and described in Table 32. The mix of rural and urban landscape of the corridor means that there are a variety of grade-separated crossings and opportunities.

Grade separations on the greenway system should be of the highest quality possible to ensure safety and security and to establish the greenway system as a truly special and high-quality destination.

Figure 31. Typical Urban Section, adjacent to railway



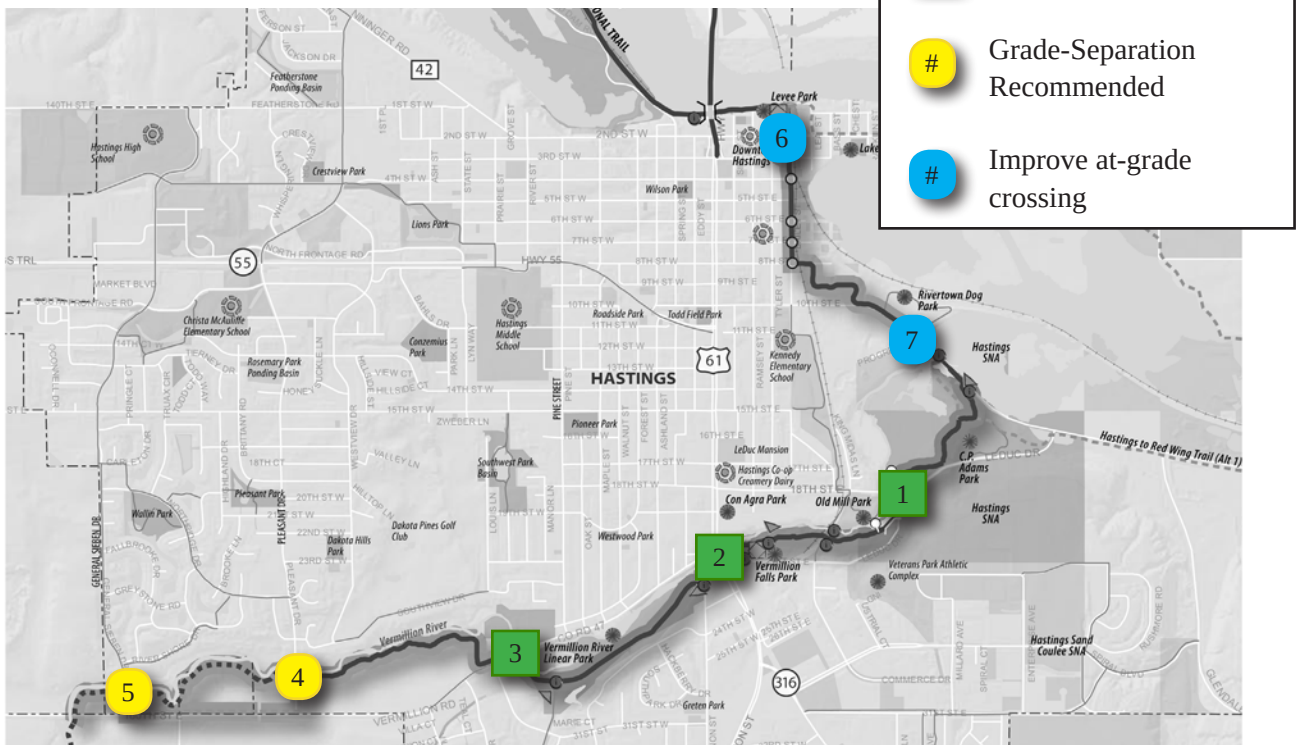
There are three existing grade-separated crossings along the Vermillion River Greenway, and two potential new grade separated crossings. Of the existing grade-separated crossings, all are underpasses for the trail to continue under the perpendicular roadway above. The proposed grade-separated crossings are at Pleasant Drive and General Sieben Drive on the west end of the corridor. Evaluation of these potential grade-separated crossing locations were based on topography, utility information, existing infrastructure, and land ownership. Further study will need to be done to establish project cost estimates.

Existing grade-separated crossing at Vermillion Falls Park under Highway 61

Table 32. Proposed Grade-Separated Crossings

ID*	LOCATION	RECOMMENDATION	IMPORTANCE FOR USER SAFETY AND EXPERIENCE	ESTIMATED CONSTRUCTION COST	DESCRIPTION
4	Pleasant Drive	Tunnel	High (alternative route)	Cost not evaluated	The existing Pleasant Drive bridge over the river does not allow sufficient space for a trail to fit underneath it. A new tunnel would likely need to be constructed under Pleasant Drive south of the river.
5	General Sieben Drive	Retrofit existing bridge over river	High	Cost not evaluated	See Appendix B

Figure 32. Grade-Separated Crossings Map



AT-GRADE CROSSINGS

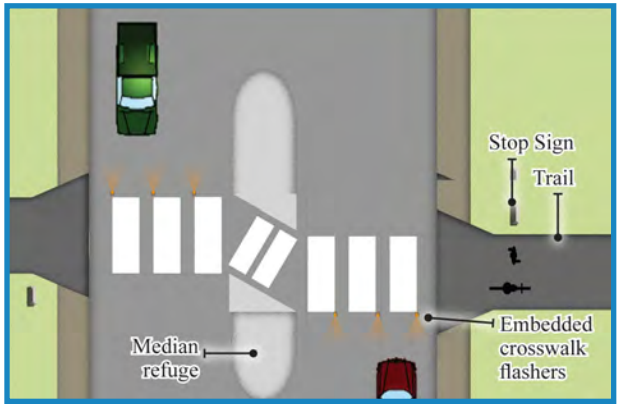
When grade-separated crossings are not possible on collector roads or higher, crossing should occur at controlled intersections with road users stopping at traffic lights or stop signs. In some instances, mid-block crossings may be appropriate and should be designed with pedestrian/cyclist safety and visibility in mind, as shown in the images on this page. On lower volume local roads, crossings might not be controlled with traffic lights or stop signs. In these cases, features such as pavement marking, refuge islands, and bumpouts should be applied to reduce crossing distances for trail users and increase visibility for trail users and road users.

ACCESSIBILITY

Dakota County is committed to offering universal accessibility at all trail facilities. The primary paved trail and all access points suggested in the master plan are located and planned for universal accessibility to provide all visitors with a meaningful experience.

Typical At-grade, Mid-block Road Crossing with Median Refuge

At-grade trail crossing at 2nd Street E



Typical Mid-block Road Crossing with Median Refuge

SUSTAINABILITY

Environmental sustainability is at the core of the greenway concept. Improving ecological function, habitat creation, wildlife movement, stormwater management, and carbon sequestration, as well as facilitating non-motorized recreation and transportation, are all greenway objectives.

Greenways will be assembled in environmentally sustainable ways and designed to minimize impact on natural systems. Recommended strategies include:

- Protecting and restoring natural systems
- Emphasizing native plant species
- Energy-efficient lighting and use of timed lighting
- Use of recycled materials and pervious pavement
- Reducing maintenance costs by promoting self-sustaining wildlife and plant communities and treating stormwater on-site

SITE FURNISHINGS

One of the key features of the greenway system is having a consistent design signature for site furnishings. On the right are examples of site furnishings (benches, bike racks, lighting, and trash receptacles) that show the desired character of facilities at trailheads, neighborhood gateways, and other resting areas along the greenway.

Benches

Trash and recycling receptacles

LIGHTING

Lighting is an essential component for safety and to make the greenway functional as a transportation corridor in the winter and fall months when the days are short. For safety and navigation, lighting is paramount at all greenway access points, trailheads, neighborhood gateways, and trail connections. In these places, it is recommended that lighting be incorporated into initial design and construction. In areas with potential for high use because of population density, trail connections, and destinations, it is recommended that continuous trail lighting be installed.

Fix-it stations and drinking fountains

Bicycle racks

Lighting

WAYFINDING

Wayfinding is the way people navigate from place to place. For the Dakota County greenway system, a consistent wayfinding system is essential for orientation, navigation, and safety. Signage should be consistent across the system and should guide greenway users to local services, cultural destinations, transportation connections, activity centers, recreation destinations, cities, neighborhoods, and other landmarks.

Trailhead / Gateway

Monument Sign

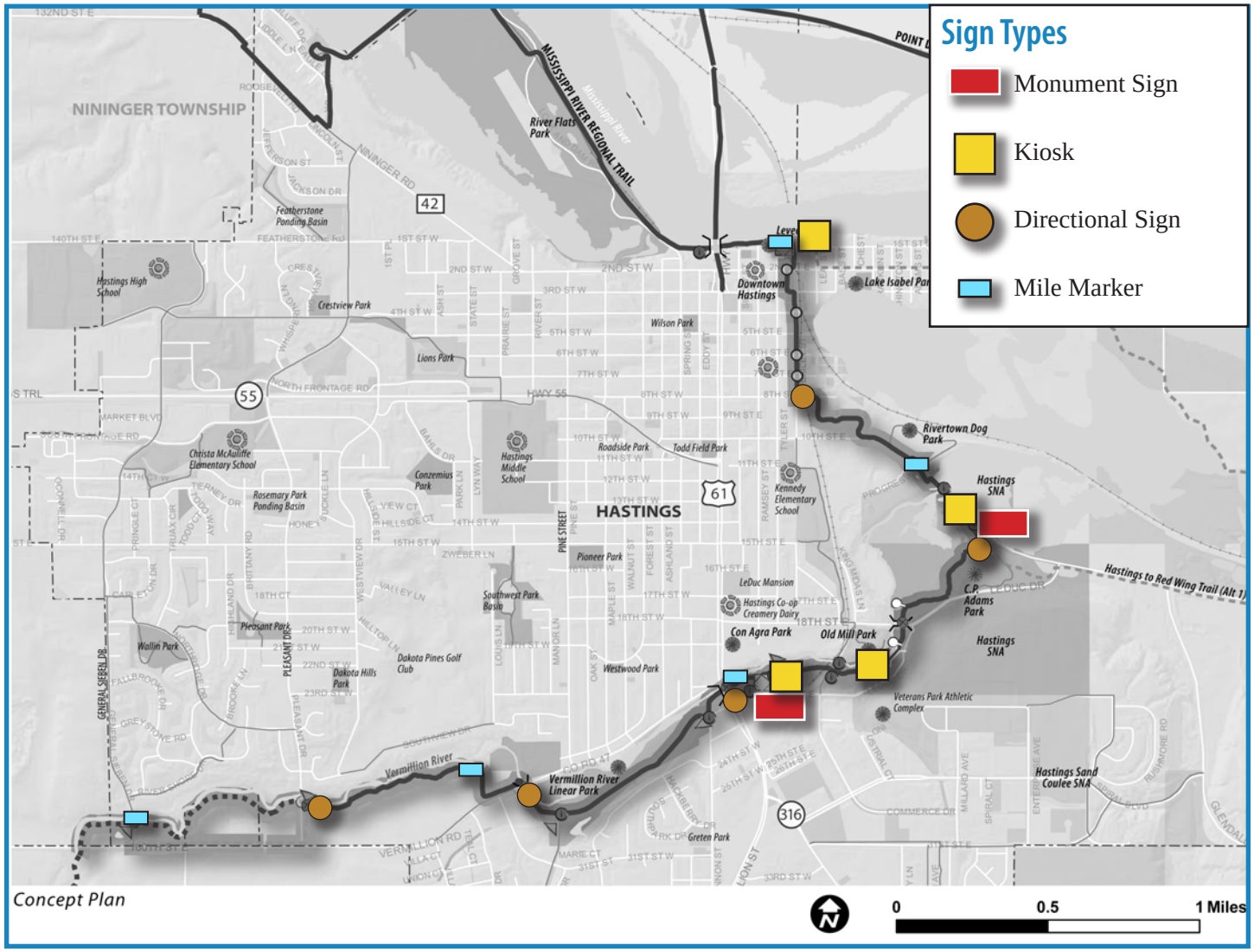
Sample of National Grid sign standard

Mile Marker

Directional Post

Gateway Landmark

Figure 36. Wayfinding Signage Plan



B. Key Initiatives

TRAIL ALIGNMENT

This section summarizes, by segment, specific development and natural resource projects and issues. A zoomed-in view of the greenway map is provided for each segment with a summary of features and discussion of initiatives needed to complete the greenway.

Figure 37. Vermillion River Greenway (Hastings) Segment Map

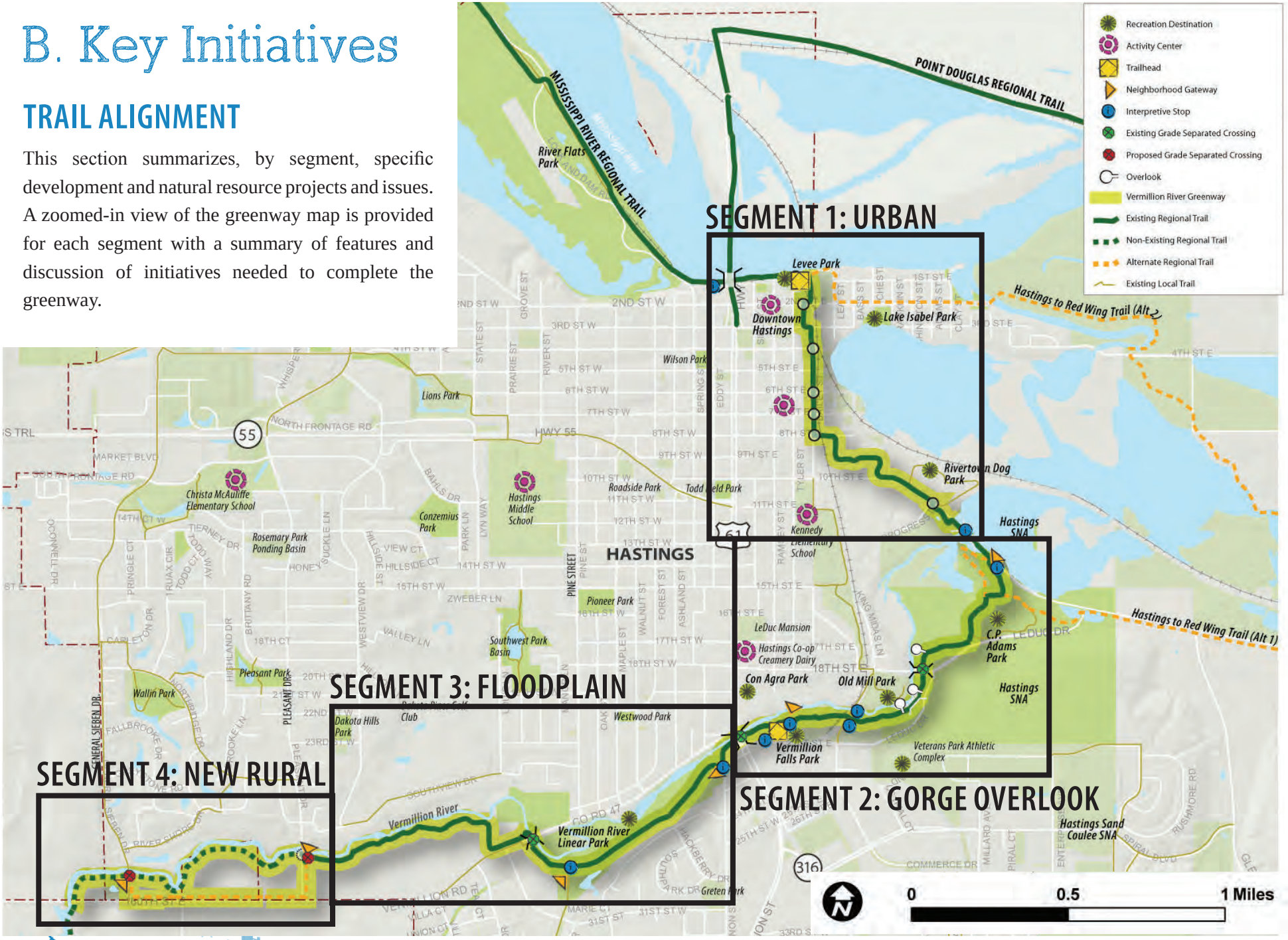


Figure 38. Vermillion River Greenway: Segment 1

Segment 1: Urban Section

(1.6 Miles; 40% parallel to road, 60% off-road)

Segment 1 of the Vermillion River Greenway starts at Levee Park, then continues south through downtown Hastings and along the rail corridor to Ravenna Trail, Rivertown Dog Park and C.P. Adams Park.

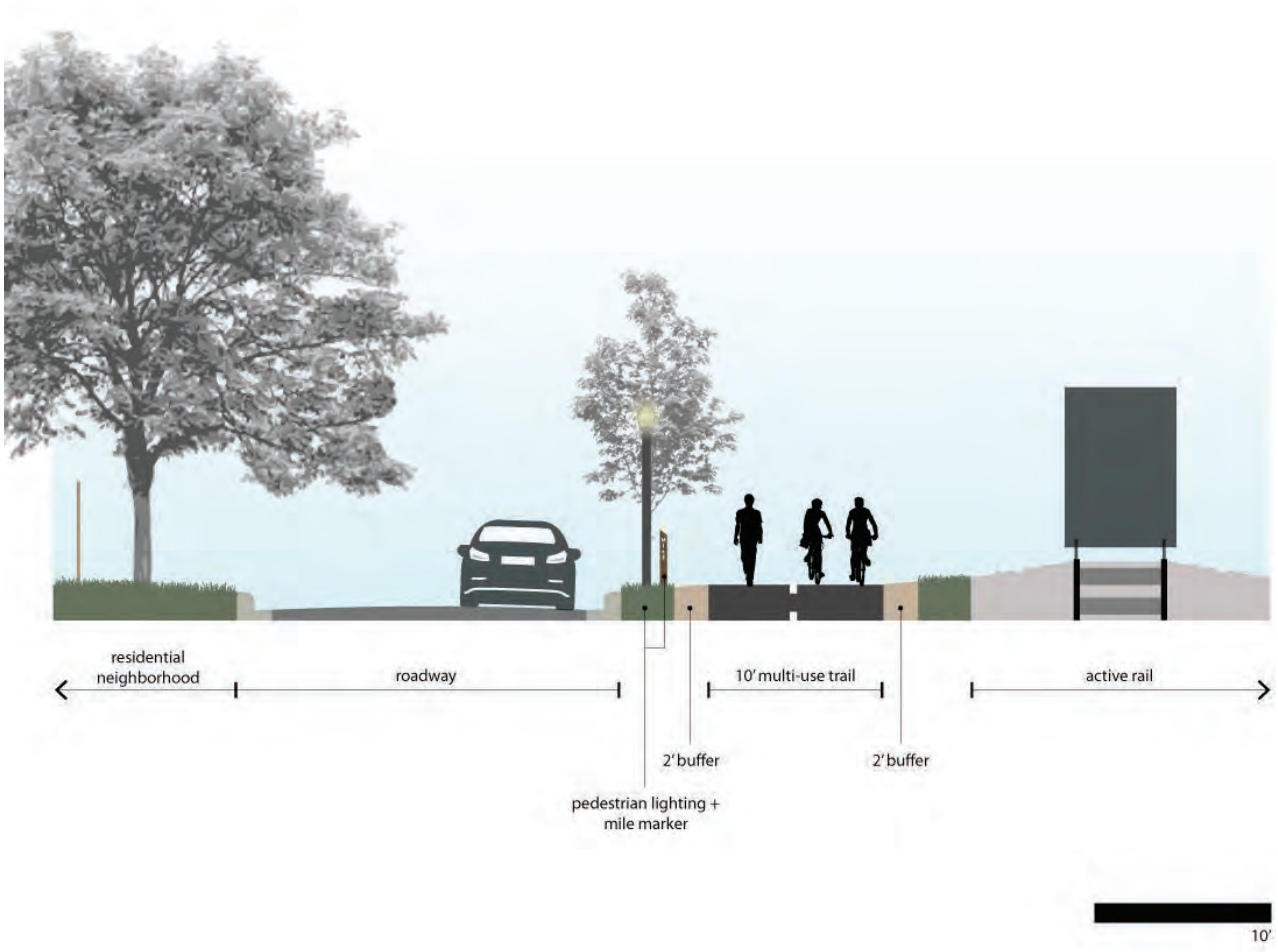
Trailhead: Levee Park

Levee Park has been recently updated by the City of Hastings and is a popular location for city events, river viewing, and trail use. The location of Levee Park at the confluence of the Mississippi River Regional Trail and the Vermillion River Greenway makes it an ideal location for a trailhead. Existing features include a restroom building, parking lot, and picnic facilities. Future upgrades could include Dakota County trail signage and interpretation.

Interpretive Stop

Interpretive elements will be included either near the Hwy 61 bridge overpass or at Levee Park as part of the Mississippi River Trail interpretive plan.

Figure 39. Typical Urban Section



SEGMENT 1: URBAN

Recreation Destinations
- Levee Park
- Lake Isabel Park
- Rivertown Dog Park

Activity Centers
- Downtown Hastings
- St. Elizabeth Ann Seton Catholic School
- Kennedy Elementary School

Trailheads
- Levee Park

Interpretive Stop
- MRRT /Spring Street

Segment 2: Gorge Overlook

(1.35 Miles; 0% parallel to road, 100% off-road)

Segment 2 of the Vermillion River Greenway follows the Vermillion River gorge from the falls to the outlet of the river at Ravenna Trail where it begins to pour into the Mississippi River. This segment offers dramatic views of the Vermillion River, opportunities to view ruins of the former mills, and a restored rail trestle bridge that serves as a trail connection to the north side of the river.

SEGMENT 2: GORGE OVERLOOK

Recreation Destinations
- C.P. Adams Park
- Old Mill Park
- Veterans Park Athletic Complex
- Vermillion Falls Park
- Con Agra Park

Activity Centers
- Kennedy Elementary School
- Hasting Co-op Creamery Dairy

Trailheads
- Vermillion Falls Park

Neighborhood Gateways
- Ravenna Trail Entry
- Con Agra Park

Interpretive Stop
- Ravenna Trail
- Old Mill Park
- Vermillion Falls Park

Grade Separated Crossings
- 18th Street E
- Highway 61

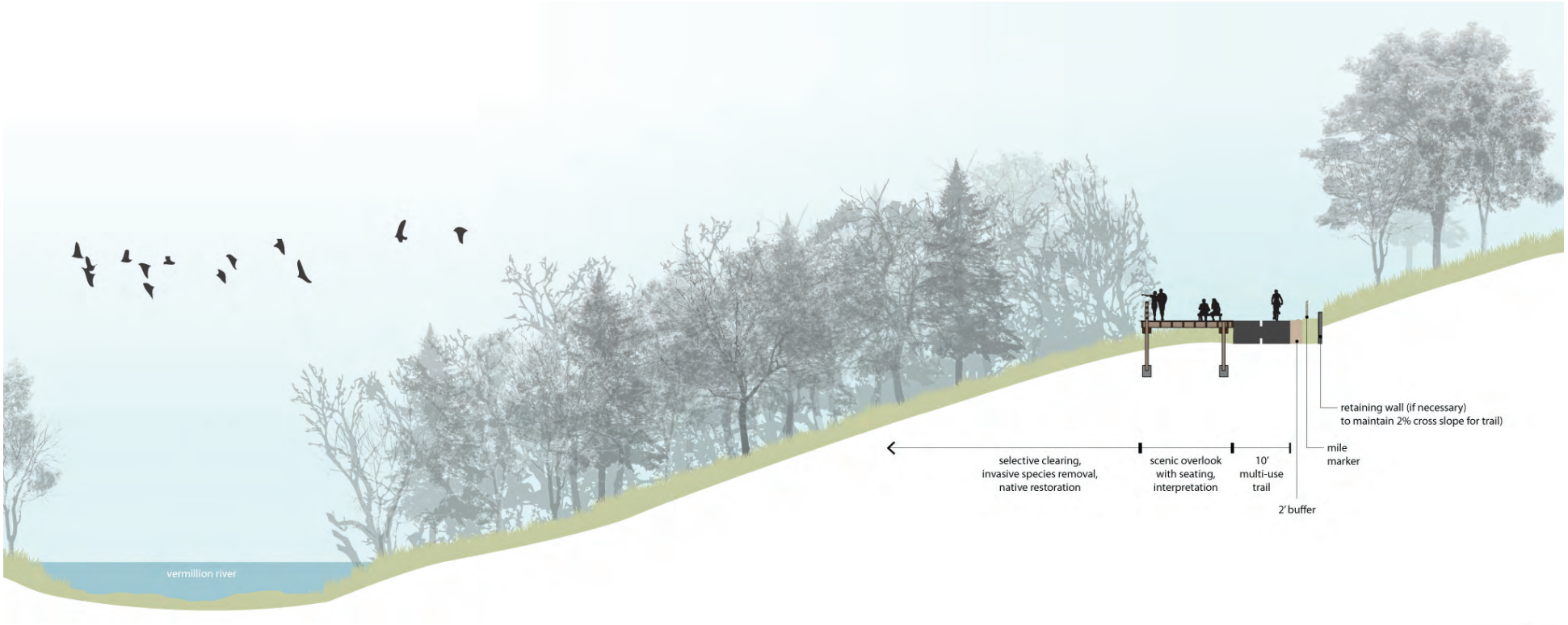
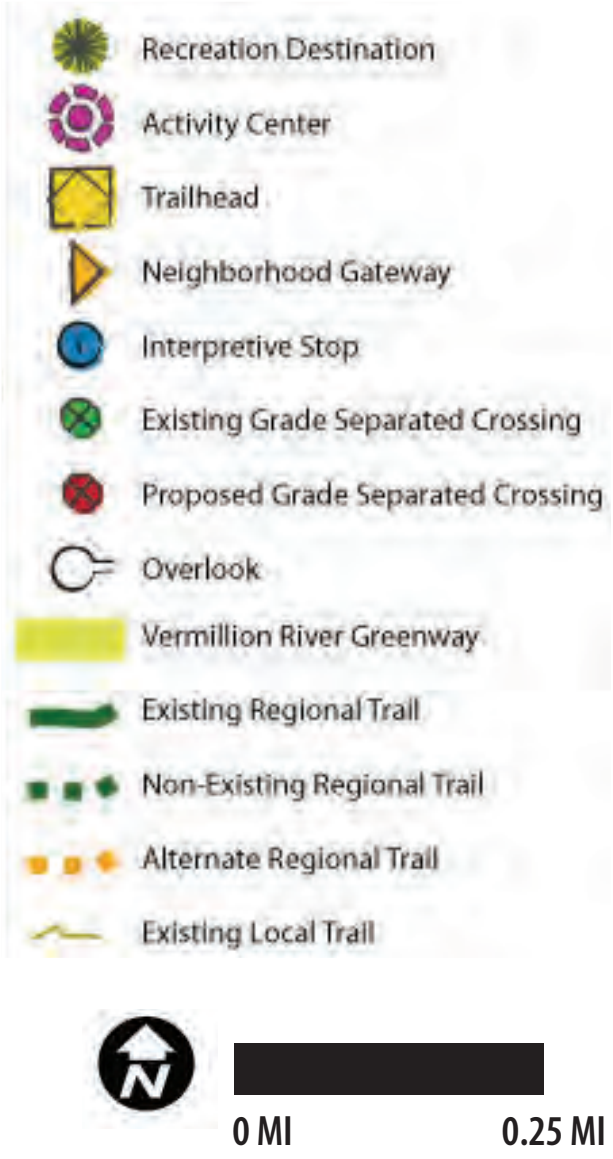
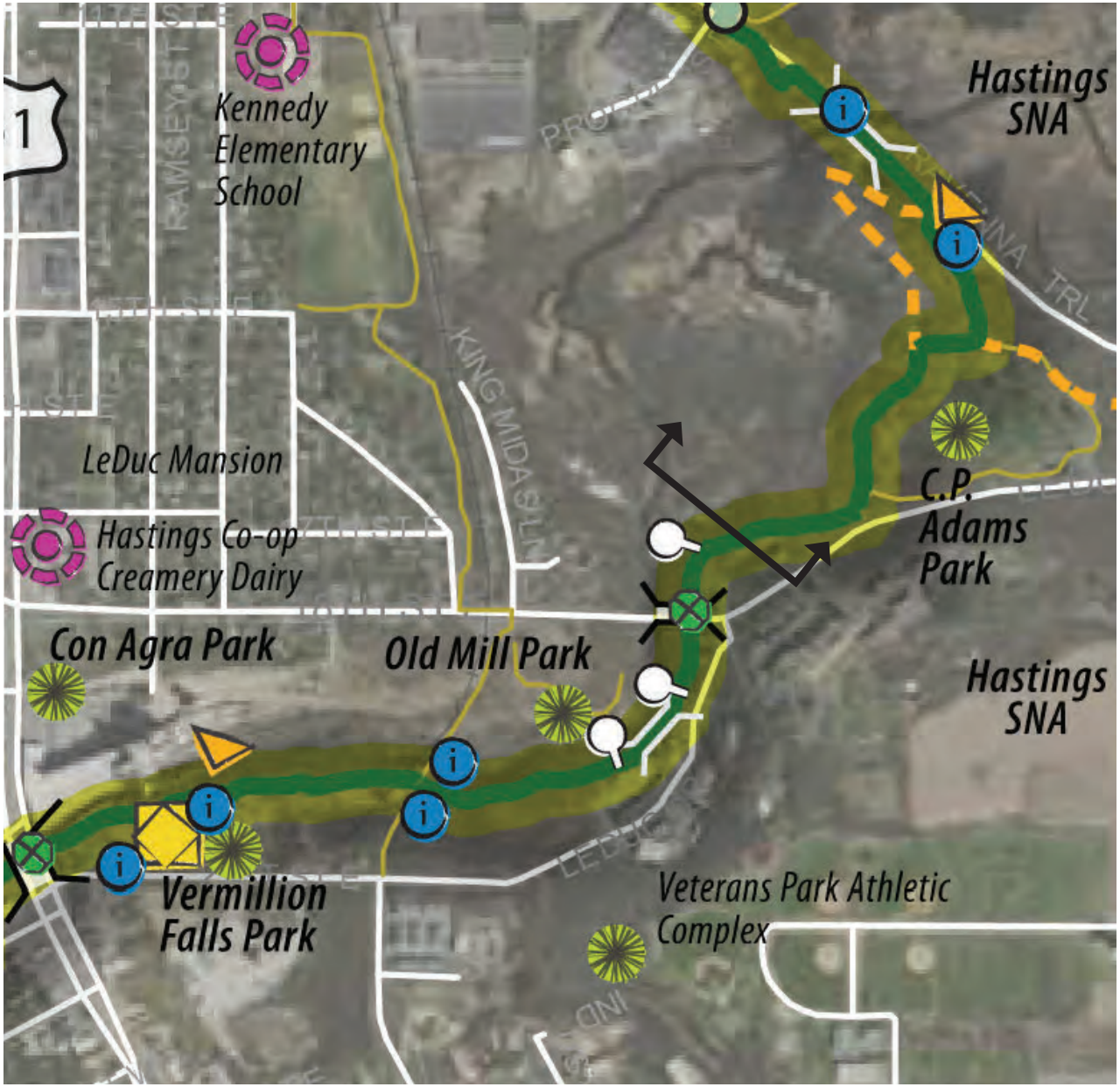


Figure 40. Gorge Overlook Section

Figure 41. Vermillion River Greenway: Segment 2





Further design details will assess location and access of overlooks.

C.P. Adams Park / Alternative Alignment

From Ravenna Trail to the north side of the disc golf course in C.P. Adams Park, two paved trails exist to traverse the steep slope. Trail A is newer and wider than B, but A includes a sharp, hairpin turn in order to meet ADA slope requirements. Trail B has a more gentle curve but has a steeper grade. This plan identifies trail B as the preferred route for the regional greenway trail.

Figure 42. Alternative Alignment Options at C.P. Adams Park

Vermillion Falls Park

The trailhead concept at Vermillion Falls Park shows a re-designed parking lot with trail connections to a re-aligned Regional Trail. Trailhead amenities include a future ADA accessible restroom, bike racks, and areas with native prairie restoration. Wayfinding and interpretation are integrated into the park at key locations. An additional stair, path and overlook will connect trail and park users to the river.

Existing trail bridge over the Vermillion River and connecting the greenway trail to Old Mill Park

Figure 43. Trailhead at Vermillion Falls Park

Segment 3: Floodplain
(1.75 Miles; 6% parallel to road, 94% off-road)

Segment 3 of the Vermillion River Greenway starts at the Highway 61 underpass and leads west along the river and floodplain. The trail winds behind homes and along the levee that was constructed as a result of severe flooding in the 1960s. The experience on this segment allows some views of the river, but the trail winds away from the river and through prairie restoration areas.

The trail crosses under Co. Rd. 47 and continues to follow along the south side of the river up until Pleasant Drive where the trail ends and meets up with a local trail that crosses over the river on the Pleasant Drive bridge.

SEGMENT 3: FLOODPLAIN

Recreation Destinations
Vermillion River Linear Park

Neighborhood Gateways
Cannon Street / 22nd Street W
Bolkhen Drive
Pleasant Drive

Grade Separated Crossings
Vermillion Road/31st Street W

Interpretive Stop
Vermillion River Linear Park

Figure 44. Floodplain Restoration Section

Figure 45. Vermillion River Greenway: Segment 3

The trail will be reconstructed in its current location in order to stay out of the floodway.

Segment 4: New Rural Section
(0.9 Mile; 0% parallel to road, 100% off-road)

Segment 4 of the Vermillion River Greenway starts at the Neighborhood Gateway at Pleasant Drive.

The new trail segment begins at Pleasant Drive and will follow the south edge of the Vermillion River. This alignment has been identified on past City trail planning maps and in the City's comprehensive plan. If the trail were to follow the river, easements or property acquisition would be needed on several private properties that are adjacent to the river. This alignment would be in an entirely off-road corridor, which would provide a more natural experience for trail users.

An alternative alignment shows the trail travelling south to CR 46 where the trail will turn, crossing Pleasant Drive at-grade. The alternative alignment will continue along the north side of CR 46. At General Sieben Drive, the trail will turn north.

The remaining (long-term) future trail segment will cross General Sieben Drive with a grade-separated crossing and continue alongside the Vermillion River to Marshan Township, crossing under CR46 with another grade separated crossing.

Figure 46. Vermillion River Greenway: Segment 4
The trail will be located generally along the floodway boundary (where feasible outside of the floodway).

SEGMENT 4: NEW RURAL SECTION

Neighborhood Gateways

Pleasant Drive

General Sieben Drive

Grade Separated Crossings

Pleasant Drive

General Sieben Drive

CR 46 / 160th Street E

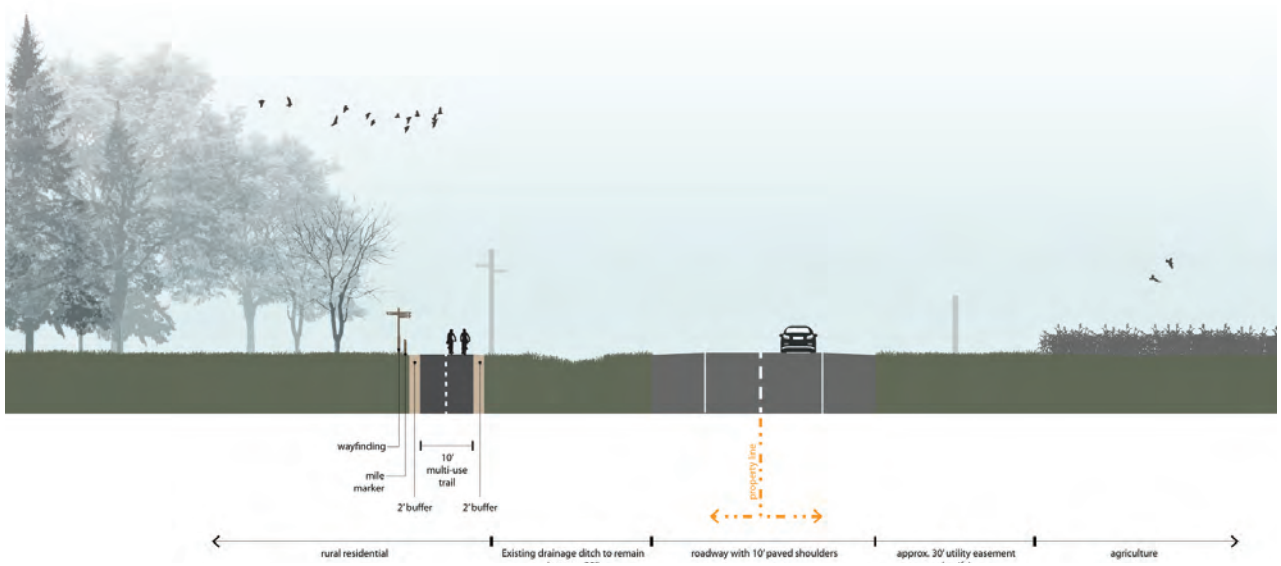


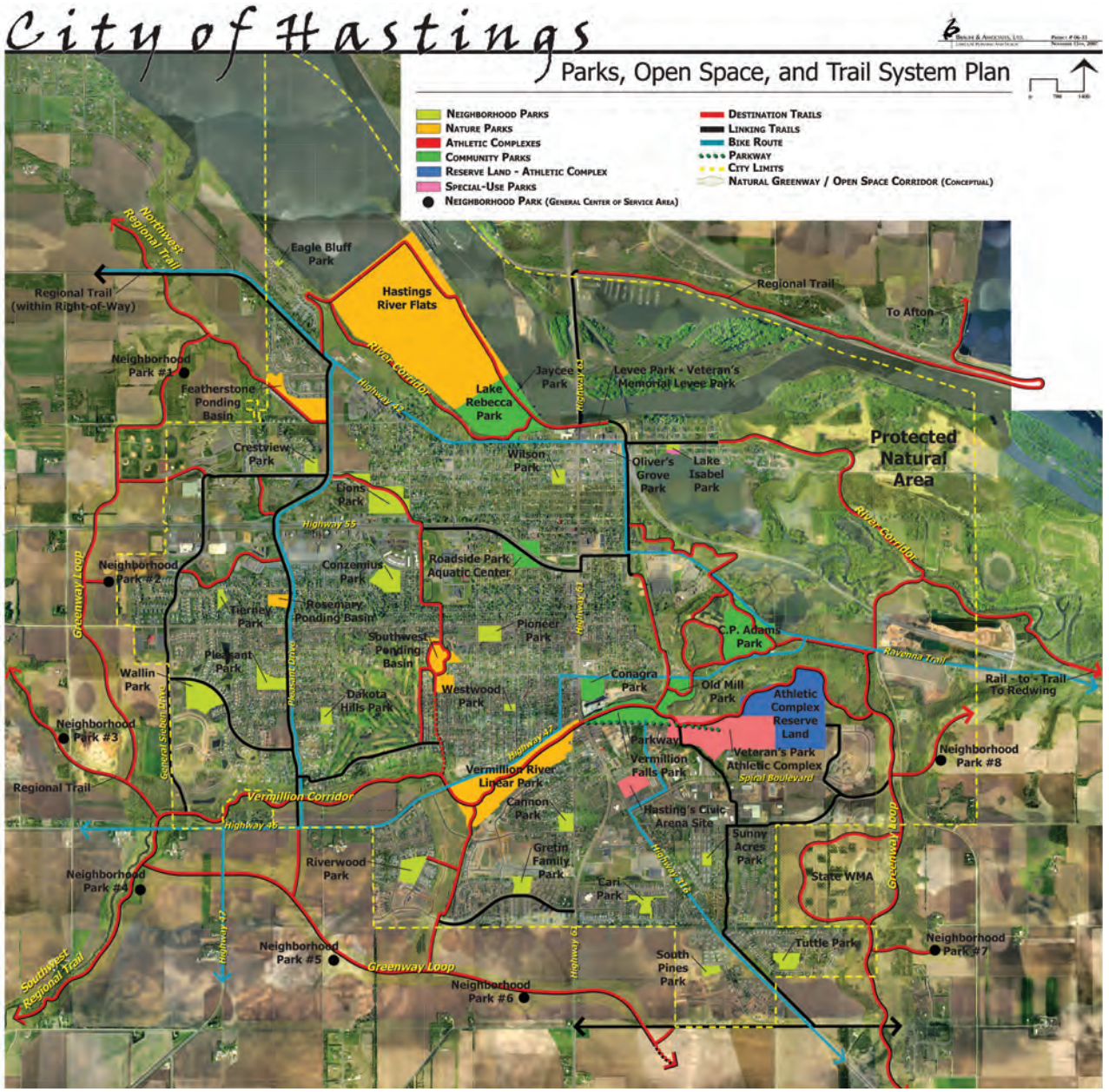
Figure 47. New Rural Section: Alternative Alignment

HASTINGS PARKS, OPEN SPACE, AND TRAIL SYSTEM PLAN

The City of Hastings 2030 Comprehensive Plan includes an alignment along the Vermillion River for the future regional trail. Over the past decade, the City has worked to fill gaps in its trail network with new trails connecting neighborhoods, social destinations, and parks.

The historic rail trestle bridge connects the proposed greenway trail across the Vermillion River to Old Mill Park.

Figure 48. City of Hastings Parks, Open Space, and Trail System Plan



C. Interpretive Plan

The interpretive plan identifies an approach to interpretation, general themes for the corridor, and specific locations and stories along the trail that should be represented in interpretive stories.

Various nodes are identified with a location, a story, and potential interpretive methods.

The full interpretive plan can be found in Appendix B.

Figure 49. Proposed Experience Nodes along the Vermillion River Greenway

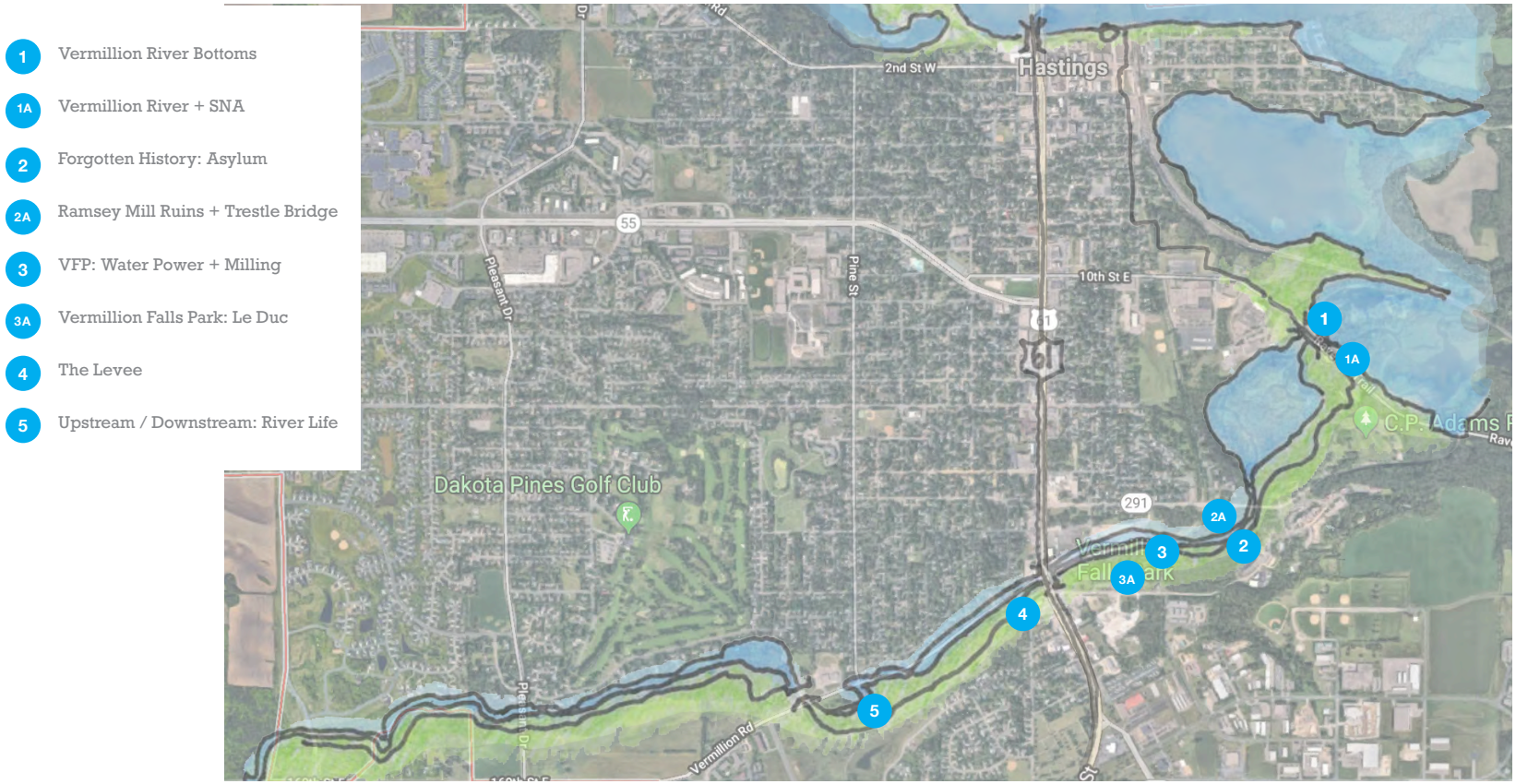
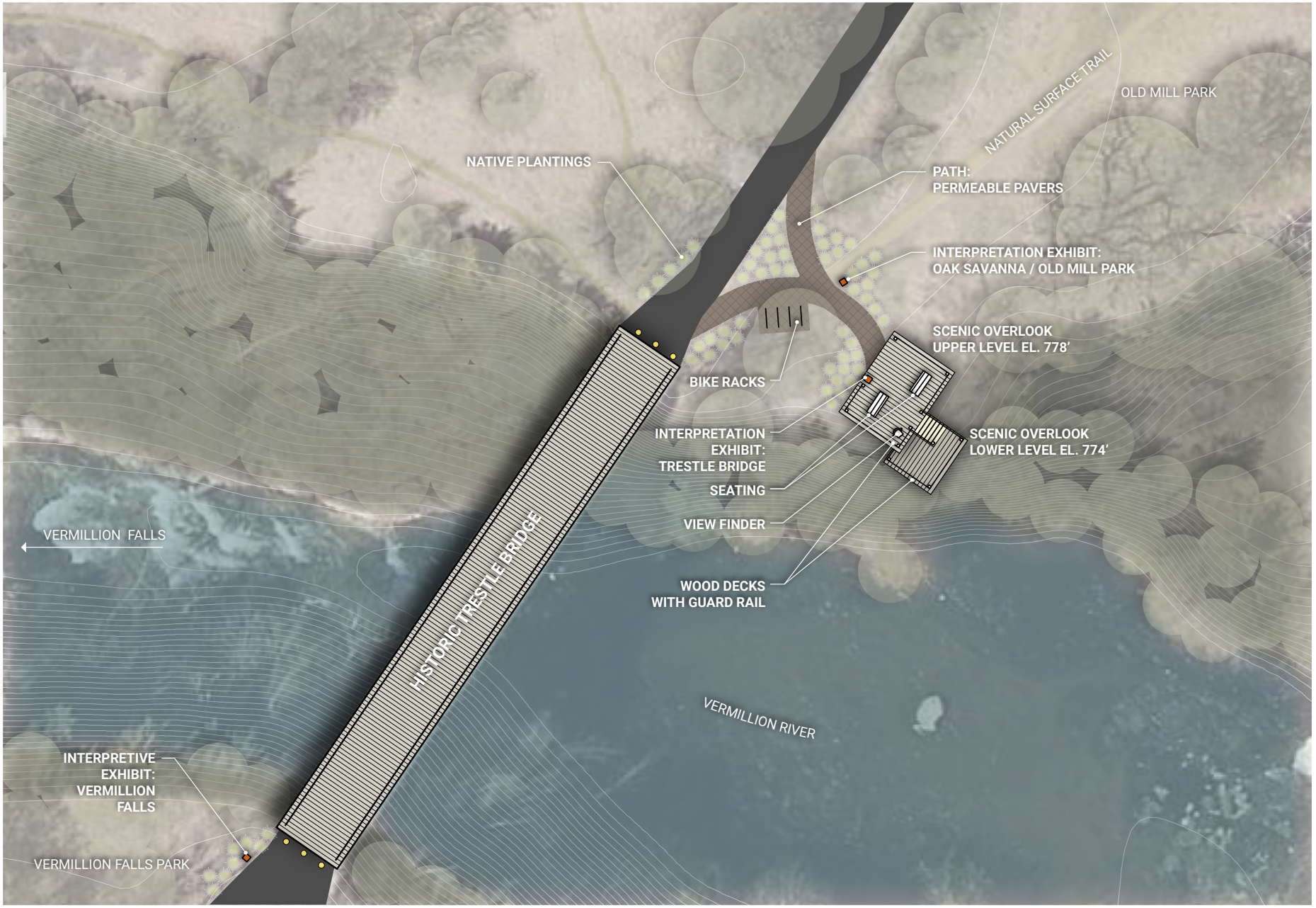


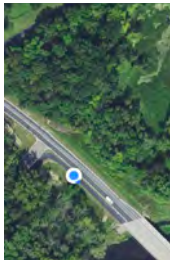
Figure 50. Interpretive Node Concept for Trestle Bridge



VERMILLION STORIES

1

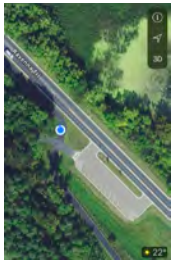
NODE 1. VERMILLION RIVER BOTTOMS



Proposed location of node

1A

NODE 1A. VERMILLION SNA



Proposed location of node

Node Location

VERMILLION STORIES

1

NODE 1. VERMILLION RIVER BOTTOMS: IMAGES

Interpretive Opportunities:
Cutouts of Birds
Map: Visualizing the intersections of the Mississippi and Vermillion Floodplains

From top left: bunting, flycatcher, great blue heron, grosbeak, heron, pelican, warbler, wood thrush, falcon.

Images

VERMILLION STORIES

1

NODE 1. VERMILLION RIVER BOTTOMS

Cultural and Natural History Stories:
Stop, Look, Listen: Birding the Vermillion
Who's Visiting? Bird Migration
Floodplain Forest
Please Don't Disturb: Preserving the SNA

As the glaciers melted 10,000 years ago, a braided-stream system dominated the Mississippi River. The main river channel was separated into smaller, intersecting channels. The Vermillion River Bottoms is a remnant of that river system. Here, the Mississippi and the Vermillion run parallel to each other, separated by a 17-by-2.5-mile area of floodplain forest. One of the most beautiful spots along the Mississippi River National Recreation Area, the Vermillion River Bottoms remains a largely untouched example of the floodplain forests that once extended from Itasca to the Gulf of Mexico. The area is home to a diversity of wildlife, including rare birds, fish and mussels.

The city of Hastings is a designated IBA, or Important Birding Area. And this spot along the backwaters of the Vermillion is part of a critical migratory corridor for waterfowl, songbirds, and raptors. If you listen carefully on a late spring morning, you can hear the voices of many forest songbirds, such as the Wood Thrush, Great-crested Flycatcher, and Indigo Bunting. Each spring, migrating waterfowl can be spotted in the wetlands beyond Bullfrog Pond, including the rare Tri-colored Heron. A total of 153 bird species have been recorded breeding or migrating through the area, which extends southeast to include the lower Cannon River. Two species of special concern in southeastern Minnesota—red-shouldered hawks and cerulean warblers—are included in this site.

The backwaters of the Vermillion River are a destination and haven for many songbirds and waterfowl.

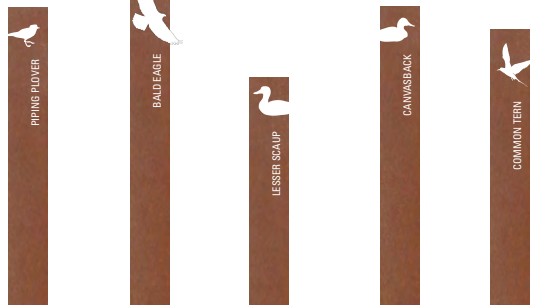
Story

VERMILLION STORIES: EXHIBIT PRECEDENTS

1

NODE 1. VERMILLION RIVER BOTTOMS

Precedent:



Interpretive method precedents

D. Stewardship Plan

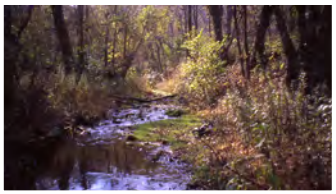
The linear nature of the greenway will require natural resource management strategies that are geographically targeted, cooperative, and realistic. Restoration and protection efforts should be focused near trailheads, as these locations will provide the greatest opportunity for greenway users to see the results of stewardship and provide a high-quality user experience. Given the linear nature of the greenway, stewardship activities should be in cooperation with adjoining landowners, public and private. Cooperative stewardship activities likely will be easier with other public agencies, but this should not preclude the possibilities of stewardship work on adjoining private lands. All stewardship actions should be evaluated through the lens of sustainability—determine if the stewardship effort is economically and ecologically sustainable over the long term.

Table 52. Natural Resource Conservation & Habitat Investment Strategies

HABITAT PRESERVE

Top priority habitat restoration/management

- Has adequate patch size/shape to sustain native plant community
- Contains existing remnant of native plant community
- Has interpretive potential
- Has benign surrounding uses
- Buffers or contains natural waters



HABITAT CORRIDOR

Second priority habitat management

- Provides connection between habitat preserves
- Has adequate width to sustain native plant ground layer
- Grades allow for rainwater infiltration
- Buffers natural waters

NATURAL LANDSCAPES

Lowest landscape investment priority

- Primary task is to control invasive plants
- Managed as a natural, low-maintenance landscape

DESIGNED LANDSCAPES

High landscape investment

- Managed urban landscapes
- Limited habitat value
- Relatively small area
- Provides for treatment of stormwater runoff

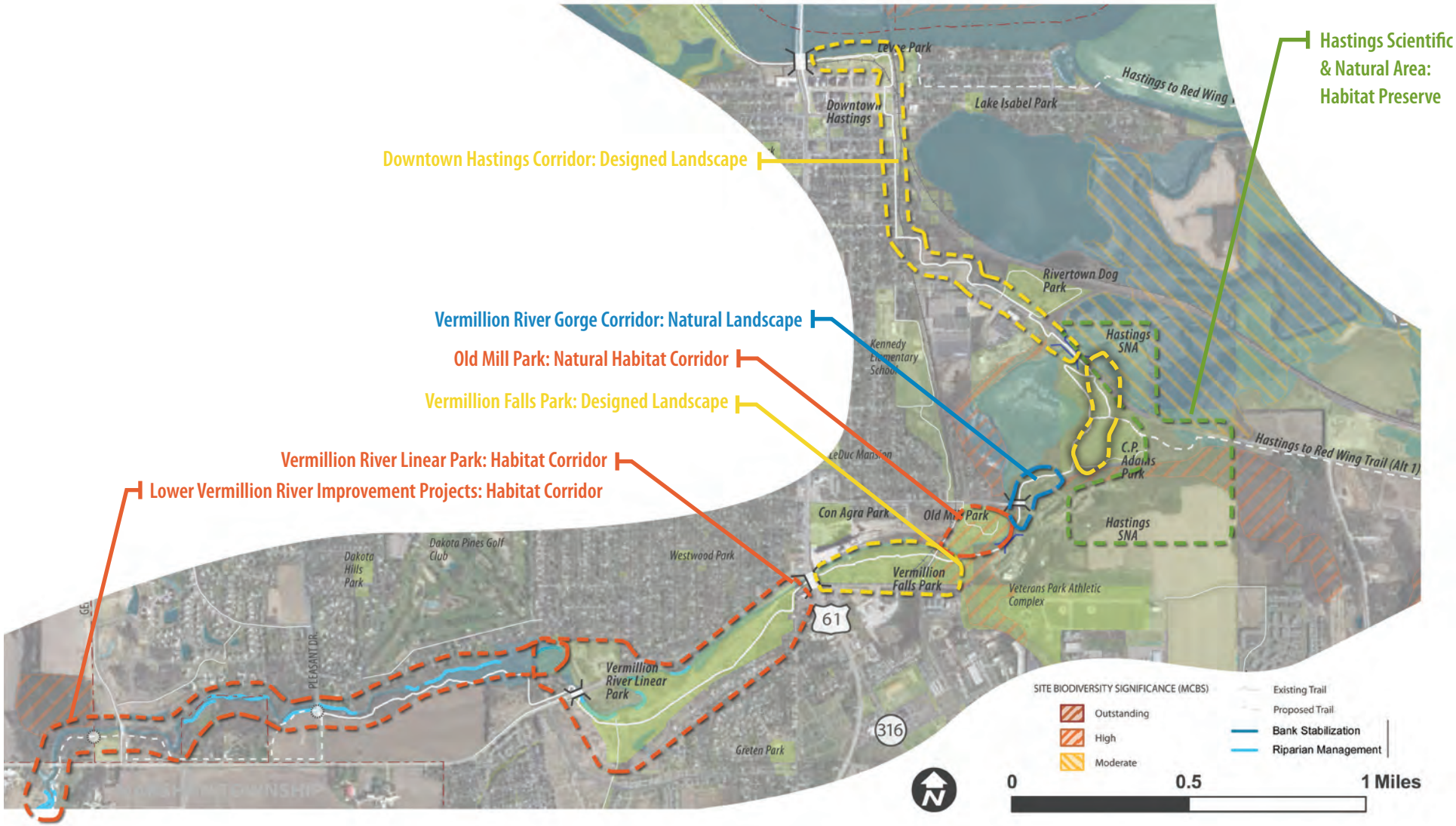


Figure 53. Stewardship Plan

HABITAT INVESTMENT AREAS

Given the length of the greenway corridors, efforts to manage and restore the natural resources and native plant communities would be a daunting task—well beyond the ability of any one agency. In order to provide for realistic and sustainable restoration and management of the resources, key habitat investment areas were identified for natural resource management. These habitat investment areas were prioritized and targeted to areas associated with high-quality ecological resources and greenway use patterns. These areas are identified in Figure 53.

Some of the area along the Vermillion River Greenway is currently undeveloped, and much of it exists within city parks and natural/restoration areas. It is possible to conserve large areas of open space and establish a continuous ecologically functioning habitat corridor throughout these areas. General recommendations are made for overall corridor preservation, while targeted natural resource and water quality improvements are recommended at key locations, such as trailheads and parks.

STEWARDSHIP RECOMMENDATIONS

General considerations for stewardship activities within this investment hierarchy are organized around ecological quality, landscape position, and future uses and are described on page 52.

Vegetation management and water quality improvements

In native plant communities—prairie, woodlands, and wetlands—invasive species removal, buffer protection, or establishment and re-establishment of disturbance regimes will be the key activities. Oak savannas may need to be supplemented with tree plantings, and all of the grassland systems will likely need supplemental seeding.

Stormwater runoff from impervious surfaces will be treated, and significant erosion issues will be addressed, as opportunities arise along the corridor.

SITE SPECIFIC ACTIONS

The natural resources recommendations for the Vermillion River Greenway (Hastings) corridor reference work that has been done by the City of Hastings, Dakota County, the Vermillion River Watershed JPO, and Friends of the Mississippi River. Natural Resource Management Plans have been written for Vermillion River Linear Park and Old Mill Park.

Hastings Scientific and Natural Area

History

- FMR has been very involved with management of this area
- Includes floodplain, mesic oak forest, steep slopes, and rare native plant species

Recommendations

- ***Habitat Preserve***
- Coordinate with DNR to ensure SNAs are protected within the greenway corridor
- Avoid disturbance of the site
- Monitor invasive species within forested and wetland areas

Downtown Hastings Corridor

Existing Conditions

- Urban development

Recommendations

- Designed Landscape
- Add landscaping where opportunities exist, including rain gardens or other stormwater treatment practices and native plants

Old Mill Park

History

- Historic mill ruins on site

Recommendations

- ***Natural Habitat Corridor***
- Implement strategies outlined in Old Mill Park NRMP. Continue to plant and manage native restoration areas

Vermillion Falls Park

Existing Conditions

- Active mill, active park

Recommendations

- Designed Landscape
- Complete park master plan to identify rain gardens, prairie planting areas and turf areas

Vermillion River Linear Park

History

- 1965-major flood, levee constructed
- 1979: channel excavation for flood abatement
- Heavy disturbance

Recommendations

- ***Natural Habitat Corridor***
- Implement strategies outlined in Vermillion River Linear Park NRMP.
- Restore native plant communities
- Continue planting prairie/grassland within managed floodway
- Breeding bird surveys
- Improve water quality with buffer plantings
- Stabilize river banks with acceptable practices, with a focus on bioengineering

Lower Vermillion River improvement projects

Existing Conditions & Issues

- Eroded banks, narrow riparian corridors, mowed to edge of river

Rcommendations

- ***Natural Habitat Corridor***
- Implement bank stabilization & riparian management projects as identified by Vermillion River Watershed JPO
- Partner with VRWJPO, City, and developers to ensure future greenway corridor includes natural resources protection measures
- Monitor runoff from planted/cultivated land cover areas
- Minimize any floodplain impacts from proposed trail addition

Opportunities for Stormwater Management

Many practices are available to manage surface water at trailheads. Some make more sense than others and provide greater return on investment.

Practical surface water management practices include:

- Creating shallow depressions (raingardens) alongside parking lots and grading the parking lot to tip in that direction.
- Creating planted depressed parking lot islands to capture surface water.
- For small parking lots surrounded by greenspace, running the water onto the surrounding grass (ideally prairie).
- Around parking lots, planting trees to capture and evaporate rainwater on their leaves and creating pores in the soil with their roots to allow water to soak in. Trees also shade pavement to keep it cooler in the summer.
- Planting prairie plants around parking lots—they function much like trees (minus the shading). They are especially useful on clay soils, where they drive roots deep and facilitate surface water infiltration.
- For large parking lots or impervious surfaces, larger stormwater management practices to capture and treat stormwater runoff may be needed.

Lake, Wetland, and Stream Restoration Considerations

Lake, wetland, and stream restoration should be considered along the greenway. Restoration should be designed by multidisciplinary teams that include expertise in engineering, hydrology, aquatic and restoration ecology, geomorphology, soil science, and policy/permitting.

The lakes, wetlands, and streams along the Vermillion River Greenway corridor are valuable water resources. With every greenway construction project, opportunities to implement water quality enhancement strategies will be found.

These strategies include:

- Plant native shoreline vegetation along ponds and lakes
- Plant oak savanna treeline to shade trail, absorb stormwater, and buffer trail
- Maintain and preserve existing moderate-quality plant communities
- Maintain and preserve existing outstanding-quality plant communities in Hastings SNA and along the Vermillion River
- Plant native trees and grasses along all future trail projects in order to shade the trail and absorb stormwater
- When possible, locate recreation development away from water
- Manage stormwater on-site to protect downstream water by preventing the influx of large amounts of water and capturing pollutants
- Create rain gardens at proposed trailheads adjacent to parking lots to capture surface runoff
- Plant trees and native/prairie vegetation
- Interpret water quality enhancements and educate users of the Vermillion River Greenway on water-related issues along the corridor

Native vegetation shoreline buffer

Urban rain gardens in boulevard

Pervious pavement and rain garden in a parking lot

Rain gardens in suburban setting

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Implementation

4

OVERVIEW

This master plan is a long-range vision for recreation, transportation, water quality and habitat improvements for the Vermillion River Greenway (Hastings). Accomplishing this vision depends on multi-agency collaboration. Without continued coordination between the communities it is unlikely the greenway could be realized as envisioned. Working collaboratively will enable Dakota County, cities, and other agencies to leverage resources to build, operate, and maintain the greenway.

While the 30-foot regional trail corridor will be the jurisdictional and operational responsibility of Dakota County, the larger greenway corridor will be governed in many ways, depending on the situation. Similarly, responsibilities for land acquisition, construction, stewardship, operations and maintenance will depend on the particularities of each segment.

This Chapter outlines approaches for greenway implementation, including:

- Phasing and priorities
- Land protection and stewardship
- Lighting along the trail
- Operations
- Funding
- Capital and operational budgets

PHASING AND PRIORITIES

The majority of the Vermillion River Greenway (Hastings) trail is already in place. Regional trail improvements will include adding amenities, landscaping and restoration, and interpretation, in addition to construction of the one-mile segment that is not yet developed. The improvements will be implemented in phases. Greenway segments have been prioritized into five-year, 10-year, and long-term projects (Table 60). It is anticipated that five-year projects will be built in advance of 10-year projects, but the master plan remains flexible so that any project can be implemented as partnership or funding opportunities arise.

First priority (five-year) projects are those that will improve upon the existing trail in the northern and eastern part of the corridor and provide recreation facilities for the more populated areas along the trail. Of foremost importance is securing land or easements for the 30-foot corridor as opportunities arise. After land has been secured, improving the portions of existing trail to regional standards is the first priority. This includes rerouting and/or reconstructing segments of trail that do not meet standards for condition or safety, improved street crossing conditions, and continuous wayfinding signage. Recreation, water quality, non-motorized transportation, and natural resource elements should be integrated into the greenway at the time of other improvement projects and as opportunities and needs arise.

Second priority (10-year) projects will complete the full trail build out along the entire corridor and provide amenities that will enhance the greenway experience. These are projects like trailhead development and enhancements to existing trails, such as landscaping, habitat restoration interpretation, wayfinding, benches, and trash receptacles.

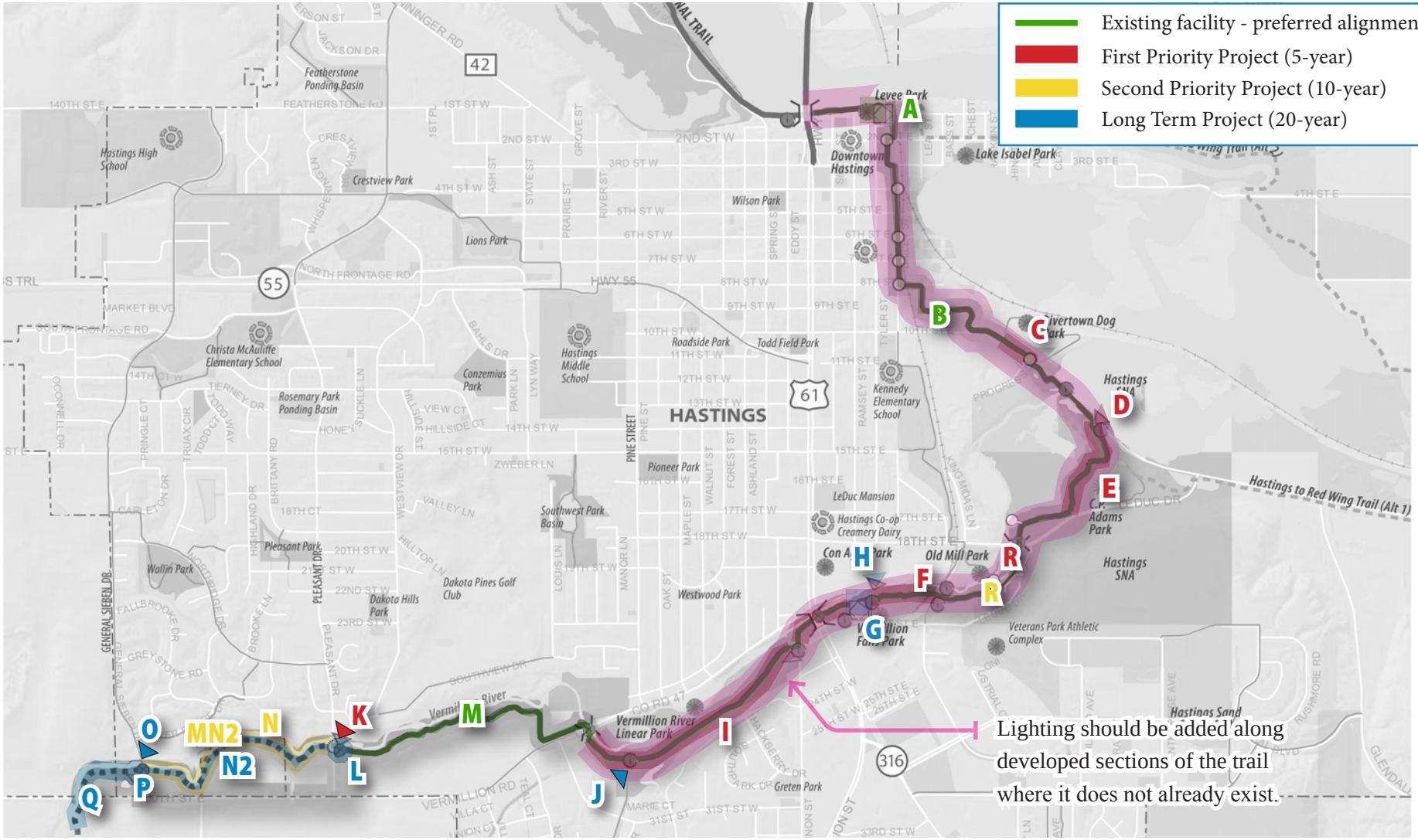
Grade separated crossings will be installed as funding, partnership, or construction opportunities arise.

In cases where alternative trail alignments are identified, these will be lower priority than the preferred route, but they will be constructed as opportunities and partnerships arise.

Table 60. Vermillion River Greenway (Hastings) Priority Projects

Project ID	Project Description	Priority	Potential Partners/ Triggers
A	Trailhead at Levee Park: minor improvements to existing facilities	Existing/5-year	
B	Greenway improvements from downtown Hastings to Ravenna Trail Gateway	Existing/5-year	
B2	NR improvements: urban signature (30' wide corridor)	5-year	
C	Trail reconstruction to meet greenway standards (Rivertown Dog Park segment)	5-year	
D	Neighborhood Gateway at Ravenna Trail	5-year	
E	Trail reconstruction to meet greenway standards (C.P. Adams Park)	5-year	
E2	NR improvements: urban signature (30' wide corridor)	5-year	
F	Trail reconstruction to meet greenway standards (Vermillion Falls Park to Cannon Street)	5-year	
F2	NR improvements: urban signature (100' wide corridor)	5-year	
G	Trailhead at Vermillion Falls Park	20-year	City master plan and park redevelopment
H	Neighborhood Gateway at Con Agra Park	20-year	
I	Trail reconstruction to meet greenway standards (Vermillion River Linear Park)	5-year	
I2	NR improvements: habitat corridor (100' wide corridor)	5-year	
J	Neighborhood Gateway at Vermillion River Linear Park	20-year	
K	Neighborhood Gateway at Pleasant Drive	5-year	
L	Grade-separated crossing of Pleasant Drive: needs further evaluation	20-year	
M	Greenway improvements from Ravenna Trail to Pleasant Drive	Existing/5-year	
N	Establish public ownership of corridor along Vermillion River from Pleasant Drive to General Sieben Drive	10-year	
N2	Greenway construction (trail and amenities)	20-year	
MN2	Natural Resource improvements: habitat corridor (100' wide corridor) including bank restoration projects identified in the Vermillion River Watershed JPO geomorphic assessment	10-year	Vermillion River Watershed JPO identified projects
O	Neighborhood Gateway at General Sieben Drive	20-year	
P	Grade-separated crossing of General Sieben Drive	20-year	
Q	Trail west of General Sieben Drive	20-year	
R	River Overlooks and Access (1)	5-year	
R	River Overlooks and Access (2)	10-year	

Figure 61. Vermillion River Greenway Priority Projects



LAND PROTECTION AND STEWARDSHIP

Dakota County's greenway concept incorporates recreation, transportation, and ecological and water quality components in a 100- to 300-foot corridor secured through two approaches:

Land protection: protecting land essential to make the greenway usable. For the Vermillion River Greenway, this means securing land needed for the trail corridor, grade-separated crossings, and trailheads.

Land stewardship: the care of native landscapes and habitat within the greenway.

Land Protection

It is essential that Dakota County secure lands for the minimum 30-foot trail alignment and trailheads. Sections of the Vermillion River Greenway corridor where protection is needed are shown on Figure 63. Two categories of land are shown: publicly owned land (City of Hastings and road right of way) and privately owned land. For land owned by other public agencies, Dakota County will need to permanently protect the trail corridor and trailheads for regional trail use with easements or joint powers agreements. For land that is privately owned, the County will need to secure the land with a trail easement or acquire the trail corridor for public use. Table 63 summarizes the approximate number of acres of land needed for protection. Land protection strategies include park dedication, direct purchase with resale of land not required for the trail, permanent easements, land donation, bargain sale, life estate, and negotiations with cities and developers. Table 62 highlights several techniques for protecting land in different ownership scenarios.

Land Stewardship

The natural resource objective for the greenway system is to maintain or create a healthy context within which nature can thrive. The first stewardship priority is restoring continuous habitat within the greenway corridors. The second is habitat restoration and protection of the most sensitive lands, including uplands that link greenways to the broader landscapes. Generally, Dakota County will not be the lead agency in stewardship activities outside the 30-foot trail corridor and trailheads but will work as steward partners with local jurisdictions, agencies, and private landowners and provide funding and expertise.

Table 62. Land Protection and Stewardship Tools

TOOL	DAKOTA COUNTY RIGHT OF WAY		OTHER PUBLIC LAND		CURRENT PRIVATE LANDS	
	30' Regional Trail Easement or Trailhead	100'-300' Greenway	30' Regional Trail Corridor or Trailhead	100'-300' Greenway and Neighborhood Gateways	30' Regional Trail Easement or Trailhead	100'-300' Greenway
County Easement			✓	✓	✓	✓
County Fee Title			✓		✓	
Other Public Agency Acquisition						✓
Use Agreement	✓	✓	✓	✓		
Stewardship Partnerships				✓		✓

Table 63. Protection & Steward Partnership Lands (for 30-foot-wide trail corridor)

SEGMENT	Public/ROW/Ex. Easement	Private	TOTAL	EST. COST
1-3	15.8 acres (4.35 miles)	--	15.8 acres	$2,067,120
4 - *pref.*		3.6 acres (1.0 miles)	3.6 acres	$475,200

Table 63 summarizes the approximate length and number of acres of land needed for protection for the trail. Land protection strategies include: park dedication, direct purchase with resale of land not required for the trail, permanent easements, land donation, bargain sale, life estate and negotiations with cities and developers. An average amount of $90 per lineal foot for a 30 foot wide corridor was used to calculate the estimated cost of securing the corridor.

Figure 63. Property Ownership

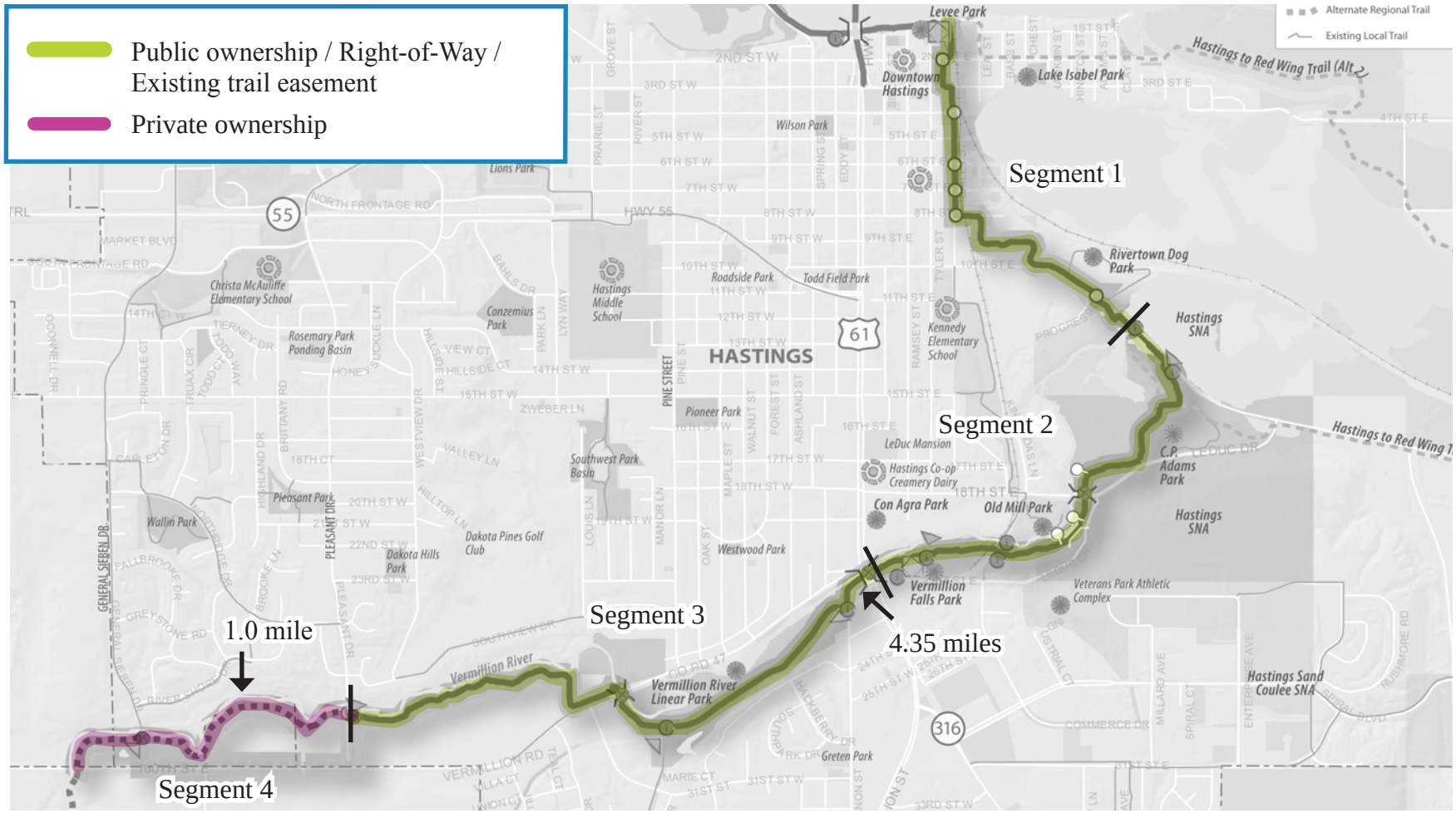
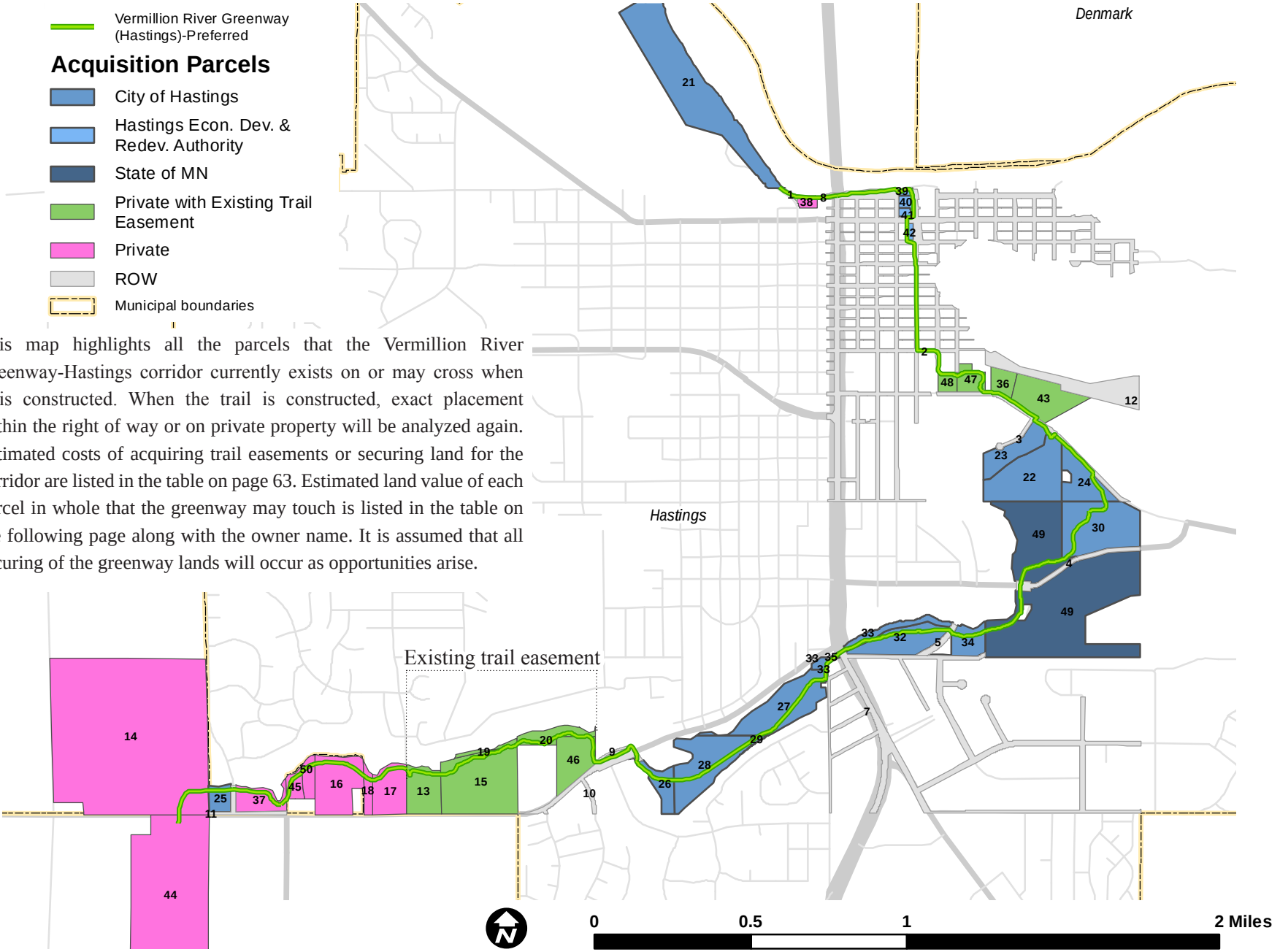


Figure 64. Acquisition Parcels



This map highlights all the parcels that the Vermillion River Greenway-Hastings corridor currently exists on or may cross when it is constructed. When the trail is constructed, exact placement within the right of way or on private property will be analyzed again. Estimated costs of acquiring trail easements or securing land for the corridor are listed in the table on page 63. Estimated land value of each parcel in whole that the greenway may touch is listed in the table on the following page along with the owner name. It is assumed that all securing of the greenway lands will occur as opportunities arise.

Table 65. Acquisition Parcels

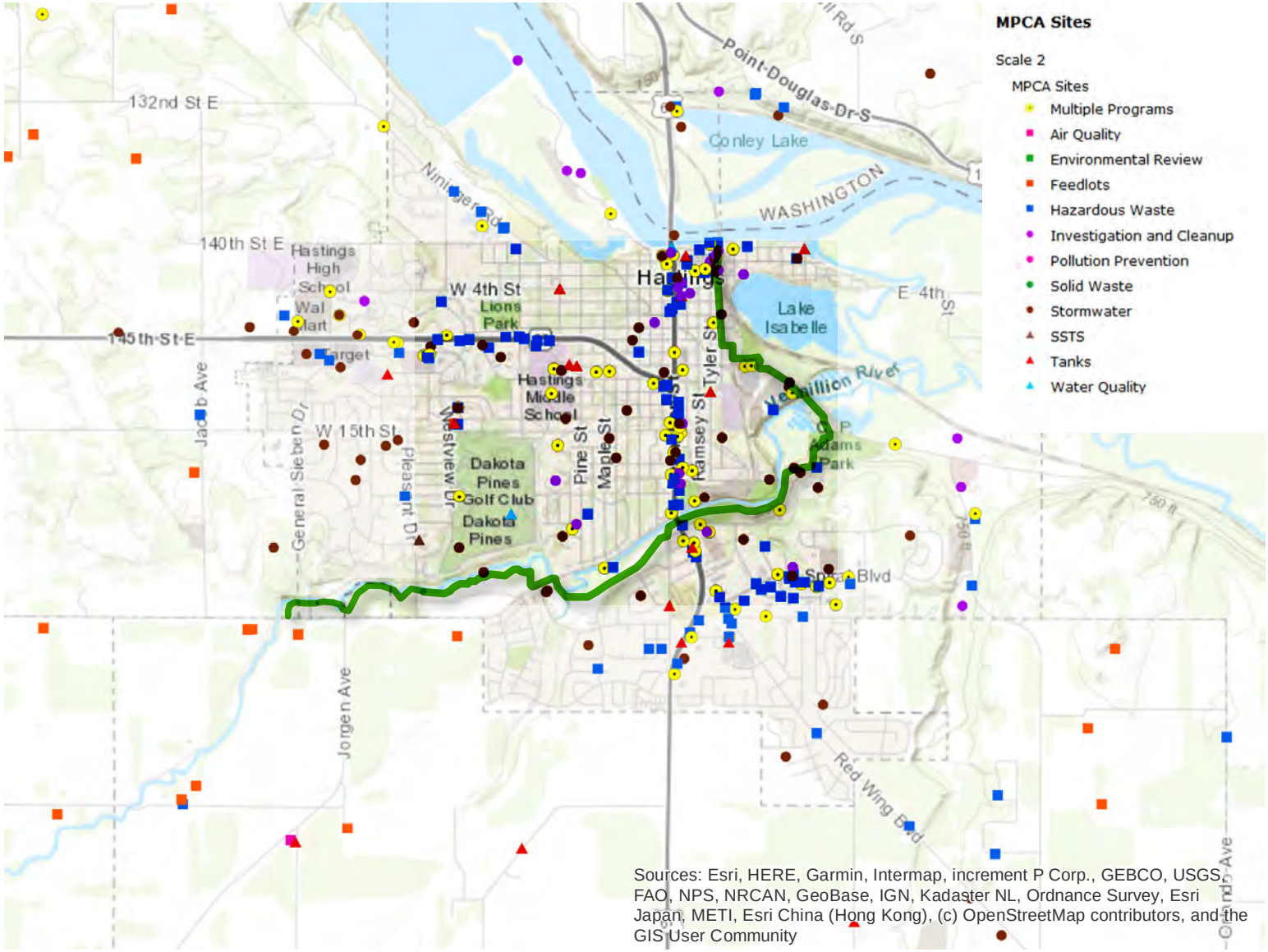
ID	Ownership Category	Owner Name	Estimated Land Value*	Notes
1 - 12	ROW		-	
13	Private with Existing Trail Easement	BAUER LOREN	$152,500	Work with City and landowners to transfer local trail easement to Dakota County to establish regional trail.
14	Private	BAUER LOREN & WILLARD	$ 953,800	Purchase trail easement from landowner or reroute greenway alignment.
15	Private with Existing Trail Easement	BAUER LOREN & WILLARD	$ 596,100	Work with City and landowners to transfer local trail easement to Dakota County to establish regional trail.
16	Private	BAUER ROSALIA	$ 116,600	Purchase trail easement from landowner or reroute greenway alignment.
17		BAUER ROSALIA	$ 153,200	
18		BAUER ROSALIA	$34,300	
19	Private with Existing Trail Easement	BAUER WILLARD J	$ 1,200	Work with City and landowners to transfer local trail easement to Dakota County to establish regional trail.
20		BAUER WILLARD J	$ 6,900	
21	City of Hastings	CITY OF HASTINGS	$ 403,800	Work with City of Hastings to transfer ownership of trail corridor to Dakota County to establish regional trail.
22		CITY OF HASTINGS	$ 24,700	
23		CITY OF HASTINGS	$ 398,500	
24		CITY OF HASTINGS	$19,000	
25		CITY OF HASTINGS	$49,100	
26		CITY OF HASTINGS	$ 12,300	
27		CITY OF HASTINGS	$ 56,300	
28		CITY OF HASTINGS	$ 324,700	
29		CITY OF HASTINGS	$ 1,300	
30		CITY OF HASTINGS	$ 651,000	
31		CITY OF HASTINGS	$ 600	
32		CITY OF HASTINGS	$ 905,200	
33		CITY OF HASTINGS	$ 14,000	
34		CITY OF HASTINGS	$ 340,100	
35		CITY OF HASTINGS	$ 10,300	
36	Private with Existing Trail Easement	CORNERSTONE BIBLECH	$ 178,200	Work with City and landowners to transfer local trail easement to Dakota County to establish regional trail.
37	Private	DUANE WALLIN & WINSTON WALLIN PTNSHIP	$ 364,400	Purchase trail easement from private land owners or reroute greenway alignment.
38	Private with Existing Trail Easement	H D HUDSON MFG CO	$ 424,300	Work with City and landowners to transfer local trail easement to Dakota County to establish regional trail.
39	Hastings Econ. Dev. & Redev. Auth.	HASTINGS ECON DEV& REDEV AUTHORITY	$ 202,300	Work with City of Hastings to transfer ownership of trail corridor to Dakota County to establish regional trail.
40		HASTINGS ECON DEV& REDEV AUTHORITY	$ 426,800	
41		HASTINGS ECON DEV& REDEV AUTHORITY	$ 243,400	
42		HASTINGS ECONOMICDEV REDEV AUTHORITY	$ 237,400	
43	Private with Existing Trail Easement	INTEK WEATHERSEALPROD INC	$ 357,400	Work with City and landowners to transfer local trail easement to Dakota County to establish regional trail.
44	Private	MAMER HELEN	$ 431,900	
45		MURRAY THOMAS E & BETH M	$ 84,900	
46	Private with Existing Trail Easement	SCHMITT MARY E	$ 533,500	Work with City and landowners to transfer local trail easement to Dakota County to establish regional trail.
47		SMEAD MFG CO	$ 188,900	
48		SMEAD MFG CO	$ 109,900	
49	State of MN	STATE OF MN	$ 7,975,900	Work with State to secure easement at no cost
50	Private	TRUAX CHARLOTTE A	$ 90,700	Purchase trail easement from landowner or reroute greenway alignment.

This table shows the Estimated Land Value of all the parcels that the greenway corridor touches. In order to accommodate the ideal 100-foot-wide trail corridor, it is not anticipated that the County will purchase the entire parcel. It is expected that securing easements on portions of these parcels will cost less than the amount shown in this table.

Acquisition may be realized as easement or fee title depending on situation; additional land may be acquired if it provides benefit for natural resources improvement.

Figure 66. MPCA Remediation Sites

There are a few MPCA contamination sites within 500 feet of the trail corridor, but these sites are not anticipated to impact the trail or require additional funds for remediation. The site locations are identified on the map on this page.



Data Source: https://www.pca.state.mn.us/data/contaminated-sites-data

Management and operations

Like other aspects of the greenway, management and operations will be a collaboration between the County, city, and other partners. Responsibilities will vary by greenway segment. While this master plan defines general responsibilities for each greenway segment, formal joint powers agreements between Dakota County and collaborating agencies will be needed to outline specific agency responsibilities. These agreements will outline who has control of the trail right-of-way as well as who will operate and maintain the trail and how they will do it.

Management

The Dakota County Parks Department will be the lead agency for coordinating greenway and management operations. The Dakota County Board of Commissioners establishes policies and goals for the park system and through an annual budget provides capital and operating funds for the department. The Planning Commission, appointed by the Board of Commissioners, advises the County on park and recreation trail issues.

General operations

Dakota County Parks Department will be responsible for the operation of the 30-foot regional trail corridor. Where there are opportunities for operational partnerships, Dakota County will enter a joint powers agreement with partner agencies. The Parks Department employs a staff of permanent employees and seasonal employees adequate to maintain the system. Volunteers assist with outdoor education programs, patrol, park clean-ups, and special events. Contractual agreements also are in place with outside agencies for some maintenance and natural resource work. Dakota County recognizes that, as facilities expand, it will need to increase staffing. Based on operations and maintenance staffing for current Dakota County regional trails, it is anticipated that when the regional trail within the Vermillion River Greenway (Hastings) is complete, an additional 0.15 full time employee (FTE) park keeper (300 hours of labor) and 0.15 seasonal FTE (300 hours of labor) will be needed.

Operating hours

The regional greenway hours will be open according to local jurisdiction ordinance or policy.

Maintenance

Maintenance of facilities and lands is essential to protect public investment, enhance natural resource quality, and achieve the County's goals of providing recreational users clean, safe, enjoyable year-round experiences. The Dakota County Parks Department has a clearly defined maintenance program and reporting hierarchy led by the manager of park development and maintenance, who reports to the parks director.

Regular maintenance activities for the greenway will include:

- Sign maintenance
- Trash collection
- Sweeping and blowing
- Trail repair
- Bridge repair
- Trailhead facility repair and maintenance
- Mowing
- Tree trimming
- Winter trail clearing
- Vegetation maintenance of restored areas and rain gardens, including sediment removal from stormwater management projects and prairie management, including burns

Pavement Management

Pavement deteriorates as it ages. Regular pavement maintenance can prolong the life-span of the greenway trail in a cost effective manner. See Table 67 for an outline of recommended activities.

Table 67. Pavement Maintenance

YEAR	MAINTENANCE ACTIVITY
0	Original construction of the paved trail
3	Seal coating
7	Routine maintenance: crack filling, minor patching, minor curb repairs
11	Routine maintenance: crack filling, minor patching, minor curb repairs
13	Seal coating
18	Routine maintenance: crack filling, minor patching, minor curb repairs
21	Routine maintenance: crack filling, minor patching, minor curb repairs
25	Total reconstruction

Ordinances

Public use and enjoyment of the County park system is controlled by Ordinance 107, Park Ordinance, which was last revised June 3, 1997. The ordinance incorporates pertinent Minnesota statutes and addresses the following issues:

- Regulation of public use
- Regulation of general conduct
- Regulations pertaining to general parkland operation
- Protection of property, structures and natural resources
- Regulation of recreational activity
- Regulation of motorized vehicles, traffic and parking
- Enforcement and security

Visitors are informed of park and trail rules and regulations through strategically located kiosks and signs that address specific information about hours, trails, permitted and prohibited activities, fees and directions. Dakota County Parks, Lakes and Trails officers will patrol the park in motor vehicles, on bicycles and on foot. Officers will also educate visitors and enforce ordinances. Local law enforcement and public safety agencies will be responsible for emergency and criminal complaints within the greenway.

Public Awareness

Dakota County's Parks Department will continue working with Dakota County's Communications Department to promote awareness and use of the County's parks and greenway system. Many tools are available to promote awareness of Dakota County parks and greenways including, but not limited to, websites, direct mail, press releases, brochures, on-site promotion, monument signage along roads, wayfinding within greenways and parks and paid advertising. Dakota County also collaborates with cities, businesses, the Metropolitan Regional Parks System and others to promote its facilities, programs and services and educate the public about its resources.

Conflicts

The surrounding land uses and the greenway are generally compatible and no conflicts outside of norm affect the viability of master plan recommendations. Minor conflicts will occasionally arise from private encroachment or neighboring residents' sensitivity to greenway, recreation or maintenance uses. Dakota County will work with individual landowners to resolve these issues case by case.

Public Services

No significant new public services will be needed to accommodate the greenway. Proposed trailheads and neighborhood gateways are served by the existing road network. If utilities are not accessible at gateways and trailheads, options such as solar powered lighting, portable toilets or wells will be considered. Stormwater will be treated on site. Accommodations for later installation of continuous trail lighting will be considered at initial trail construction.

Affordability and Trail Access

The greenway trail will be provided for public use with no user fees or direct costs. Information will be provided on the Dakota County website and on signs in public parks that are adjacent to or connected with the greenway trail. The trail provides an accessible and cost free recreation facility that encourages and promotes safe active living with access to natural resources.

FUNDING

Funding for initial capital cost and ongoing operations and maintenance costs is essential for a successful greenway. Funding will be a collaboration among the County, cities, and other agencies, with an emphasis on seeking outside funding. Cost share roles will be determined by the strengths of each agency and circumstances of each project. In-kind contributions of land, easement, design, engineering, construction, and maintenance and operations are encouraged and will be outlined in joint powers agreements among agencies.

It is anticipated that most future capital projects will be well positioned to secure regional, state, and federal funds for recreation, transportation, water, and habitat and that these sources will account for a majority of capital construction costs. In many cases, but not all, Dakota County, as the regional agency, will be in the best position to pursue outside funding. Examples of outside funding sources include:

- Federal Transportation Grants (MAP-21 / TAP)
- Metropolitan Council
- National Park Service Rivers, Trails, and Conservation Assistance Program
- Minnesota Department of Transportation
- Minnesota Department of Natural Resources
- Minnesota Pollution Control Agency
- The Environment and Natural Resources Trust Fund
- Clean Water, Land, and Legacy Amendment funds
- Watershed management organizations
- Foundations and non-profits
- Statewide Health Improvement Partnership or similar

Funding for operating and maintaining the 30-foot regional trail easement and trailheads primarily will be Dakota County's responsibility. Annual operating costs are funded though the County's general fund and from regional park allocations from the Metropolitan Council. In situations where there are efficiencies in local jurisdictions performing maintenance and operations, Dakota County will enter a joint powers agreement outlining responsibilities and cost sharing.

CAPITAL BUDGETS

Estimated costs in 2019 dollars for land protection, development costs, and annual operations and maintenance are included in Tables 70 and 71a.

Land protection costs are included by segment in Table 63. Because land protection strategies might include direct purchase with resale of land not required for the trail, permanent easements, land donation, bargain sale, life estate, and negotiations with cities and developers, it is very difficult to accurately project total acquisition costs. Estimated costs assume land protection of a 30-foot trail corridor on land that is currently privately owned with an average cost of $90 per lineal foot.

Table 70 includes budgets for capital investments, the priority of the investment, and possible project partners. The table identifies the full anticipated construction costs of the plan elements. It is not anticipated that Dakota County will be responsible for the full cost of improvements outlined; funding will be a collaboration between the County and partner agencies. Habitat restoration within the greenway corridor is also included in these tables as NR (Natural Resource) improvements. It is assumed that along with greenway construction an average of 200 trees and 12.5 acres of prairie will be needed per mile along with basic water management. Natural Resource project opportunities beyond the greenway corridor that the County may choose to partner with other public or private entities are identified in Table 71. Most capital projects will be well positioned to secure regional, state, and federal funds for recreation, transportation, water, and habitat.

While the table identifies priorities for capital projects, development will occur as funding becomes available and at the discretion of the Dakota County Board.

Table 70. Vermillion River Greenway Capital Development Cost Estimates

Project ID	Project Description	Priority	Potential Partners/Triggers	Estimated Cost (Construction, Engineering, and Administration)		
				5-year	10-year	20-year
A	Trailhead at Levee Park: minor improvements to existing facilities	Existing/5-year		$50,000		
B	Greenway improvements from downtown Hastings to Ravenna Trail Gateway	Existing/5-year		$193,565		
B2	NR improvements through Hastings neighborhoods: urban signature (30' wide corridor - 5.8 acres)*	5-year		$58,000		
C	Trail reconstruction to meet greenway standards (Rivertown Dog Park segment)	5-year		$12,500		
D	Neighborhood Gateway at Ravenna Trail	5-year		$45,000		
E	Trail reconstruction to meet greenway standards (C.P. Adams Park)	5-year		$43,125		
E2	NR improvements through C.P. Adams Park: urban signature (30' wide corridor - 1.2 acres)*	5-year		$12,000		
F	Trail reconstruction to meet greenway standards (Vermillion Falls Park to Cannon Street)	5-year		$62,000		
F2	NR improvements along the river gorge: natural/habitat signature (100' wide corridor - 11.0 acres)*	5-year		$110,000		
G	Trailhead at Vermillion Falls Park	20-year	City master plan and park redevelopment			$300,000
H	Neighborhood Gateway at Con Agra Park	20-year				$45,000
I	Trail reconstruction to meet greenway standards (Vermillion River Linear Park)	5-year		$99,625		
I2	NR improvements in the river floodplain: habitat corridor (100' wide corridor - 10.9 acres)*	5-year		$109,000		
J	Neighborhood Gateway at Vermillion River Linear Park	20-year				$45,000
K	Neighborhood Gateway at Pleasant Drive	5-year		$45,000		
L	Grade-separated crossing of Pleasant Drive: needs further evaluation	20-year				$500,000
M	Greenway improvements from Ravenna Trail to Pleasant Drive	Existing/5-year		$409,095		
N	Land Protection for corridor along Vermillion River from Pleasant Drive to General Sieben Drive	10-year			$330,750	
N2	Greenway construction (trail and amenities) along Vermillion River from Pleasant Dr. to General Sieben Dr.	20-year				$367,500
MN2	Natural Resource improvements along the rural river: habitat corridor (100' wide corridor - 19.3 acres)*	10-year	Vermillion River Watershed JPO identified projects		$193,000	
O	Neighborhood Gateway at General Sieben Drive	20-year				$45,000
P	Grade-separated crossing of General Sieben Drive	20-year				$50,000
Q	Trail west of General Sieben Drive	20-year				$117,500
R	River overlooks and access (1)	5-year		$ 200,000		
R	River overlooks and access (2)	10-year			$ 400,000	

5-year Total	$1,448,910		
10-year Total		$923,750	
20-year Total			$1,470,000
TOTAL	**$3,842,660**		

*$10,000 per acre used for a general Natural Resource (NR) improvements cost estimate

Table 71. Vermillion River Greenway Natural Resources Collaborative Project Opportunities

Year	Description	Partner Opportunities	Size	Cost Estimate
Levee Park and Urban trail corridor				
2020-2025	Existing stormwater filtration and native landscaping along trail edges and in parks	City of Hastings		$50,000
2020-2025	Stormwater management project at Smead	by others		$200,000
C.P. Adams Park and Vermillion River gorge				
2020-2025	Slope and bluff restoration, address stormwater outlet at MNDOT facility	City of Hastings MNDOT		$300,000
Hastings SNA				
2020-2030	Support efforts to restore and preserve natural resources within the Hastings SNA	MNDNR		
Old Mill Park, Vermillion Falls Park, Vermillion River Linear Park				
2020-2030	Support ongoing restoration efforts within city parks	City of Hastings; FMR		
2018-2023	Old Mill Park: long-term maintenance	City of Hastings; FMR		$18,485
2018-2023	Vermillion Linear Park: long-term maintenance	City of Hastings; FMR	61 acres	$11,600
2020+	Vermillion Linear Park: future prairie restoration	City of Hastings; FMR	30 acres	$120,000
Vermillion River banks				
2020-2030	Support river bank restoration and stabilization efforts	Vermillion River Watershed JPO		

OPERATIONS AND MAINTENANCE BUDGETS

Annual operations and maintenance (O&M) for the 30-foot trail corridor, including gateways, are shown in Table 71a. Grade-separated crossings will be inspected and maintained annually as part of the County's existing inspection and maintenance programs. Trailheads for the Vermillion River Greenway are joint-use facilities located at regional trail intersections and existing parks. Trailhead facilities such as restrooms, picnic shelters, and parking will be open to trail users, park users, and the general public and will be maintained according to joint powers agreements between Greenway Collaborative partners. The County's annual operations and maintenance costs will vary based on joint powers agreements and facilities needed at each location. Similarly, natural resource restoration projects in the larger greenway corridor will be coordinated with Greenway Collaborative partners who, in most cases, will be responsible for on-going stewardship.

Table 71a. Vermillion River Greenway-Hastings Estimated Annual Operations and Maintenance Costs

Task	Annual Per Mile Cost	Total Trail Length Cost
10' trail pavement maintenance (includes blowing, sweeping, and plowing)	$1,925	$10,260
30' trail corridor maintenance (includes trash pick up, mowing and trimming, sign maintenance)	$1,650	$8,795
10' patching and mill and overlay of trail surface (per year, based on 20-year life-cycle)	$5,775	$30,781
Total Annual O & M	$49,836	

VERMILLION RIVER GREENWAY (HASTINGS) MASTER PLAN

2019

Appendix A: Public Input and Resolutions of Support

COMMUNITY OPEN HOUSE MEETING NOTES

Dakota County Vermillion River Greenway (Hastings) Master Plan

March 14, 2019, 5:00–7:00pm

Hastings City Hall, Community Room, 101 4th Street East, Hastings, MN 55033

Meeting Purpose

Present draft trail alignment concept, interpretive plan, and stewardship plan to the public with display boards and obtain feedback.

Comment Card Input

Are there specific sites where river access should be provided along the trail?

- Across from Old Mill Park, south of 18th Street, add a stairway down to the river shore. People swim there in the summer.

What types of river recreation are you interested in along the greenway?

- People kayak and swim in the Vermillion River, east of the falls, across from Old Mill Park.

Just north of C.P. Adams Park, two alignments are shown. Do you prefer A or B? Why?

- A- it is prettier trail experience but needs to be lit in the evening. Forest is really dark.

After reviewing the DRAFT Interpretive Plan information, do you feel there are additional interpretive stories that should be explored along the corridor?

- Yes. An explanation at the intersection of the old railroad trellis bridge at Old Mill Park should have a map on how to cross and get down to the Mill Ruins on the north side of the Vermillion River.

Where do you think trail lighting should be provided (i.e. pedestrian scale light poles)?

- It is very dark through the heavily wooded section of the trail from the Vermillion Falls to the Vet Park and then the heavily wooded areas around the disc golf park. It's creepy at dusk.
- The more inviting it can be around the Vermillion Falls will help keep out vandalism or kids up to no good in the area doing drugs, etc.

How do you envision using the greenway corridor (i.e. short walks, long runs, bicycling, rollerblading, nature viewing, picnicking, other)?

- Where the trail goes under Hwy 61, on the east side of the highway—please place a gradual trail going up to connect the trail to the sidewalk on Hwy 61.
- If you're going to do it, do it all.

General Comments:

- The Wallin LLLP opposes the placement of trail on its platted lots east of the intersection of General Sieben Drive and Co 47.
- Run greenway along river, not along 46. Too hard to get on 46 without the greenway to cross.

Conversational Input

- A property owner adjacent to the Vermillion River on the north side, west of Pleasant Drive, is concerned that the trail might be built on the north side of the river since there are several established homes there.
- A Hastings City Councilor has a desire for:
  - short loops along the trail (identify loops using local trails and the greenway)
  - a trail connection from the trail up to Hwy 61 at Vermillion Falls Park
  - better signage and wayfinding

- a more formal connection for kids that swim in the river below the falls to get down to the river
- A property owner along 46 would like to see the trail along the river, not along the road. He said he is familiar with the City's plan that has shown a trail along the river for many years.
- A Hasting Park Commissioner would like to see the trail go under Pleasant Drive and along the river.

COMMENTS RECEIVED ON PUBLIC REVIEW DRAFT MASTER PLAN

Hastings Senior Center Event: July 8, 2019

Tilden Community Center, 310 River Street, Hastings, MN 55033

Meeting Purpose

Present draft master plan summary to and solicit feedback from Hastings Senior Center members.

Input & Comments

- Interest from the attendees in walking and biking along the trail
- Interest in nature viewing and benches along the trail
- Concerns about safety along the isolated sections of the trail
- Lighting should be provided by the lock and dam; the trail to 42
- Some trails need replacement, fixed cracks
- Add poles for 911 assistance
- Add solar industrial lighting along trails
- Consider interpretive information on trout in the Vermillion River at Farmington and further down to Hastings; best trout fishing
- Consider adding fishing docks along the Vermillion River

COMMENTS RECEIVED ON PUBLIC REVIEW DRAFT MASTER PLAN

Online Survey Responses

#	RESPONSES	DATE
1	I am Pastor Jim Bzoskie of Cornerstone Bible Church 735 East 10th Street. We have some questions concerning how the present easement and agreement we have with the city is changed in any way by this master plan. I talked to the mayor last week and she stated she thinks there would be no change. Our neighbor Gina Snyder at 701 East 10th Street has the same question. my phone is 612-978-7867	7/16/2019 9:06 PM
2	I would strongly recommend connecting the trail to the south end of Pine St. This would provide a safe way for residents who live in that area to access the trail and a great way for kids who live in the 31st/36th street neighborhoods to bike to the middle school, the pool and Pinecrest. I suggest adding a raised sidewalk/bikepath on the north side of the cty rd 47 bridge right by the county service garage property. The path could split before it goes under the bridge on the driveway of address: 1000 Cty Rd 47. Please give me a call or email me if you have any questions about this. Charlie Black (651)307-2733, cblack@hastings.k12.mn.us	6/30/2019 2:35 PM
3	Additional bike trails would be a very welcome and exciting idea. Hastings area has a great trail system already and brings many people to the area to bike. Both the planned and proposed additional trails sound fantastic. We live in Hastings and bike 30-40 miles per week all around the area. The trails offer opportunities to encourage recreation and physical fitness for residents and visitors. It was one of the things that made us want to move to Hastings in 1999.	6/27/2019 3:26 PM

Appendix B: Interpretive Plan

VERMILLION RIVER TRAIL INTERPRETATIVE PLAN

STORIES OF CHANGE, MOVEMENT AND PLACE

PREPARED BY RSP DREAMBOX

TILDEN'S PRINCIPLES OF INTERPRETATION

1. Any interpretation that does not somehow relate what is being displayed or being described to something within the personality or experience of the visitor will be sterile.

2. Information, as such, is not interpretation. Interpretation is revelation based upon information. They are entirely different things. However, all interpretation includes information.

3. Interpretation is an art which combines many arts whether the materials presented are scientific, historical or architectural. Any art is in some degree teachable.

4. The chief aim of interpretation is not instruction, but provocation.

5. Interpretation should aim to present a whole rather than a part and must address itself to the whole man rather than any phase.

6. Interpretation addressed to children should not be a dilution of the presentation to adults, but should follow a fundamentally different approach. To be at its best it will require a separate program.

PROVOKE. RELATE. ENGAGE.

RSPDREAMBOX

VERMILLION EXPERIENCE DESIGN FRAMEWORK

The Experience Design Framework builds on an understanding of the audience, the intended experience, and the site to deliver messages, information, and insights that support a strong connection to content, history and each other. The Framework characterizes the voice, the feel, and the nature of the messages that are salient to the MRT experience for both children and adults. Attentive to materials and grounded in the experience of each place along the trail, it includes branded elements, material palette and signage standards. Finally, the experience Nodes + Trails bring together text, images, drawings, materials, and location for experiences.

Our approach to designing experiences is to consider all stages of the experience.

ANTICIPATE.
ENGAGE.
RECALL.

GOALS

1. Provide more than one sensory modality or experience at each location.

2. Make it easy for Trail users to engage with content and stories.

3. Create a multi-layered experience that allows visitors to go deeper into content, or have a new experience each time they visit.

4. Design "Durable Experiences" —those that engage and provide positive, memorable experiences for users.

5. Design experiences that connect users to each other and to the history and site and make them curious about other locations along the Trail.

RSPDREAMBOX

THEMES OF THE VERMILLION TRAIL

Changing River

Movement + Connection

Architecture of connection: bridge
Rambling river
Visualizing the river: Vermillion is a spot in a larger picture of movement
Upstream and downstream

Change + Continuity

Forgotten history: Ruins + Mental Health
Cultural changes: Impact of war
Institutional changes: Mental health
Natural changes: Levee
Restoration

The Pull of Place

Foods: supporting life, ag and native
Why we're here
Who lives here and who lived here
Animal visitors
Bird visitors
Beauty: personal views

SUB-THEMES + EXHIBIT TYPOLOGIES

Postcards from a place

River as attraction + respite

River as resource + haven

One of a kind qualities

NODE DESCRIPTORS / NATURE OF PLACE

PLACE: PARK
TRAILS
DESTINATIONS: BRIDGE
TRAIL NODES: NATURAL PLACES TO PAUSE
DESTINATION PARK

RSPDREAMBOX

VERMILLION CULTURAL + ACTIVITY CLUSTERS

- Movers are Trail users looking for opportunities to be physically active and cover stretches of the Trail.
- Seekers are Trail users looking for opportunities to observe, notice, and discover.
- Meeters / Connectors are Trail users looking for opportunities to enjoy quality time with friends and family.
- Dreamers are Trail users looking for opportunities to be inspired and reflect.

Movers

Bladers Bikers Joggers Tri-trainers Walkers Amblers Fitness Athletes

Seekers

Birders Geocachers Historians Hunters Archers Naturalists

Meeters / Connectors

Socializers Baby walkers People watchers Playground users Families

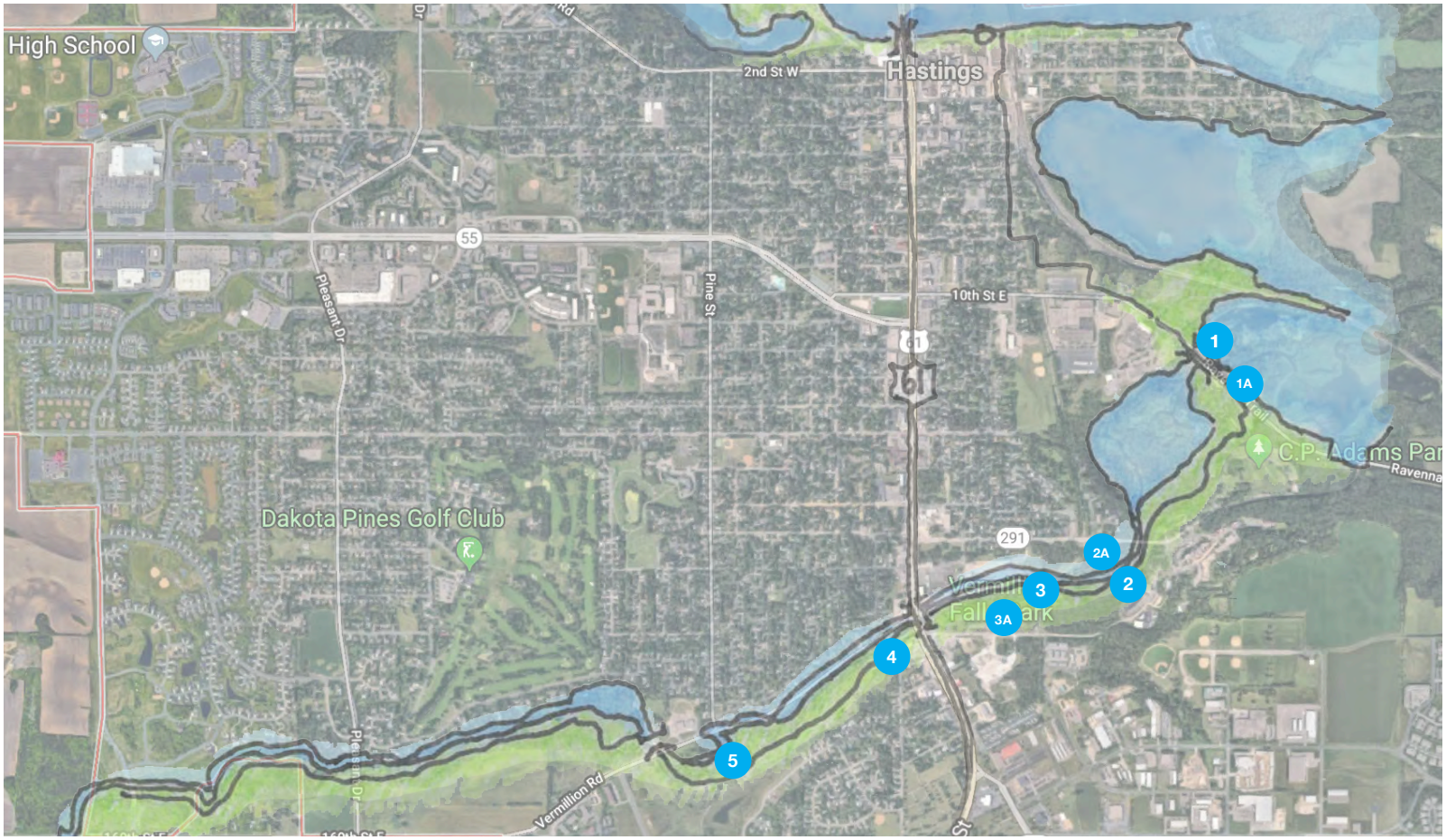
Dreamers

Respite Contemplaters Musers Artists Time travelers Worshippers

RSPDREAMBOX

PROPOSED EXPERIENCE NODES THE VERMILLION TRAIL

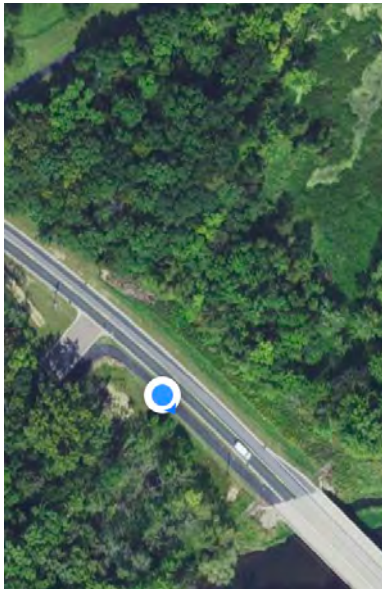
1. Vermillion River Bottoms
1A. Vermillion River + SNA
2. Forgotten History: Asylum
2A. Ramsey Mill Ruins + Trestle Bridge
3. VFP: Water Power + Milling
3A. Vermillion Falls Park: Le Duc
4. The Levee
5. Upstream / Downstream: River Life



RSPDREAMBOX

1

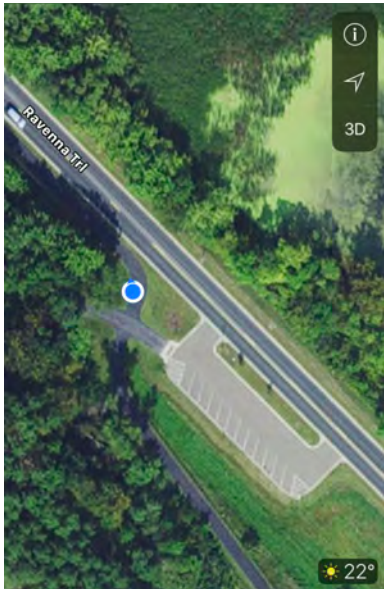
NODE 1. VERMILLION RIVER BOTTOMS

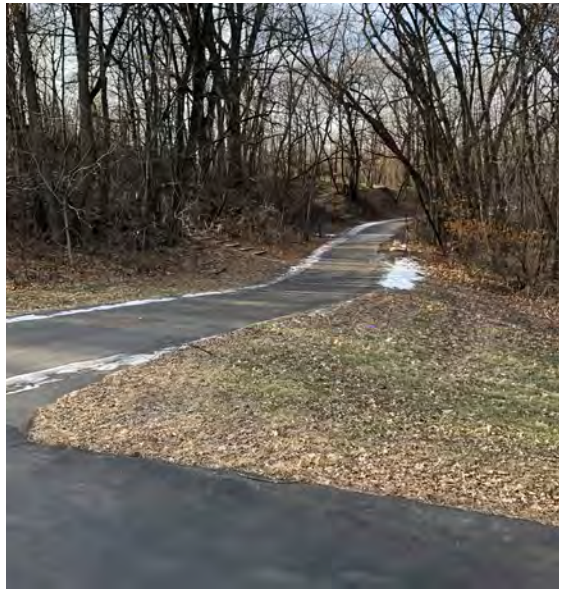


Proposed location of node

1A

NODE 1A. VERMILLION SNA





Proposed location of node

1

NODE 1. VERMILLION RIVER BOTTOMS

Cultural and Natural History Stories:
Stop, Look, Listen: Birding the Vermillion
Who's Visiting? Bird Migration
Floodplain Forest
Please Don't Disturb: Preserving the SNA

As the glaciers melted 10,000 years ago, a braided-stream system dominated the Mississippi River. The main river channel was separated into smaller, intersecting channels. The Vermillion River Bottoms is a remnant of that river system. Here, the Mississippi and the Vermillion run parallel to each other, separated by a 17-by-2.5-mile area of floodplain forest. One of the most beautiful spots along the Mississippi River National Recreation Area, the Vermillion River Bottoms remains a largely untouched example of the floodplain forests that once extended from Itasca to the Gulf of Mexico. The area is home to a diversity of wildlife, including rare birds, fish and mussels.

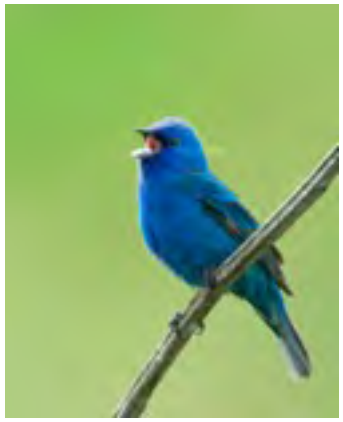
The city of Hastings is a designated IBA, or Important Birding Area. And this spot along the backwaters of the Vermillion is part of a critical migratory corridor for waterfowl, songbirds, and raptors. If you listen carefully on a late spring morning, you can hear the voices of many forest songbirds, such as the Wood Thrush, Great-crested Flycatcher, and Indigo Bunting. Each spring, migrating waterfowl can be spotted in the wetlands beyond Bullfrog Pond, including the rare Tri-colored Heron. A total of 153 bird species have been recorded breeding or migrating through the area, which extends southeast to include the lower Cannon River. Two species of special concern in southeastern Minnesota—red-shouldered hawks and cerulean warblers—are included in this site.

The backwaters of the Vermillion River are a destination and haven for many songbirds and waterfowl.

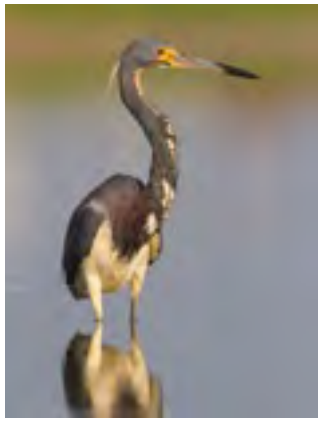
1

NODE 1. VERMILLION RIVER BOTTOMS: IMAGES

Interpretive Opportunities:
Cutouts of Birds
Map: Visualizing the intersections of the Mississippi and Vermillion Floodplains





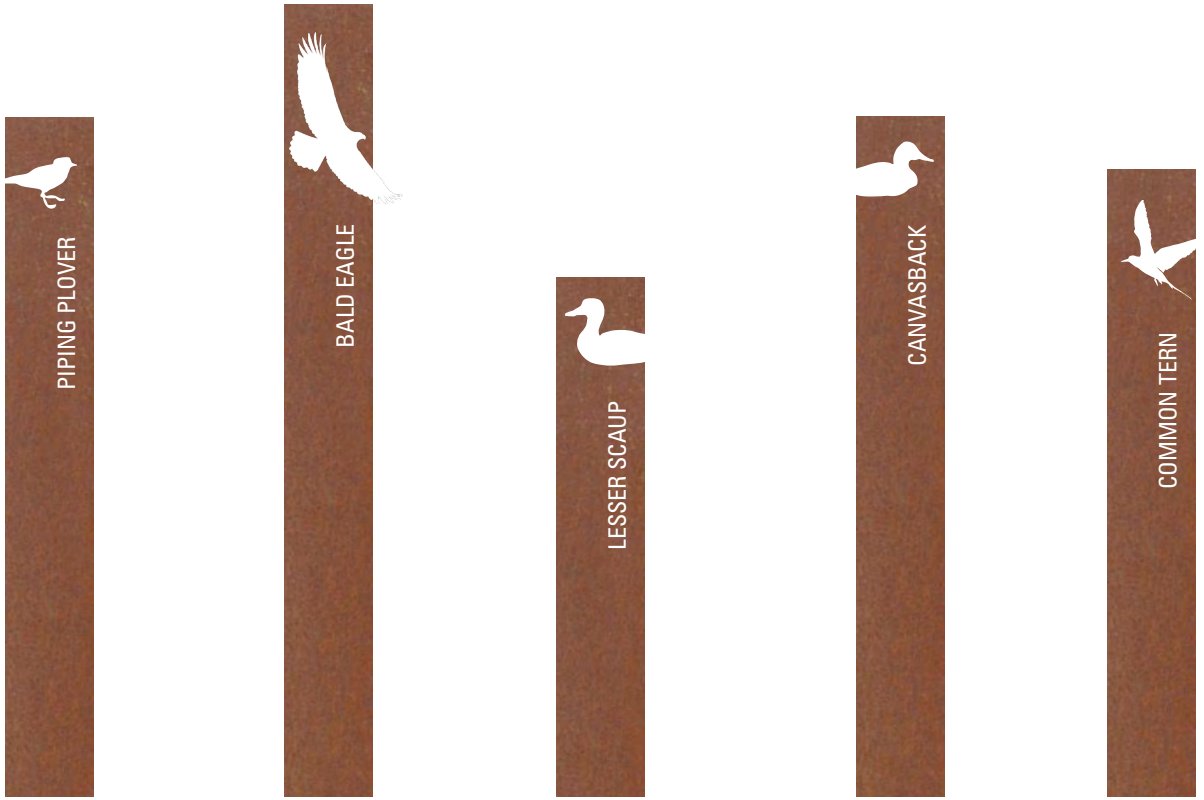




From top left: bunting, flycatcher, great blue heron, grosbeak, heron, pelican, warbler, wood thrush, falcon.

1 NODE 1. VERMILLION RIVER BOTTOMS

Precedent:



RSP DREAMBOX

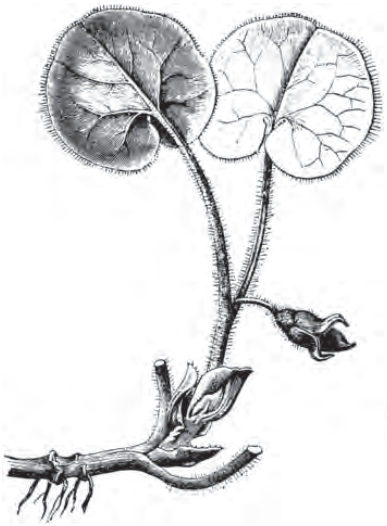
Interpretive Opportunities:
The Mississippi Migratory Flyway
Prompt to look and listen for birds

1A

NODE 1A. VERMILLION RIVER SNA

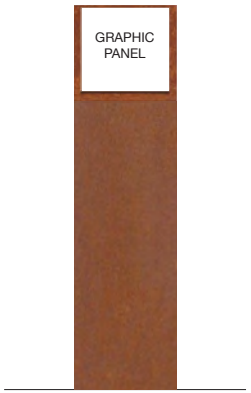
Please Don't Disturb: Preserving the SNA

This spot is also a great vantage point for locating the Hastings Sand Coulee SNA, which can be spotted just before the railroad tracks. Part of the Vermillion and Mississippi River floodplain, the SNA is a mixture of floodplain forest and marsh preserved as a natural area. At least 17 threatened and endangered species area can be found within a mile of the SNA, along with native plant species such as wild ginger, blue cohosh, and maidenhair fern. This site is the largest of the few remaining sand-and-gravel prairies in Dakota County. During major flood events, the Mississippi River floods into the Lower Vermillion at the northern parcel of the SNA.



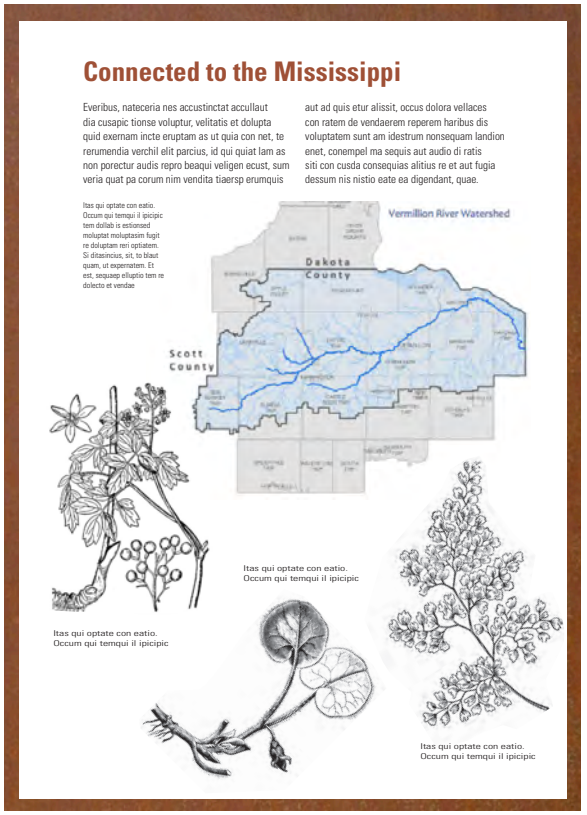
1A NODE 1A. VERMILLION SNA

Precedent:



ELEVATION
NTS

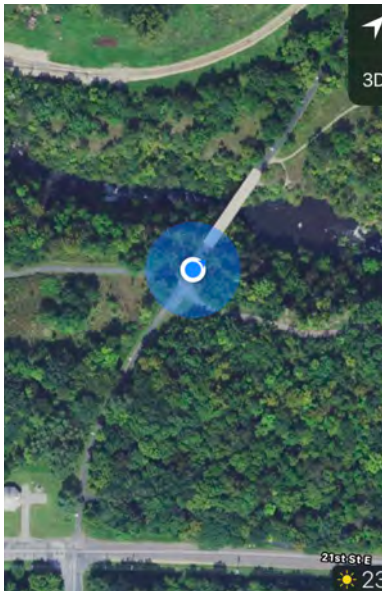
SIDE VIEW
NTS



RSPDREAMBOX

2

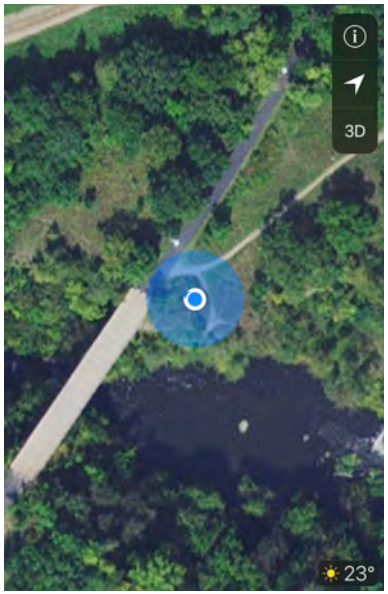
NODE 2. FORGOTTEN HISTORIES ASYLU2



Proposed location of node

2A

NODE 1A. RAMSEY HILL RUINS TRESTLE BRIDG



Proposed location of node

RSP DREAMBOX

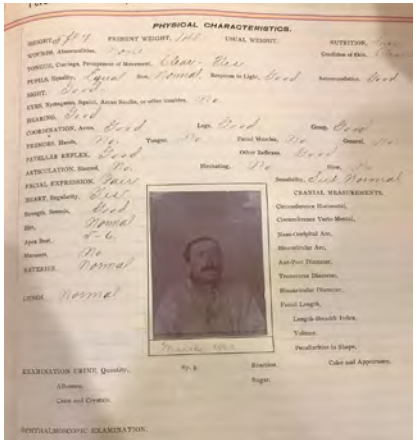
2

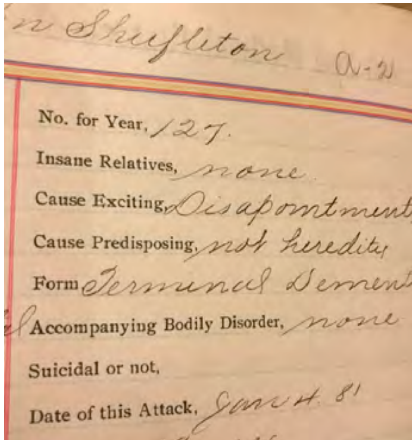
NODE 2. FORGOTTEN HISTORY ; ASYLUM

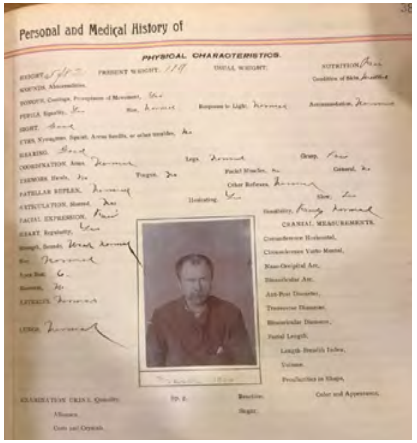
Interpretive Opportunities:
Forgotten History: Asylum: changes in how we diagnose, name and treat mental health issues
Methods: panel

Forgotten History: Mental health Facility

Up on the hill, you can spot the Minnesota Veterans Home. This site has long been home to a hospital. In 1900, the Hastings State Hospital opened here, established by an act of the legislature and accepting 112 transfer patients from Rochester. As with most asylums of the time, patients were little more than simply housed onsite, admitted for maladies ranging from “dementia” to “political excitement,” “disappointment,” and “fear.” But this story of mental health treatment was also marked by innovation. The hospital’s architecture of the hospital was based on the cottage plan, designed for a “home-like” atmosphere. On the complex’s 460-acre farm, patients produced garden and dairy products for the hospital. The Hastings Asylum was one of the first to stop the use of restraints for mentally ill patients and, in 1968, to open a regional service for drug dependency. It was also a leader in terms of developing partial hospitalization, adolescent treatment services, and education programs before closing in 1977.





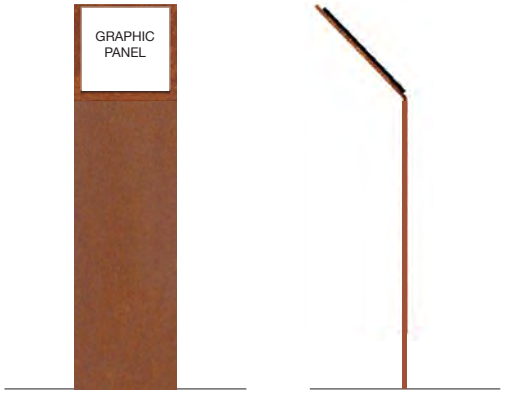


Top: asylum records
Bottom and right: images of asylum

RSPDREAMBOX

2 NODE 2. FORGOTTEN HISTORIES ASYLUM

Precedent:

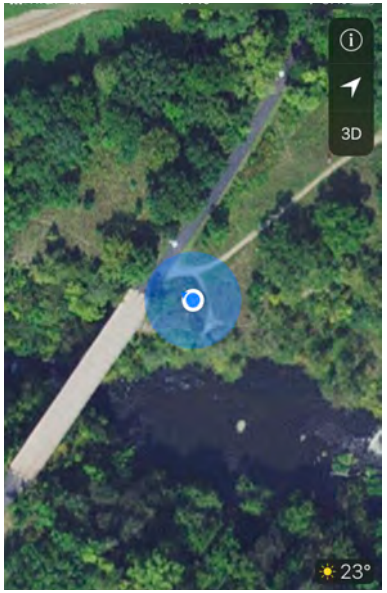


STEEL FRAMES WITH TEXT INSETS
Weathered steel finish to match sign blades. Graphic panels to be stud mounted to frame. Base of frame bolted to concrete pad.

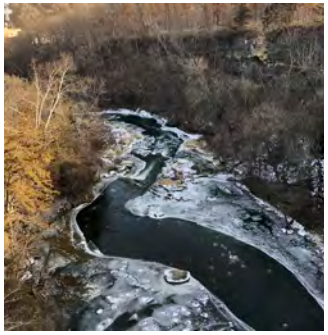
RSPDREAMBOX

2A

NODE 2A. RAMSEY MILL RUINS



Proposed location of node



Interpretive Opportunities:

Overlook to Mill Ruins and Trestle Bridge

Methods: view finders depicting historic views

RSPDREAMBOX

This site hosts several fascinating and forgotten stories.

2A

NODE 2A. RAMSEY MILL RUINS

Owobopte: Dakota Food Source
"Your Mill's on Fire!": The Ramsey Mill Fire
Kayaking the Vermillion Rapids
Restoring an Oak Savanna

Ramsey Mill Ruins and Old Mill Park is a reminder of Hasting's presence in Minnesota history. In 1857, a two-and-a-half story stone grist mill was built here to harness the water power of the lower Vermillion Falls. The mill was owned by several different Hastings citizens, including Alexander Ramsey and William LeDuc, before it burned down shortly before Christmas in 1894. Arson was suspected though never proved. In 1958, this site was designated a Minnesota Historic Site, and the ruins were preserved. Today, a series of rapids exist where the 20-foot lower waterfall once stood. A number of pits, bowls, waves, and other river features make this half-mile stretch ideal for whitewater kayaking.

Long before white settlement, Old Mill Park was frequently visited by Dakota people who named the region, Owobopte, meaning "the place where they dig tipsin." Tipsin is also known as prairie turnip or Indian breadroot—a native wildflower that grew on the high banks of the Vermillion. The flower's starchy, thick root was a staple of the Dakota diet, along with fish they harvested from the Vermillion on journeys to and from Black Dog's village by the Minnesota River. Tipsin was boiled or mashed, peeled raw to eat, and dried for winter use. A variety of native wildflowers still grow in Old Mill Park, including the rare Kittentail. This plant grows on prairies, grasslands, and savannas but is endangered due to habitat loss. Old Mill Park is a place of high biodiversity and is being restored by the DNR and the City of Hastings to its original state of oak savanna and woodland. Restoration efforts included controlled burns, mowing invasive weeds, cutting and removing brush, planting oak saplings and acorns.

"The Vermillion gorge is a short but challenging whitewater run, but only in the high water of early spring. As the Vermillion pulls into Hastings and slides under US 61, it suddenly leaps into the abyss—literally. This gentle farmland stream steps completely out of character, plunging over a falls of about 20 feet and running through 0.3 mile of ledges and rapids. High cliffs of dolomite press in on the river. The river is narrow and steep, and maneuvering is tight. As the river passes under the old Hastings and Dakota railroad trestle (now a pedestrian bridge), it narrows in a steep drop and then eases up. Rate this stretch Class III in medium water, Class IV in high water."
--Greg Breining, Paddling Minnesota (Falcon Guides)

RSPDREAMBOX

2A

NODE 2A. RAMSEY MILL RUINS

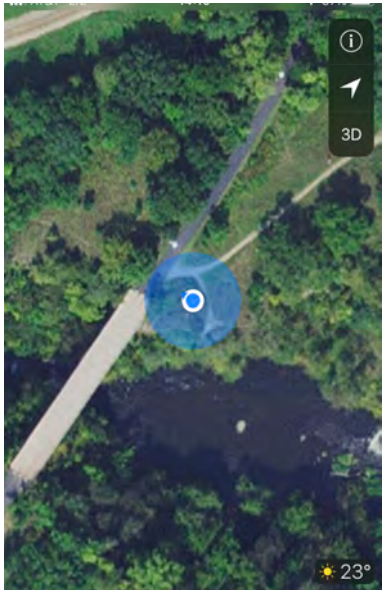
Interpretive Opportunities:
Historic views of Mill
Kayaking the Vermillion Rapids
Wildflower restoration in area
(Tipsin, Kittentail)

From top left: Ramsey Mill and asylum, mill ruins postcard
Left: tipsin, kittentail

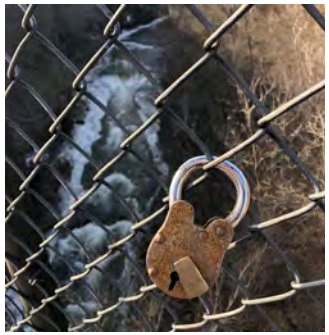
RSPDREAMBOX

2A

NODE 2A. H&D TRESTLE BRIDGE



Proposed location of node



Interpretive Opportunities:

Viewfinders of Mill

Kayaking the Vermillion Rapids

Wildflowers (Tipsin, Kittentail)

This bridge crosses a unique spot of natural beauty—the Vermillion Gorge.

2A

NODE 2A. H&D TRESTLE BRIDGE

Same River, Different Bridge
A Gorgeous Gorge: Natural History
Abandoned Rails
A Bridge Between Waterfalls
Mile Cave

A bridge over this stretch of the Vermillion has existed since 1868, when the Hastings and Dakota Railroad built a segment of line between Hastings and Shakopee. Known at the time as the 'High & Dry' or 'H & D,' the railroad opened for passenger service in 1862. Investors hoped it would eventually extend west across the Rocky Mountains to the Pacific Ocean. By 1872, Hastings citizen William LeDuc had brokered a deal to sell the line to the Milwaukee & St. Paul Railroad Company, which did indeed take it all the way west. The trestle bridge has been replaced four times. Today, the 140-foot steel truss bridge remains one of the best spot to admire the Vermillion River Gorge.

The gorge's buff-colored bluffs formed 400 to 600 million years ago when shallow seas covering southeastern Minnesota deposited marine sedimentary rocks. Geologists know this rock as Shakopee and Oneota dolomite. Millions of years later, advancing and retreating glaciers shaped the landscape by depositing rocks, sediments, and boulders. Glacial rivers carved channels in rock. The Vermillion River arrived at its current path abut 12,000 years ago, at which point a waterfall existed about 1.5 km downstream from its present-day location. If not for the artificial stabilization of falls near the Ramsey Mill site, the waterfall would probably still be in the process of migrating upstream to create an even wider gorge. Today, you can see caves and crevices in the dolomite where groundwater and rainwater have dissolved rock and formed natural caverns. Mile Cave (named for its length) is one well-known natural feature of the gorge, explored by many in the past but currently ill-advised to all but the best spelunkers.

RSPDREAMBOX

2A

NODE 2A. H&D TRESTLE BRIDGE

Interpretive Opportunities:
Frames to View the Trestle
How high are we? Measuring the Bridge
Rail Tracks
Dolomite samples to touch
Viewfinders of historic images



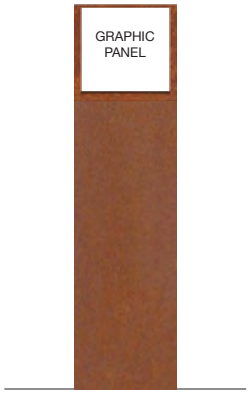



From top left: trestle bridge, 1905. 1880. 1896, train station, railroad construction, platte map

RSPDREAMBOX

2A NODE 2A. H&D TRESTLE BRIDGE

Precedent:



ELEVATION
NTS

SIDE VIEW
NTS

Sample dolemite and view finder:

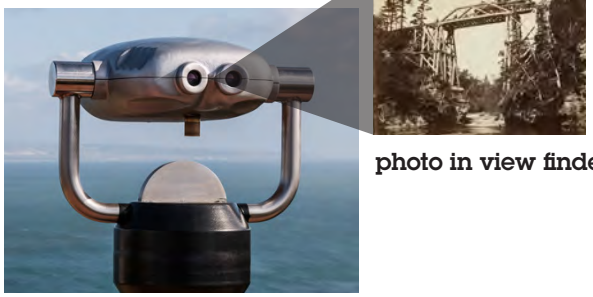
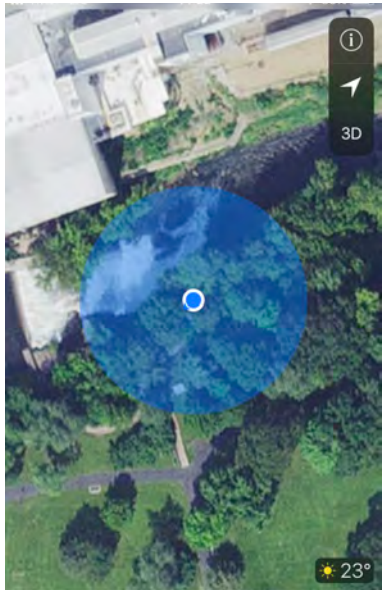


photo in view finder

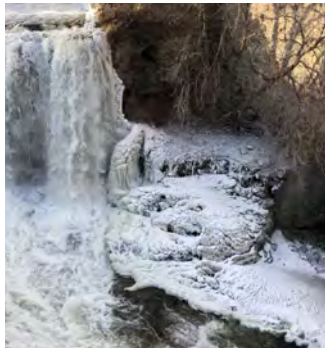
RSPDREAMBOX

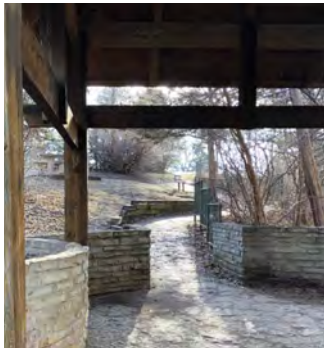
3

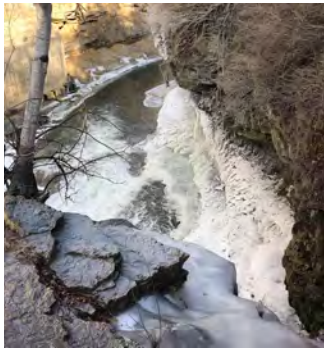
NODE 3. VERMILLION FALLS PARK



Proposed location of node







RSPDREAMBOX

3

NODE 3. VERMILLION FALLS PARK

Vermillion Falls offered water power to early Hastings. It was also a major regional draw.

River Power: Flour Milling
A Hidden Gem/Forgotten Falls: Vermillion Falls Native Plant Restoration + Rain Garden

Vermillion Falls has been photographed continuously since the beginning of white settlement, lauded for its beauty and potential for water power. Here, the river drops 60 feet at the upper falls. And as it crosses through Hastings, the Vermillion drops an overall 100 feet.

The upper falls boosts the oldest continuous running flour mill in Minnesota. Water resources made Hastings into a shipping and milling center for many years, as well as the Dakota County Seat. From 1857 to 1866, Hastings had a corner on the Minnesota grain market. The Vermillion River provided water power for three mills at the end of the "Pioneer Wheat Trail," which extended to Northfield. In 1854, Harrison Graham built a mill at the upper falls, which later became the Gardner Mill. This was America's first all roller mill. Roller mills could make several additional categories of flour and feed than stone grist mills. They didn't require a wooden water wheel. Stephen Gardner also patented a type of fine flour made with wheat middlings. Advancements made in the Hastings mill were introduced to Minneapolis in 1871, and Gardner's Middlings Purifier process became industry standard. At one time, 30 barrels of flour per day were produced here. More recent owners have been King Midas, Peavey, and Con Agra, which runs the mill today. The slogan used in King Midas advertising for many years was, "The highest priced flour in America and worth all it costs." Some of the old equipment is visible on the outside of the mill today.

3

NODE 3. VERMILLION FALLS PARK

Interpretive Opportunities:

Hidden Gem: Stereoscope views

TIpsin native plantings

A Changing Mill: Viewing Frame to view old mill equipment or old building

LeDuc House interpretation

Native plant restoration and rain garden





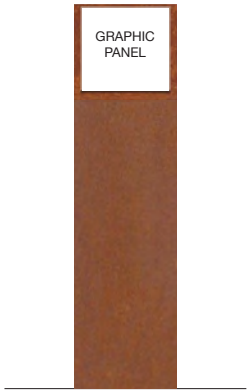

viewfinders




From top left: postcards and stereoscope images of the falls, Gardner Mill postcard, exterior and interior, King Midas Flour postcard, Le Duc mansion construction, news clipping about the falls

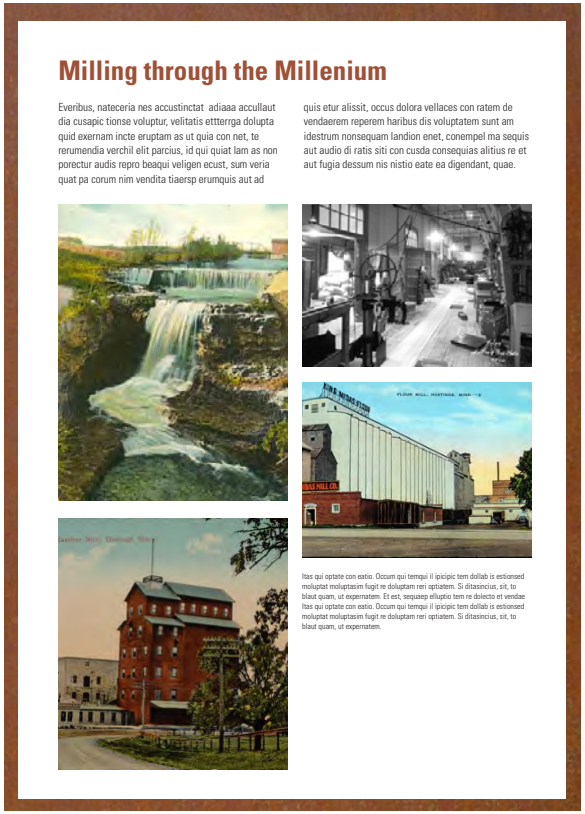
3 NODE 3. VERMILLION FALLS PARK

Precedent:



ELEVATION
NTS

SIDE VIEW
NTS



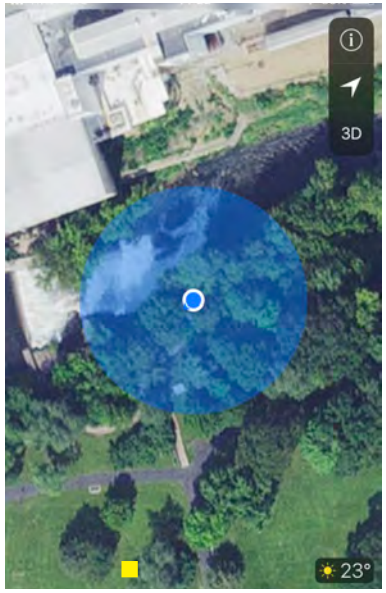
view finder:

photo in view finder

RSPDREAMBOX

3A

NODE 3A. VERMILLION FALLS PARK : LE DUC MANSION



Proposed location of node

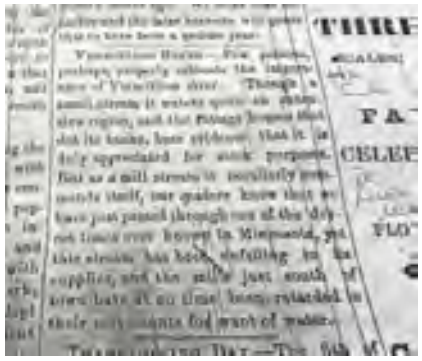
Location of site

3A

Interpretive Opportunities:
Hidden Gem: Stereoscope views
LeDuc House interpretation
Native plant restoration and rain garden

NODE 3A. VERMILLION FALLS PARK : LE DUC MANSION

LeDuc Mansion (Turn-off)
A short ride away is the William LeDuc House, listed on the National Register of Historic Places. Intended as the family's dream home, it was built from 1862 to 1866 in the Gothic Revival style popular back east. The real story, however, is not all dreamy. LeDuc was an early citizen of Hastings and a one-time owner of the upper falls mill. The house intended to reflect his family's prosperity was delayed in construction. LeDuc even took a leave from fighting in the Civil War to return home and settle with a wayward contractor. After the war, with new taxes imposed for household windows, closets and rooms, the LeDuc family found their finances drained—the house features a staggering 52 windows! The site is now run by the Dakota Historical Society and open to visitors May through October.

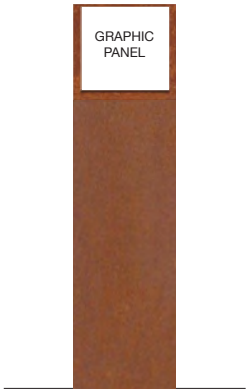


move to panel off parking
draw people to LeDuc

RSPDREAMBOX

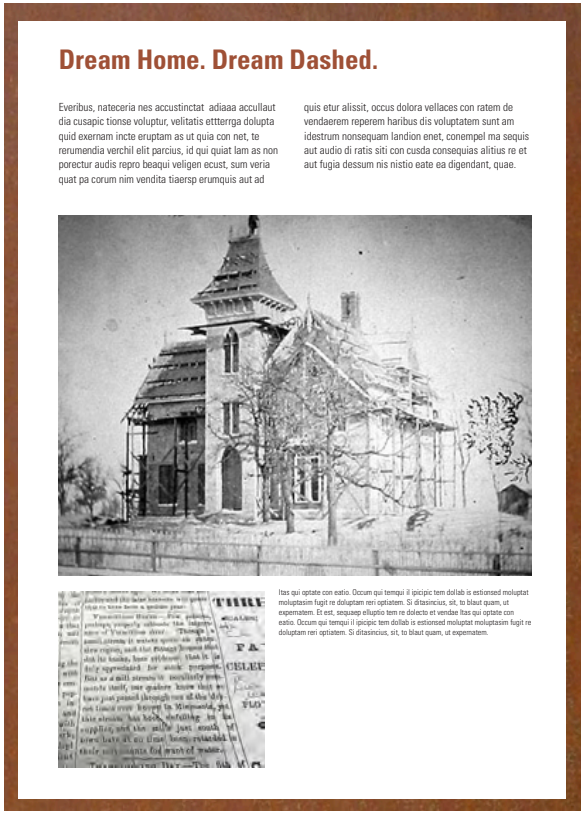
3A NODE 3A. VRF + LE DUC MANSION

Precedent:



ELEVATION
NTS

SIDE VIEW
NTS



RSP DREAMBOX

4

NODE 4. LEVEE

Proposed location of node

RSP DREAMBOX

Over time, and in response to flooding, people have altered the river's course.

4

NODE 4. LEVEE

Living in a River's Floodplains
Prairie River
Straightening the River

In pre-settlement times, this area of Linear Park was prairie. It's possible that trees and shrubs could have existed along stretches of the Vermillion, but most of it was probably a "prairie river," with grasses forming lips over the bank and stabilizing the slopes. Much of Dakota County, and a third of Minnesota, was once prairie broken by woodlands and water features.

Flooding is a natural part of life along the Vermillion. In 1888, flooding took out all of the small bridges over the upper Vermillion, sweeping at least one over the falls. In response to a record flood in 1965, an entire meander was removed from the Vermillion north of Linear Park, and a levee was constructed to hold floodwaters from spilling into a nearby residential neighborhood—the natural floodplain. In 1979, a larger area south of the channel was excavated to receive floodwaters in lieu of the floodplain. This is called the spillway, or Bypass Channel.

The Vermillion was also straightened earlier in its history, by farmers who found straight banks easier for plowing. However, the river's natural path is meandering, with alternating riffle and pools. Riffles oxygenate water while pools allow for slow flow areas, making the river suitable for trout and other fish species. Riverbank erosion is one result of channel straightening. Portions of the Vermillion upstream have been restored since 1950 to support river and watershed health. Current restoration efforts include stream stabilization, re-meanders, installation of trout habitat, shoreline vegetation, and invasive species removal

4

NODE 4. LEVEE

Interpretive Opportunities:

A meandering feature along the path:
Measuring sticks for river heights over time
Straightening the River: Map
Visualizing the floodplain

Figure 11a. Floodwaters from Vermillion River north of Linear Park. Hastings Gazette reported this on Dec 20, 1965: "Looking south, this airview of Westwood Addition shows the area hardest hit by flooding from the Vermillion River. The river itself, normally a quiet stream only a few feet wide, runs along the top of the picture, with trees outlining its natural course. Photo was taken on Wednesday, April 7, when the floodwaters were still holding after the crest. West 19th Street curves across the center of the picture. The outline of the hockey rink in the West 19th Street Park can be seen at left center. A total of 42 blocks in the city were under water from Monday through Thursday of that week, and more than 250 families were forced from their homes." Photo from Pioneer Room.

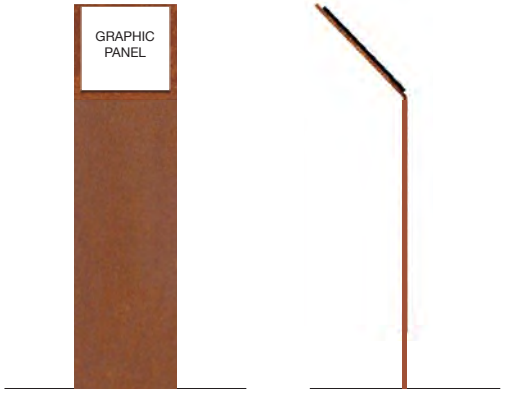
Figure 11b. Photo from April 6, 1965 showing the flooding in the Westwood addition of Hastings. Photo from Pioneer Room, City of Hastings (Cindy Thury Smith, Curator).

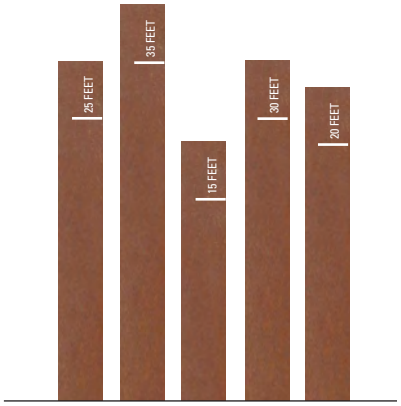
From left: arial view of flood, flood 1965,
Vermillion Linen Mill

RSPDREAMBOX

4 NODE 4. LEVEE

Precedent:





Panels indicating different flooded water heights

RSPDREAMBOX

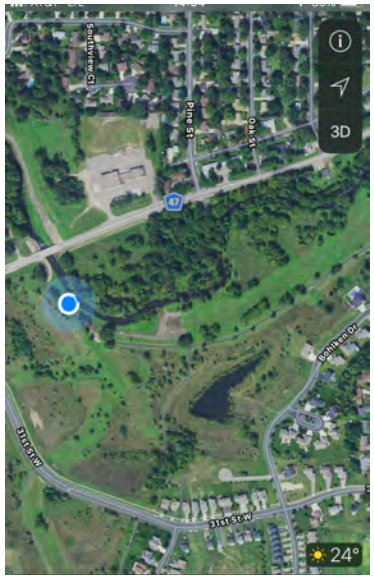
5

NODE 5. UPSTREAM AND DOWNSTREAM

Upstream/Downstream:
Visualizing the Vermillion
River Recreation:
Kayaking, Canoeing, Trout Fishing
Watershed Health and Changes:
Agriculture, Population Growth, Increased Frequency of Storm Events (Climate Change)

The Vermillion is Dakota County's largest waterway, beginning near Elko and traveling eastward across the center of the county until it discharges into the Mississippi. The river's watershed spans 335 square miles and collects water from four major tributaries. While the Vermillion turns into a fast-moving river near Hastings, most of its course meanders slowly through a mix of agricultural lands, suburban developments, parks/open spaces, and rural areas.

Upstream from here, river recreation abounds. Canoers and kayakers frequent the river below Highway 52. Brown trout habitat begins just above Cedar Avenue and ends downstream of the Highway 52 bridge. Near Hastings, the river is too warm for trout. Downstream from the falls on the south side of Hastings, the water becomes even warmer, supporting river species such as northern pike and freshwater drum. Today, the Vermillion is managed for trout catch-and-release, but fingerling trout were stocked for fishing as early as the 1880s. Other river harvests included clams in the 19th century—the pearls sold for 50 to 170 dollars a piece.



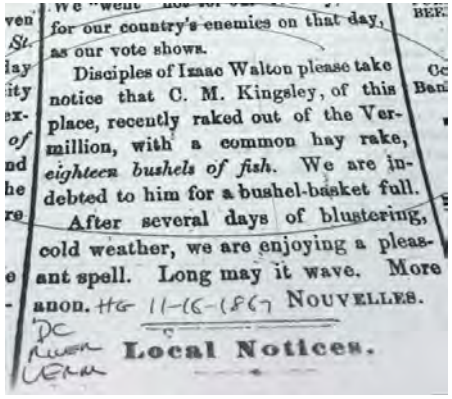
Proposed location of node

RSPDREAMBOX

5

NODE 5x. UPSTREAM AND DOWNSTREAM

Interpretive Opportunities:
Trout fishing
Canoeing and Kayaking

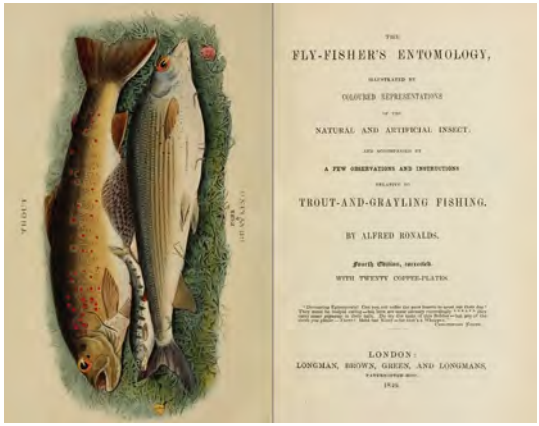


for our country's enemies on that day, as our vote shows.

Disciples of Izaac Walton please take notice that C. M. Kingsley, of this place, recently raked out of the Vermillion, with a common hay rake, *eighteen bushels of fish*. We are indebted to him for a bushel-basket full.

After several days of blustering, cold weather, we are enjoying a pleasant spell. Long may it wave. More anon. HG 11-16-1867 NOUVELLES.

Local Notices.

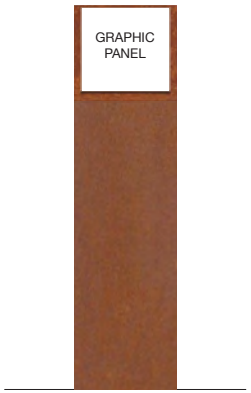


THE
FLY-FISHER'S ENTOMOLOGY,
ILLUSTRATED BY
COLOURED REPRESENTATIONS
OF THE
NATURAL AND ARTIFICIAL INSECT.
AND ACCOMPANIED BY
A FEW OBSERVATIONS AND INSTRUCTIONS
RELATIVE TO
TROUT-AND-GRAYLING FISHING.
BY ALFRED RONALDS.
Fourth Edition, corrected.
WITH TWENTY COPPER-PLATES.
LONDON:
LONGMAN, BROWN, GREEN, AND LONGMANS,
1839.

From left: news clipping, Vermillion tributaries and watershed, brown trout

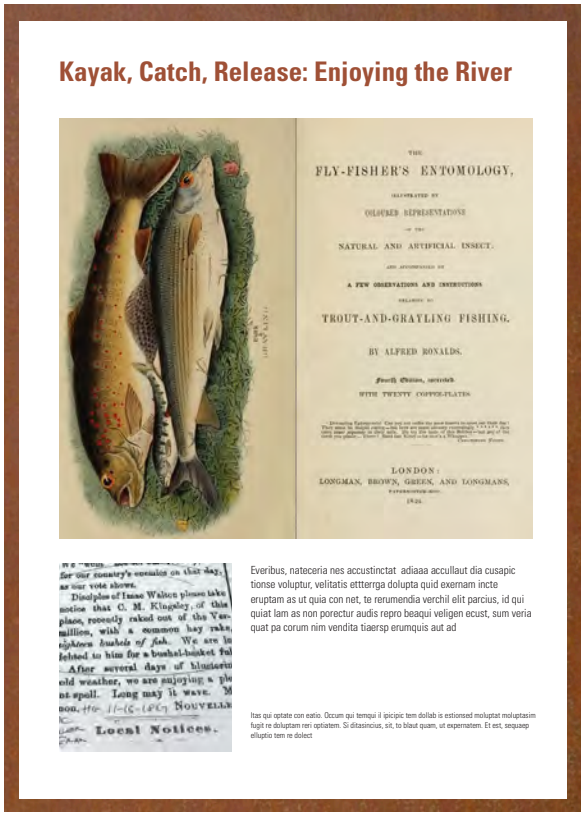
5 NODE 5. UPSTREAM AND DOWNSTREAM

Precedent:



ELEVATION
NTS

SIDE VIEW
NTS

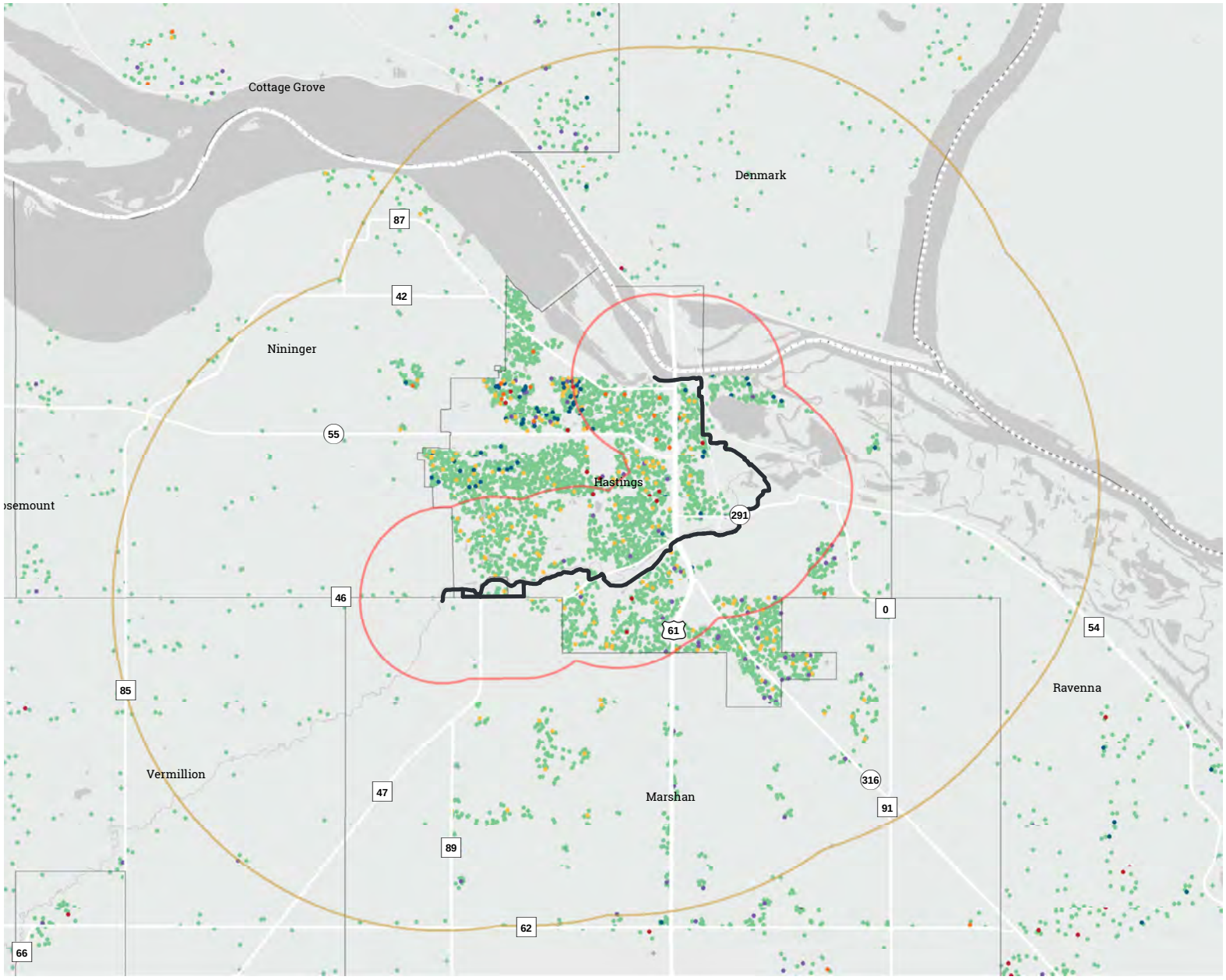


RSPDREAMBOX

Appendix C: Equity Maps

The following pages include maps that identify information related to race and ethnicity, poverty, and mode of transportation to work within the Vermillion River Greenway (Hastings) service area. These maps show that the northwest part of Hastings has the most diversity and poverty, indicating that connections to the greenway from these areas are important to implement for greater connectivity.

Race and Ethnicity



Vermillion River Greenway-Hastings

Areas within .75 mile of the greenway

Areas within 3 miles of the greenway

Open Water

Race and Ethnicity

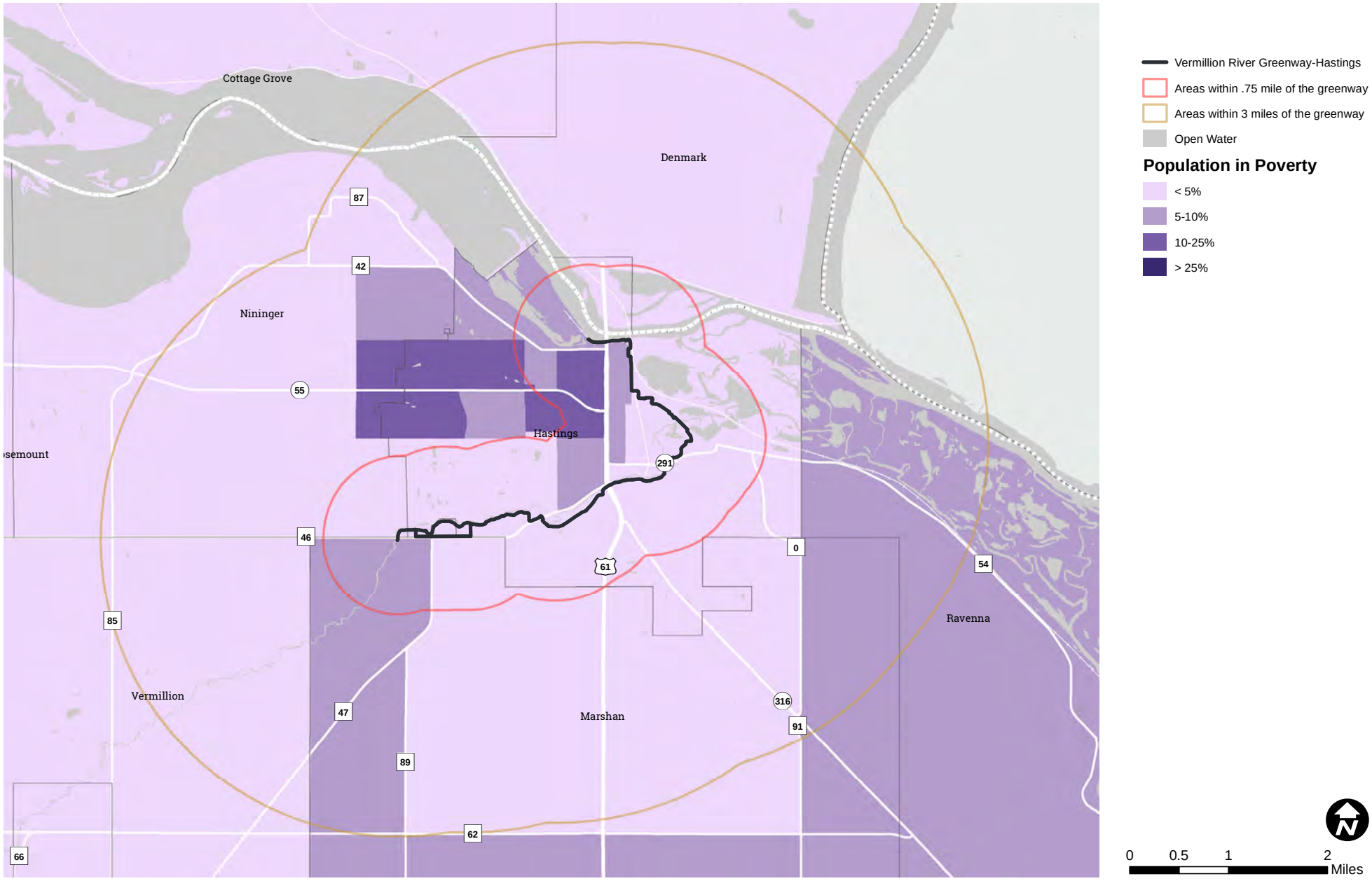
- Black
- American Indian
- Asian
- Other
- Hispanic/Latino
- White

1 Dot = 5 People (Random Placement within Census Block Group)

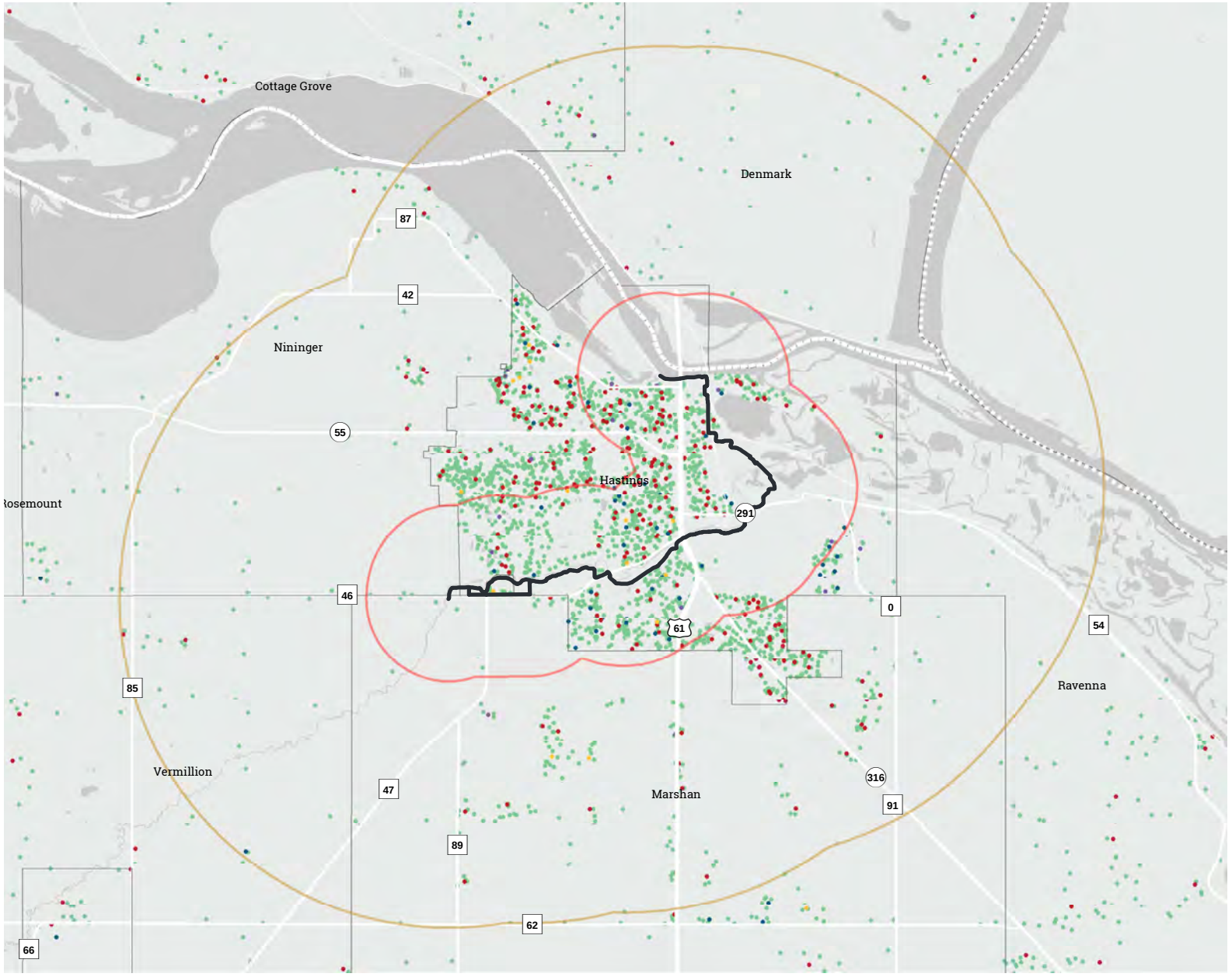
Source: U.S. Census; American Community Survey 5 Year Estimates, 2011-2016

0 0.5 1 2 Miles

Poverty


Cottage Grove
Denmark
Nininger
Hastings
Ravenna
Vermillion
Marshan
87
42
55
291
46
61
0
54
85
316
91
47
89
62
66
Vermillion River Greenway-Hastings
Areas within .75 mile of the greenway
Areas within 3 miles of the greenway
Open Water
Population in Poverty
< 5%
5-10%
10-25%
> 25%
0
0.5
1
2
Miles

Mode of Transportation to Work



Vermillion River Greenway-Hastings

Areas within .75 mile of the greenway

Areas within 3 miles of the greenway

Open Water

Mode of Transportation to Work

- Walk
- Carpool
- Public Transportation
- Bike
- Drove Alone

1 Dot = 5 People (Random Placement within Census Block Group)

Source: U.S. Census; American Community Survey 5 Year Estimates, 2011-2016

0 0.5 1 2 Miles