



MOORHEAD RIVER CORRIDOR MASTER PLAN

Moorhead, Minnesota

CITY OF MOORHEAD

**FARGO-MOORHEAD
METROPOLITAN COUNCIL OF
GOVERNMENTS**

April 30, 2014





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Acknowledgments

TECHNICAL ADVISORY GROUP

Wade Kline - Executive Director, Metro COG

Adam Altenburg - Assistant Planner, Metro COG

Larry Anderson - Parks & Forest Manager, City of Moorhead

Brad Anderson - GIS Manager, City of Moorhead

Kim Citrowske - Assistant Planner, City of Moorhead

Andrea Crabtree Naves - Utilities Engineer, City of Moorhead

Kristie Leshovsky - City Planner & Zoning Administrator, City of Moorhead

Tom Trowbridge - Assistant City Engineer, City of Moorhead

Bob Zimmerman - City Engineer, City of Moorhead

FOR MORE INFORMATION CONTACT:

Wade Kline -

Executive Director, Metro COG

Email: kline@fmmetrocog.org

Phone: 701.232.3242

Kristie Leshovsky -

City Planner & Zoning Administrator, City of Moorhead

Email: Kristie.leshovsky@ci.moorhead.mn.us

Phone: 218.299.5332

RIVER CORRIDOR ADVISORY COMMITTEE

Jeff Andvik

Bob Backman

John Brummer

Bart Cahill

Julian Dahlquist

Doyle Dotson

Brenda Elmer, Moorhead City Council

Tiffany Footitt

Rae Halmrast

Richard Jones

Deb Kazmierczak

Julie Letourneau

Milo Moyano

Nancy Otto, Moorhead City Council

Eileen Scheel

Larry Seljevold, Moorhead Park Advisory Board

Darline Sween

David Thordahl

Larry Anderson - Parks & Forest Manager, City of Moorhead

Andrea Crabtree - Utilities Engineer, City of Moorhead

Kritie Leshovsky, City Planner & Zoning Administrator, City of Moorhead

Tom Trowbridge, Assistant City Engineer, City of Moorhead

Bob Zimmerman, City Engineer, City of Moorhead

CONSULTANTS



Hoisington Koegler Group Inc.
Planning • Landscape Architecture • Urban Design





Introduction

Overview

Traveling through the heart of the Fargo-Moorhead metropolitan area, the Red River of the North is a defining natural feature in both cities and provides life-giving water, scenic views, and natural habitat. However, floods have raised a constant concern and posed a threat to public and private development along the River Corridor. In response, the City of Moorhead has initiated a number of flood mitigation actions. One of the most visible actions has been the purchase of flood prone properties for flood mitigation measures, notably the construction of floodwalls and levees. There is widespread community recognition that the new public land along the river is a unique opportunity for the City to not only achieve flood mitigation goals, but also transform the River Corridor to a visible and publicly accessible source of pride, beauty, culture, and recreation for residents.

This Master Plan considers how the Moorhead community embraces the River Corridor both now and in the future. It presents a long-term vision for the corridor side by side with implementation actions that can be undertaken in the near term, within current budgets, land ownership, and flood protection infrastructure. The study is a guide to future public access, recreation development, and vegetation restoration for the nine-mile Red River Corridor between approximately 60th Avenue South and County Road 22/Wall Street (Fig 3).

BENEFITS OF PUBLIC OPEN SPACE

The benefits of public open space for property values, public health, and quality of life have been documented in numerous studies and publications.

Increased Property Value

Close proximity to public open space increases property values. Evidence has shown that large, natural areas in urban locations have the greatest positive impact on property values – up to a 15% increase in home value – compared to active, neighborhood parks and parks in suburban or rural areas.

Improved Health

Quality of open spaces and quantity of parks in a community equals healthy residents. People who live near parks and open spaces tend to get more exercise and be healthier. In addition, the natural landscapes and vegetation in parks and open space contribute to a healthier planet. Trees provide shade, wildlife habitat, and evapotranspiration of stormwater.

Quality of Life

Parks and public open space are unique in that they are places that are free for people of all ages, abilities, and incomes to enjoy. They provide spaces for intimate contemplation and community wide events. Parks can be community symbols of pride and beauty. They attract tourists, benefitting the local economy (ie. Central Park in New York, Yellowstone Park in Wyoming, and Yosemite in California, among others). Their welcoming nature and social functionality contribute to high quality of life.

In Minnesota, people place a high value on outdoor recreation. The lakes, parks, and trails provide opportunities for boating, fishing, skating, skiing, running, biking, and many other year-round activities. Minnesotans have proven their interest in investing in parks and open spaces by the passing of the Clean Water, Land and Legacy Amendment.

Sources:

“The Economic Value of Open Space: A Review and Synthesis,” by Charles J. Fausold and Robert J. Lilieholm. Lincoln Land Institute, Paper. WP96CF1, 1996.

“The Proximate Principle,” by John L. Crompton. National Recreation and Park Association, 2004.

“The Value of Open Space: Evidence from Studies of Nonmarket Behavior,” by Virginia McConnell and Margaret Wells. *Resources for the Future*, January, 2005.

Anton, Paul A. *“The Economic Value of Open Space: Implications for Land Use Decisions,”* Wilder Research, December, 2005. pg. 12.

Master Plan Purpose

As a result of significant floods of 2009, 2010, and 2011, the City of Moorhead initiated a number of interrelated flood mitigation actions. One of the most visible actions is the proactive (but voluntary) acquisition of flood-prone properties adjacent to the river. Through that effort, over 225 acres in the past ten years along the Red River has been transferred to public ownership. While the priority use for this property is flood risk reduction, there has been significant public interest in how these areas will be maintained, managed, and transformed into a community asset.

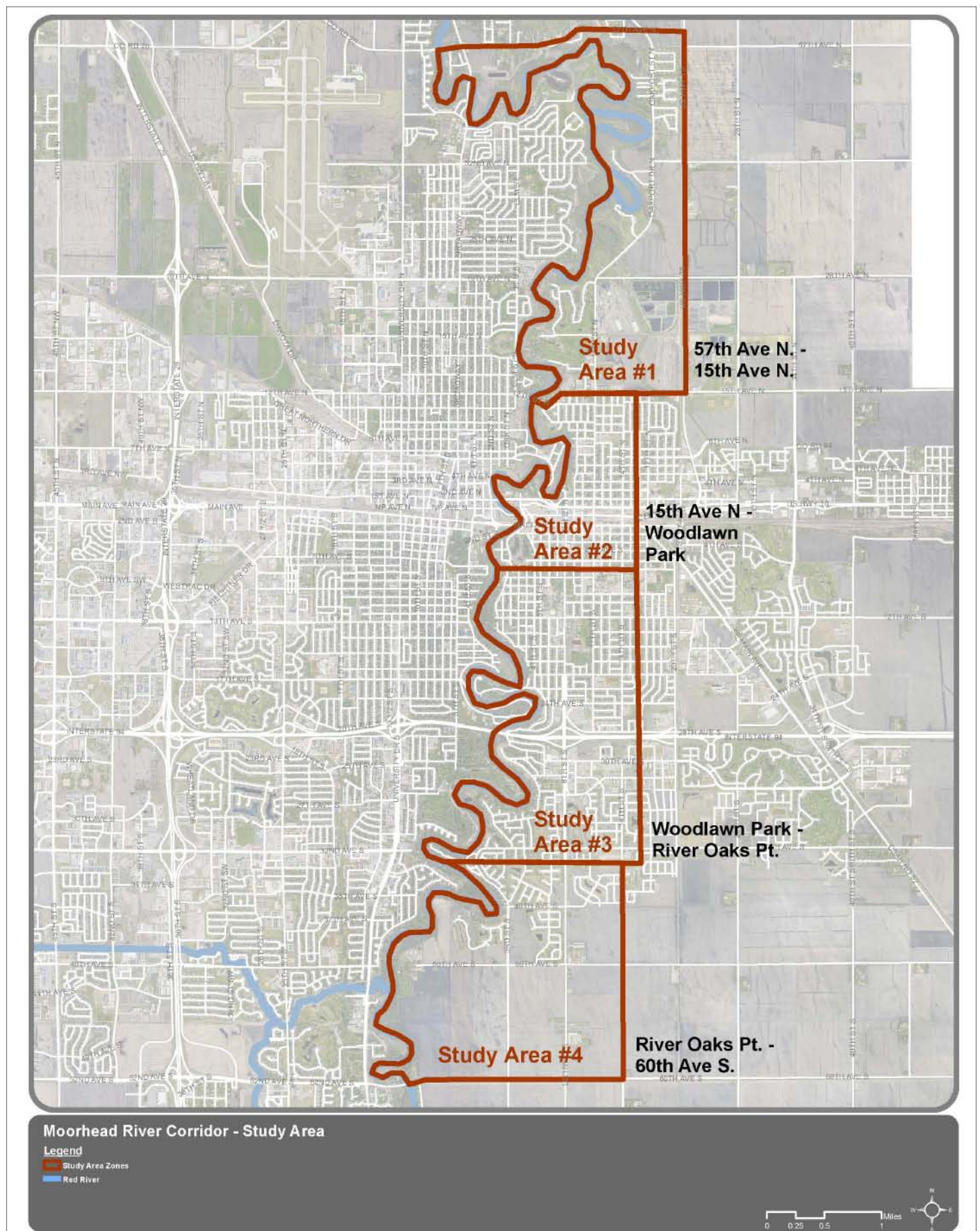
The purpose of the River Corridor Master Plan is to present a long term (25+ years) community vision and comprehensive strategy to guide sustainable management and maintenance of the River Corridor in Moorhead. The Master Plan has five chapters. These include:

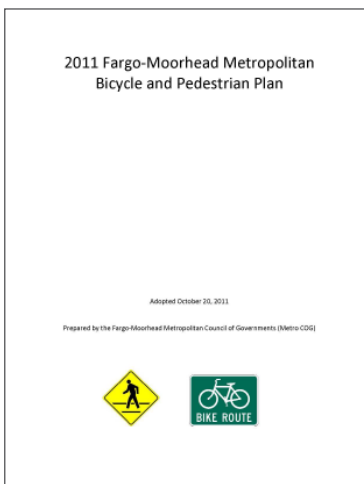
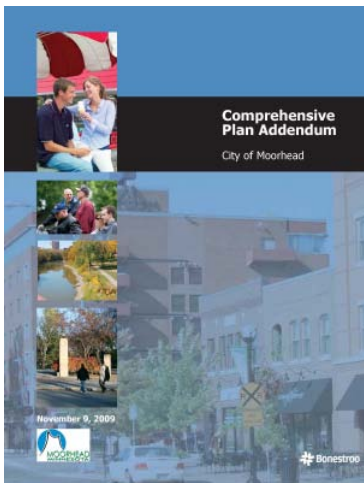
1. **Introduction** includes project background and needs
2. **Existing Conditions**
3. **Vision & Goals**
4. **The Plan**, addresses how the corridor will be used by the public and what it will look like
5. **Implementation & Management.** This chapter addresses multiple timeframes: actions that can be undertaken immediately and near-term (1-5 years); projects that require additional planning and consideration and longer lead times (5-10 years); and visionary projects (10+ years) that may not be possible today but are desired to completely achieve the vision for the corridor.

Within these chapters, the Master Plan:

- » Addresses flood mitigation strategies
- » Proposes policy for lease/sale of public lands along the River Corridor
- » Outlines strategies for the delineation of public & private land
- » Identifies a continuous river trail alignment, pedestrian bridge locations, and priorities
- » Defines activities and concepts at recreation nodes
- » Guides natural resource stewardship and restoration
- » Recommends interpretive themes and strategies
- » Guides implementation: priorities and phasing, capital and operational budgets, funding, and partnership opportunities

FIGURE 3. MASTER PLAN AREA MAP





Planning Context

Over the last several decades more than forty plans and studies have either directly or indirectly discussed issues related to the River Corridor in Moorhead. The following prior planning documents and related studies have been reviewed as part of this effort:

1. Red River Vision 1989 – a product of the American Institute of Architects
2. Red River Action Plan (1989)
3. FM Perceptions of the Red River & Surrounding Area (1992)
4. Moorhead Comprehensive Plan (2004) & Addendum (2009)
5. Fargo-Moorhead Metropolitan Bicycle and Pedestrian Plan (2011)

Planning Process

The Moorhead River Corridor Master Plan is the result of an 18 month planning process which involved cooperation and discussion among a number of project partners and stakeholders, as well as direct consultation with the community at large.

ROLES AND RESPONSIBILITIES

Metro COG & City of Moorhead Staff - Metro COG served as the principal investigator for the River Corridor Master Plan and worked closely with staff from the City of Moorhead. To ensure participation from a range of municipal departments, a Technical Advisory Group was formed, with representation from Metro COG and Moorhead's planning, engineering, and parks departments. Metro COG and City of Moorhead staff, along with Hoisington Koegler Group Inc. (HKGi) and Emmons and Olivier Resources (EOR), planning and natural resource consultants hired mid-way through the project, are responsible for data analysis, meeting and stakeholder coordination, and drafting of the Master Plan.

River Corridor Advisory Committee - The River Corridor Advisory Committee (RCAC) was appointed by the City Council in October of 2012 to assist with providing input into the development of the overall River Corridor Master Plan. The Advisory Committee consists of representation from each of Moorhead's eight (8) flood zones and City Council representation from Wards 1 and 3. The RCAC provided input and feedback on concepts, policies, and recommendations developed as part of the River Corridor Master Plan. The RCAC met four (4) times throughout the development of the River Corridor Master Plan.

Moorhead City Council - The Council was updated on the River Corridor Master Plan at the conclusion of each phase of the Master Plan. The Council was kept apprised of the River Corridor Master Plan through direct representation on the River Corridor Advisory Committee and through informal communication with City and Metro COG staff.

City Residents at Large - Three (3) public input meetings were held during the planning process. The meetings were structured to gather input and feedback from Moorhead residents and the general public regarding various aspects of the River Corridor. Public input meetings were held at key milestones within the overall project.

Stakeholders - Outreach and coordination with public agencies, recreation providers and other key stakeholders was conducted during the planning process. These groups included: City of Fargo, Oakport Township, Buffalo Red River Watershed District, Clay County, Minnesota Department of Natural Resources (MN DNR), Fargo Moorhead Trailbuilders, Fargo-Moorhead River Keepers, Prairie's Edge Nordic Skiers (PENS), River Corridor Advisory Committee, and Trollwood Performing Arts School.

PROJECT PROCESS

PHASE I – NEEDS AND ISSUES (NOVEMBER 2012 - APRIL 2013)

This phase identified the needs and issues related to the River Corridor. The Phase I work included documentation of existing conditions, public input, identification of limitations, needs, and opportunities along the River Corridor, and presents a range of needs and opportunities as identified by the public, residents, and City staff. Metro COG, in close collaboration with City of Moorhead staff, led the Phase I work. During this phase of the project the following outreach activities were conducted:

Summaries from community outreach activities can be found in Appendix C

- » **River Corridor Advisory Committee (RCAC) Meeting (December 2012)**
- » **Community Open House (December 2012)**
- » **Public Survey (January 2013)**
- » **River Corridor Advisory Committee Meeting (March 2013)**

PHASE II –ALTERNATIVE POLICIES & STRATEGIES (JUNE 2013- APRIL 2014)

This phase established a set of policy and strategy alternatives that could be used to address the issues, needs and opportunities identified along the River Corridor and developed the Red River Corridor Master Plan. At this phase of the project Hoisington Koepler Group Inc. was hired to work closely with Metro COG and the City on the remainder of the Master Plan. As part of Phase II, a River Corridor Summit was held in late October 2013. Meetings Include:

- » **Agency Partners Roundtable:** Metro COG, City of Moorhead, City of Fargo, Fargo Park District, Oakport Township, MN DNR, Buffalo Red River Watershed District, Clay County (October 28, 2013)
- » **Recreation Partners Roundtable:** Fargo/Moorhead River Keepers, Prairie's Edge Nordic Skiers (PENS), Fargo Moorhead Trailbuilders, Moorhead Country Club, Fargo Park District, Trollwood Performing Arts School (October 28,2013)
- » **River Corridor Advisory Committee (RCAC) Meetings** (October 28, 2013)
- » **River Corridor Field Day:** Project Technical Advisory Group, RCAC, City Council/Commissions, and the public were invited to see key areas of the corridor first hand; approximately 15-20 people visited each stop (October 29, 2013)
- » **Community Open House** (October 29, 2013)

Input on the Draft Plan was obtained in March and April of 2014. Meetings included:

- » **RCAC Meeting** (March 5, 2014)
- » **River Corridor Residents Workshop** (March 5, 2014)
- » **Committee of the Whole** (March 17, 2014)
- » **Park Advisory Board** (March 18, 2014)
- » **Open House** (April 15, 2014)



Existing Conditions

Overview

Today, Moorhead's River Corridor is in a state of change. During the last decade, over 225 acres of land has been transferred to public ownership and levee construction has been ongoing. In the process, streets that were once lined with homes and landscaping now are new open spaces and levees providing permanent flood protection. At the same time, residents are ready to embrace the new public river edge and seek clarity in the delineation of public and private property along the river. Remaining residents want to make sure that their property rights are respected and also have varying opinions about how the adjacent public land is maintained. This section provides an overview of existing conditions and needs along the River Corridor.



Existing Conditions

FLOOD PROTECTION LEVEES

Existing, proposed, and flood levees that are under construction are mapped on Figure 9. Proposed levees are those that are desired by the City, but for which easements and acquisitions are required for project completion.

PUBLIC PROPERTY

The City of Moorhead has acquired approximately 225 acres of property along the River Corridor for flood mitigation since 1990, shown in Table 8 and in Figure 9. Table 8 depicts approximate acquisition acreage by year. It is important to note that additional acquisition by the City of Moorhead is ongoing.

Table 8.1 separates acquisitions by funding source. It is important to note that acreage acquired with Federal Emergency Management Agency (FEMA) funds and Minnesota Department of Natural Resource (DNR) funds have deed restrictions attached, as noted below.

Table 8. City of Moorhead River Property Acquisition by Year (Acreage)

YEAR	ACERAGE
1990	26.69
1995	5.97
1997	12.33
2003 & 2004	0.39
2009	32.47
2010	23.04
2011	103.15
2012	23.04
2013	12.96

Table 8.1 City of Moorhead River Property Acquisition by Funding Source (Acreage)

SOURCE	ACREAGE	DEED RESTRICTIONS
Federal Emergency Agency (FEMA)	20.70	Property can only be used for open space, recreational or wetland management practices
Minnesota Department of Natural Resources (DNR) & City (General Fund, Assessments, etc.)	183.49	Property can only be used for open space, recreational or wetland management practices. No new structures except park facilities for outdoor activities, pervious parking areas, public utility infrastructure, flood improvement structures, public trails, public restrooms
Community Block Grant Funds (CDBG)/FEMA	0.17	
Unknown / Unidentified	21.62	
Total	225.98	

Source: Acreage Deed Restriction

FIGURE 9. EXISTING EASEMENT LOCATIONS

TRAIL EASEMENTS

There are existing trail easements on private river corridor properties as illustrated in Figure 9. The location, width, and provisions of these easements vary and are tied to each specific property or plat, but may be of use in establishing a continuous public river corridor.

LEASED PUBLIC LAND HOLDINGS

Based on prior River Corridor buy outs, the City has leased remnants of parcels of land adjacent to the River Corridor. The majority of these leases were an efficient means of managing a few disparately located areas that were remaining after the flood mitigation improvements were completed. These leases are short term leases between City and the adjacent land owners in which the lessee provides maintenance and upkeep that would otherwise be provided by the City. In the past, when most of the corridor was in private ownership, this was an efficient way for the City to absorb additional maintenance responsibility without significantly increasing maintenance budgets. The standard term limit for lease agreements has been set as year to year and can be terminated by the tenant or City at any time with proper notification. Rent payments per the agreements are in the form of maintaining the property as a vacant residential lot; which includes mowing, spraying for weeds, general lawn care, and snow removal where applicable. The City currently has two (2) types of leases which include:

- » **Full Lease** - These leases allow the tenant to make improvements generally limited to gardening and some landscaping, with City approval.
- » **Leased (Mow Only)** – These leases allow for maintenance only. No additional trees/shrubs, landscaping, gardening, or structures are permitted; the lessee may only maintain the property as is.

As flood mitigation projects have been completed along the Corridor, and as Corridor planning continues to clarify a vision for the Corridor's public use and function, the conditions that support the notion of leasing lands continues to change. One of the outcomes of the River Corridor Master Plan is to determine if it is in the best interest of the City to lease or sell any of these remnant lands back to adjacent property owners, and if so, under what conditions.

PUBLIC / PRIVATE DELINEATION

As shown on Figure 11, land along the River Corridor is a mix of public parks, acquired public property (much of which has new flood protection levees on it), and private property. Some of the private property is still desired for flood mitigation, and some is not needed and will remain in private ownership. One of the issues with the inconsistent, and since 2009, constantly changing, ownership is that there is not clear delineation between public and private land. This has led to conflicts and frustration from both the landowners, who do not want the public trespassing on their land, and from the public, who want to use and are using the public open space along the river for informal recreation.



CONNECTIVITY - BICYCLE AND PEDESTRIAN FACILITIES

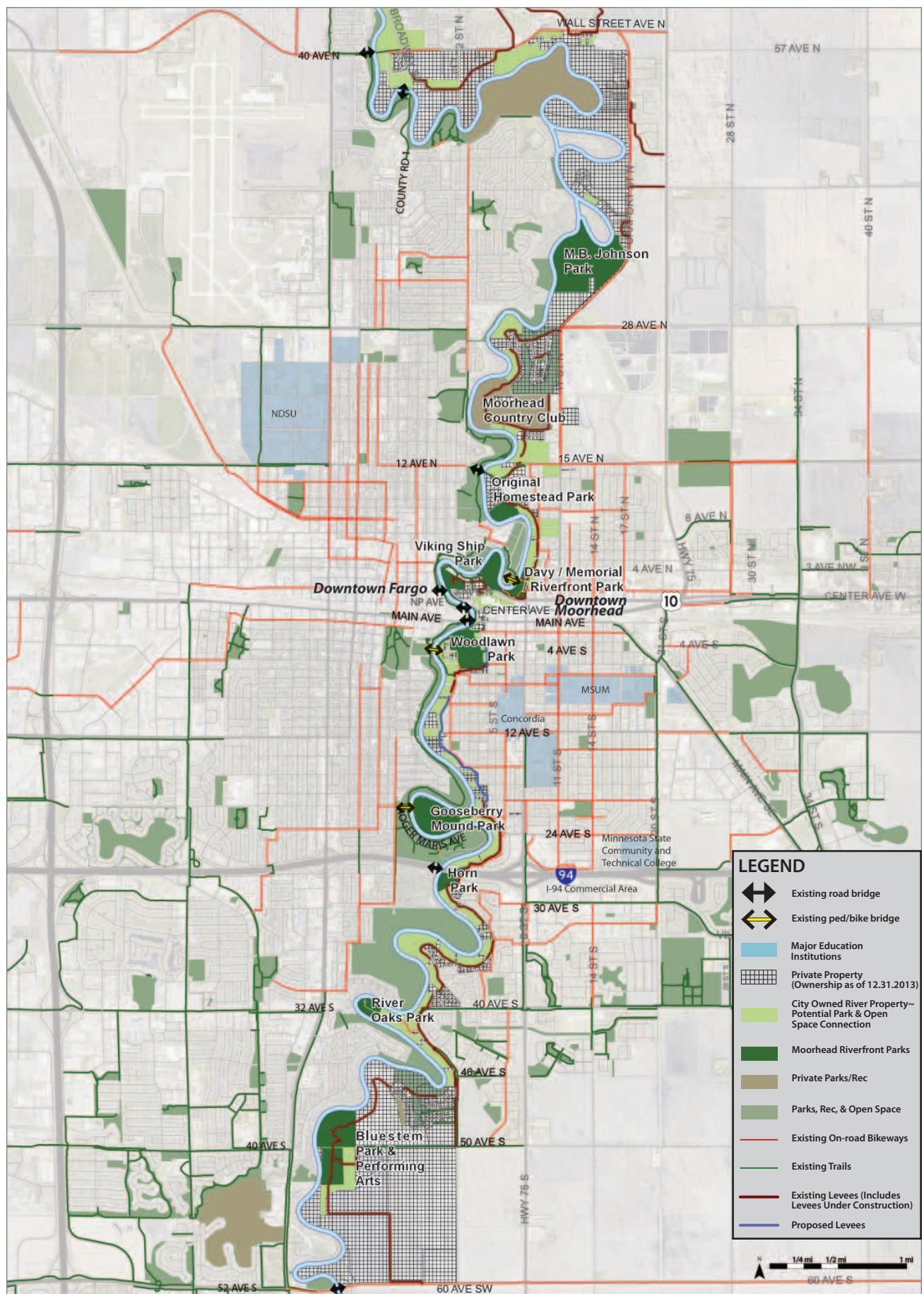
Today, there are 22 miles of pedestrian and bicycle facilities along the Moorhead River Corridor including: 1) 14 miles of separated shared use paths; 2) 8 miles of signed or striped roadways; 3) and bridges. These facilities are shown in Figure 11. A significant issue with these facilities is persistent flooding of existing paved trails below the 24' flood elevation, which results in trail closures during flooding, increased maintenance to clear trails of silt and debris, and shortened pavement life. In addition, in some areas, notably the Woodlawn Park area, there is the need to review options for permanent relocation of the existing river trail due to bank instability and slumping issues. Today, there are three dedicated bicycle and pedestrian bridges linking Moorhead to Fargo, including:

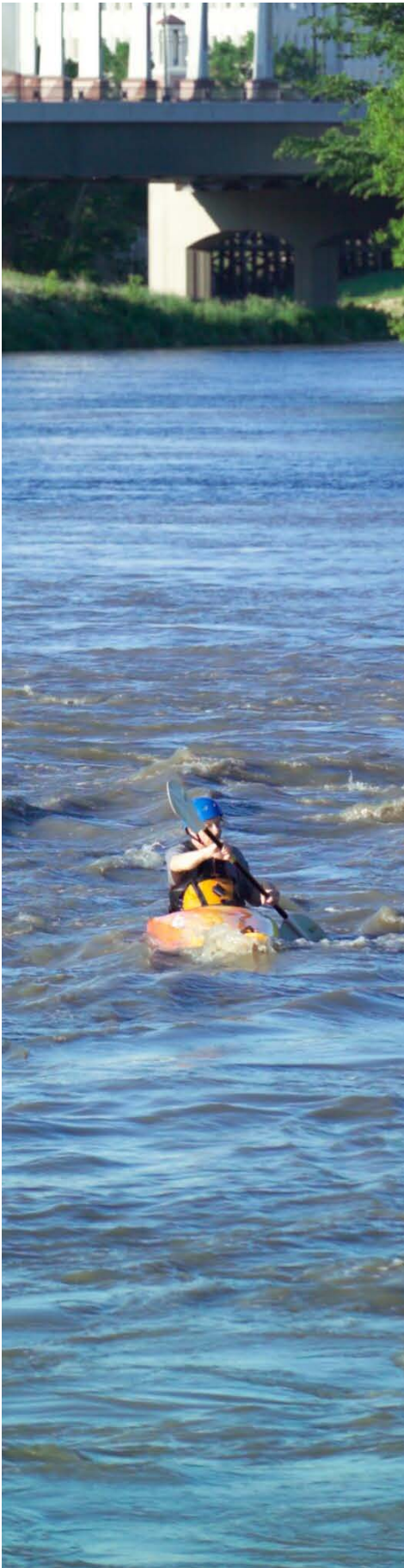
- » **Memorial/Oak Grove Bicycle and Pedestrian Bridge** - this bridge is anticipated to be replaced in 2016-2018 following the 2009 Project Concept Report (PCR) prepared for this structure. A number of existing limitations were identified: steel trusses have minor bowing; treated timber decking shows signs of cracking and is considered a maintenance issue; location and elevation of the bridge is problematic due to its length and elevation relationship to the river. The bridge structure itself is in sound condition.
- » **Power Plant / Dike East Floating Pedestrian Bridge** - when operational this is a popular crossing point for recreational and commuting purposes and it provides a direct connection between existing river trails in Moorhead and Fargo. There is a high volume of river related recreational activity around this location due to its proximity to the Midtown Dam, Woodlawn Park, and Dike West/East Parks. This floating bridge is currently a maintenance concern for both the City and the Fargo Park District. The bridge is required to be removed when the river goes above 17' stage; and at 19' stage the river levels compromise the integrity of the structure. In the near term, the City has indicated a desire to review options for the potential relocation of the bridge further upstream.
- » **Gooseberry Mound / Lindenwood Pedestrian Bridge** - this bridge was constructed in 2012 and is in good condition. It is not high enough to ensure boat travel under the bridge during high water conditions.

Table 10. FARGO-MOORHEAD BRIDGES

ROAD BRIDGE LOCATION (MN/ND)	AVAILABLE BIKE/PED FACILITIES
County 22 – Wall Street Avenue NW/County 20	Yes – Dedicated segment
Broadway Street North	On road
15th Avenue North (private)/12th Ave N – Toll Bridge	Yes – Dedicated segment (narrow)
Memorial /Oak Grove Bicycle and Pedestrian Bridge	Yes – Ped-Bike Only (removed during floods)
1st Avenue North	Yes – Dedicated segment
Center Avenue North/NP Ave	Yes – Dedicated segment (narrow)
Main Avenue	Yes – Dedicated segment
Floating Bridge Power Plant - Dike East	Yes – Ped-Bike Only (seasonal)
Gooseberry Mound Park – Lindenwood Park	Yes-Ped-Bike Only
Interstate 94	None
60th Avenue South/52nd Ave S	On road

FIGURE 11. EXISTING CONDITIONS





RECREATION AND PARKS

The City of Moorhead has identified several classes of parks, including: Neighborhood Parks, Community Parks, and Regional Parks. Existing parks and recreational areas within Moorhead comprise approximately 1,088 acres. Since 2009, the City has added 225 acres of newly acquired property through flood mitigation efforts. This has effectively increased the amount of acreage that must be managed and maintained by 22%. Moorhead's park classification system follows.

NEIGHBORHOOD PARK

- » One to ten acres in size
- » Serves the immediate areas within two miles of the park
- » Features typically include a tot lot, benches, some open play areas, and sports facilities such as tennis courts, ball diamonds, soccer fields, hockey rinks, etc.
- » Moorhead currently has thirty-four (34) neighborhood parks throughout the City

COMMUNITY PARK

- » 10 to 20 acres in size
- » Attracts residents from throughout the community
- » Moorhead currently has four (4) community parks all within the River Corridor, including:
 - Davy-Memorial/Riverfront Park
 - Viking Ship Park
 - Woodlawn Park (impacted by river flooding)
 - Gooseberry Mound Park (impacted by river flooding)

REGIONAL PARKS

- » 20 acres or larger
- » Attracts patrons from throughout the City and larger regional area
- » Moorhead currently has four (4) Regional Parks including:
 - M.B. Johnson Park (located within the River Corridor)
 - Horizon Shores Park
 - Southside Regional Park
 - Robert A. Fogel Riparian Forest/Bluestem Park (located within the River Corridor)

24' FLOOD ELEVATION

The 24' river flood stage has been identified as a recommended minimum elevation for new park buildings and recreation facilities and trails to avoid minor flooding due to spring runoff and heavy summer rains. The Red River has exceeded the 24' stage sixteen (16) times in the last 30 years (1982-2013) during spring flooding (March-May). Over this same time frame, the Red River has exceeded 24' two (2) times during the summer months (June – August).

INTERPRETATION

Moorhead's River Corridor has numerous cultural amenities and historic sites that provide opportunities for interpretation. In some cases, there is still existing physical evidence of a historical feature along the River Corridor in Moorhead (e.g. Probstfield Farm, etc.). Appendix 2 summarizes the highlights of the cultural/historic points. This data was developed by the Clay County Historical Society in 1990 and has not been formally updated.

FIGURE 13. EXISTING CULTURAL & HISTORIC FEATURES

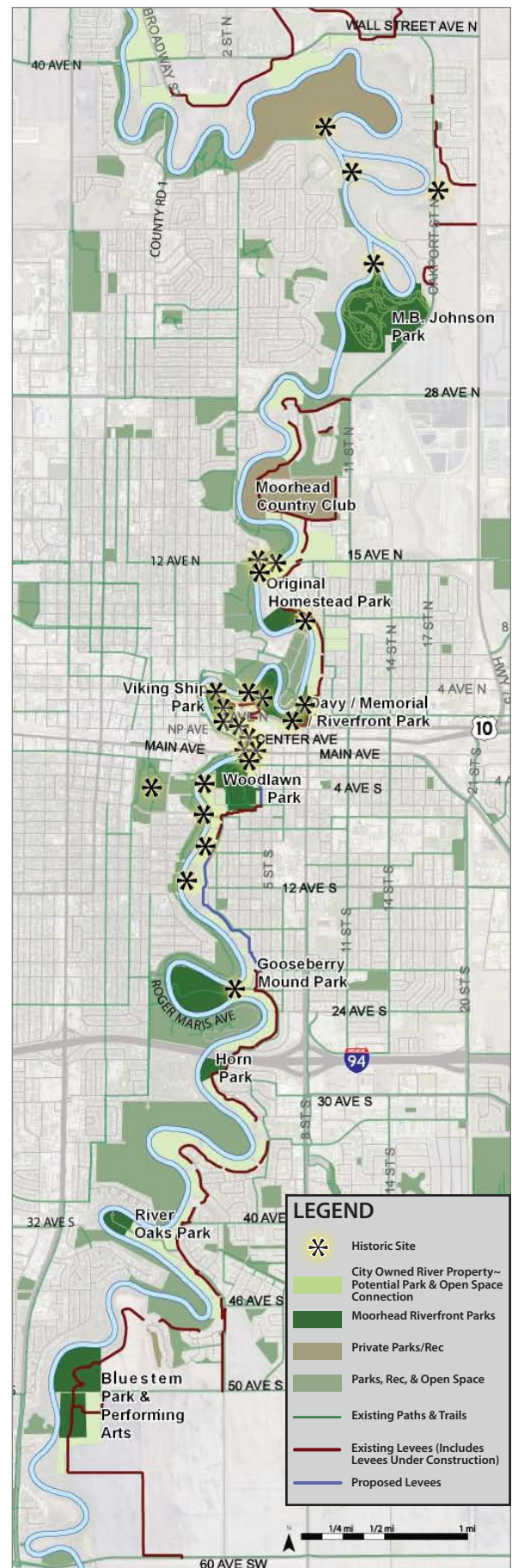
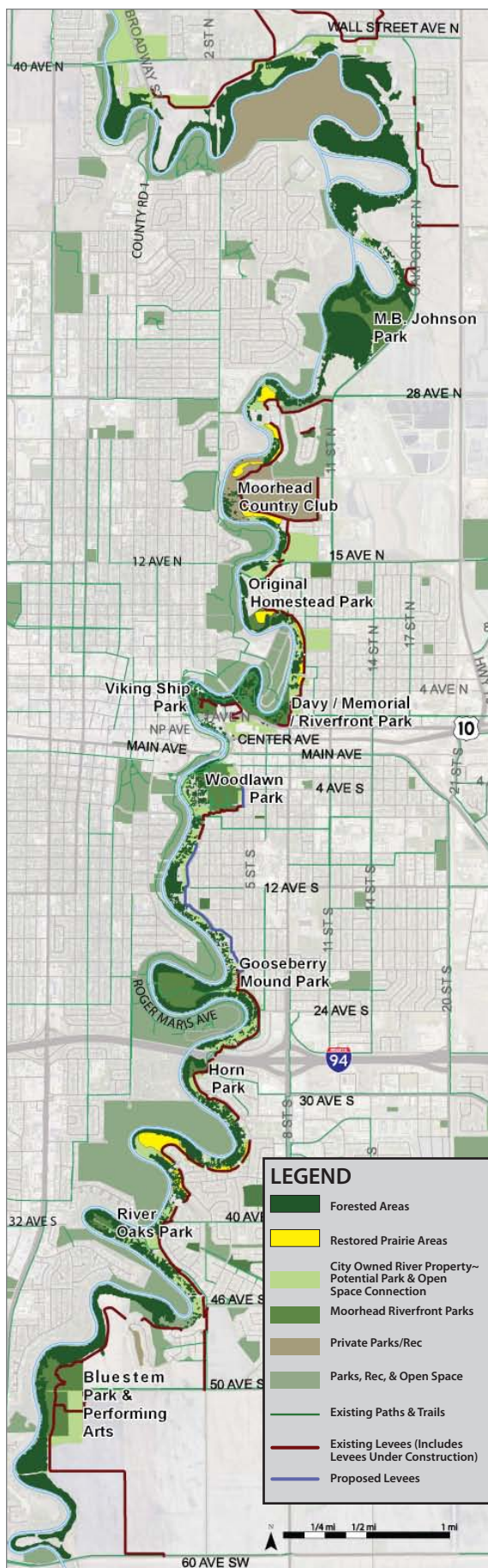


FIGURE 14. EXISTING VEGETATION



NATURAL RESOURCES

TOPOGRAPHY

The River Corridor is a mix of steep slopes and flat lowlands. Construction on and adjacent to slopes greater than 10% presents limitations regarding slumping and increased construction costs related to grading, filling, and other issues, and can have negative vegetative/riparian impacts and introduce erosion control issues. Development of less formalized off-road mountain biking or unpaved nature trails are not as constrained by steep slopes.

VEGETATION

Today the River Corridor is a mix of natural habitat, maintained areas, and restored prairie communities. Recent construction of flood control structures has changed the landscape with the removal of homes and in some areas, there has been significant tree loss as a result of levee construction. Existing vegetation is shown in Figure 14.



Needs and Opportunities

The needs, shown in Figure 18. and in the following discussion are related to the future of the River Corridor and are representative of: existing conditions; input from Metro COG, City of Moorhead Staff, the RCAC, the public; and guidance from past river corridor planning studies. These address what the River Corridor will look like in the future, how the public will use the corridor, and how the corridor will be managed.

ATTRACTIVE RIVER CORRIDOR

The overarching public desire is that the River Corridor should be developed as a public resource open for year round activities that will have a positive social and economic impact on the City of Moorhead. Residents noted recreational features along the River Corridor and how they might serve to attract and retain new residents to the community.

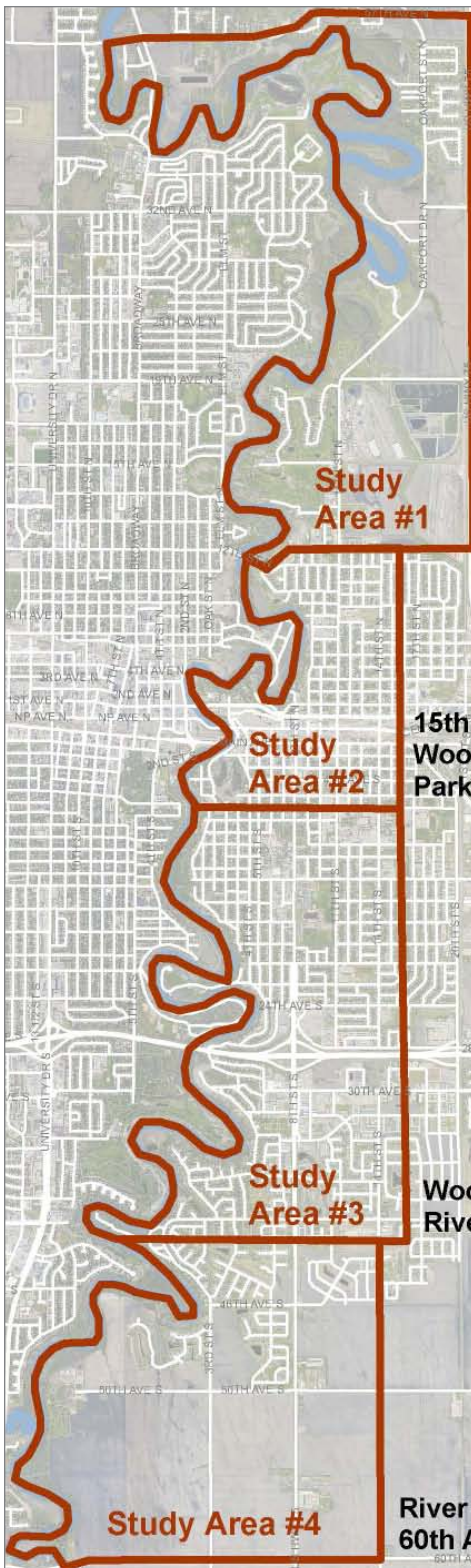
Residents expressed concern over how the maintenance and management of the River Corridor has and will continue to affect surrounding real estate. There is a general expectation that River Corridor development will stabilize adjacent neighborhoods that have been most impacted by residential property removal. Along with development of the River Corridor as a public resource, there is a need to provide clarification in two areas:

- » **Lease/Sell (Public Land Holdings) Analysis** – there is a need for a clear policy regarding the potential lease or resale of public land holdings that are remnants of parcels along the River Corridor and are no longer required for flood mitigation or other public purposes.
- » **Public/Private Delineation** – there is a need to develop design solutions that delineate private property adjacent to public land, so impacts to private lands can be minimized.

CONNECTIVITY

There is a strong desire to build upon and expand existing connections between Moorhead and Fargo by linking existing and future bicycle and pedestrian paths for recreation, commuting (transportation), and supporting an active community. There is also the need and desire to link existing recreational features along the River Corridor (e.g. M.B. Johnson Park, Davy/Memorial Park, Bluestem Park) as part of a connected park and trail network that supports outdoor activity. The following are specific needs, desires and opportunities for connectivity organized by Study Area.





STUDY AREA 1

- » Opportunity to expand mountain bike trails to the north and south of M.B. Johnson Park. Installing the former Gooseberry Mound Park bicycle bridge over Snaky Creek could provide access to land south of existing trails in M.B. Johnson Park.
- » Need for a trail connection between 15th Ave. N. and M.B. Johnson Park, using either the Fargo or Moorhead sides of the river
- » Desire for a bridge connection to Fargo perpendicular to River Drive in the Moorhead Country Club addition
- » Desire for a bridge connection from M.B. Johnson Park to the north to connect to Edgewood Golf Course, which would allow expansion of cross country ski trails into Fargo
- » Potential to expand the cross country ski trails to the north and south of M.B. Johnson Park – dependent on easements

STUDY AREA 2

- » Opportunity for a trail connection between 15th Ave. N. and Davy/Memorial Park through Original Homestead Park
- » Need to replace the Memorial/Oak Grove bicycle and pedestrian bridge
- » Need to reduce conflicts that exist between cross country skiers and trail users in Davy/Memorial/ Riverfront and Viking Ship Parks
- » Opportunity to expand cross country ski trails south of Woodlawn Park
- » Need to relocate the floating bridge between the old Power Plant in Moorhead and Dike East Park in Fargo upstream in the near term. Long term need to replace the bridge with a permanent structure

STUDY AREA 3

- » Desire for a trail connection along the river between Woodlawn and Gooseberry Mound Parks
- » Opportunity for a connected network of cross country ski trails from Dike West Park in Fargo through Lindenwood Park, Gooseberry Mound Park, and south to Horn Park, along with a warming house and equipment rental opportunities
- » Need for a trail connection along the river between Gooseberry Mound and River Oaks Park
- » Desire for natural surface, cross country ski, mountain bike, or hiking trails along the river between Gooseberry Mound and River Oaks Park, that could be constructed prior to constructing a paved, multi-use trail

STUDY AREA 4

- » Need for bridges between River Oaks Park and 60th Ave. South. Opportunities from River Oaks Park to Lemke Park/32nd Ave. S. in Fargo and from Bluestem Park to 40th Ave. S. in Fargo
- » Opportunity for a trail connection along the river in concert with levee construction easements between Bluestem Park and 60th Ave. S.
- » Desire to explore the potential for easements for mountain biking trails, cross country ski trails, and nature trails along the river between Bluestem Park and 60th Ave. S.

RECREATION OPPORTUNITIES

In addition to connected, linear recreation there is a need for additional facilities and activities along the River Corridor. Needs and opportunities include:

- » Permanent trail support facilities such as benches and lighting
- » Restrooms, gazebo shelters, and concession stands to further increase use of the River Corridor and promote positive public activity
- » A community gathering and/or congregational space (such as a small scale amphitheater) developed for music and other community events and programming
- » Increased use of the River Corridor during the winter months
- » Continuation and expansion of river boat tours (e.g. SS Ruby) as well as canoe and kayak rentals
- » Better utility of boat launches and portages along the River Corridor to support user safety and to increase accessibility for low impact water based recreation
- » Designate River Oaks Park as a Community Park and provide community facilities (there currently are no recreation buildings or facilities in the park)

VEGETATION AND HABITAT

There is a need for re-vegetation, reforestation, and habitat restoration along the River Corridor to improve aesthetics as well as wildlife habitat. There is a strong desire to replace trees lost due to levee construction as well as a desire to identify and enhance key natural and ecological characteristics of the River Corridor.

INTERPRETIVE OPPORTUNITIES

There is a need and desire to integrate interpretation of the River Corridor's cultural, ecological and historic context into the River Corridor experience. Interpretive opportunities may be place specific, incorporated into signage, or program based. All methods offer an opportunity to educate the community about the historical and ecological significance of the Red River.

2012 RIVER CORRIDOR SURVEY

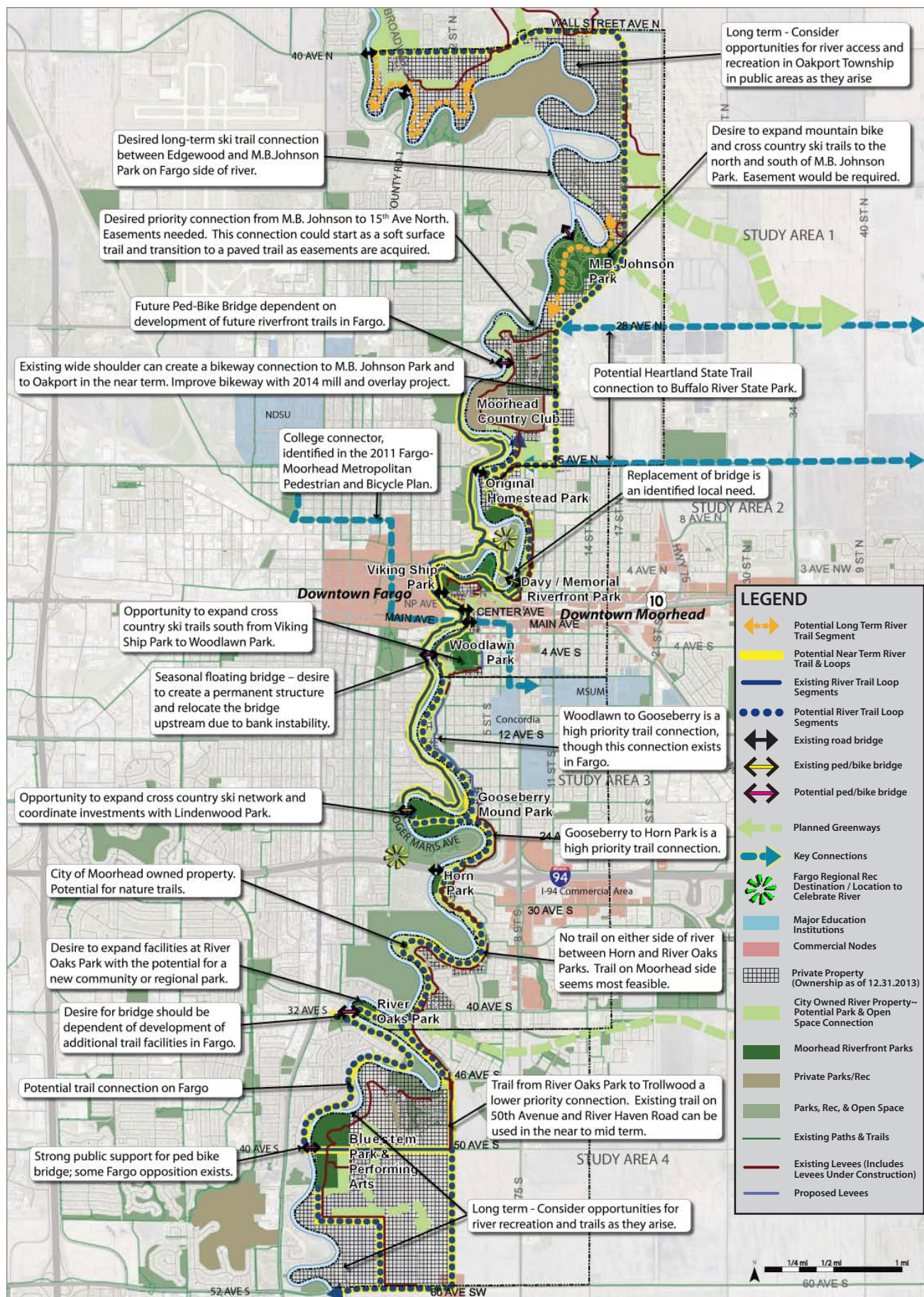
In December 2012, as part of the planning process, an on-line survey was conducted. When asked to rate priorities for potential investments along the River Corridor, the top three were:

- » Expanded bicycle and pedestrian trails;
- » Development of additional bicycle/ pedestrian bridges;
- » Expanded winter recreational activities.

The top three trail connections priorities were:

- » Downtown to Gooseberry Park;
- » Gooseberry Park to Horn Park;
- » MB Johnson to 15th Avenue North.

FIGURE 18. NEEDS AND OPPORTUNITIES

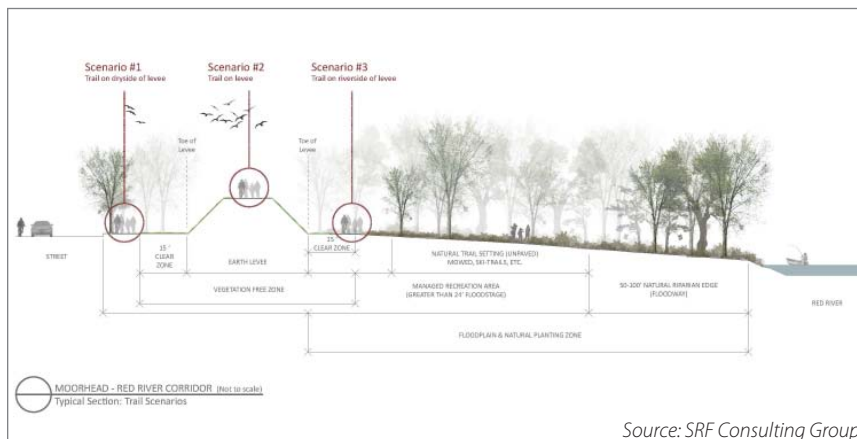


Landscape Sensitivity

To determine which areas of the River Corridor are appropriate for recreation development and which are most appropriate for re-vegetation and habitat restoration, a comprehensive analysis of the River Corridor landscape was completed based on topography, habitat, and flood frequency. Areas with low, moderate, and high sensitivity to human impact have been identified and are shown in Figure 19.

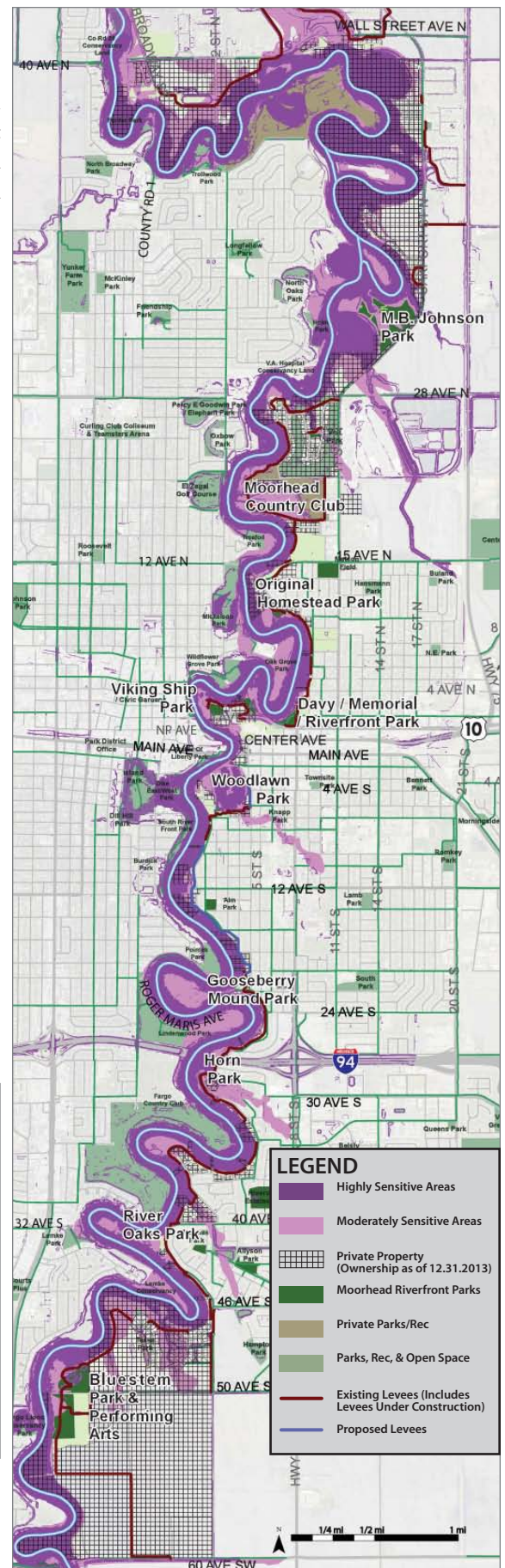
1. High Sensitivity areas are most sensitive to human impact and are least suitable for recreation because of impact to resources or frequent flooding. These areas represent:
 - Slopes of 10% or greater
 - Areas where geotechnical analysis has deemed the soils unstable and prone to slumping
 - Areas of sensitive habitat based on tree cover, patch interior, patch size, and flood frequency
2. Moderate Sensitivity areas are somewhat sensitive to human impact and recreational use. These areas represent:
 - Areas of moderately sensitive habitat based on tree cover, patch size (smaller than in the High category), and flood frequency
 - Areas within the 100-year floodplain below the levee, but above the 24' flood elevation
3. All other areas are considered low sensitivity and are appropriate for a variety of recreational activities and other land uses.

FIG 19.1 TYPICAL SECTION – POTENTIAL TRAIL SCENARIOS



Depending on landscape sensitivity a paved trail has the potential to be located in one of three locations: on the dry side of the levee, on the levee, or on the river side of the levee. Section 5 of this plan shows recommended trail placement along the corridor.

FIGURE 19. LANDSCAPE SENSITIVITY ANALYSIS





Vision

3

Overview

Due to recent property acquisitions to support flood mitigation, the City of Moorhead now has its best opportunity to redefine the River Corridor for the next generation. This Chapter presents the long term vision for the corridor along with supporting principles and goals.

The recommendations in this Master Plan focus on six (6) basic principles for Moorhead's River Corridor: flood protection, an attractive river corridor, connectivity, recreation, interpretation, and habitat enhancement and water quality. Each principle is expanded upon with goals and strategies. Goals support the vision and principles. Strategies are specific actions designed to make goal achievement an attainable and step-by-step process.

The vision, principles, goals, and strategies are based on River Corridor Advisory Committee and community input, current plans, and evaluation of the opportunities and challenges facing the River Corridor. Goals and strategies provide a framework for recommendations in Chapters 4 and 5.

VISIONS FOR THE RIVER CORRIDOR

Visions for the River Corridor have been varied over the years. However, they have generally coalesced into a finite set of key themes. Input during the planning process reaffirmed the following themes. The themes are reflected in the principles outlined in this chapter.

- » **Flood Mitigation** – Provide unified flood mitigation measures throughout the City of Moorhead;
- » **Attractive River Front** - Maintain a river front that is embraced as a safe and secure environment, which is an attractive destination to the community as a whole and has a positive social and economic impact on the City of Moorhead and the region;
- » **Enhanced Connectivity to the River** - Focus investments along the River Corridor to increase sustainable interaction between the community and river;
- » **Enhanced Recreational Opportunities** - Increase the utility of the River Corridor as a year-round recreational and transportation amenity with pedestrian, bicycle, and ski trails linking existing recreational features along the river for adjacent neighborhoods and the community as a whole;
- » **Protection and Enhancement of Designated Natural Areas** - Identify and enhance key natural and ecological characteristics of the River Corridor;
- » **Encouragement of Cultural and Historic Interpretation of the River** - Utilize the River Corridor as an opportunity to increase community interaction with the cultural and historic significance of the Red River.

A Vision for the Moorhead River Corridor

“The Moorhead River Corridor will serve as a flood risk reduction asset for the City of Moorhead. The River Corridor provides opportunities for economic vitality, improves and restores ecological stability of the River Corridor, links residents and tourists to four seasons of recreation and transportation facilities, balances the desire for public uses with adjacent private property, provides linkage between the cities of Moorhead and Fargo, preserves and promotes the history and culture of the region through education, and improves the quality of life for future generations.”



PRINCIPLE 1: FLOOD PROTECTION

First and foremost, the purpose of the River Corridor is to provide a unified flood mitigation strategy. The purpose of this Master Plan is to recognize the corridor's role in flood mitigation while guiding how the corridor can simultaneously function as an attractive, accessible public asset.

GOAL: The Moorhead River Corridor will continue to serve first and foremost as flood mitigation infrastructure.

- **STRATEGY:** Ensure consideration of flood mitigation facilities during recreation planning.



PRINCIPLE 2: ATTRACTIVE RIVER CORRIDOR

An attractive River Corridor means creating a destination for the community with attention to clear delineation of public and private land, aesthetics, and safety, in order to create a positive economic impact. Attractiveness of the River Corridor is measured by the acceptance, enjoyment, and admiration by the people who use and view the spaces.

GOAL: The Moorhead River Corridor will be an economic asset to the City of Moorhead.

- **STRATEGY:** Develop a recreation programming and events plan for the River Corridor that will be affordable to Moorhead residents and attract new park users.
- **STRATEGY:** Research innovative partnerships with local business owners and entrepreneurs to incorporate recreational events, day-to-day programming, and additional services into the parks.

GOAL: The Moorhead River Corridor will be a safe recreation area for all users.

- **STRATEGY:** Implement safety lighting and emergency posts at appropriate places (as determined by need and resident input) along the river, using context sensitive design strategies.
- **STRATEGY:** Include signage with recommendations for safe use of the parks and trails and open and closing times.
- **STRATEGY:** Consider parking and vehicle accessibility barriers in the parks.
- **STRATEGY:** Increase park 'clean team' visits at prioritized locations along the river.

GOAL: The Moorhead River Corridor will have a unified look, a natural signature, and an overall unique brand.

- **STRATEGY:** Common signage (wayfinding plan) to be used for all River Corridor parks and recreation areas.
- **STRATEGY:** Develop a unique logo to be used on all River Corridor signage and published information to help develop a unique brand. Coordinate this with efforts for Metro Trails branding.
- **STRATEGY:** Preserve and restore tallgrass prairie, bur oak savanna, and forested floodplains along the riparian corridor.
- **STRATEGY:** Establish native vegetation to create a discernible transition from maintained park space and natural areas.



GOAL: The Moorhead River Corridor will contain a clear distinction between public and private lands.

- » **STRATEGY:** Define land uses within the River Corridor – active park areas and passive park areas (yards vs. habitat/vegetative restoration) and identify potential redevelopment opportunities adjacent to the River Corridor (commercial/residential) that are protected by levees.
- » **STRATEGY:** Develop design guidelines to define land use and ownership boundaries with physical barriers, such as, split rail fencing and tree and shrub lines.
- » **STRATEGY:** Create a standardized signage set to delineate property ownership boundaries and explain River Corridor rules and expectations.



PRINCIPLE 3: CONNECTIVITY

Connectivity refers to the non-motorized routes between social nodes, recreation areas, schools, workplaces, and residential areas. These routes include: on-road and off-road bikeways, trails, and sidewalks. These routes enable safe, non-motorized recreation and transportation.

GOAL: A continuous regional trail along the Red River and within the cities of Fargo and Moorhead will exist.

- » **STRATEGY:** Define the continuous trail alignment and focus on filling trail gaps from the downtown area first.
- » **STRATEGY:** Coordinate trail construction projects with the City of Fargo & Fargo Park District, Clay County, Buffalo Red River Watershed District, Oakport Township, MN DNR, and Minnesota Department of Transportation.
- » **STRATEGY:** Prioritize trail and bridge projects biennially in order to reposition funding and focus on grants or other funding sources.
- » **STRATEGY:** Acquire property or easements (from willing sellers) necessary to construct trail gaps and bridges, as opportunities arise.
- » **STRATEGY:** Follow City of Moorhead trail design standards to construct new trail segments and, if necessary, to retrofit existing trail segments.

GOAL: The Moorhead River Corridor will be easily accessible and connected to people of all ages and abilities.

- » **STRATEGY:** Increase pedestrian and bicycle crossings of the river.
- » **STRATEGY:** Identify opportunities to strengthen connections between the River Corridor and key destinations in the community (physical trail/sidewalk connections, parks, as well as greenways/drainage ways).

GOAL: The Moorhead River Corridor will include directional wayfinding signage.

- » **STRATEGY:** Work with the City of Fargo, Fargo Park District, recreational organizations, and other stakeholders to determine the best placement and information for wayfinding signage.
- » **STRATEGY:** Use the unique Moorhead River Corridor brand to create consistent wayfinding signage.

PRINCIPLE 4: RECREATION

Recreation is activity done for personal health and wellness or for enjoyment or pleasure. Within the River Corridor, enhanced and varied outdoor recreation opportunities are recommended to draw people to the River Corridor.

GOAL: The River Corridor recreation nodes will include unique community and regional parks.

- » **STRATEGY:** Follow existing park master plans and create/update concept master plans for park areas, as needed, in the River Corridor; Master Plan should include: programmed elements, planning level cost estimates, maintenance strategy/program, and prioritized/phased improvements.
- » **STRATEGY:** Incorporate new and innovative recreation facilities.

GOAL: The River Corridor recreation nodes (parks and open spaces) will be adaptable and flexible.

- » **STRATEGY:** Include funding for park improvements.
- » **STRATEGY:** Continually solicit input from park users (survey) on satisfaction of existing facilities and ideas for adaptive reuse.
- » **STRATEGY:** Designate River Oaks Park as a new community park.

GOAL: The River Corridor will include a wide range of four-season activities.

- » **STRATEGY:** Communicate and partner with recreational organizations (e.g. River Keepers, Prairie's Edge Nordic Skiers, Fargo Moorhead Trailbuilders) to update the Corridor's recreation needs and desires.
- » **STRATEGY:** Expand winter offerings in the River Corridor.



PRINCIPLE 5: HABITAT ENHANCEMENT & WATER QUALITY

Habitat enhancement includes the restoration and preservation of native landscapes, as well as establishing key patch and corridor connections to create a well-functioning ecological matrix. Water quality can be thought of as a measure of the suitability of water for a particular use. Stormwater that is discharged into a public body of water is frequently cited as a cause of poor water quality due to the pollutants that are carried in the stormwater. Improvements to open space areas must consider opportunities to treat stormwater before it enters the river.

GOAL: A healthy Red River that is advocated for by the community.

- » **STRATEGY:** Share success and failures with down and upstream communities.
- » **STRATEGY:** Support sustainable solutions to stormwater and vegetation management.

GOAL: The Moorhead River Corridor will include attractive and sustainable landscape types.

- » **STRATEGY:** Utilize native plant species of local ecotypes for all restoration activities.
- » **STRATEGY:** Manage invasive exotic species that create maintenance issues and degrade open space areas.
- » **STRATEGY:** Preserve current large tracts of forested areas along the corridor to provide critical interior space habitat for wildlife, including passerine bird species.



- » **STRATEGY:** Develop an implementation plan that identifies priority natural resource enhancement projects and schedule.
- » **STRATEGY:** Investigate funding sources and potential partners to help with implementation costs.
- » **STRATEGY:** Target restoration and preservation projects on habitat types that are compatible with the riparian corridor and require the least amount of maintenance, such as prairie, oak savanna, and floodplain forests.
- » **STRATEGY:** Include maintenance requirements and costs in all planning efforts.

GOAL: The Moorhead River Corridor will include water quality enhancement features where appropriate in order to improve water quality before it enters the Red River.

- » **STRATEGY:** Work with the Buffalo Red River Watershed District to determine construction and maintenance funding options for future water quality improvement projects.
- » **STRATEGY:** Target water quality improvement projects that provide additional benefits such as habitat improvement, public education, and aesthetic enhancement.
- » **STRATEGY:** Develop projects that can be used to enhance habitat and aesthetics in the corridor as well as contribute to the City of Moorhead stormwater management needs.



PRINCIPLE 6: INTERPRETATION

Interpretation is the action of explaining the meaning of something. Informational, cultural, historical, and environmental interpretation can be communicated in many ways, including: signage, organized events and programs, classes, tours, interactive technology, and brochures.

GOAL: The Moorhead River Corridor will include dynamic and interactive learning opportunities for all ages.

- » **STRATEGY:** Create an educational program plan open to residents and visitors of Moorhead.
- » **STRATEGY:** Work with the local universities/colleges, school district, and recreational organizations to establish educational programming.
- » **STRATEGY:** Recognize and interpret the power and morphology of the Red River.
- » **STRATEGY:** Provide interpretive and educational information on natural river processes such as flooding, erosion and channel evolution.

GOAL: The Moorhead River Corridor will include interpretive opportunities pertaining to the local communities, natural environment, local culture, and history of the area.

- » **STRATEGY:** Identify landscape remnants from homes relocated along the corridor, and identify the significance of remaining features (such as trees) to the families which had lived there.
- » **STRATEGY:** Provide opportunities for park users to harvest fruits, nuts, and berries from remnant perennial plants found in former residential yards.
- » **STRATEGY:** Create informational materials that identify uses of plants and animals in the local region by native American and European settlers.
- » **STRATEGY:** Identify and exemplify historic landscape character in signage and posters.



The Plan

4

Overview

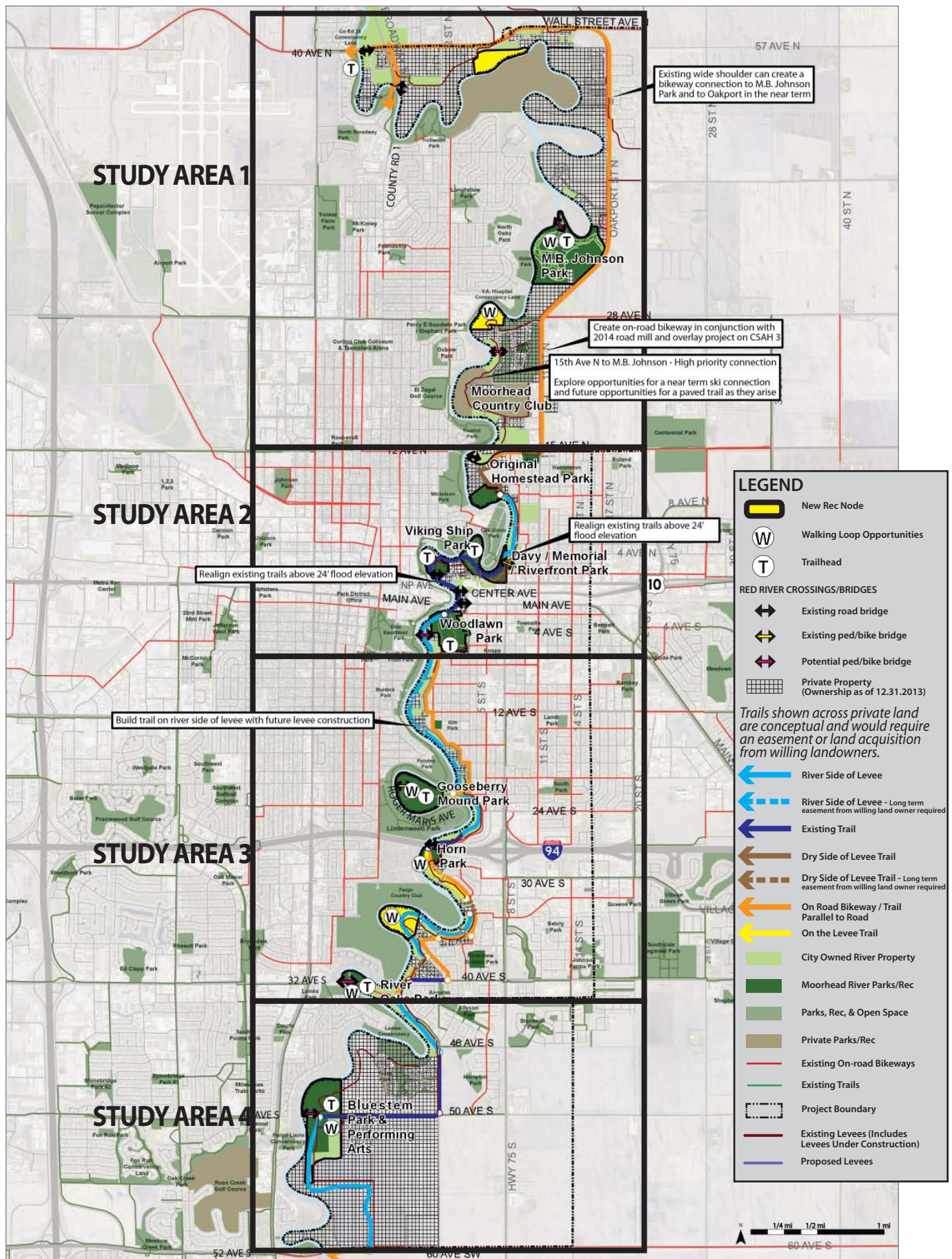
An attractive riverfront that contributes positively to property values, a connected trail system, vibrant recreation areas, restored natural landscape, and interpretation are key features of the Moorhead River Corridor Vision. This section provides recommendations and projects needed to achieve the vision.

The Plan is organized by the following six topic areas:

1. Flood Protection
2. Attractive River Corridor
3. Connectivity
4. Recreation
5. Habitat Enhancement and Water Quality
6. Interpretation

Each topic starts with a general, corridor wide discussion followed by specific projects, as identified by a unique letter and number I.D., which are organized by study area (Figure 32).

FIGURE 28. CONNECTIVITY AND RECREATION OVERVIEW



Flood Protection

First and foremost, the River Corridor's purpose is flood protection. This Master Plan recognizes this primary role. The purpose of this Master Plan is not to describe how the corridor will function for flood protection, but how it can go beyond flood protection to be an attractive, publicly accessible, and ecologically functioning community asset. All recommendations in this Master Plan support flood protection.

Attractive River Corridor

The purpose of an attractive River Corridor is to create a place that is aesthetically pleasing and is an asset to the surrounding neighborhoods and larger community. This includes clarifying policy on public landholdings and clearly delineating public and private property.

LAND HOLDINGS

The acquisition of property by the City of Moorhead, and subsequent construction of flood mitigation infrastructure, has created remnants of parcels that are not required for flood mitigation purposes or other public River Corridor uses. The sale or lease of these parcel remnants reduces the public cost for on-going maintenance and, if sold and combined with abutting properties, may provide opportunities to increase private property values and augment the City's property tax base. The following objectives are critical to the decision of leasing or selling these remnant public land holdings:

- » Maintain the integrity of the City's flood mitigation infrastructure.
- » Maintain unrestricted access to deploy temporary measures needed to implement the City's emergency flood plan.
- » Maintain neighborhood character and discourage absentee ownership or lease of remnant parcels.
- » Discourage additional private development and/or construction in areas not protected up to the standards of the City's flood mitigation goals.
- » Maintain public ownership of properties identified as part of this Master Plan for public use areas within the River Corridor.

Many, if not all, of the parcel remnants were part of a larger parcel acquired with State of Minnesota grant funding. The terms of the grant agreement do not allow sale or lease of property acquired with grant funds. Therefore, the sale or lease of parcel remnants has a budgetary impact on flood mitigation funding that must be considered by the City Council.

Remnant land areas should be considered for sale to adjacent land owners. Each sale must be carefully considered relative to the stated goals and to the implications of the original grant terms used to acquire the parcel. The practice of leasing public lands within the corridor should be greatly limited to circumstances where entering into such a lease will only enhance the ability of the City to achieve all of its flood mitigation goals as well as the vision for the River Corridor outlined in this Master Plan.

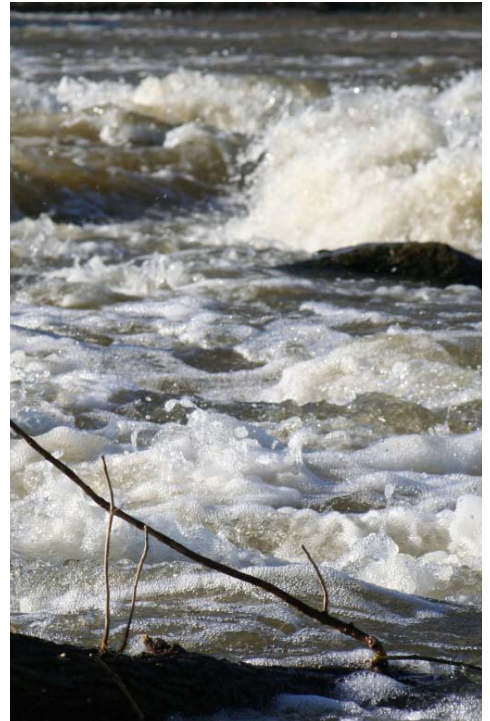


FIGURE 30. TYPICAL ROADSIDE TRAIL



FIGURE 30.1. TYPICAL RIVERSIDE TRAIL

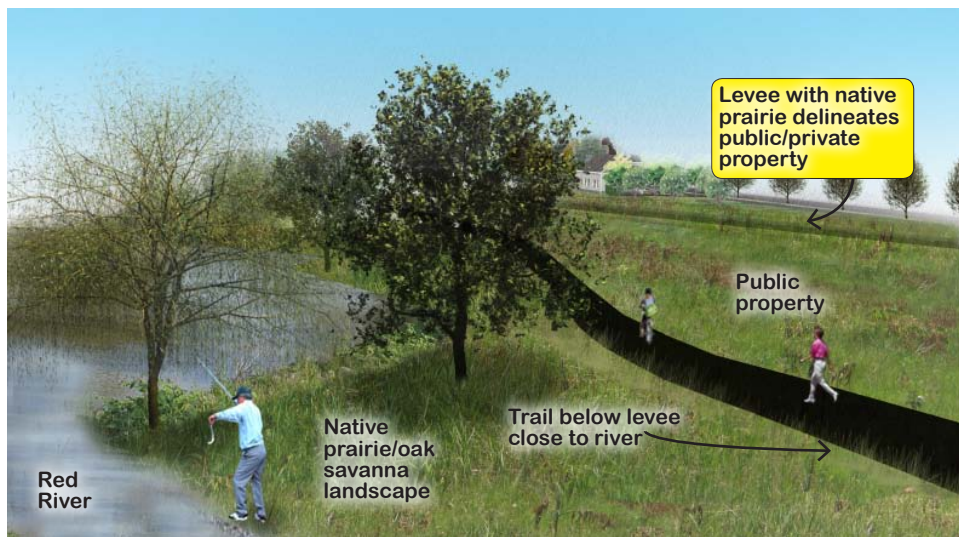
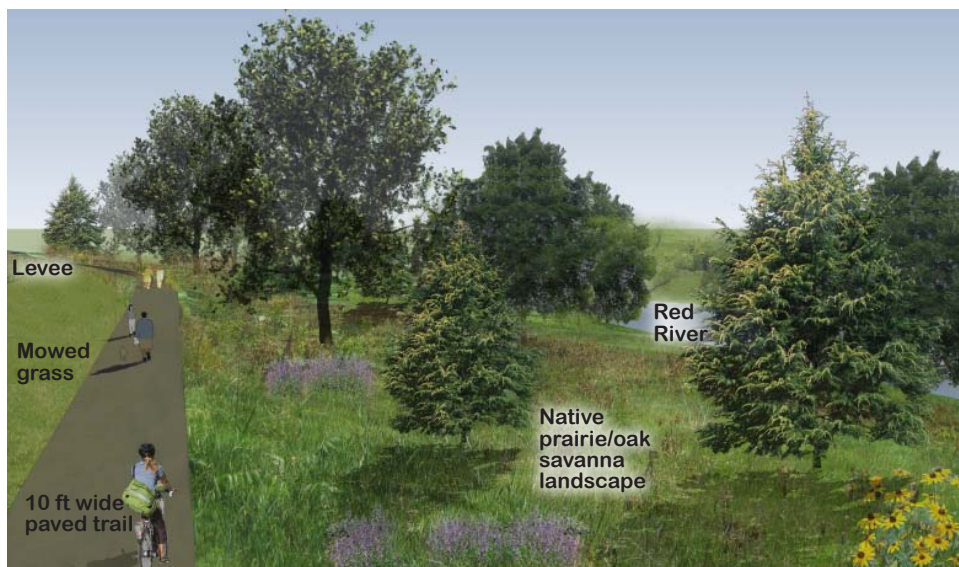


FIGURE 30.2. TYPICAL RESTORATION AREA TRAIL



UNIFIED AESTHETICS

A unified, welcoming, beautiful, and safe River Corridor will contribute positively to the attractiveness of adjacent neighborhoods and the City as a whole. Recommendations for enhancing the aesthetic value of the River Corridor include the following efforts:

- » Creating and maintaining a natural signature along the entire corridor by restoring large areas of native habitats and utilizing a native plant pallet for trees, shrubs, and garden areas in high visibility locations (at the street edge, in parks, near trails, and at public/private transitions).
- » Including 'cues to care' at the street edges and the transitions between maintained and natural areas. "Cues to care" are maintenance efforts in natural areas that make an area look cared for even when it is wild. Edge treatments, such as a two foot strip of mowed turf grass next to a prairie, brick or stone edging, trees planted in a row, or a planting pattern, can be used to show that a landscape is cared for.
- » Installing a consistent pallet of furnishings such as lighting, benches, waste receptacles, picnic tables, kiosks, etc. that unify the corridor and help support a 'sense of place'.
- » Creating unified signage that designates park names, corridor rules and regulations, and other pertinent information.

PUBLIC/PRIVATE PROPERTY DELINEATION

Clear delineation of the boundary between public and private property is needed to clarify the public realm and respect the privacy and property rights of River Corridor land owners. Two strategies are recommended for boundary delineation: installation of consistent signage and landscape buffers. Used together these techniques will create consistent and visible boundaries.

ATTRACTIVE RIVER CORRIDOR PROJECTS

CORRIDOR WIDE

A-1 DESIGN UNIFIED PROPERTY BOUNDARY SIGNAGE

Standardized property boundary signage will go a long way to reduce tension between the public and River Corridor landowners. Signage, provided by the City at property owner's request and expense, will be made of sturdy materials with consistent language and the City of Moorhead logo (Figure 32).

A-2 DEVELOP AND ADOPT LANDSCAPE BUFFER DESIGN GUIDELINES AND A LANDSCAPE BUFFER POLICY

Buffering tools and techniques can be customized to individual property owners along the corridor. Figure 32 illustrates design options for public/private property delineation. These include formal landscaping, natural vegetation, and fencing. Depending on whether the property line needing to be buffered is in the front yard, rear yard, or side yard, one or more treatments may be appropriate per property.

Landscape buffer design guidelines. This plan recommends that individual landowners be allowed to install landscape buffers that comply with adopted design guidelines. All screening would be by the homeowner at their own expense, must follow City adopted design guidelines, and be approved by the City of Moorhead Planning Department.

FIGURE 31. TYPICAL TRAIL EDGE BETWEEN PRIVATE PROPERTY AND RIVER EDGE

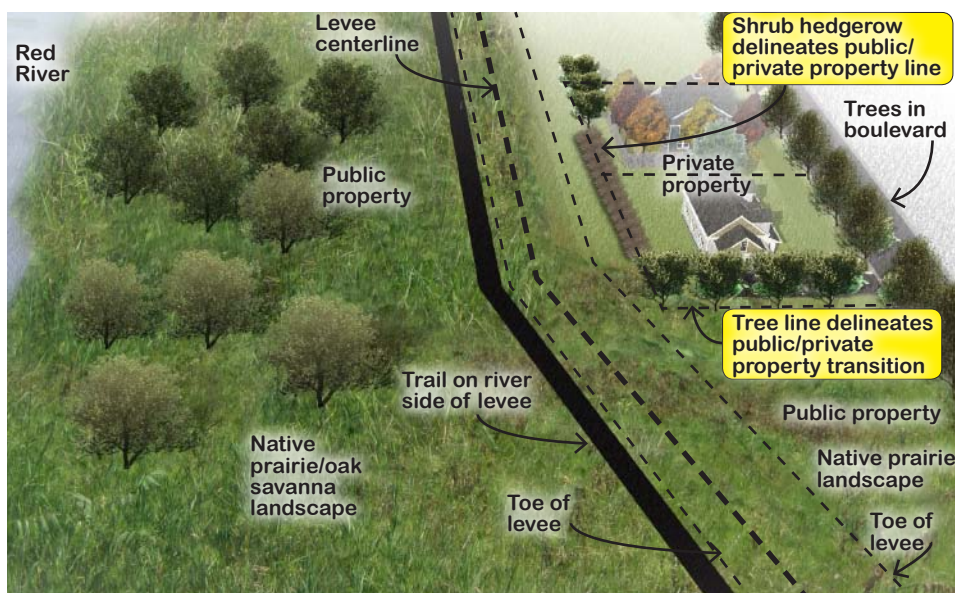


FIGURE 31.1. TYPICAL DELINEATION BETWEEN PUBLIC AND PRIVATE PROPERTY

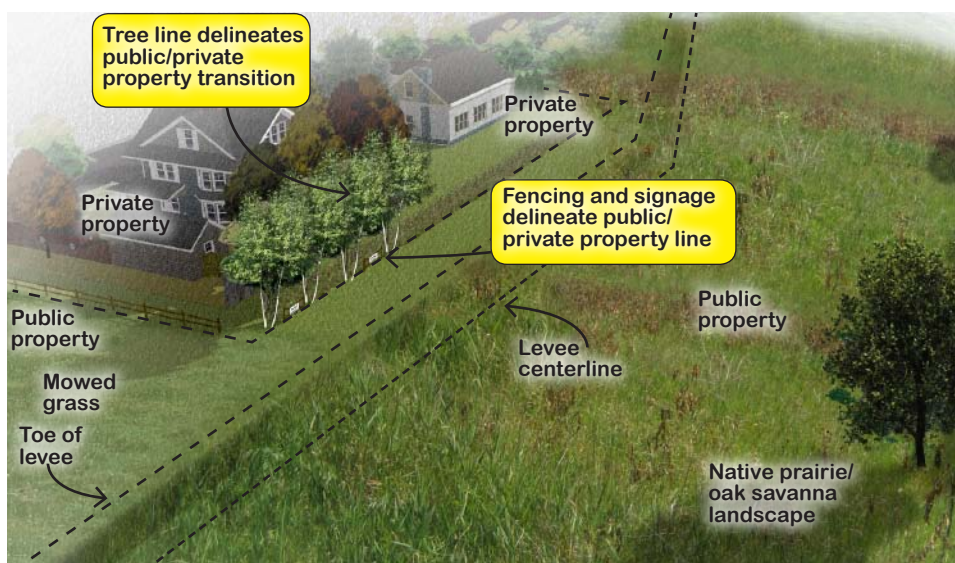


FIGURE 31.2. TYPICAL TRAIL EDGE BETWEEN PRIVATE PROPERTY AND ROAD EDGE

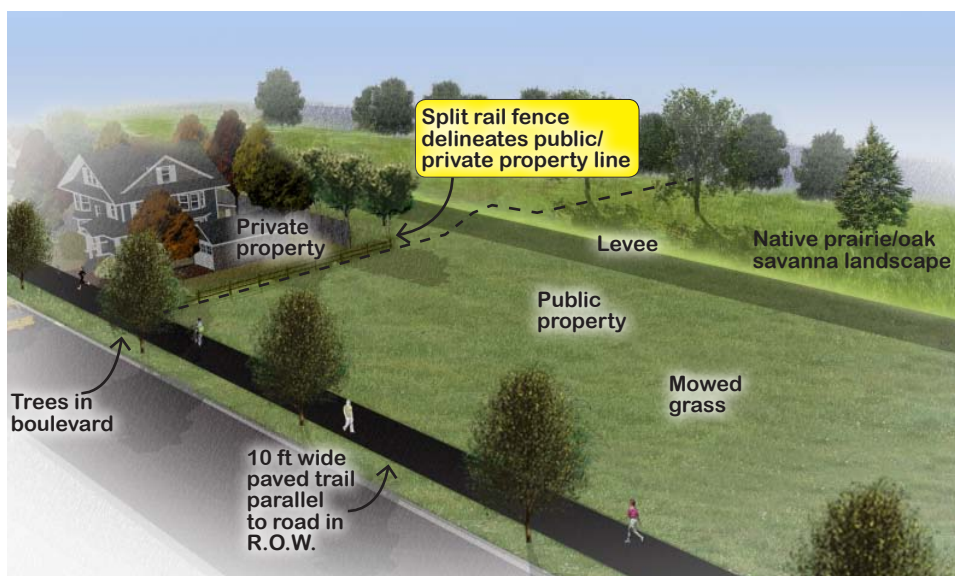


FIGURE 32. PROPOSED SIGN DESIGN

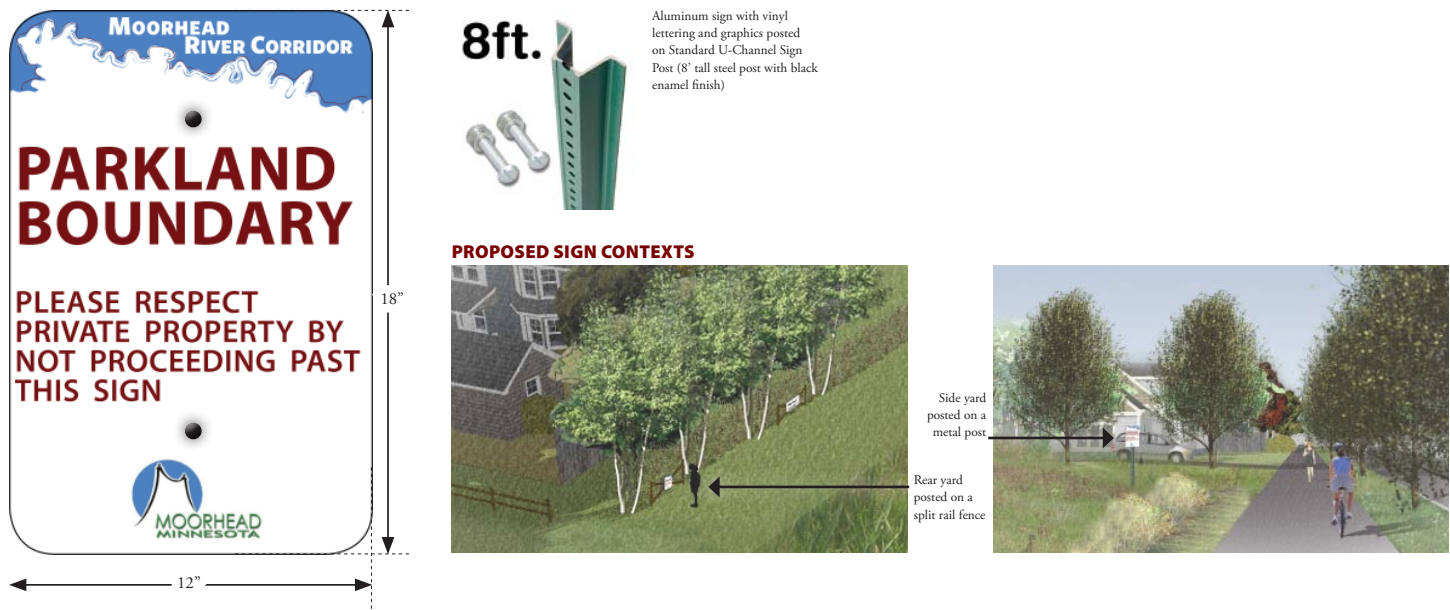










FIGURE 32.1. TOOLS AND TECHNIQUES FOR DELINEATING PUBLIC AND PRIVATE PROPERTY

Public/Private Transition	MOWED LAWN / FORMAL LANDSCAPING	NATURAL VEGETATION	FENCING AND SIGNAGE
Public/Private transition occurs in REAR YARD	<ul style="list-style-type: none"> ► Mow from top of levee to property line (distance varies) 	<ul style="list-style-type: none"> ► Prairie on levee up to property line 	<ul style="list-style-type: none"> ► Fencing and/or signage delineate the property line 
Public/Private transition occurs in SIDE YARD	<ul style="list-style-type: none"> ► Mow 10 feet buffer with tree line 	<ul style="list-style-type: none"> ► Woody vegetation buffer (shrubs/trees) ► Prairie vegetation up to property line 	<ul style="list-style-type: none"> ► Fencing and/or signage delineate the property line 
Public/Private transition occurs at ROAD / STREET	<ul style="list-style-type: none"> ► Tree line and mowed turf along street 	<ul style="list-style-type: none"> ► Native vegetation with narrowed mowed turf shoulder at curb 	<ul style="list-style-type: none"> ► Does not apply

Connectivity

Connectivity refers to connecting destinations in the River Corridor as well as bringing people to the River. This section describes the bikeways, trails, and bridges needed for a fully connected River Corridor. Though a continuous trail is the long term vision, recommendations recognize that today much of the River Corridor is privately owned. Therefore, recommendations are a combination of visionary and interim measures that will create a connected corridor in the near term.

PAVED TRAILS AND BRIDGES

The visionary concept is a continuous River Corridor paved regional trail, which will serve as a recreational spine and non-motorized transportation route. The trail will be multipurpose, bituminous or concrete, and designed in line with the City of Moorhead trail standards and MnDOT trail design standards.

FIGURE 33. SECTION - TRAIL ON DRY SIDE OF LEVEE

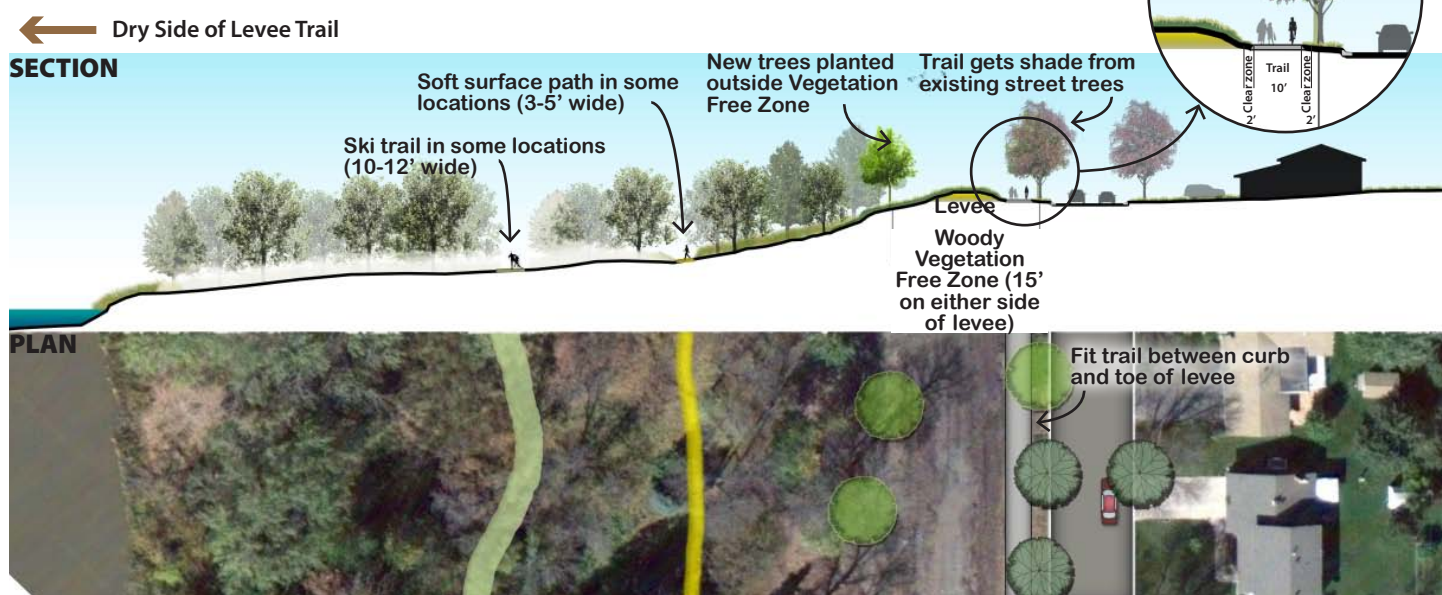


FIGURE 33.1. SECTION - ON ROAD BIKE LANE

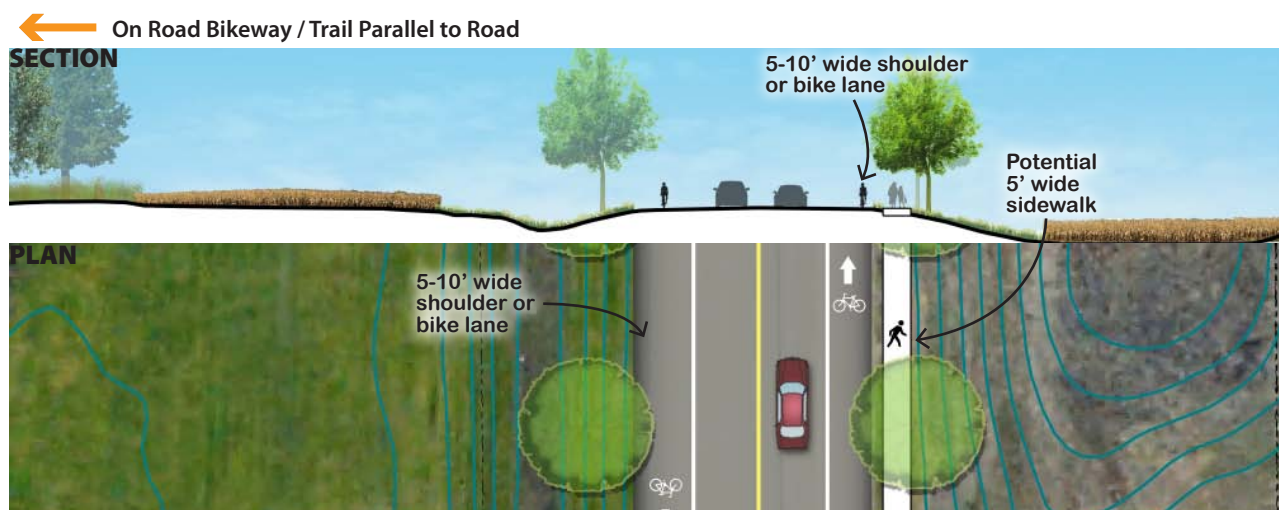


FIGURE 34. SECTION - TRAIL ON LEVEE

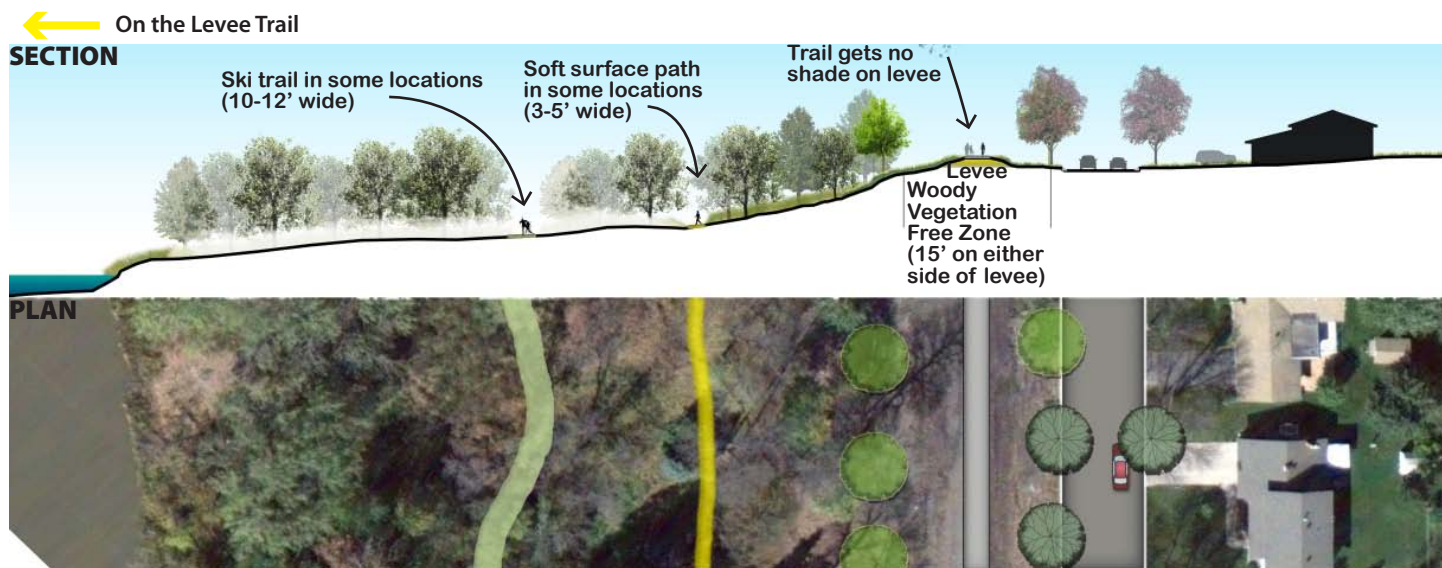


FIGURE 34.1. SECTION - TRAIL ON RIVER SIDE OF LEVEE

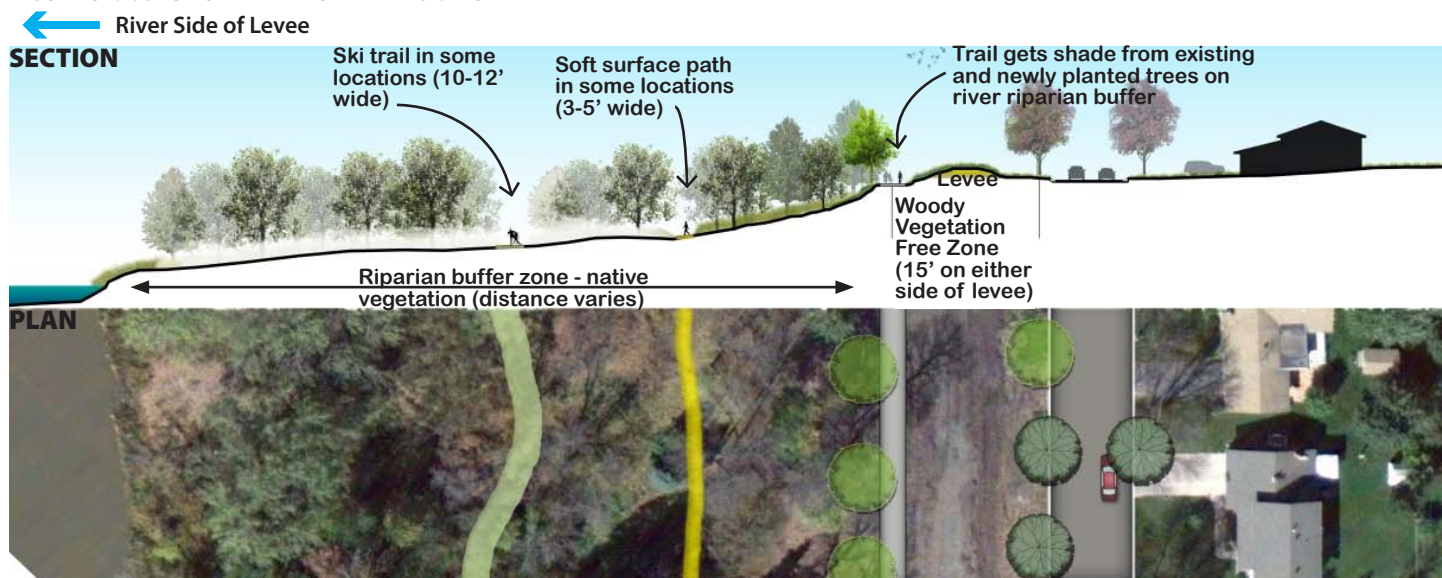


FIGURE 35. WELL MARKED TRAIL CROSSING



The trail will be designed with suitable grades and curves for multi-use recreational activities, including: walking, running, bicycling, and rollerblading. The trail may be built on the river side of the levee or the dry side of the levee. In special situations, a trail on the levee will be considered.

ROAD CROSSINGS

The inclusion of well-marked road crossings within the corridor increases the continuity of the trail experience for all users. Crossing treatments such as pavement painting and striping, different paving types, refuge islands, and signage, are suggested at the road crossings on the map in Figure 35.1.

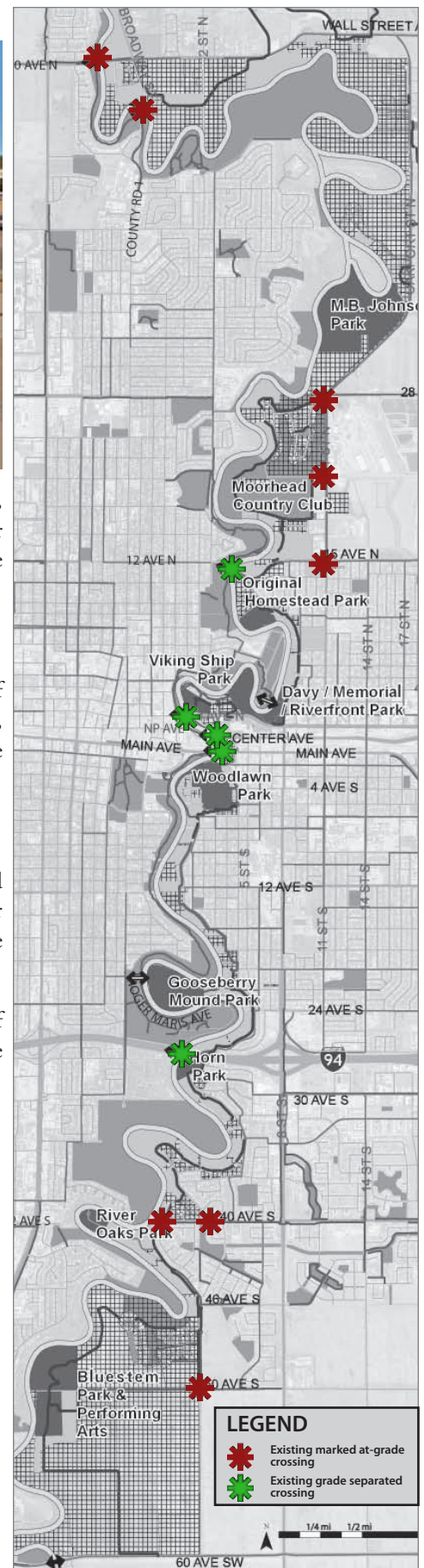
BRIDGES

Fargo and Moorhead are tightly connected communities. Many residents live in one city and work, shop, recreate, or go to school in the other. Frequent trips across the Red River occur multiple times a day. Reliable and convenient bridges support a seamless recreation experience and non-motorized commuting between the two cities.

Bridge improvements should be coordinated with corresponding trail links on both sides of the river. Priority will be placed on bridges that help to complete a continuous trail experience utilizing trails on both Fargo and Moorhead sides of the Red River.



FIGURE 35.1. ROAD CROSSINGS AND BRIDGES



WAYFINDING SIGNAGE

Wayfinding signs typically show destination, direction and distance. Signs are placed where routes change and periodically along the route. For cyclists, pavement markings can be easier to see and can be used to supplement signage. Types of wayfinding signs are described below.



Kiosk

Role: route maps, information about the destination and interpretation

Placement: trail heads and destinations such as parks



Directional Sign

Role: identify turns, route destination choices and distance.

Placement: route intersections and decision points



Route Sign

Role: identify route name and major destination

Placement: every 1/2 mile along on-road bike routes and at major intersections



Button

Role: identify bikeways

Placement: on existing street signs along bikeway



Pavement Markings

Role: identify on-road bike routes, in addition to route signs

Placement: pavement

NATURAL SURFACE: WALK, BIKE, CROSS COUNTRY SKI

Mountain biking, hiking, and cross country skiing are popular activities in Moorhead parks. Many natural surface trails exist in community and regional parks within the River Corridor. Volunteer organizations maintain many of these trails in coordination with the City of Moorhead staff partner organizations include: Prairie's Edge Nordic Skiers, and Fargo Moorhead Trailbuilders. Natural surface trails are recommended throughout the River Corridor to expand existing hiking, skiing, and off-road biking offerings. Natural surface trails are recommended close to the river (Figure 33 & 34), allowing for a more nature based experience.

As natural surface trails are less expensive and alignments are more flexible than paved trails, in many cases a natural surface trail accommodating summer walking and winter cross country skiing can be created in advance of paved trail segments. Creation of natural surface trails will in some cases require securing easements from willing landowners or, if easements cannot be secured, routing trails over the levee to the public road right of way.

RED RIVER WATER TRAIL

The Red River of the North is a designated Minnesota DNR State Water Trail. Three dams within the Fargo-Moorhead boundaries require portages, and the Gooseberry Mound Park bridge and the Memorial/Oak Grove Bridge can be barriers to watercraft depending on the water level. Any new bridge construction should accommodate boat clearance during high water.

TRAILHEADS

Trailheads will be located at all community and regional parks along the river. These parks are M.B. Johnson Park, Davy/Memorial/Riverfront Parks, Viking Ship Park, Woodlawn Park, Gooseberry Mound Park, River Oaks Park, and Bluestem Park. Trail support facilities, such as parking, wayfinding kiosks, restrooms, water, and bike racks will be shared with existing facilities in each park. In River Oaks Park, where these facilities do not currently exist, trailhead development would occur in conjunction with the addition of other community scale facilities.

Secondary trail access, including connections over levees, should be located approximately every ¼ mile. Trail access will occur at logical locations such as the intersections of major roadways, existing city trails and bikeways, and bridges. Wayfinding signage should clearly indicate access points. Other amenities, such as benches, bike racks, and water can be incorporated into trail access points where logical.

WAYFINDING

Ease of navigation throughout the Corridor is important to the experience of the River Corridor. Direct trail routes are a high priority to reduce the amount of directional and informational signage needed. At trail intersections, recreation nodes, and road crossings, unified signage will be essential to orient and inform users. Signage content should be developed in coordination with the City of Fargo, Fargo Park District, and local business organizations in order to highlight and guide corridor users to local businesses, trail connections, social and cultural destinations, recreation nodes, trail loops, and neighborhoods. Metro COG is currently undertaking a bicycle signage implementation plan for kiosks and guide signs; future River Corridor signage style should be coordinated and consistent with this effort.

CONNECTIVITY PROJECTS

CORRIDOR WIDE

C1- DEVELOP WAYFINDING DESIGN STANDARDS AND INSTALL WAYFINDING SIGNS

STUDY AREA 1

PAVED TRAIL AND BIKEWAYS

C-2 BIKEWAY – RED RIVER TO 15TH AVENUE NORTH (WALL STREET NORTH, OAKPORT ROAD NORTH AND NORTH 11TH STREET)

A connection from 15th Avenue to M.B. Johnson Park has been identified by the public as a high priority.

Near term, formal designation of the road shoulder as an on-road bikeway and wayfinding signage and pavement markings are recommended to increase awareness. The 2014 mill and overlay project for North 11th Street should include designation and striping of the bikeway on the road shoulder.

Long term, exploration of creating a side path (paved multi-use trail parallel to but separated from the road) on the west side of North 11th Street and Oakport Street North is recommended.

Most of the river land in this area is expected to remain privately owned making a river trail alignment challenging. If, in the future, ownership patterns in this area significantly change, riverside trails should be considered.

BRIDGES

C-3 NEW BICYCLE – PEDESTRIAN BRIDGE AT M.B. JOHNSON PARK

This bridge is dependent on the ability of both Fargo and Moorhead to secure funding and create trail connections along the river.

C-4 NEW BICYCLE – PEDESTRIAN BRIDGE NORTH OF MOORHEAD COUNTRY CLUB PERPENDICULAR TO NORTH RIVER DRIVE

This bridge is dependent on the ability of both Fargo and Moorhead to secure funding and create trail connections along the river.

NATURAL SURFACE TRAILS

C-5 BRIDGE OVER SNAKY CREEK

Relocation of the former Gooseberry Mound Park Bridge over the Snaky Creek in M.B. Johnson Park will provide access to expanded mountain biking and cross country ski trails.

C-6 CROSS COUNTRY SKI EXPANSION SOUTH OF M.B. JOHNSON PARK

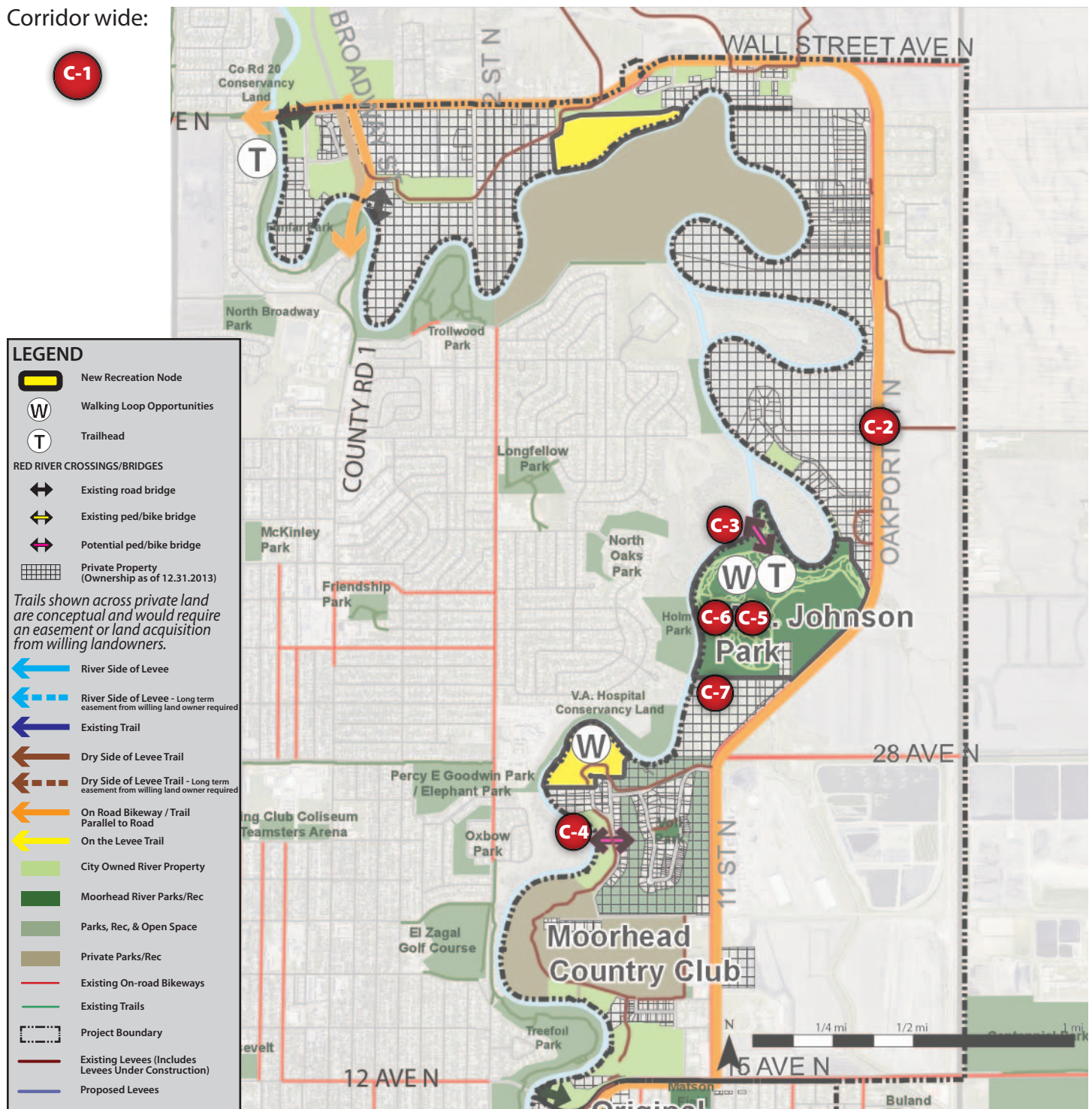
Expansion of the cross country ski network south of Snaky Creek to the Moorhead Country Club is recommended in cooperation with the Prairie's Edge Nordic Skiers, Riverside Cemetery, and Moorhead Country Club.

C-7 MOUNTAIN BIKE TRAIL EXPANSION SOUTH OF SNAKY CREEK WITHIN M.B. JOHNSON PARK

Expansion of the mountain bike trail network south of Snaky Creek within M.B. Johnson Park is recommended in cooperation with Fargo Moorhead Trailbuilders.

FIGURE 38. CONNECTIVITY AND RECREATION PROJECTS STUDY AREA 1

Corridor wide:



STUDY AREA 2

PAVED TRAIL AND BIKEWAYS

C-8 & C-8.1 BIKEWAY BETWEEN 15TH AVENUE NORTH AND HOMESTEAD PARK

Between 15th Avenue North and Homestead Park near term and visionary options exist.

- » C-8 On-road Bikeway - today, an on-road bikeway is possible on 11th Avenue N. and 13th Avenue N. connecting to the existing paved trail on 15th Avenue North between the Toll Bridge and 9th Street North. The existing 15th Avenue North trail is only 6-8 feet wide and in disrepair and should be rebuilt to meet regional trail standards, and can be used to connect to the suggested bikeway on 11th Street North.
- » C-8.1 Riverside Trail - to fully realize the vision for connectivity, a paved, river side trail is recommended between Homestead Park and 15th Avenue North. There are currently residential homes in this area that are expected to remain. A paved trail here will only be possible if easements from willing landowners can be acquired above the 24 foot flood elevation.

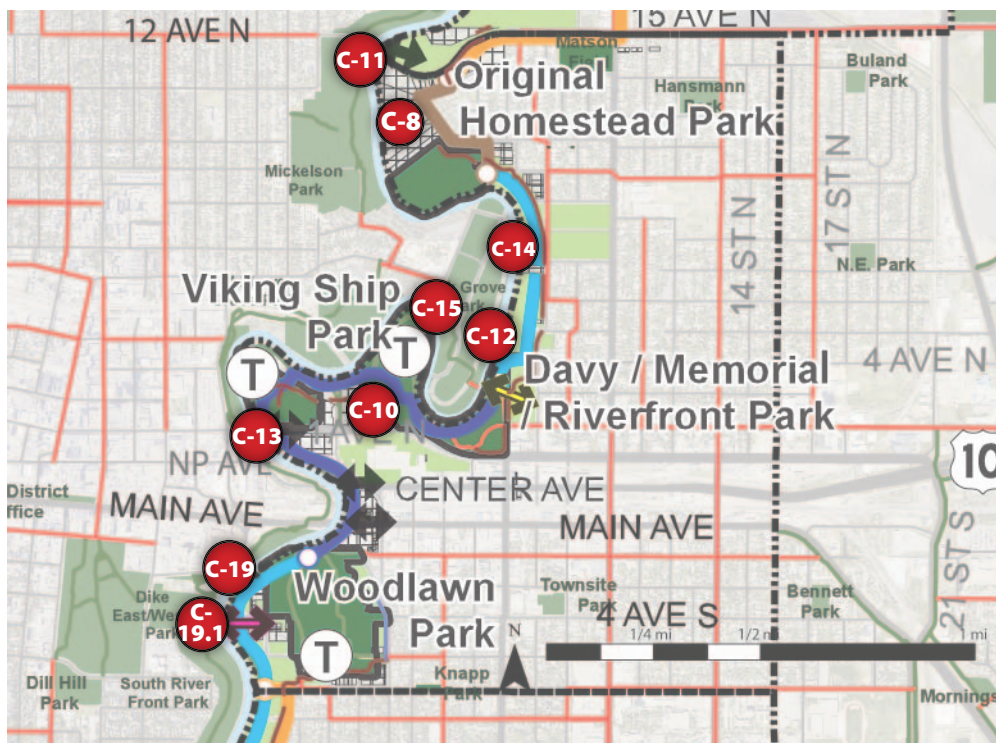
C-9 PAVED TRAIL HOMESTEAD PARK TO DAVY/MEMORIAL PARK

The City owns most of the property along the Red River between Original Homestead Park and Davy/Memorial/Riverfront Park. A paved regional trail is recommended on the river side of the levee in this location. Three private homes currently exist south of Original Homestead Park. A trail easement should be explored with landowners or the trail can be routed within the street right-of-way.

C-10 RECONSTRUCT PAVED TRAILS FROM DAVY/MEMORIAL PARK TO WOODLAWN PARK

A paved, multipurpose trail exists through Davy/Memorial/Riverfront Park, Viking Ship Parks, and Woodlawn Park. In several areas this trail is heaving and shifting and will be realigned above the 24 foot flood elevation.

FIGURE 39. CONNECTIVITY AND RECREATION PROJECTS STUDY AREA 2



BRIDGES

C-11 15TH AVENUE NORTH TOLL BRIDGE IMPROVEMENTS

This bridge forms an important connection between Moorhead and existing trails in Fargo. It is recommended that this bridge be improved with a dedicated, separate pedestrian and bicycle zone with future reconstruction.

C-12 REPLACE MEMORIAL/OAK GROVE BRIDGE

C-13 PEDESTRIAN AND BICYCLE IMPROVEMENT TO 1ST AVENUE BRIDGE

Improvements to the 1st Avenue North bridge for pedestrian and bicycle comfort and safety will facilitate connections between Downtown Fargo and the Hjemkomst Center.

NATURAL SURFACE TRAIL PROJECTS

C-14 NATURAL SURFACE HIKING AND CROSS COUNTRY SKI TRAIL FROM HOMESTEAD PARK TO DAVY/MEMORIAL PARK

A summer hiking/winter cross country ski trail is recommended. Easements or agreement from willing landowners would be required at private properties.

C-15 REALIGN CROSS COUNTRY SKI TRAILS IN DAVY/MEMORIAL PARK, RIVERFRONT PARK AND VIKING SHIP PARK

This project will be completed in conjunction with realignment of the paved trails in these parks. Care will be taken to reduce paved trail/ski trail crossings.

STUDY AREA 3

PAVED TRAIL AND BIKEWAYS

C-16 AND C-16.1 PAVED TRAIL FROM WOODLAWN PARK TO GOOSEBERRY MOUND PARK

- » C-16 in the near term an on road bikeway is recommended on River Drive and 4th Street South
- » C-16.1 to complete the vision for the corridor, a multi-purpose, paved trail connection between Woodlawn Park and Gooseberry Mound Park is recommended on the River Side of the corridor. At time of implementation, easements or agreement from willing landowners would be required at private properties.

C-17 PAVED TRAIL FROM GOOSEBERRY MOUND PARK TO HORN PARK

From Gooseberry Mound Park south to Horn Park a paved trail is recommended on the river side of the levee. Challenges in this area include steep slopes associated with the levee, swale/ backwater south of the Interstate, and one private property. More detailed, feasibility level study is needed here to assess best trail location and potential for a boardwalk over the low areas. At I-94, a paved trail exists under the Interstate.

C-18 PAVED TRAIL FROM HORN PARK TO RIVER OAKS PARK

Steep slopes and private land ownership pose significant challenges to paved trail construction from Horn Park to 40th Avenue South for the foreseeable future. In the near term, an on road bikeway is suggested using Rivershore Dr. S. and 37th Avenue South and 4th Street South. To complete the vision for a continuous paved trail along the river, options shown in Figure 41 should be explored.

From between 37th and 39th Avenue South to River Oaks Park, a combination of existing trails, paved trail on the dry side of the levee and on road trail are recommended.

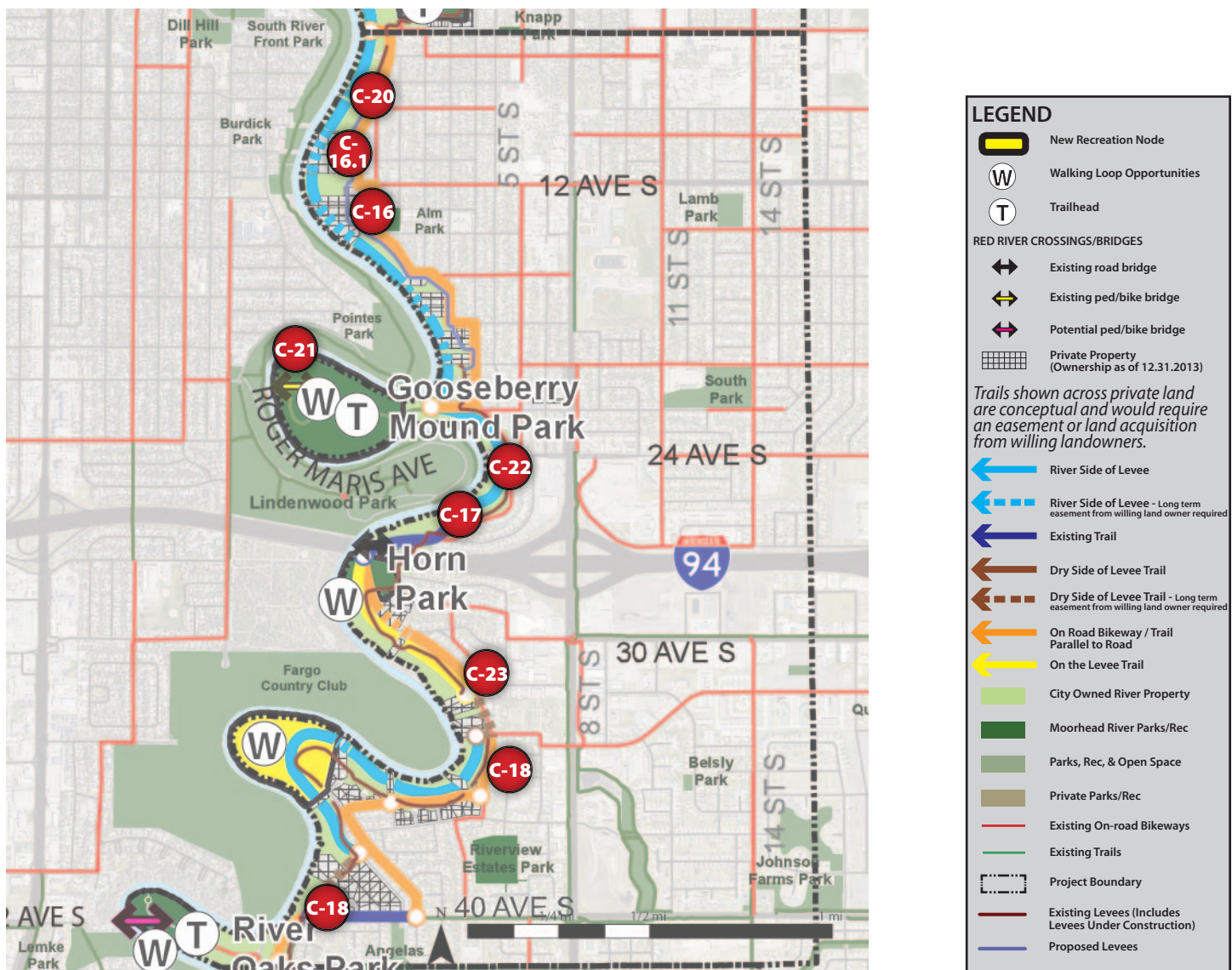
BRIDGES

C-19 & C-19.1 PEDESTRIAN AND BICYCLE BRIDGE FROM WOODLAWN PARK TO DIKE EAST PARK IN FARGO

Near term and visionary solutions are recommended for this crossing.

- » C-19 In the near term, relocate the floating bridge upstream to more stable soils.
- » C-19.1 Long term, replace the bridge with a permanent structure.

FIGURE 41. CONNECTIVITY AND RECREATION PROJECTS STUDY AREA 3



NATURAL SURFACE TRAIL PROJECTS

C-20 NATURAL SURFACE CROSS COUNTRY SKI/HIKING TRAIL FROM WOODLAWN PARK TO GOOSEBERRY MOUND PARK

Today, a significant amount of private property exists in this area. A continuous natural surface trail is dependent on acquisition of private properties for flood mitigation.

C-21 HIKING LOOP IN GOOSEBERRY MOUND PARK

A natural surface hiking loop at the river's edge is recommended.

C-22 CROSS COUNTRY SKI/HIKING TRAIL FROM GOOSEBERRY MOUND PARK TO HORN PARK

Only one private property remains in this area. A use agreement or easement should be explored with the landowner. If the landowner is not willing, a hiking trail can be routed around this property and ski trails should be expanded from Gooseberry Mound Park as far as this property.

C-23 CROSS COUNTRY SKI/HIKING TRAIL FROM HORN PARK TO RIVER OAKS PARK

This area contains several privately owned homes and access issues that would make continuous trails difficult in the near term, but hiking trails can be extended from each park until private property is reached.

STUDY AREA 4

PAVED TRAIL AND BIKEWAYS

C-24 PAVED TRAIL FROM RIVER OAKS PARK TO 46TH AVENUE SOUTH

A paved trail is recommended on the river side of the levee. There is an existing trail easement in this area but, as long as private properties exist along the river, it is likely the existing trail on the east side of South River Haven Drive will be used.

C-25 PAVED TRAIL FROM 46TH AVENUE SOUTH TO BLUESTEM PARK

The existing trail on South River Haven Drive and 50th Street South will be used. If in the future, the Tessa Terrace Development is interested in a public, riverside trail, the City will consider the opportunity.

C-26 BLUESTEM PARK TO 60TH AVENUE SOUTHWEST

A trail along the recently constructed levee is recommended.

BRIDGES

C-27 NEW PEDESTRIAN AND BICYCLE BRIDGE AT RIVER OAKS PARK -OR-

C-28 NEW PEDESTRIAN AND BICYCLE BRIDGE AT BLUESTEM PARK

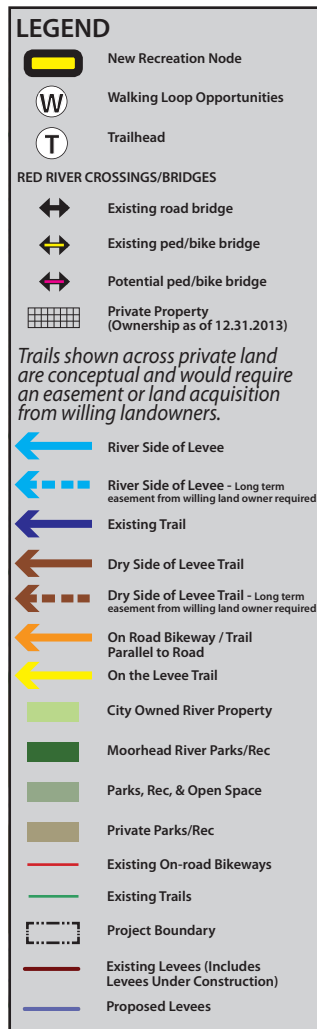
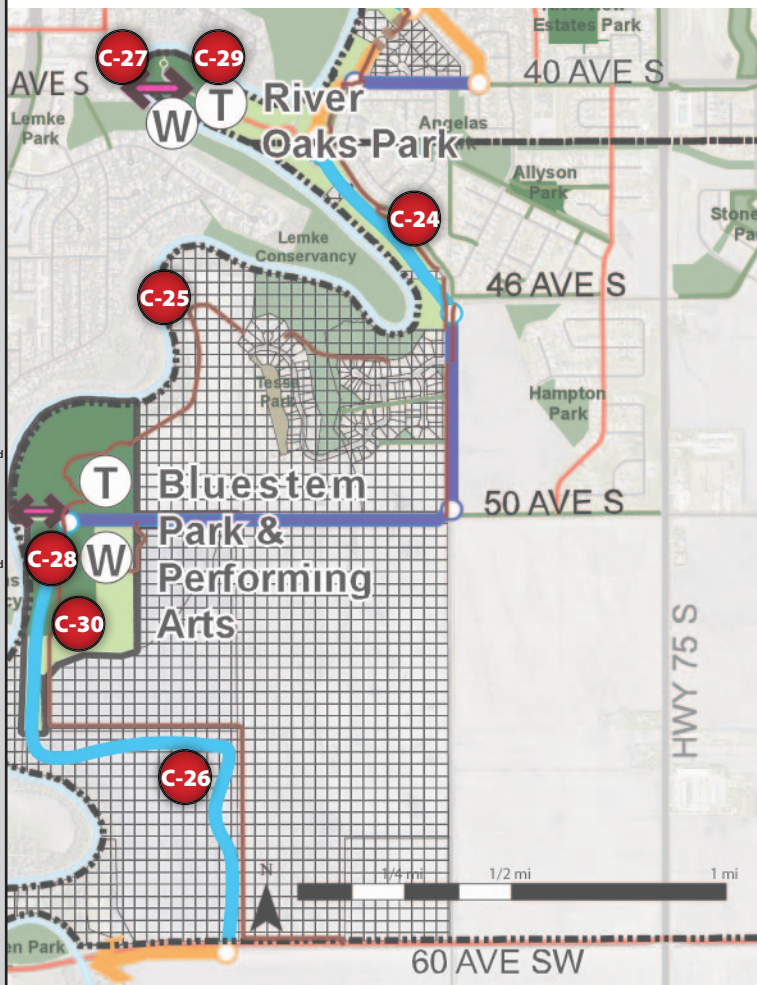


FIGURE 42. CONNECTIVITY AND RECREATION PROJECTS STUDY AREA 4



NATURAL SURFACE TRAIL PROJECTS

C-29 CROSS COUNTRY SKI/HIKING TRAIL IN RIVER OAKS PARK

Hiking trails and ski trails are recommended within the park and north and south of the park on public land.

C-30 CROSS COUNTRY SKI/HIKING TRAILS WITHIN BLUESTEM PARK

Work with the Trollwood Performing Arts School to develop a natural surface trail loop in Bluestem Park.

Recreation Plan

Today, the River Corridor contains a concentration of regional and community parks. The River and its natural resources create an idyllic setting for hiking, cross country skiing, picnicking, and other recreation pursuits. The future vision for existing parks, along the River Corridor is to enhance what is already there. The aim is to make parks more distinct from each other in their recreational offerings and character. In addition, three new recreation nodes are recommended to provide more opportunities to interact with the river. All River Corridor Parks are envisioned to have:

- » Simple and well-constructed facilities;
- » Low maintenance, natural landscapes;
- » Ecologically-stable riverbank treatments;
- » Flexible turf areas for sports, picnicking and special events; and
- » Four-season recreation.

The focus for each River Corridor Park is summarized below.

- » **M.B. Johnson Park (Regional Park)** will be a center for mountain bike trails, and a hub for winter recreation, including: the winter festival, ice skating, and cross country skiing.
- » **Original Homestead Park (Neighborhood Park)** will focus on historical interpretation of the Bergquist Cabin, ecological restoration, and passive outdoor recreation.
- » **Davy/Memorial/Riverfront and Viking Ship Parks (Community Parks)** In keeping with their location between the Fargo and Moorhead Downtowns, focus will be on regional attractions, community gatherings and events, high quality park amenities, historical interpretation, these parks will have more manicured/higher maintenance landscaping than other parks along the River.
- » **Woodlawn Park (Community Park)** will be an extension of the downtown parks with activities that have a community-wide draw, including the possibility of a performance space.
- » **Gooseberry Mound Park (Community Park)** will continue to serve as a location for picnicking and outdoor gatherings, unique children's play area and bridge connection to Fargo. This park can become a neighborhood facility and winter cross country ski hub if warming house facilities can be shared with Fargo's Lindenwood Park.
- » **Horn Park (Neighborhood Park)** will be a passive park focusing on natural restoration.
- » **River Oaks Park (Community Park)** will have a natural resource focus.
- » **Bluestem Park (Regional Park)** will continue to be the hub for summer events and expand into a southern hub for winter recreation in partnership with Trollwood Performing Arts School.

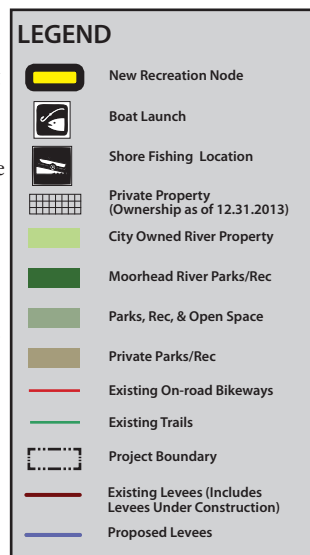


FIGURE 43. REC NODES & PARK IMPROVEMENTS

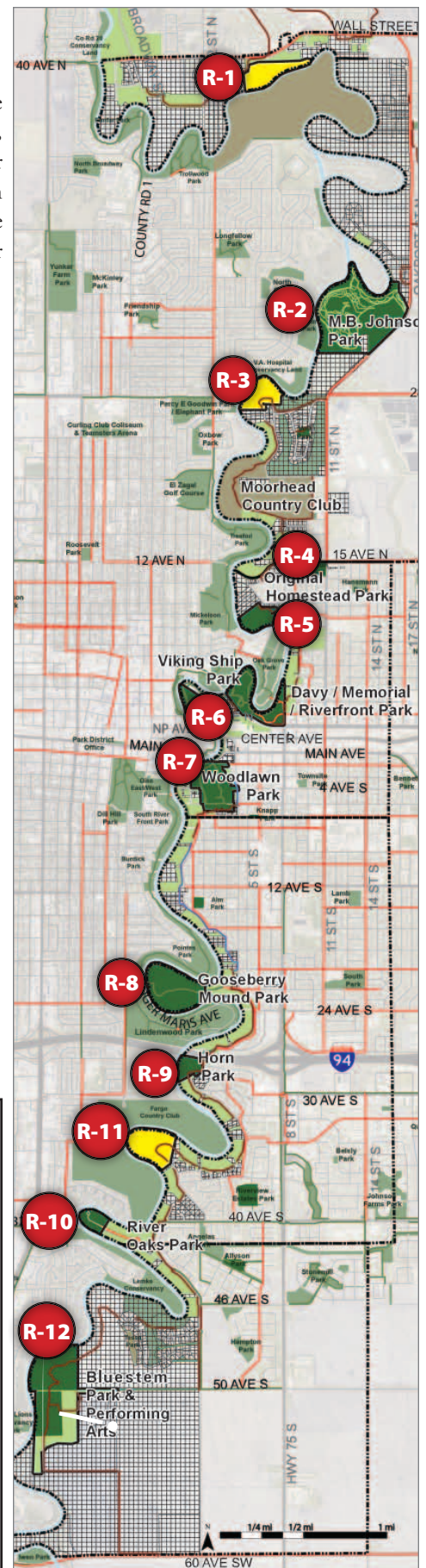


FIGURE 44. NEW RECREATION NODE PLAN (R-1)

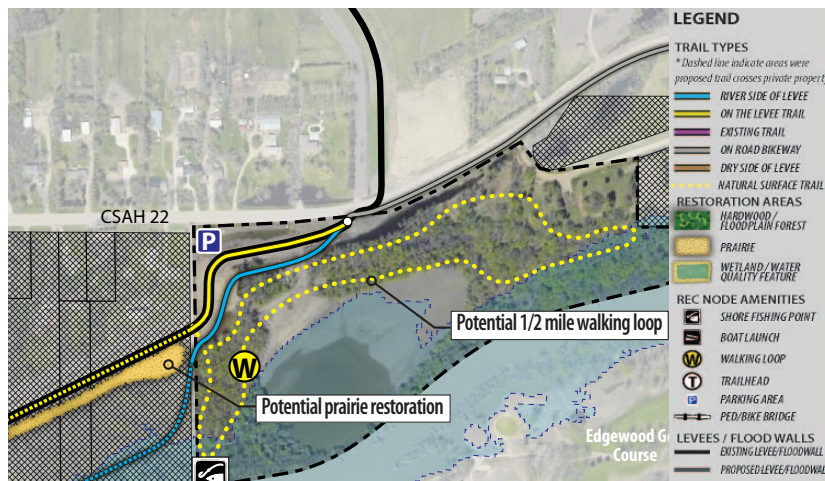


FIGURE 44.1. M.B. JOHNSON PARK PLAN

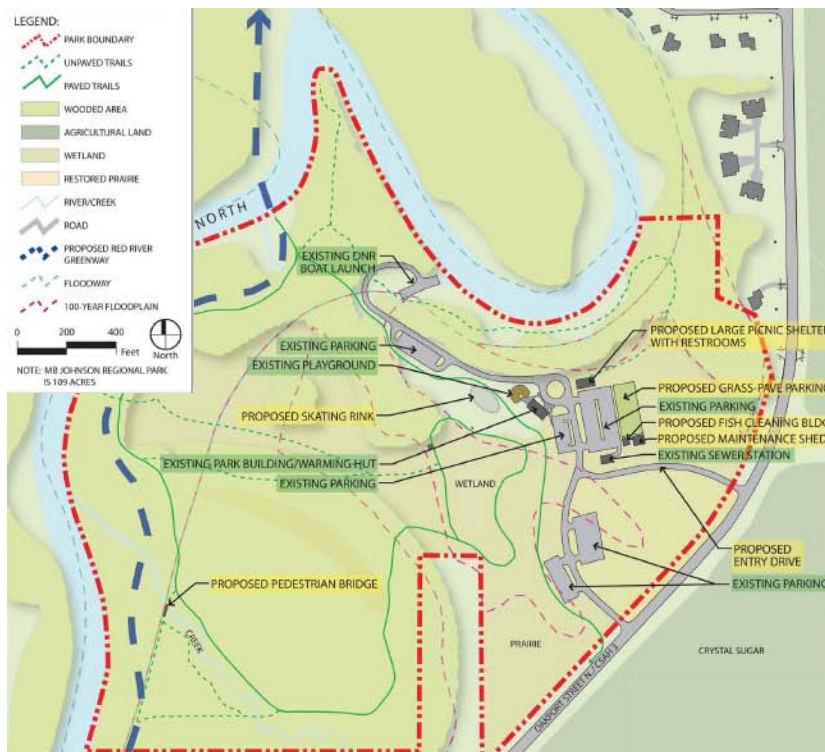


FIGURE 44.2. NEW RECREATION NODE PLAN (R-3)



RECREATION PROJECTS

STUDY AREA 1

R-1 NEW RECREATION NODE ON BUFFALO - RED RIVER WATERSHED LAND

A new recreation node is proposed on this land. Improvements will include prairie restoration, half mile walking loop, and a connection to the bikeway on CSAH 22.

R-2 IMPROVEMENTS TO M.B. JOHNSON PARK

This regional park will be improved according to its 2012 Master Plan. Improvements include: ice skating rink, fish cleaning station, new picnic shelter with restrooms, expanded parking, new maintenance shed, and expanded hiking and mountain biking trails south of Snaky Creek. Expansion of cross country ski trails south of the park to Moorhead Country Club Golf Course are a possibility (requires easements from willing landowners). In addition, if trail connections on the Fargo side of the river are built, there is potential for a ped/bike/ski bridge over the river that would allow cross-country skiing to Edgewood Golf Course in Fargo.

R-3 NEW RECREATION NODE NORTH OF MOORHEAD COUNTRY CLUB

A new recreation node is proposed on the City land at N. River Drive north of Moorhead Country Club. Improvements include: forest/floodplain forest restoration, half mile nature trail, and river access.

R-4 DNR CANOE PORTAGE AND PARKING IMPROVEMENTS 15TH AVENUE NORTH

The DNR has indicated they will be redesigning and rebuilding the flood damaged parking area and portage.

STUDY AREA 2

R-5 IMPROVEMENTS TO ORIGINAL HOMESTEAD PARK

The focus of this park, containing the historic Bergquist Cabin, will be interpretation. Other improvements include: paved regional trail link and a natural surface hiking/ski link to Davy/Memorial/Riverfront Parks, and expanded historical interpretation.

R-6 IMPROVEMENTS TO VIKING SHIP/DAVY/MEMORIAL/RIVERFRONT PARKS

These downtown parks will continue to provide community and regional scale activities. Other potential improvements include: disc golf expansion connected to Fargo's Oak Grove Park disc golf course, replacement of the Oak Grove/Memorial bicycle and pedestrian bridge, trailhead facilities including upgraded recreation center, expanded place based historic interpretation, upgraded and realigned paved trail, restored riparian shoreline, and small water quality or rain garden features.

R-7 IMPROVEMENTS TO WOODLAWN PARK

Possible future redevelopment of the power plant site, along with the potential for park expansion to include land acquired for flood mitigation has sparked community interest in this park. In addition, frequent flooding has left some of the facilities, such as the baseball field and courts in poor condition.

It is recommended the City prepare a master plan specifically for this park, the power plant site, and newly acquired flood mitigation properties. As part of that plan, the following improvements should be explored:

- Replacement of the floating bridge with permanent bridge upstream
- Natural surface trails
- Restored natural areas
- The potential to create a lake in low areas
- An amphitheater
- Gardens in partnership with the Plains Art Museum (Defiant Garden)
- Gardens and a conservatory in partnership with the Northern Plains Botanic Garden Society

FIGURE 45. IMPROVEMENTS TO ORIGINAL HOMESTEAD/VIKING SHIP/MEMORIAL/RIVERFRONT PARK PLANS (R-5 & R-6)

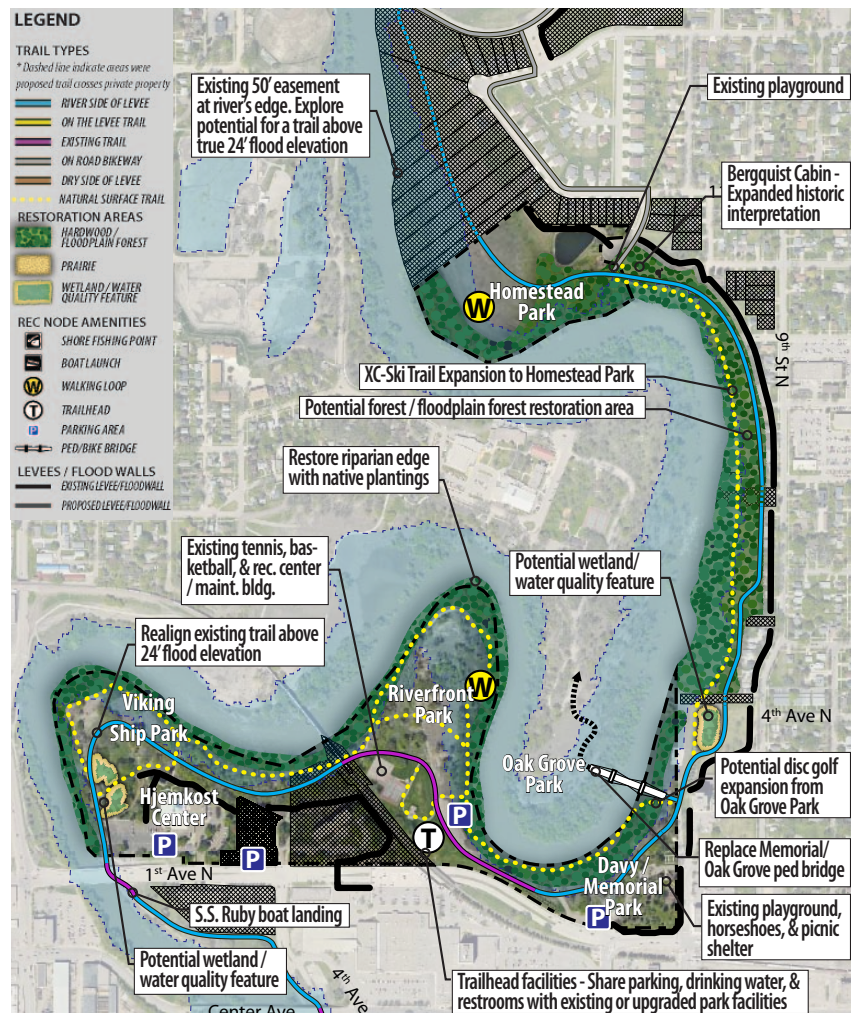


FIGURE 45.1. IMPROVEMENTS TO WOODLAWN PARK PLAN (R-7)

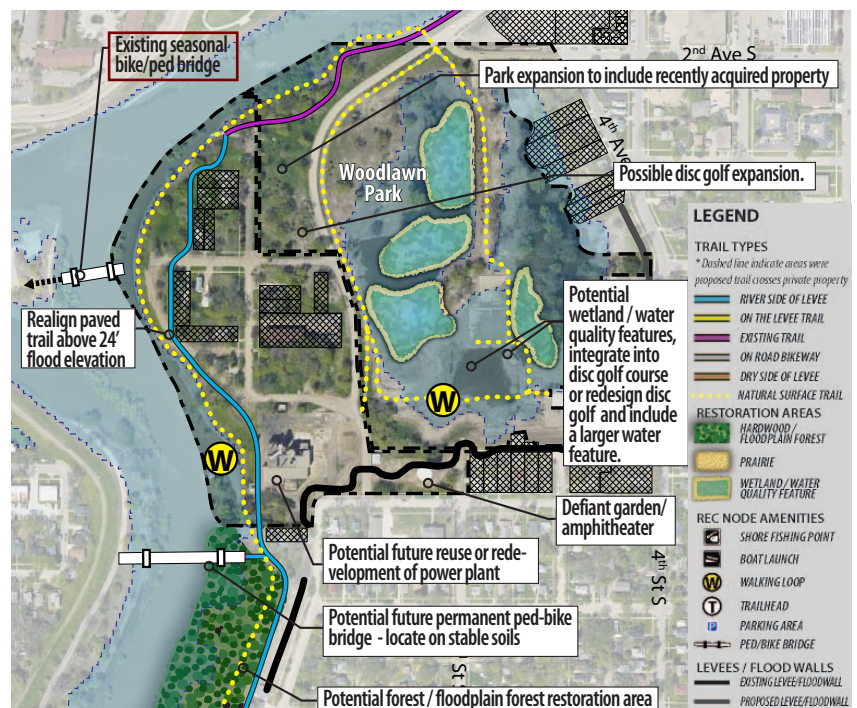


FIGURE 46. IMPROVEMENTS TO GOOSEBERRY MOUND/HORN PARK PLANS (R-8 & R-9)

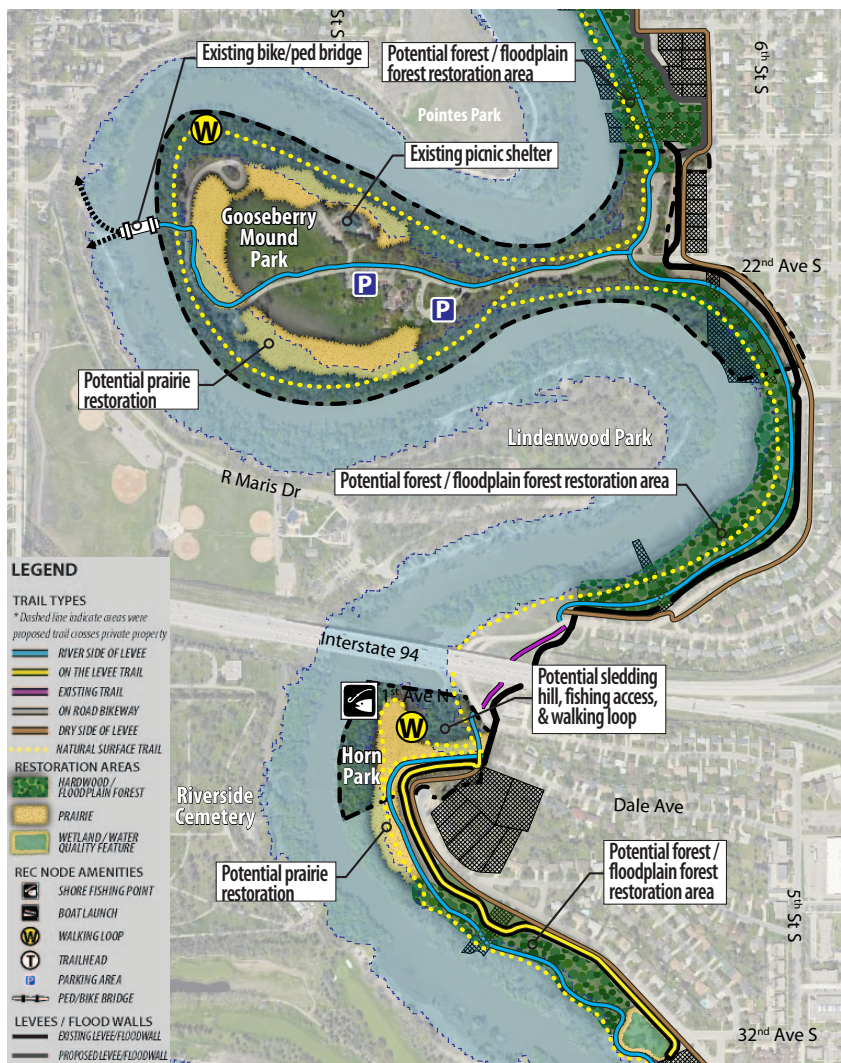
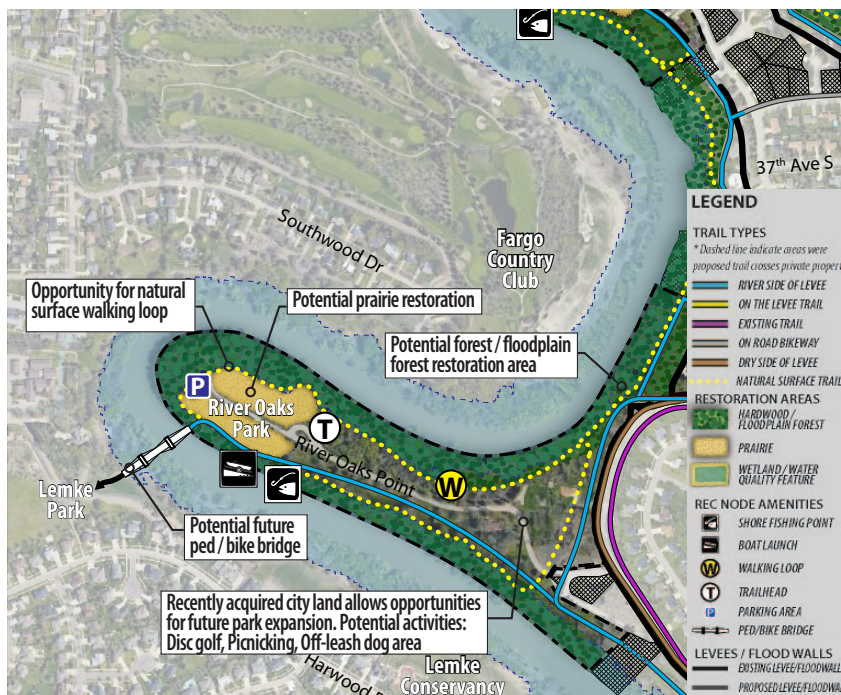


FIGURE 46.1. IMPROVEMENTS TO RIVER OAKS PARK PLAN (R10)



STUDY AREA 3

R-8 IMPROVEMENTS TO HORN PARK

Visual and physical access to this park have been reduced with the construction of flood mitigation structures. As such, focus of this park will be on passive neighborhood-scale recreation. Improvements include: shore fishing access, half mile nature trail and boardwalk, and sledding hill.

R-9 IMPROVEMENTS TO GOOSEBERRY MOUND PARK

This park will continue to specialize in community-scale picnicking and river access. As cross country ski trails are expanded along the River to the north and south, the park has the potential to become a cross country ski hub, provided the warming house in Fargo's Lindenwood Park can serve both parks. Other improvements include: reconstructed entry drive and paved trail connection, natural surface walking trail at river's edge, and prairie restoration.

R-10 IMPROVEMENTS TO RIVER OAKS PARK

River Oaks Park is currently a neighborhood park, but with recent land acquisition related to flood mitigation has more than doubled in acreage. This park should be reclassified as a Community Park, recognizing that due to size and river location, it is appropriate for community-scale activities. Because road access to the park is somewhat indirect and on local streets, and the land is prone to frequent flooding, it is recommended that the focus of the park remain on passive, natural resource based activities. Potential improvements include: natural surface walking trails with river access, shoreline fishing areas, fish cleaning station, interpretive elements, improved parking area, accessible trails, picnic tables, picnic shelter, and playground. Community wide facilities such as an off leash dog area, reservation picnicking, and disc golf are also appropriate here but would require support facilities such as improved parking, water, and restrooms. River Oaks Park is a potential location for a pedestrian/bicycle bridge over the River.

R-11 NEW RECREATION NODE AT RIVERVIEW CIRCLE SOUTH

The large area of City owned open space at the end of Riverview Circle is unique in that the land is free of woody vegetation and there is a small lake between the levee and the River. The area's scenic qualities make it a desirable local destination. Improvements to this new recreation node include: shoreline fishing access, habitat restoration, nature trails, wildlife viewing opportunities and interpretation, and a potential outdoor learning lab for students and educational groups in partnership with the River Keepers.

STUDY AREA 4

R-12 IMPROVEMENTS TO BLUESTEM PARK AND EVENTS CENTER

Increased public access to this park is recommended. Improvements will be made in partnership with Trollwood Performing Arts School and have the potential to include: expanded hiking and cross country ski trails, ice skating, possible warming area in Trollwood Performing Arts School, location for events such as charity walks, and a pedestrian/bicycle bridge connection to Lions Conservancy Park in Fargo.

FIGURE 47. NEW RECREATION NODE PLAN (R11)

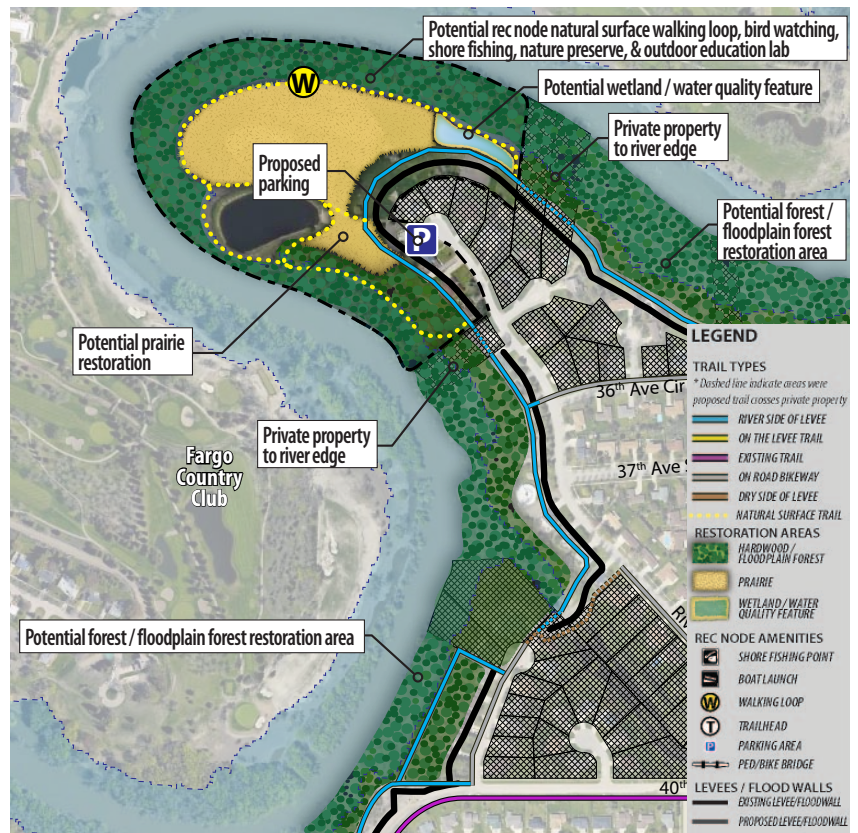
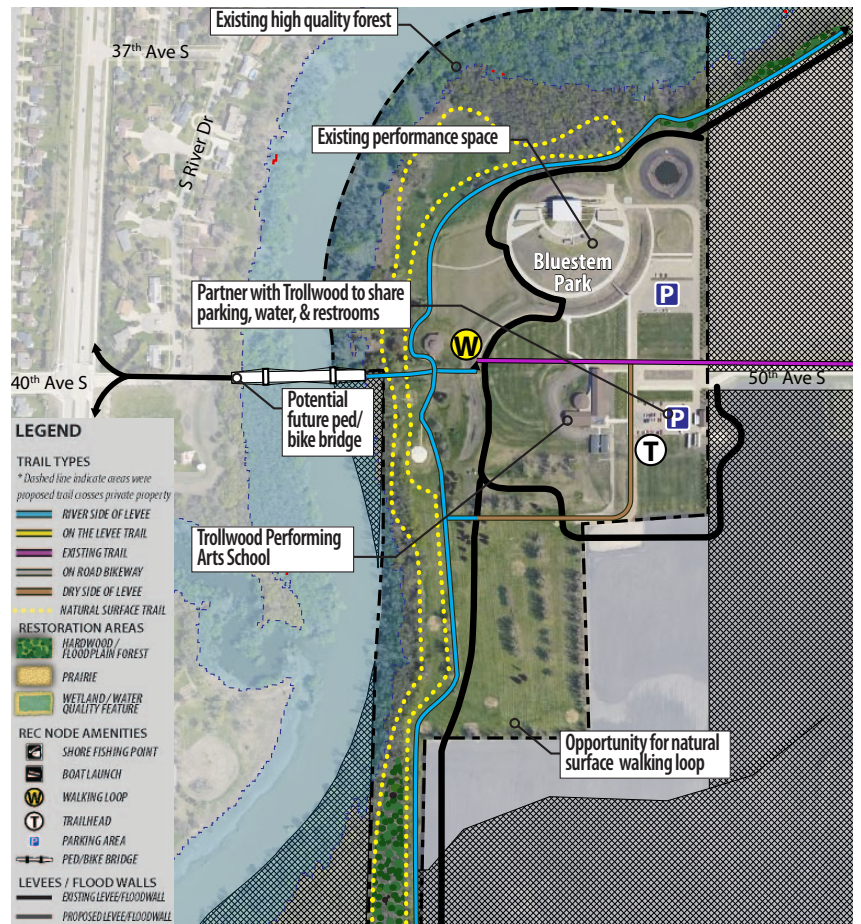


FIGURE 47.1. BLUESTEM PARK & PERFORMING ARTS PLAN (R12)



Habitat Enhancement and Water Quality Plan

HABITAT ENHANCEMENT

The primary goal of habitat enhancement is to increase the area of native vegetation through preservation and restoration, while maintaining an overall natural feel that appears cared for and intentional. Native vegetation provides several benefits including wildlife habitat, erosion and flood control, recreational opportunities, such as birding and wildflower viewing, and is an important component to the natural history of the Fargo-Moorhead area. Target restoration and preservation areas have been identified along the Red River Corridor in the Moorhead area and include restoration of habitats that are compatible with the riparian corridor and require minimal amounts of maintenance. Specifically, habitats that are proposed for restoration along the River Corridor include prairie, oak savanna, and floodplain forest. A description of each habitat type along with strategies for restoration and enhancement are below.



PRAIRIE

Prairies once covered 18 million acres of Minnesota although due to agriculture and development, only 235,000 acres of original prairie remain. The prairies of western Minnesota were tallgrass prairies that were dominated by grass species such as big bluestem and Indiangrass, as well as wildflowers such as sunflowers, blazing stars, and many aster species. Prairies were historically maintained by fire, drought, and grazing by native herbivores such as bison and elk, meaning that these types of disturbances were necessary for maintaining the vast grasslands. Without such disturbances, trees and shrubs encroach on the prairies converting them to forests.

Prairies provide a number of ecosystem services that benefit both humans and wildlife. The plants of prairies are adapted to the conditions of Minnesota, including droughts and flooding. The strong roots of these plants provide stabilization and erosion control of the soils. As prairies were the natural vegetative plant communities that once covered 1/3 of the state of Minnesota, they are important for our natural history and provide a sense of place. Prairies are important for wildlife, including many rare species such as the state-listed regal fritillary and Dakota skipper. Prairies also offer aesthetic value to our landscapes with plants in flower from the early spring to the late fall, as well as recreational birding and butterfly observation opportunities.

RECOMMENDATIONS

Several areas along the Red River Corridor in the Moorhead area are proposed to be restored to prairie, including:

- » Many areas along the corridor that were formerly residential have already been and will continue to be seeded with prairie plants by the City of Moorhead, including north and south of the Moorhead Country Club, Homestead Park, and north of River Oaks Park.
- » Restored prairie along the levees in many areas will serve as a transition between maintained turf and forested areas along the corridor and in several parks.
- » Portions of public parks including M.B. Johnson Park, Gooseberry Mound Park, and River Oaks Park.

Restoring and maintaining prairies in urban environments is relatively easy because once established, prairies require little maintenance compared to high maintenance turf which requires frequent mowing. Restoring prairies on land that has been used for other purposes, such as residential properties and areas currently maintained as turf, includes removing existing vegetation, such as turf grass or invasive species. After vegetation removal, the selected areas will be seeded with a local ecotype prairie seed mix. Because native plants are adapted to local climatic conditions, such as drought, once established they will require minimal maintenance, such as watering. During initial establishment, selective weed control will be implemented to remove invasive and undesirable species. After the prairie vegetation has become established, it should be mowed or prescribed burned every 3-5 years.

OAK SAVANNA

Oak savannas are among the rarest habitats in North America. They are a transition habitat between the tallgrass prairie and woodlands. Oak savanna is comprised of prairie plant species with a sparse canopy of trees (typically bur oak) and shrubs. Similar to prairies, oak savanna was historically maintained by fire, drought, and grazing. Without such disturbances, oak savannas would fill in with trees and become forests.

Because oak savannas are a transition habitat, they are important for both forest dwelling species as well as prairie species (including both plants and animals). For example, red-headed woodpecker, indigo bunting, eastern kingbird, and karner blue butterflies occur in oak savannas. As such, this ecosystem provides an aesthetic and accessible landscape for birding and searching for insects, such as butterflies.

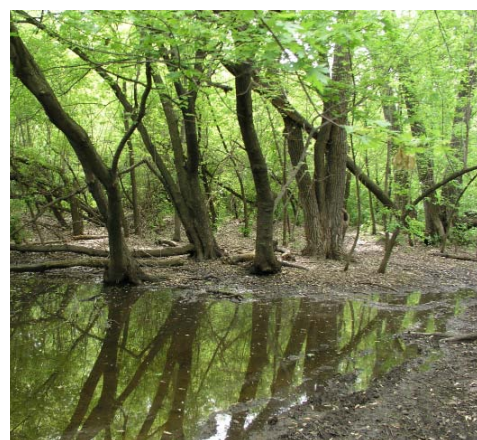
RECOMMENDATIONS

Many areas along the River Corridor have bur oak saplings that have naturally recruited. Restoring bur oak savanna in these areas would entail protecting the saplings that are already growing, by enclosing them in tubes or mesh wiring. Protecting saplings will ensure survival and growth and will eliminate costs associated with purchasing, planting, and maintaining new trees. In addition to protecting existing bur oak saplings, native prairie plants will be seeded in these areas. As mentioned above, native plants are adapted to local climatic conditions which minimize the need for watering. During establishment of native plants, selective weed control will have to be implemented. Similar to prairie, once oak savanna becomes established, maintenance is minimal, and would include mowing or prescribed burning every 3-5 years.

FLOODPLAIN FOREST

Floodplains are the broad, flat, low-lying areas at the bottom of river valleys that typically flood in spring and during periods of unseasonably high rainfall. Floodplain forests are dominated by trees such as cottonwood, silver maple, and black willow. The understory of these forests is typically sparse with many areas of bare ground due to the high frequency of flooding. These forests are important along rivers with a high frequency of flooding, such as the Red River, because the trees help stabilize the river banks and prevent excessive erosion.

Floodplain forests provide important habitat for many wildlife species, including migrating songbirds that rely on vegetative corridors. Ephemeral pools within the forest provide habitat for amphibians and invertebrates. Examples of wildlife include: wood duck, black-crowned night-heron, cerulean warbler, acadian flycatcher, warbling vireo, blue-winged warbler, prothonotary warbler.



RECOMMENDATIONS

Floodplain forests provide many public use and recreational benefits including birding during spring and fall migrations, fishing along the Red River, and dog walking and passive recreation on hiking trails. Floodplain forests occur along many parts of the Red River in the Moorhead area, especially in parks and north and south of the core urban areas of the city. Restoring and maintaining these areas would entail maintaining permanent tree cover and allowing some areas to naturally succeed back to forest. Additionally, controlling invasive species, such as buckthorn, may be required.

WATER QUALITY

Creating wetland features along the Red River Corridor will provide ecosystem services such as water storage during large rain events, improve water quality through infiltration, and provide habitat for wildlife. Wetland features include wetland restoration, rain gardens, and created wetlands. Adding wetland features will increase heterogeneity in the landscape and add interest, as well as ensure the City of Moorhead meets its stormwater management needs. Such water quality improvement projects can also provide public education opportunities.

RECOMMENDATIONS

- » Identifying areas where wetlands can be restored or water quality improvement features can be added is the first step. Recommendations for water quality improvement features include:
- » Restoring a degraded wetland at M.B. Johnson Park.
- » Wetland restoration/creation in a poorly drained area at Woodlawn Park.
- » Decentralized stormwater best management practices, such as raingardens throughout and within the fabric of the corridor and contributing drainage.
- » Finally, several stormwater outlets along the corridor serve as potential wetland feature creation sites that would improve water quality of stormwater that flows into the Red River.

Restoring existing wetlands will entail removing invasive species, such as reed canary grass and cattails, and planting native wetland plant species. Maintenance for restored wetlands will include invasive species control and monitoring establishment of native species and supplemental plantings as needed. Constructing rain gardens and created wetlands will involve dredging the target area, installing drainage and filtration systems, and planting native wetland species. Similar to restored wetlands, invasive species will have to be controlled as needed and native species establishment will have to be monitored and supplemented as necessary.



HABITAT ENHANCEMENT & WATER QUALITY PROJECTS

STUDY AREA 1

H-1 PRAIRIE/SAVANNA RESTORATION AT THE NEW RECREATION NODE ON BUFFALO RIVER WATERSHED DISTRICT LAND

Maintenance of the existing seeded area is most important followed by protection of naturally recruited tree saplings.

H-2 PRAIRIE RESTORATION AT M.B. JOHNSON PARK

H-3 WETLAND RESTORATION AT M.B. JOHNSON PARK

H-4 PRAIRIE/SUCCESIONAL FLOODPLAIN FOREST NORTH OF MOORHEAD COUNTRY CLUB

Maintenance of the existing seeded area is most important followed by protection of naturally recruited tree saplings.

H-5 PRAIRIE/SAVANNA RESTORATION NORTH OF 15TH AVENUE NORTH

STUDY AREA 2

H-6 PRAIRIE/SUCCESIONAL FLOODPLAIN FOREST BETWEEN HOMESTEAD AND DAVY/MEMORIAL PARKS

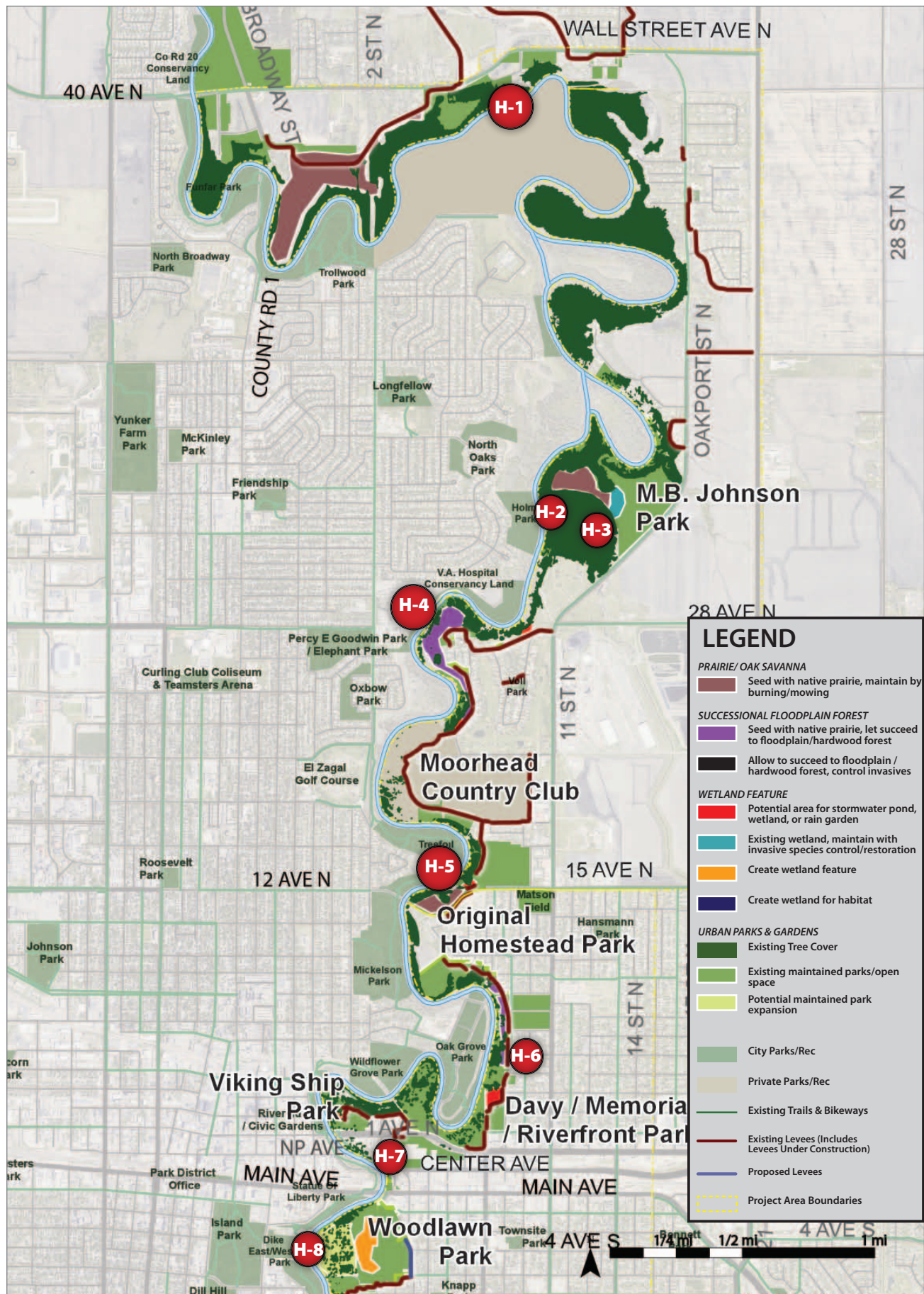
Maintenance of the existing seeded area is most important followed by protection of naturally recruited tree saplings.

H-7 WATER QUALITY IMPROVEMENTS AT DAVY/MEMORIAL PARK, RIVERFRONT PARK, AND VIKING SHIP PARK

H-8 RESTORED WETLAND IN WOODLAND PARK



FIGURE 52. PROPOSED HABITAT AND WATER QUALITY IMPROVEMENTS (STUDY AREAS 1 & 2)



STUDY AREA 3

H-9 PRAIRIE/SUCCESIONAL FLOODPLAIN FOREST SOUTH OF WOODLAWN PARK

Maintenance of the existing seeded area is most important followed by protection of naturally recruited tree saplings.

H-10 PRAIRIE/OAK SAVANNA RESTORATION IN GOOSEBERRY MOUND PARK

H-11 PRAIRIE/SUCCESIONAL FLOODPLAIN FOREST FROM GOOSEBERRY MOUND PARK TO HORN PARK

H-12 PRAIRIE/OAK SAVANNA RESTORATION IN HORN PARK

H-13 PRAIRIE/SUCCESIONAL FLOODPLAIN FOREST SOUTH OF HORN PARK

Maintenance of the existing seeded area is most important followed by protection of naturally recruited tree saplings.

H-14 PRAIRIE/OAK SAVANNA RESTORATION AT NEW RECREATION NODE AT RIVERVIEW CIRCLE SOUTH

Tree protection should occur within 0-5 years, invasive species control and maintenance of the seeded area are all important in the near term to maintain the landscape.

H-15 PRAIRIE/SUCCESIONAL FLOODPLAIN FOREST IN RIVER CORRIDOR NORTH OF RIVER OAKS PARK

Maintenance of the existing seeded area is most important followed by protection of recruited tree saplings.

STUDY AREA 4

H-16 PRAIRIE/OAK SAVANNA RESTORATION IN RIVER OAKS PARK

H-17 PRAIRIE SEEDING/SUCCESIONAL FLOODPLAIN AND POTENTIAL WETLAND FEATURE IN TESSA TERRACE DEVELOPMENT

H- 18 PRAIRIE SEEDING/SUCCESIONAL FLOODPLAIN FOREST SOUTH OF BLUESTEM PARK



FIGURE 54. PROPOSED HABITAT AND WATER QUALITY IMPROVEMENTS (STUDY AREAS 3 & 4)



Interpretation Plan

In a constantly changing world, connections between people and their community, culture, land, and nature are becoming more important to maintain and recreate. Events that give identity and significance to a place are not self-evident and frequently become lost to time. Place-based interpretation allows for the rediscovery of these 'places', revealing and reaffirming important connections between a community's social and natural systems. It is an approach rooted in the belief that people seek to understand the stories of the places they live and explore.

As Moorhead works to recapture the value of the Red River, the City will work to improve awareness and appreciation of the River Corridor and its history, culture, and role in nature. As part of these efforts, recreation in the River Corridor will be enhanced by dynamic and interactive educational opportunities, as well as an attractive and consistent interpretive signage.

Interpretive planning designs educational experiences that support an organization's vision and mission. The process considers place-specific historical, cultural and natural resources to be interpreted and the characteristics and interests of the people who use the site in order to develop relevant messages and media.

In the context of the Red River Corridor, fostering an understanding of the relationships between social and natural systems can nurture an interest in environmental stewardship. In other words, helping visitors understand the connections between history, culture, and nature is at the core of fostering stewardship of these resources.



INTERPRETIVE THEMES

Taking stock of the corridor's unique attributes is a central task in creating the backdrop against which the corridor's story is framed and interpretive themes are developed. These stories create a unique setting, or sense of place, and are places where stories of nature, history, and culture intersect in ways that are meaningful to visitors. The following interpretive themes are suggested as a framework for future interpretive development.



RIVER RECREATION

Renewed interest in river recreation is an opportunity for interpretation. Interpretive opportunities include:

- » River Oriented Recreation

THE CHANGING LANDSCAPE

Understanding and appreciating the natural history of an area provides a sense of place and perspective. Natural resources include the river and the habitat that the river's frequent flooding has created and maintained. The story of the recent transition of the River Corridor landscape from quiet streets lined with single family homes to the current open space and levees may provoke questions and new ideas about the ways people live and interact with the natural environment. Interpretive opportunities include:

- » Geology and Hydrology
- » The Evolving Landscape



THE CHANGING RIVER

The ever changing dynamics of the Red River of the North is a powerful story. Interpretive and educational information about the Red River could include information on natural river processes, such as flooding, erosion, and channel evolution. Interpretive opportunities include:

- » Oxbows and the River Channel
- » Flood History
- » Flood Mitigation



RIVER HISTORY

Historic and cultural resources include several historically significant sites along the River Corridor, with the greatest concentration near downtown. Many of these historic resources, such as the Ice Cutting on the River area, Moorhead Power Plant, and the Moorhead Brewery owe their existence and location to their reliance on the river as a resource, while others are connected to the river in other ways. The Hjemkomst Center is an example of the local pride for and attention to the Nordic cultural heritage. Interpretive opportunities include:

- » Settlement Era
- » River Crossing
- » Structures
- » Sites



TRANSPORTATION

Throughout history, river transportation has been a key component of settlement. Interpretive opportunities include:

- » River Transportation

AGRICULTURAL HISTORY

The relationship of the River to early settlement and agriculture is an important part of Moorhead's history. Remnant perennial plants from residential yards provide opportunities to harvest fruits, nuts, and berries and spark new interest in urban foraging. Interpretive opportunities include:

- » The Edible Landscape
- » Food Production

RECOMMENDATIONS

Interpretation can be integrated into the River Corridor using multiple methods. Following are options for interpretive methods and media.

- » **Traditional Interpretive Signage** - integrate interpretive media into wayfinding orientation signs.
- » **Performance** – partner with the Trollwood Performing Arts School on theatrical interpretation and performances in parks throughout the River Corridor. Performances could interpret Moorhead history, wildlife stories, and natural history.
- » **Tours and Classes** – work with the local school district, colleges, and universities, to create educational programming in the parks. Develop a Red River Steward program for those interested in serving at a higher level.
- » **Art Installations** – temporary and fixed installations could portray historical figures or environmental situations. Art could be solicited from local artists, schools, and universities.
- » **Outdoor Learning Lab** –an educational facility with access to the river, floodplain ponds, soils, and vegetation; the proposed recreation node at Riverview Circle is a possible location.
- » **Technology** – develop phone based audio tours and use QR codes for updated information at key locations, capture River Corridor photos and distribute them using Facebook, Twitter, and Instagram.
- » **Interactivity** – interpretation can be integrated into play features, water fountains, moveable items, and large scale maps or formations.
- » **Site Design** – use the designed environment to frame and highlight attractive views, hide undesirable views, and guide appropriate activity.
- » **Visitor Center** – Hjemkomst Center could be utilized as the hub for River Corridor visitor information.
- » **Publications** – brochures, maps, scavenger hunts, and a variety of printed materials can serve interpretive purposes.



INTERPRETATION PROJECTS

CORRIDOR WIDE

I-1 DEVELOP A COMPREHENSIVE RIVER CORRIDOR INTERPRETATION PLAN

Undertake a system-wide interpretive planning effort that:

- » Establishes guiding principles for River Corridor interpretation.
- » Establishes goals and objectives for River Corridor interpretation.
- » Develops interpretive themes.
- » Establishes consistent design standards for media.



A stylized map of the Red River Corridor, showing the river's path in white and blue against a dark blue background. The river flows from the top left towards the bottom left, with several meanders and tributaries.

Implementation & Management

Overview

This chapter outlines approaches for the Red River Corridor Master Plan implementation, including:

- » Phasing and Priorities
- » Land Protection and Public Land Holdings
- » Operations and Management – Sustainability
- » Funding Sources, Capital, and Operating Budgets

TAKING THE LONG VIEW

The Red River Corridor Master Plan is a long-range vision that includes recommendations for near term actions, long term projects, and more visionary ideals. The long term nature of this plan should not be underemphasized. The Red River has taken a very long time to become what it is today, and future change within the corridor cannot be expected to occur overnight. Near term actions, while tangible, exciting, and more easily understood, must be completed in the context of the larger vision. For example, a short trail segment might be envisioned as closing a gap, but in the long term, that gap might be better completed in an area that still requires a property acquisition to occur on the time frame of the property owner. The vision may include a trail corridor through private property. The near term view finds an acceptable solution today.

COMMITMENT

The vision outlined in this plan comes with the price of commitment of significant additional resources of money and staff time to build, manage and operate the River Corridor. Today, within current City budgets, the potential funding dedicated to River Corridor projects is roughly \$90,000 a year. This is based on an estimated \$40,000 available from the current Park and Recreation Capital Improvement funding devoted to capital projects along the river and a possible \$50,000 a year available as matching funds for grants from the Capital Improvement Fund. This equates to roughly \$900,000-\$1,000,000 devoted to the River Corridor over the next 10 years. With an estimated capital cost of over \$17 million to fully realize the vision of this plan there is a significant funding gap. If the River Corridor is a priority to the community, significant additional funding will need to be obtained for capital projects, on-going maintenance, and capital replacement. Additional staff time for management, operations, and maintenance will also be needed.



A COLLABORATIVE EFFORT

Collaboration is essential to achieving success. There are many layers of governance that have an impact on how the corridor evolves and that have regulatory authority over certain actions and improvements within the corridor. There are also many different property owners and organizations that have a direct investment, physical connection, and/or emotional connection with the river or the River Corridor. There is also the larger community that benefits from the public nature of the corridor and is impacted by the demand of resources that managing the corridor has on the general public. Carrying out the ideas and actions defined in this master plan cannot be and will not be done by any single entity or agency. It will require partnerships, agreement, investment, and commitment from many.

A SUSTAINABLE PERSPECTIVE

Sustainability is the use of a resource in a way that preserves it for future generations. In the context of the Moorhead River Corridor, sustainability refers to the economic, social, and environmental resilience of the open spaces and facilities. It also refers to the resources (financial and human) required to maintain the River Corridor in its desired state. Operational responsibility must not be overlooked. While the capital investment is the obvious immediate investment (land acquisition and construction), operations and maintenance require investment of people, equipment, and financial resources over an extended period of time. A commitment to the Master Plan implies a commitment to operations and maintenance. While the City of Moorhead will bear the brunt of the responsibility for maintaining and managing public lands and improvements within the corridor, regional agencies, civic groups, clubs, schools, neighborhood organizations, and others can also play an important role in operating programs or assisting with maintenance of land and facilities. Volunteerism and philanthropy can be a great asset, but it most likely will not be the primary resource.



Phasing and Priorities

Over 60 projects have been identified and defined in the Master Plan. Key to successful implementation is establishing a basis for how these projects can be prioritized and phased over an extended period of time. The master plan breaks these projects into the following categories of timing:

- » **Near Term** - likely to begin in the next 0-5 years
- » **Long Term** – likely to take 5 to 10 years to be completed
- » **Visionary** - long term implementation that might rely on a multitude of factors largely out of the control of any one single entity. These might be projects where ownership is divided, physical and financial feasibility is more challenging, and public support is less certain.

Phasing will look to fill trail gaps (including key bridge projects) first, beginning with projects in or near the downtown areas. Prioritizing filling of trail gaps will contribute to the important goal of a continuous river trail network, utilizing both the Fargo and Moorhead sides of the River. Projects that have low capital costs but take longer time periods to establish (such as habitat restoration), are near term projects that generate long term benefits.

The following key criteria were used in prioritizing projects.

1. Enhances year round use: Does the project...

- Improve an existing trail or park for 4 seasons?
- Enhance outdoor winter silent sports (snow shoeing, cross country skiing)?
- Improve corridor connectivity for mobility purposes?
- Fill a gap in the trail system?
- Reduce downtime due to flooding?
- Help achieve flood mitigation?

2. Improves the user experience: Does the project...

- Enhance public safety?
- Provide safe pedestrian/bike movements for commuting/recreation?
- Provide interpretive interest/intrigue?
- Create loops for more functional and pleasing trail usage?
- Improve connectivity (to destinations within or outside the River Corridor)?
- Clearly define public lands to be used for public purposes?
- Fill a gap in the trail system?

3. Contributes positively to the corridor's character: Does the project...

- Provide a landscape pattern that delineates public and private land areas?
- Improve wayfinding?
- Enhance the definition of public lands to be used for public purposes?
- Create an aesthetic quality and well cared for natural habitat?

4. Improves natural habitat and/or water quality and is ecologically sustainable: Does the project

- Create opportunities to treat stormwater run off?
- Protect habitat?
- Create new habitat?
- Have the ability to be maintained in a sustainable way?

5. Respects private property: Does the project...

- Provide opportunities to distinguish visually between public and private property?
- Minimize the desire/lure/prospect of trespassing?
- Improve flood mitigation?

6. Contributes to corridor safety. Does the project...

- Improve visibility to areas not otherwise visible from public right of way?
- Clarify where lands transition between public and private ownership?
- Provide lighting to trail and park areas intended for heavier use?
- Improve upon perceived or real unsafe conditions?

7. Is technically feasible – can the project physically be built within a reasonable cost?

8. Is fundable/has funding available (capital and O & M)

- Is there political support to allocate public dollars from existing budget resources to the project either to fund its construction/operations or provide matching funds for grants?
- Is the project eligible for available grant resources?
- Is the project competitive within existing grant resources?
- Does the project align with non-profit/philanthropic interests?

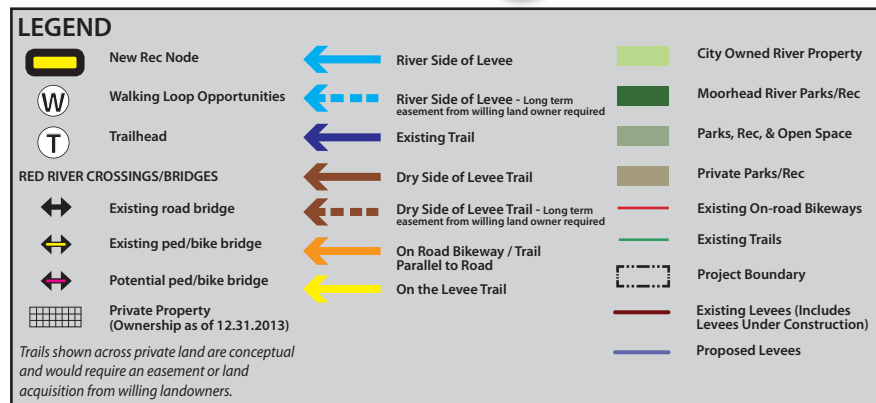
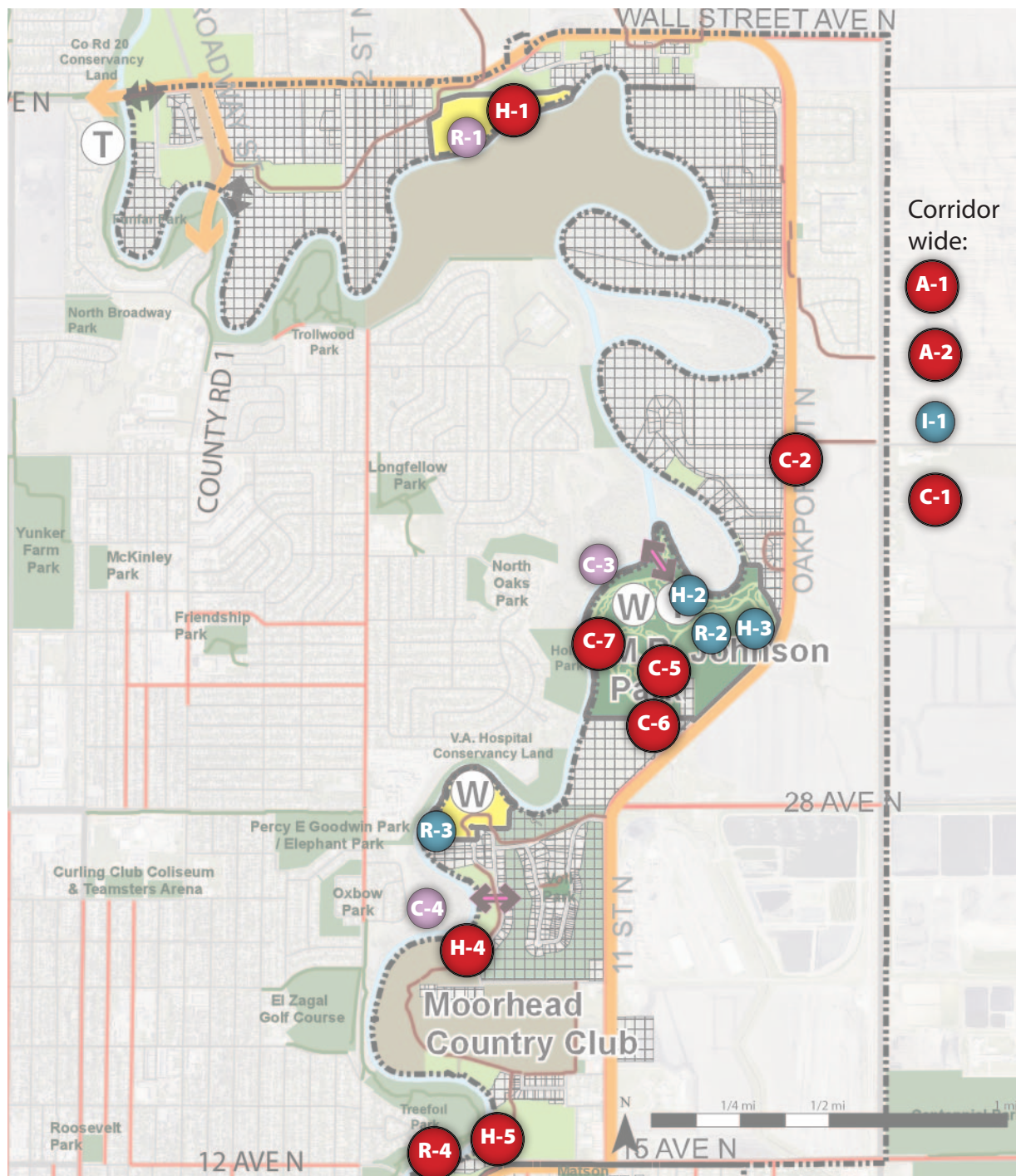
Each project outlined in Chapter 4 was considered in light of the above criteria. The results of the evaluation are provided in Table 64 and shown on Figures 65-68. It is important to note, that this phasing/prioritization list is NOT an absolute. The evaluation exercise may vary widely depending on what lens the evaluator is looking through (i.e. park advocate, trail user group, naturalist, artist, elected official, etc.). The list of projects as prioritized should be viewed as a starting point for the City and interested stakeholders to begin a coordinated approach to implementation. In addition, not every possible project has been outlined in this plan. The program and Project review process outlined in Figure 71 is intended to guide this process.

Funding availability also changes based on new funding programs, philanthropic interests, or changing priorities. As circumstances change, the evaluation criteria should be closely considered.

TABLE 64. PROJECT PHASING AND PRIORITY

ID	Project Name	Cost	Study Area	Agency/Partner	
Phase: Near - Term (0-5 years)					
A-1	Design unified property boundary signage	\$	ALL		High Priority
A-2	Develop and adopt landscape buffer design guidelines and a landscape buffer policy	\$	ALL		
C-1	Develop wayfinding design standards and install wayfinding signs	\$	ALL		
C-2	Bikeway – Red River to 15 th Avenue North (Wall Street North, Oakport Road North and 11th Street North)	\$	1		
C-5	Ped-Bike- Ski Bridge over Snaky Creek in M.B. Johnson Park	\$\$	1	Partnership	
C-6	Cross Country Ski Expansion within and South of M.B. Johnson Park	\$	1	Partnership	
C-7	Mountain Bike Trail Expansion South of Snaky Creek within M.B. Johnson Park	\$	1	Partnership	
C-8	On-road bikeway between 15th Avenue North and Homestead Park	\$	2		
C-9	Paved Trail Homestead Park to Davy/Memorial Park	\$\$	2		
C-10	Reconstruct Paved Trails from Davy/Memorial Park to Woodlawn Park	\$\$	2		
C-12	Replace Memorial/Oak Grove Bridge	\$\$\$	2		
C-14	Natural Surface hiking and cross country ski trail from Homestead Park to Davy/Memorial Park	\$	2	Partnership	
C-15	Realign Cross Country Ski Trails in Davy/Memorial Park, Riverfront Park and Viking Ship Park	\$	2	Partnership	
C-16	On road bikeway from Woodlawn Park to Gooseberry Mound Park (River Drive and 4 th Street South)	\$	3		
C-19	Relocate floating bridge from Woodlawn Park to Dike East Park in Fargo (Upstream)	\$\$	2		
C-21	Hiking Loop in Gooseberry Mound Park	\$	3		
C-22	Cross Country Ski/Hiking Trail from Gooseberry Mound Park and Horn Park	\$	3		
C-29	Cross Country Ski/Hiking Trail in River Oaks Park	\$	3		
R-4	DNR Canoe Portage and Parking Improvements 15th Avenue North	\$\$	1	DNR	
H-1	Prairie/Savannah Restoration at the New Recreation Node on Buffalo River Watershed District Land	\$\$	1	Partnership	
H-4	Prairie/Successional Floodplain Forest North of Moorhead Country Club	\$	1		
H-6	Prairie/Successional Floodplain Forest between Homestead and Davy/Memorial Parks	\$	2		
H-11	Prairie Restoration/Successional Floodplain Forest from Gooseberry Mound Park to Horn Park	\$	3		
H-13	Prairie/Successional Floodplain Forest /Tree Planting South of Horn Park	\$\$	3		
H-14	Prairie/Oak Savannah Restoration at New Recreation Node at Riverview Circle South	\$\$	3		
H-15	Prairie/Successional Floodplain Forest in River Corridor North of River Oaks Park	\$	3		
H-16	Prairie/Oak Savanna Restoration in River Oaks Park	\$	3		
C-17	Paved Trail from Gooseberry Mound Park to Horn Park	\$\$	3		
H-5	Prairie/Savana Restoration North of 15th Avenue North	\$	1		
H-12	Prairie/Oak Savanna Restoration in Horn Park	\$	3		
C-26	Paved Trail Bluestem Park to 60 th Avenue Southwest	\$\$\$	4		
R-8	Improvements to Horn Park	\$	3		
R-11	New Recreation Node at Riverview Circle South	\$\$	3	Partnership	
Phase: Long - Term (5-10 years)					
C-27/28	Southern Pedestrian and Bicycle Bridge I (River Oaks Park or Bluestem Park)	\$\$\$	3 & 4		
C-30	Cross Country Ski/Hiking Trails within and South of Bluestem Park	\$	4	Partnership	
R-2	Improvements to M.B. Johnson Park	\$\$\$	1		
R-6	Improvements to Davy/Memorial/Riverfront Park/Viking Ship Park	\$\$\$	2		
R-9	Improvements to Gooseberry Mound Park	\$\$\$	3		
R-10	Improvements to River Oaks Park	\$\$	4		
R-12	Improvements to Bluestem Park and Events Center	\$\$	4	Partnership	
H-2	Prairie Restoration at M.B. Johnson Park	\$\$	1		
H-10	Prairie/Oak Savanna Restoration in Gooseberry Mound Park	\$	3		
I-1	Create a Comprehensive River Corridor Interpretation Plan	\$	ALL		
R-3	New Recreation Node North of Moorhead Country Club	\$\$	1		
R-5	Improvements to Original Homestead Park	\$\$	2		
H-3	Wetland Restoration at M.B. Johnson Park	\$	1		
H-7	Water Quality Improvements at Davy/Memorial Park, Riverfront Park, and Viking Ship Park	\$	2		
H-18	Prairie seeding/Successional Floodplain Forest South of Bluestem Park	\$\$	4		
Visionary (10+ years)					
C-11	15 th Avenue North Toll Bridge Improvements	\$\$\$	2		
C-13	Pedestrian and Bicycle Improvement to 1st Avenue Bridge	\$\$\$	2		
C-18	Paved Trail from Horn Park to River Oaks Park	\$\$\$	3		
C-16.1	Paved Trail from Woodlawn Park to Gooseberry Mound Park	\$\$\$	3		
C-19.1	Replace floating bridge from Woodlawn Park to Dike East Park in Fargo with a permanent structure	\$\$\$	2		
C-20	Natural Surface Cross Country Ski/Hiking Trail from Woodlawn Park to Gooseberry Mound Park	\$\$	3		
C-27/28	Southern Pedestrian and Bicycle Bridge II (River Oaks Park or Bluestem Park)	\$\$\$	3&4		
R-1	New Recreation Node on Buffalo River Watershed Land	\$\$	1	Partnership	
R-7	Improvements to Woodlawn Park	\$\$\$	2		
H-17	Prairie and Potential Wetland Feature in Tessa Terrace Development	\$\$	4	Partnership	
C-3	New Bicycle – Pedestrian Bridge at M.B. Johnson Park	\$\$\$	1		
C-4	New Bicycle – Pedestrian Bridge North of Moorhead Country Club	\$\$\$	1		
C-23	Cross Country Ski/Hiking Trail from Horn Park to River Oaks Park	\$	3		
C-24	Paved Trail from River Oaks Park to 46th Avenue South	\$\$	4		
C-25	Paved Trail from 46th Avenue South to Bluestem Park	\$\$	4		
H-8	Restored Wetland in Woodland Park	\$	2		
H-9	Prairie/Successional Floodplain Forest South of Woodlawn Park	\$	2		
\$- less than \$50,000 \$\$- \$50,000-\$500,000 \$\$\$ greater than \$500,000					

FIGURE 65. STUDY AREA 1 - PROJECT PHASING DIAGRAM



Phasing Diagram Legend:

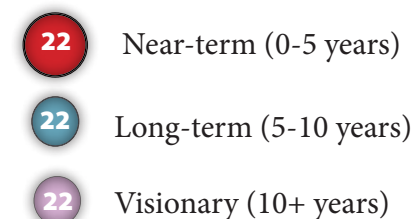
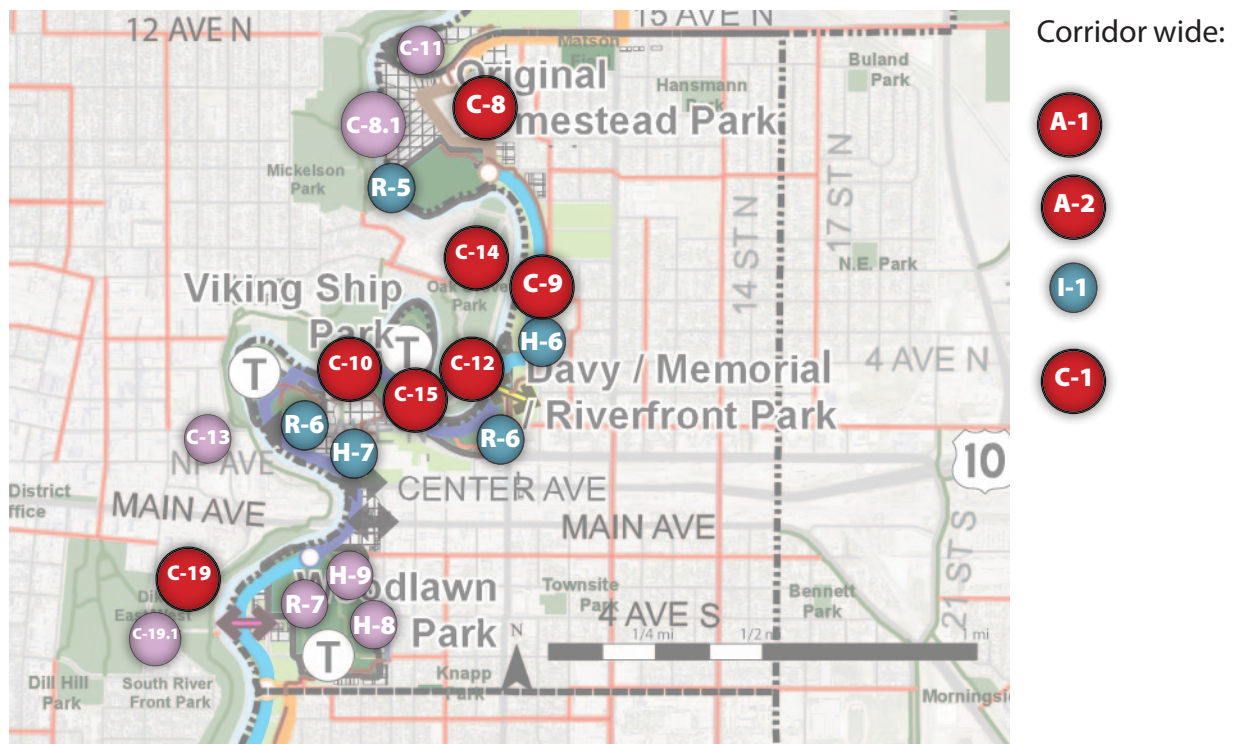


FIGURE 66. STUDY AREA 2 - PROJECT PHASING DIAGRAM



Phasing Diagram Legend:

- 22** Near-term (0-5 years)
- 22** Long-term (5-10 years)
- 22** Visionary (10+ years)

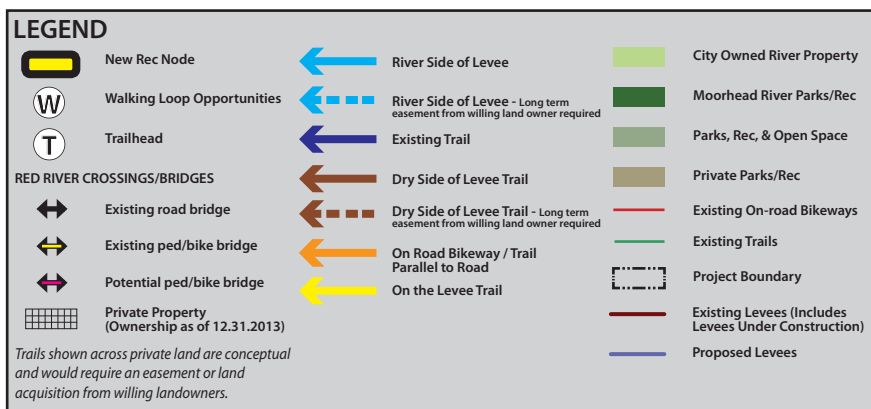
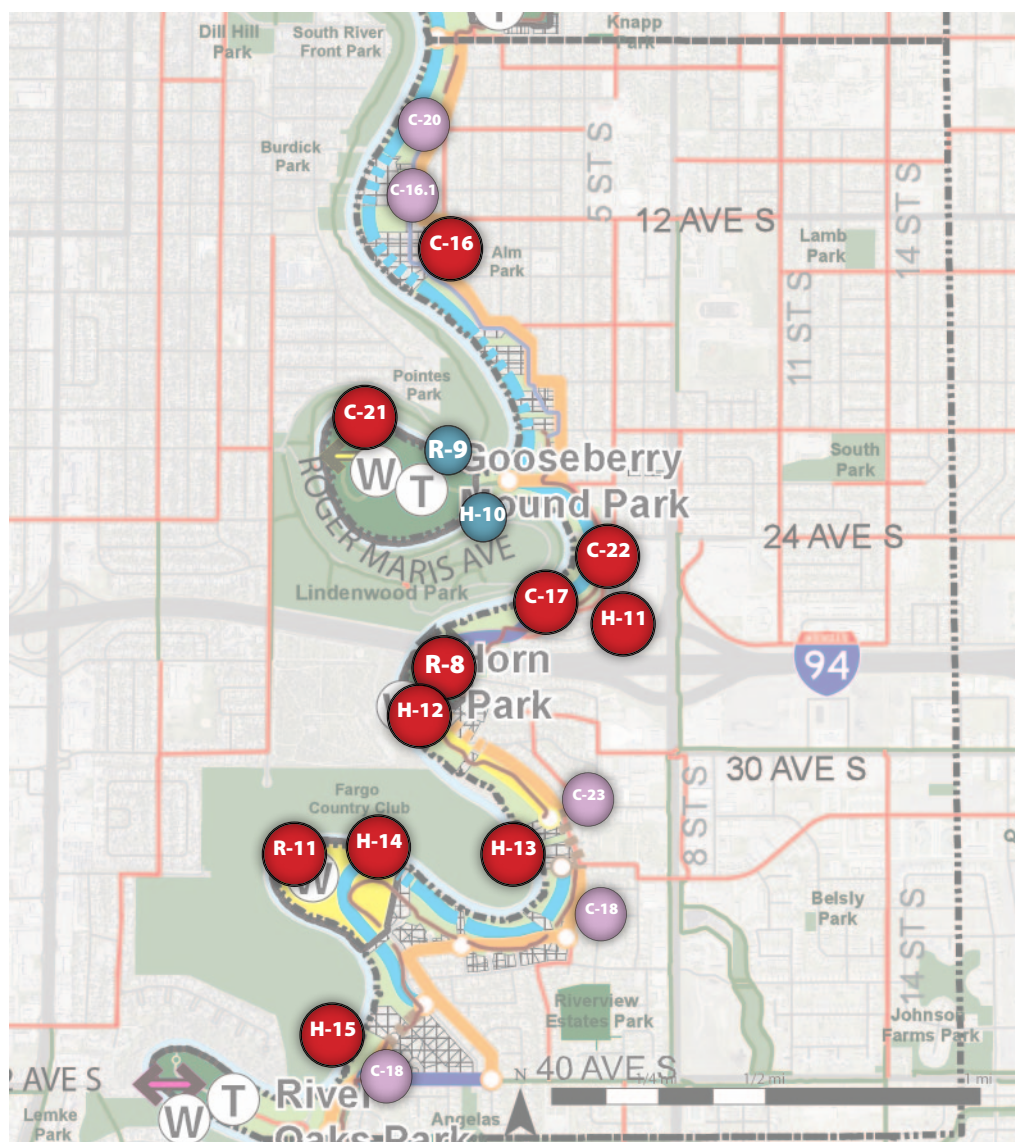





FIGURE 67. STUDY AREA 3 - PROJECT PHASING DIAGRAM



Corridor wide:



Phasing Diagram Legend:

-  Near-term (0-5 years)
-  Long-term (5-10 years)
-  Visionary (10+ years)

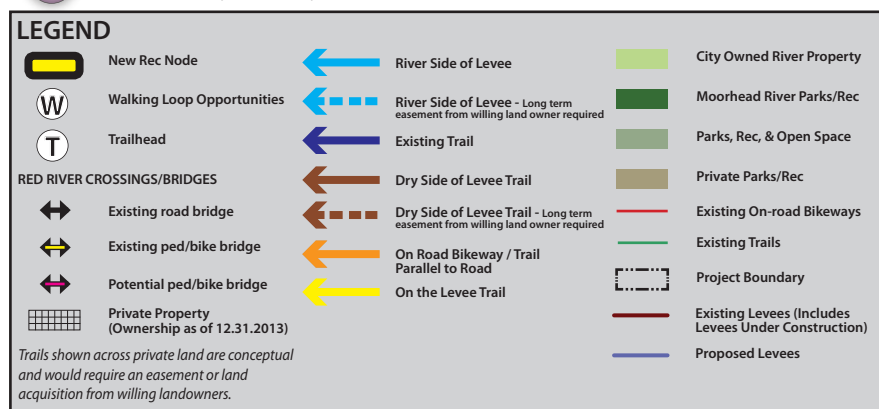
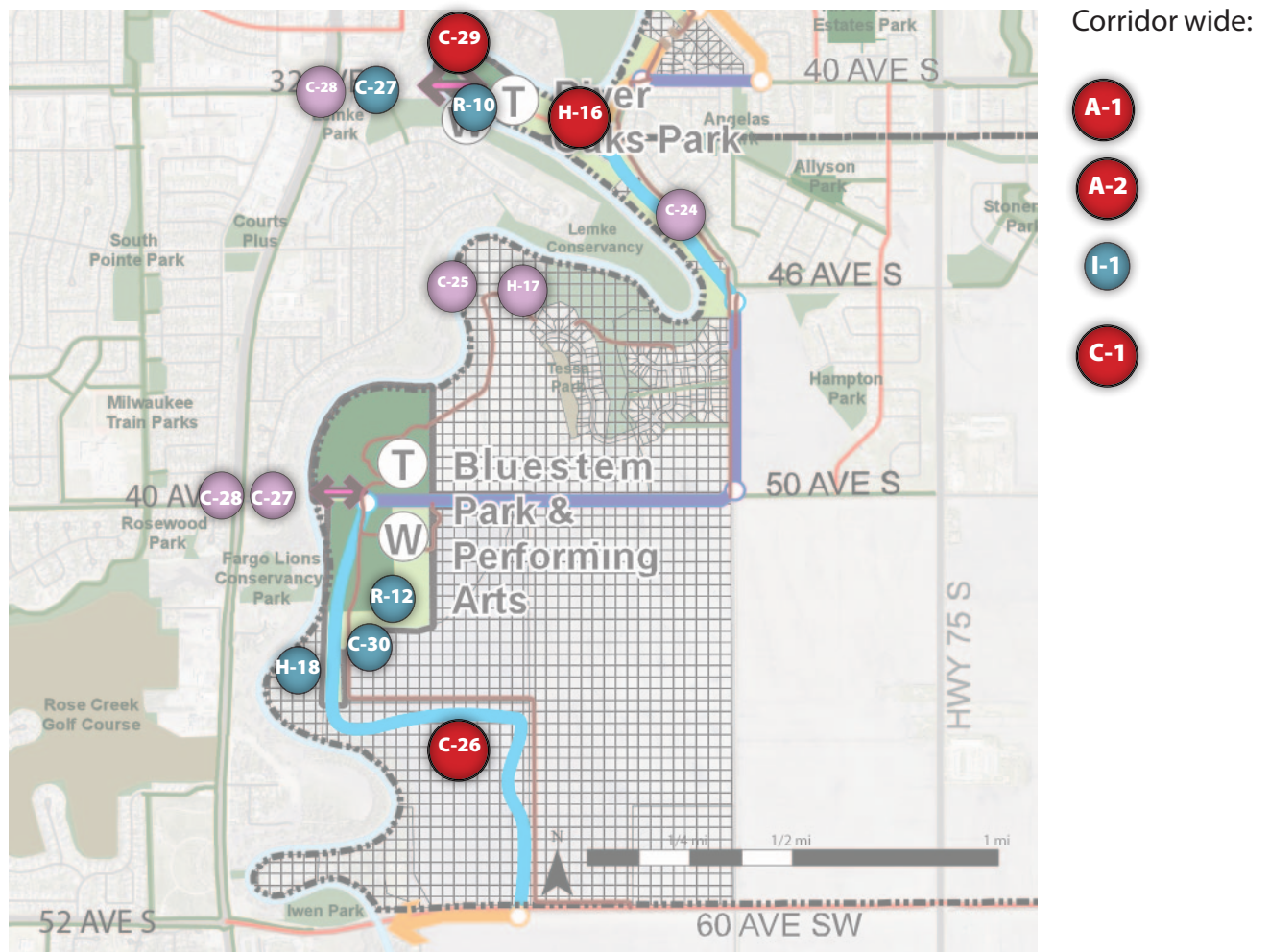
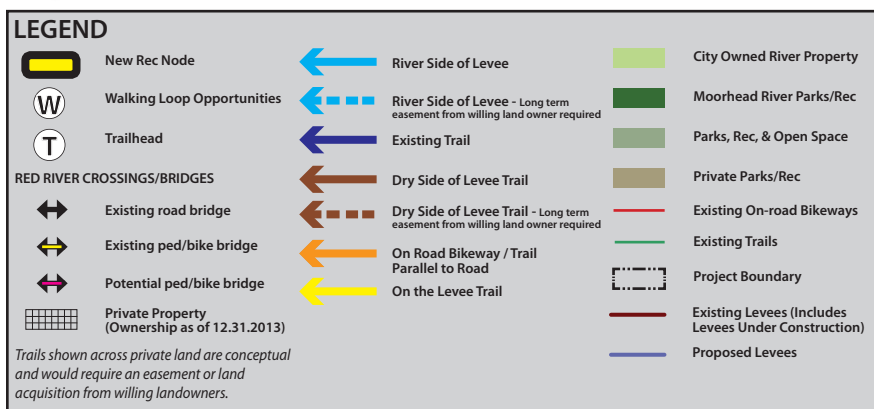


Figure 68. STUDY AREA 4 - PROJECT PHASING DIAGRAM



Phasing Diagram Legend:

- 22** Near-term (0-5 years)
- 22** Long-term (5-10 years)
- 22** Visionary (10+ years)



NATURAL RESOURCE PHASING AND PRIORITIZATION

For natural resource projects, the components of each project in Table 64 are prioritized in the following order: tree protection, seeded area maintenance, and invasive species control. These activities are relatively low cost and will alleviate future expenses. Table 69 outlines where these activities are needed in the near term.

Table 69. PRIORITY NATURAL RESOURCE ACTIVITIES

PROJECT NO.	PROJECT DESCRIPTION	PRIORITY	TREE PROTECTION	SEEDED AREA MAINTENANCE	INVASIVE SPECIES CONTROL
H-1	Prairie/Savannah Restoration at the New Recreation Node on Buffalo River Watershed District Land	High		X	
H-2	Prairie Restoration at M.B. Johnson Park	Moderate	X		
H-3	Wetland Restoration at M.B. Johnson Park	Moderate			
H-4	Prairie/Successional Floodplain Forest North of Moorhead Country Club	High	X	X	
H-5	Prairie/Savanna Restoration North of 15th Avenue North	Low			
H-6	Prairie/ Successional Floodplain Forest between Homestead and Davy/Memorial Parks	High	X	X	
H-7	Water Quality Improvements at Davy/Memorial Park, Riverfront Park, and Viking Ship Park	Low			
H-8	Restored Wetland in Woodland Park	Moderate			
H-9	Prairie/Successional Floodplain Forest South of Woodlawn Park	High	X	X	
H-10	Prairie/Oak Savanna Restoration in Gooseberry Mound Park	Moderate			
H-11	Prairie/Successional Floodplain Forest Gooseberry Mound to Horn Park	High	X	X	
H-12	Prairie/Oak Savanna Restoration in Horn Park	Moderate			
H-13	Prairie/Successional Floodplain Forest South of Horn Park	High	X	X	
H-14	Prairie/Oak Savannah Restoration at New Recreation Node at Riverview Circle South	High	X	X	X
H-15	Prairie /Successional Floodplain Forest/Tree Planting in River Corridor North of River Oaks Park	High	X	X	
H-16	Prairie and Potential Wetland Feature in Tessa Terrace Development	Moderate			
H-17	Prairie seeding/Successional Floodplain Forest South of Bluestem Park	Low			
H-18	Prairie seeding/Successional Floodplain Forest South of Bluestem Park	Low	X		

BUDGET CONSTRAINED PRIORITIES

There is a significant funding gap between funding available within current City budgets (estimated \$900,000-\$1,000,000 over the next 10 years) and needed funding. The following table lists the projects that it is anticipated can be implemented within current budgets. These projects have been chosen based on need, cost, and potential availability of outside funding (grants or partnerships). The total cost of the projects in the list is greater than \$1,000,000 and assumes that projects many projects can be completed with grants and partnerships. For example the Memorial/Oak Grove bridge would be completed in partnership with the City of Fargo, the DNR canoe portage and parking are would be funded by the DNR, cross-country ski trails would be built and managed in partnership with PENS, etc. Note: for natural resource projects the focus would be on seeded area maintenance, tree protection and invasive species control in the areas listed in Table 69.

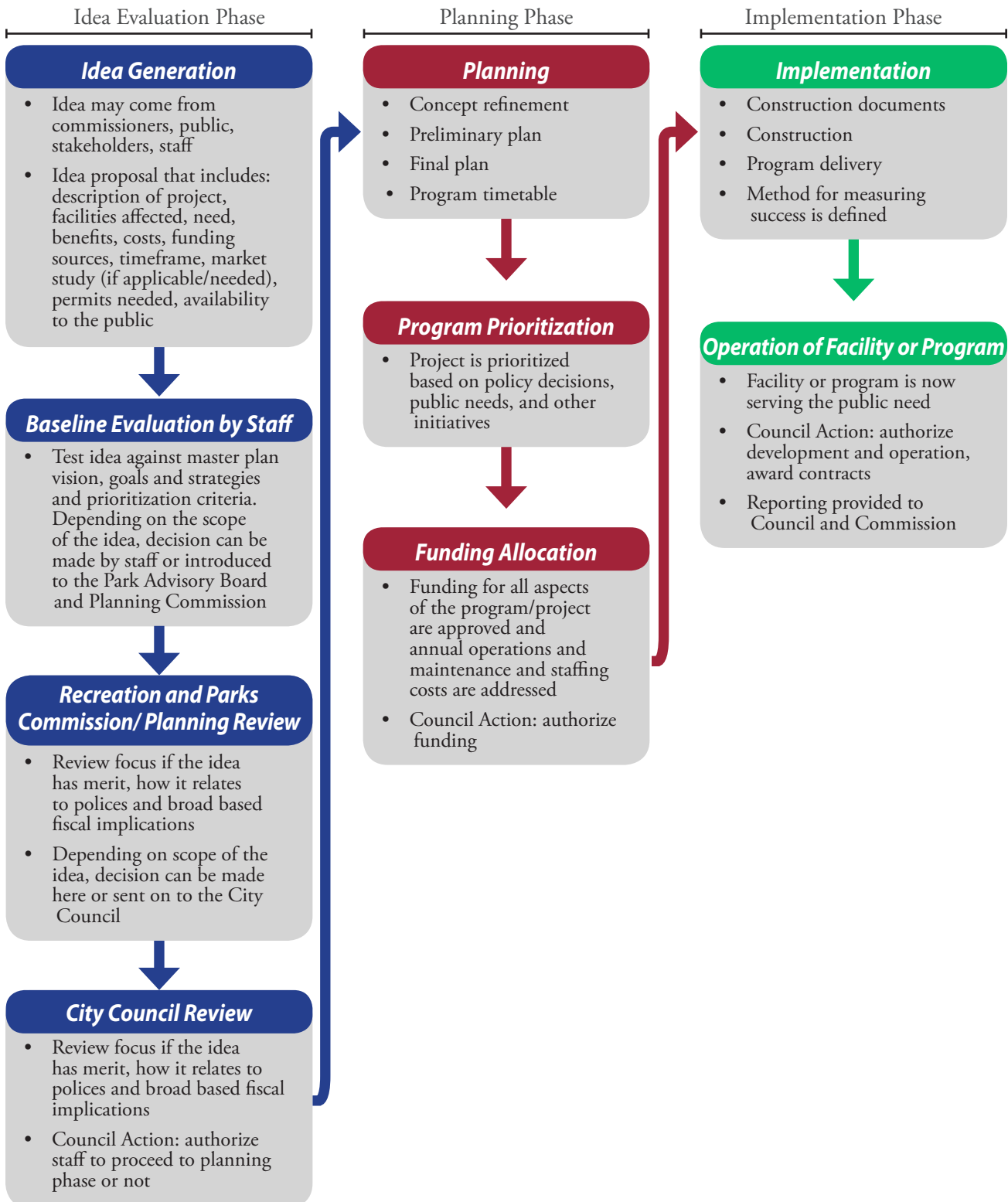
TABLE 70. 10 YEAR PRIORITY PROJECTS WITHIN CURRENT CITY BUDGETS

Project ID	Project Name
A-1	Design unified property boundary signage
A-2	Develop and adopt landscape buffer design guidelines and a landscape buffer policy
C-1	Develop wayfinding design standards and install wayfinding signs
C-2	Bikeway – Red River to 15th Avenue North (Wall Street North, Oakport Road North and North)
C-5	Ped-Bike- Ski Bridge over Snaky Creek in M.B. Johnson Park
C-6	Cross Country Ski Expansion within and South of M.B. Johnson Park
C-7	Mountain Bike Trail Expansion South of Snaky Creek within M.B. Johnson Park
C-12	Replace Memorial/Oak Grove Bridge
C-14	Natural Surface hiking and cross country ski trail from Homestead Park to Davy/Memorial Park
C-16	On road bikeway from Woodlawn Park to Gooseberry Mound Park (River Drive and 4rd Street South)
C-19	Relocate floating bridge from Woodlawn Park to Dike East Park in Fargo
C-22	Cross Country Ski/Hiking Trail from Gooseberry Mound Park and Horn Park
C-29	Cross Country Ski/Hiking Trail in River Oaks Park
R-4	DNR Canoe Portage and Parking Improvements 15th Avenue North
H-1	Prairie/Savannah Restoration at the New Recreation Node on Buffalo River Watershed District Land
H-4	Prairie/Successional Floodplain Forest North of Moorhead Country Club
H-6	Prairie/Successional Floodplain Forest between Homestead and Davy/Memorial Parks
H-11	Prairie Restoration/Successional Floodplain Forest from Gooseberry Mound Park to Horn Park
H-13	Prairie/Successional Floodplain Forest/Tree Planting South of Horn Park
H-14	Prairie/Oak Savannah Restoration at New Recreation Node at Riverview Circle South
H-15	Prairie/Successional Floodplain Forest in River Corridor North of River Oaks Park
H-16	Prairie/Oak Savanna Restoration in River Oaks Park

PROJECT REVIEW PROCESS

With many different government and private organizations having interest in the River Corridor, a future challenge will be knowing which projects to pursue and which projects are fiscally and physically possible. The program and project review process provides a sample outline for systematic review of new requests. This will ensure that new projects are in line with the vision, goals and policies for the River Corridor and can be adequately funded, staffed, and maintained prior to implementation.

FIGURE 71. PROJECT REVIEW PROCESS



Land Protection and Public Land Holdings

It is essential that land areas needed for flood mitigation and for implementing the vision for the corridor be secured through public ownership or easements. This means that where lands are needed for flood protection, the city continue to pursue ownership. Remnant lands that are no longer needed for any flood mitigation activities are not needed to help implement the goals and objectives of the River Corridor Master Plan, should be considered for sale to adjacent landowners. Each sale should be considered independently and on their own merits. Given the long term reality of implementing flood mitigation improvements in the corridor through voluntary land acquisitions, the leasing of lands may be a valuable strategy to reduce maintenance/management costs in limited cases. These leases provide a means to efficiently manage lands until such time as remaining acquisitions can be completed that enable the final completion of a flood mitigation improvement. The following criteria should be used to guide decisions when considering short term leasing or disposing of public land holdings:

- » Land must be protected by natural ground, fill, or flood mitigation infrastructure to an elevation equivalent to the City's flood mitigation goal of 44 feet river stage for the area.
- » Land must not be needed for temporary emergency measures and/or access to flood mitigation infrastructure.
- » Land encumbered with utility easements (storm sewer, sanitary sewer, etc.) will not be sold, but may be leased with specific lease terms governing use.
- » Land must not be identified in the Moorhead River Corridor Master Plan as a candidate area for future public project/s.



Operations and Maintenance – Sustainability

Maintenance and sustainability are the key ingredients to the long-term success of the River Corridor. The Red River Corridor should be economically, ecologically, and socially sustainable. In addition to sustaining future River Corridor recreational facilities, maintenance of the flood protection facilities are essential to the future of the community. The City's high investment in constructing these facilities deserves consideration when planning on and around them.

GENERAL MANAGEMENT

General operations will continue to be a coordinated effort across the City's Engineering, Planning, and Parks and Recreation Departments. The Planning Department is charged with overall coordination of River Corridor improvements and City initiatives that may impact the River Corridor. Engineering will continue to take the lead in management of all flood control structures and designing future river corridor infrastructure (such as bike trails). Parks and Recreation will continue to manage and operate the recreational facilities as well as maintain natural and landscaped vegetation.

With additional property acquisition along the River Corridor comes additional programming and maintenance of these properties. The city must provide appropriate staff and funding to maintain the corridor to appropriate levels and expectations as well as to implement and succeed with the goals outlined in the Plan.

MULTI-JURISDICTIONAL COORDINATION AND PARTNERSHIPS

Several agencies and organizations have political and jurisdictional interests in the River Corridor: City of Moorhead, City of Fargo, Fargo Park District, and Fargo-Moorhead Metro COG. Coordination is needed among these entities in order to ensure successful projects. In addition, Clay County, the Minnesota Department of Natural Resources, the Buffalo - Red River Watershed District, and the Minnesota Department of Transportation could be involved in funding or decision making processes for various projects.

Partnerships can prove to be important economic sustainers in parks and recreation. Working with the various recreation organizations, such as the River Keepers, FM Trail Builders, and the Prairie's Edge Nordic Skiers, to provide construction and maintenance of natural surface trails and other river oriented recreation facilities, gives the residents of Moorhead a larger array of recreational options than the City alone could provide. Additional partnership opportunities include working with existing local businesses to provide services within the River Corridor parks, including: bike rental, skate rental, fishing tackle rental, canoe/kayak rental, ski rental, food and drink concessions, river tours and interpretive classes, etc.

RIVER CORRIDOR AUTHORITY

The Cities of Moorhead and Fargo could enter into a joint powers agreement for a River Corridor Authority to coordinate, operate, and manage the River Corridor. An advantage to this is that efforts would be coordinated between the two cities by an organization focused on the River Corridor. It may be advantageous to include other Cities, Counties, and Watershed Districts that the Red River travels through for broader collaboration and to leverage the resources of multiple interested organizations. Examples of joint powers agreements related to river management include:

- the Minnesota River Board,
- the Flood Diversion Board of Authority,
- and the Crow River Joint Powers Board.



STAINABLE OPERATIONS AND MAINTENANCE

As with many public improvement projects, capital costs are often given much more attention than operations and maintenance costs. It is easy to think of applying for a grant to build a new, facility for public use, but acquiring additional funding for mowing, hiring maintenance staff, plowing trails, or administering new or expanded programs is more complicated and must be considered. Creative fiscal thinking is required when attempting to realize a grand vision for the Red River Corridor in Moorhead.

Prior to implementation of any project outlined in this plan, planning and budgeting for operations, maintenance and capital replacement must be completed. Sometimes spending more time, effort, and money at the start of a project can pay off in the long run. High investment in planning and construction will lead to longer life facilities with lower repair and replacement costs. Operations and maintenance costs are outlined in Table 83.

REGULAR MAINTENANCE ACTIVITIES

Maintenance of facilities and lands is essential to protect public investment, enhance natural resource and achieve the community's vision for an attractive river corridor. The City of Moorhead Parks Department has a defined maintenance program. Some maintenance, such as for cross country ski trails and mountain bike trails is done in partnership with user groups.

Regular maintenance activities for the River Corridor will include:

- » Sign maintenance
- » Trash collection
- » Sweeping and blowing
- » Trail repair
- » Bridge repair
- » Park facility repair and maintenance
- » Mowing
- » Forestry
- » Winter trail clearing
- » Winter cross-country ski trail grooming

ECOLOGICAL SUSTAINABILITY

Low maintenance landscapes are good for the environment as well as the pocketbook. Restored native vegetation areas, such as prairies, savannas, shorelines, and floodplain forests, function as part of the natural landscape. They provide wildlife habitat, natural water filtration, windbreaks, shade, oases in urban environments and places of respite. Once established, native landscapes require minimal maintenance because the vegetation is adapted to local conditions.

In addition to maintaining native vegetation landscapes, maintaining a healthy river system is important for sustainability. A healthy river that meets its water quality goals and is allowed to ebb and flow with the seasons will also provide economic, ecological, and social benefits. Maintaining a healthy river includes properly managing and treating stormwater to reduce pollutants before they reach the river. Additionally, maintaining natural vegetation along the River Corridor is important to provide stabilization, erosion control, stormwater filtration, and flood protection.

SOCIAL SUSTAINABILITY

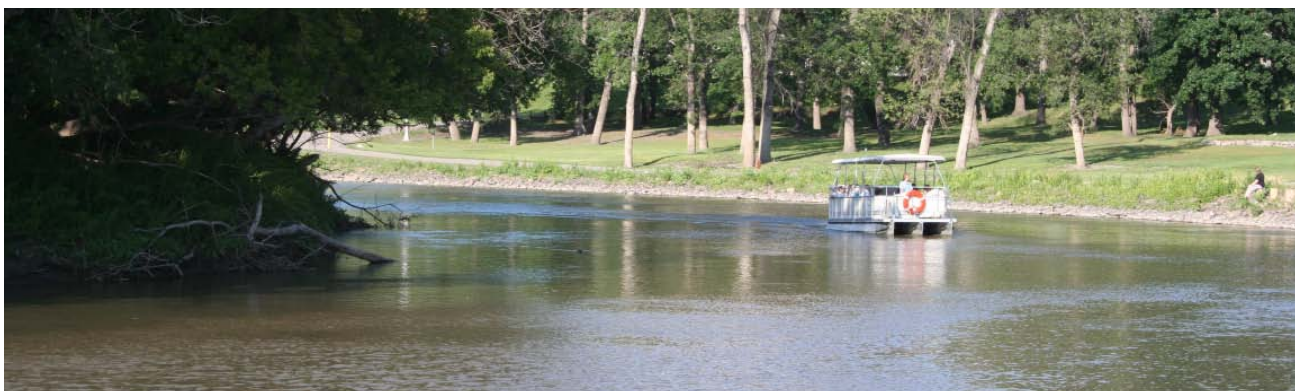
PROGRAMS AND EVENTS

Key to creating an attractive River Corridor is not only building new facilities and restoring land, but attracting people to the River. Building on existing organized programs and creating new ones such as interpretive walks, educational classes, volunteer natural resource stewards, cross country ski-clinics etc. will add to activity within the River Corridor and foster resident champions.

Existing parks and facilities currently provide the space needed for community and regional events that attract visitors to the River Corridor. M.B. Johnson Park and Bluestem Park have parking and large open fields and already host large events. Potential future events include: farmers markets or public markets, cross country ski races, mountain bike races, 5K runs or obstacle course, fundraising walk, art fair, pond hockey tournament, tree planting event, buckthorn bust, and other events.

SAFETY – ENFORCEMENT AND SECURITY

The perception and reality of safety on the River Corridor is essential for success. River Corridor visitors will be informed of rules and regulations through strategically located signs that address specific information about hours, permitted and prohibited activities, fees and directions. City of Moorhead Police and other city employees will also educate visitors and enforce ordinances.



Funding Sources, Capital, and Operating Budgets

FUNDING SOURCES

Funding for initial capital cost and ongoing operations and maintenance costs is essential in implementing the vision for the River Corridor. Funding should be a collaborative effort including local, state, and federal funding sources, grant resources, and philanthropic/local investment. In-kind contributions of land, easement, design, engineering, construction and maintenance and operations are encouraged and will be outlined in agreements among agencies and stakeholder groups. It is anticipated that many future capital projects will be well positioned to secure regional, state and federal funds for recreation, transportation, water quality, interpretation and habitat restoration.

Table 77 identifies potential funding sources for each project type. Sources are identified as possible, likely, and best depending on how well the project and the funding source are matched.

TABLE 77. POTENTIAL FUNDING SOURCES BY PROJECT TYPE

	Capital Improvement Funds	Dedicated Tax Levy	Bond Referendum	State Aid Funds	Park/Trail Dedication	Utility Fee	Grants	Partnerships	Donations	Notes
FLOOD PROTECTION										
Land acquisition for flood protection	●					○	●	●		FEMA, DNR
Flood control structures	●					○	●	●		FEMA
ATTRACTIVE RIVER CORRIDOR										
Private Property Delineation	○	○						●		Funded by property owners
Property Boundary Signage	○	○						●		
CONNECTIVITY										
On-road bikeways	●	○	○	●						
Paved trails	○	○	●	○	●		●			
Natural surface trails	●	○	○		○		○	●		
Bridges	●		●				●	●		City of Fargo
Wayfinding signage	●	○	○				○			
RECREATION										
Park improvements	●	○	●		●		●	○		
Programs	●						●	●		
HABITAT ENHANCEMENT & WATER QUALITY										
Habitat restoration	●	○	○				●	●		Soil and Water Conservation District
Water quality projects	●	○	○			●	●	●		Soil and Water Conservation District
INTERPRETATION										
Physical projects (signage, site design)	○	○	●				●	●	○	
OPERATIONS & MAINTENANCE										
Regular maintenance						●		●		

Key

Best Funding Source	Likely Funding Source	Possible Funding Source
●	●	○

Funding Sources

AD VALOREM TAXES

Ad Valorem Taxes can and should be used to develop and maintain the River Corridor. Ad Valorem Taxes are the primary funding source for on-going maintenance, operations, and amenities.

CAPITAL IMPROVEMENT FUND

Utilize to fund capital infrastructure improvements and use for grant matches.

DEDICATED TAX LEVY

A city can hold a referendum for a dedicated tax levy with proceeds directed specifically for recreation and parks. This levy can be used for capital projects as well as operations and maintenance. The proceeds may be in place of Ad Valorem Taxes or may be supplemented by Ad Valorem Taxes. The advantage of a dedicated tax levy is that recreation and parks receives a more stable source of funding and does not have to compete with other city priorities for funding on an annual basis.

BONDING

General Obligation Bonds and Revenue Bonds provide another source of implementation funding for new public facilities, as well as repairs and/or upgrades to existing facilities.

GENERAL PARK BOND ISSUE

Residents can decide to raise revenue through a permanent or temporary tax increase dedicated for specific purposes such as park, trail, and bikeway improvements and maintenance. These funds are usually provided through bonds approved as part of a voter referendum. Park bond referendums are most successful for projects that can garner significant public support. Preparation of the referendum should be done with care and public involvement.

STATE AID FUNDS

State aid funds are available for pedestrian and bicycle improvements on state aid streets. This funding source is particularly useful at the time of street construction or re-construction. The City of Moorhead should have a process for evaluating needed trail and sidewalk improvements as part of capital improvement projects.

PARK AND TRAIL DEDICATION

Minnesota Statutes allow local governments to require dedication of land or cash in-lieu of land for parks and trails from new subdivisions. The dedication must be reasonable, rationally related to the recreation demand created by the development, and based on average fair market values for unplatted land. Cities can also require dedication of right-of-way or easements for sidewalks or trails. This tool will be most useful in areas of the River Corridor where adjacent new development is anticipated. Some cities, such as Chanhassen, MN, have adopted a separate trail fee or dedication requirement.

FRANCHISE FEES

Franchise fees are a charge listed on the monthly bill that customers receive from a utility, such as natural gas, electricity or cable. This can be a flat amount each month or a percentage of the monthly bill. A franchise fee can be implemented with an ordinance which must be approved by the City Council. The City of Moorhead currently collects a 5% franchise fee on both cable and gas services which is utilized to fund activities in the General Fund.

PARTNERSHIPS

The City of Moorhead values its partnerships with both public and private organizations. These relationships have historically led to improvements to City parks, restoration projects in the River Corridor, and other public facilities. Partnerships will be important for both facilities and programming. Organizations with partner funding can also provide assistance with design, outreach, and maintenance. Partnerships and relationships with private businesses can also result in easements and use agreements for trails across private land. Potential partnership organizations include:

- » City of Fargo
- » Fargo Park District
- » Oakport Township
- » Clay County
- » The Buffalo-Red River Watershed District
- » Red River Basin Commission
- » Red River Management Board
- » International Water Institute
- » Trollwood Performing Arts School
- » Prairie's Edge Nordic Ski Group
- » Fargo Moorhead Trail Builders
- » River Keepers
- » Northern Plain Botanic Garden Society
- » MN Extension
- » Pheasants Forever
- » Local Fishing Groups

DONATIONS

Private donations are another potential funding source. These may be financial donations from individuals or area corporations or donations of labor from recreation clubs or use agreements. Programs such as “adopt-a-trail” or “adopt-a-park” by an organization, business, or individuals have successfully been used in many communities to help with maintenance tasks and raise awareness.

GRANTS

Grants are a way to make the City of Moorhead's dollars go further. The City has been successful in securing grant funding. Below is a sample of some grant opportunities that may be available along with websites to visit for more information.

MINNESOTA DNR

Website: www.dnr.state.mn.us/grants/index.html

The Minnesota DNR is one of the most comprehensive resources when it comes to state funding for park and trail programs. They offer a variety of grant programs and technical assistance. Current programs provide assistance for cross country skiing trails, mountain biking trails, horseback riding trails, recreational trails, habitat improvements, water and land conservation. Some programs also offer assistance for the development of parks or for trail amenities such as restrooms, lighting, benches, etc. Each of the Minnesota DNR grant programs is unique. The DNR should be consulted before pursuing a grant to clarify funding availability and qualifications.

MINNESOTA DOT & MAP- 21

Website: <http://www.dot.state.mn.us/grants/>

Most trail or bikeway improvement projects funded through Minnesota DOT also have a portion which is federal dollars. MAP-21, the Moving Ahead for Progress in the 21st Century Act is the first long-term highway authorization enacted since 2005. MAP-21 establishes a new program to provide for a variety of alternative transportation projects. The TAP replaces the funding from pre-MAP-21 programs including Transportation Enhancements, Recreational Trails, Safe Routes to School, and several other discretionary programs, wrapping them into a single funding source. Eligible activities include:

- » Construction, planning, and design of on-road and off-road trail facilities for pedestrians, bicyclists, and other nonmotorized forms of transportation.
- » Construction, planning, and design of infrastructure-related projects and systems that will provide safe routes for non-drivers, including children, older adults, and individuals with disabilities to access daily needs.
- » Construction of turnouts, overlooks, and viewing areas.
- » Community improvement activities, including—
 - Historic preservation and rehabilitation of historic transportation facilities;
 - Vegetation management practices in transportation rights-of-way to improve roadway safety, prevent against invasive species, and provide erosion control; and
 - Archaeological activities relating to impacts from implementation of a transportation project.
- » The City should begin collaborating with other local jurisdictions and organizations with focuses on the Red River to prioritize projects for the next round of federal transportation dollars. Building early support across multiple jurisdictions will better position the City in obtaining federal dollars.

Any environmental mitigation activity, including pollution prevention and pollution abatement activities and mitigation to—

- » Address stormwater management, control, and water pollution prevention or abatement related to highway construction or due to highway runoff; or reduce vehicle-caused wildlife mortality or to restore and maintain connectivity among terrestrial or aquatic habitats.

CLEAN WATER, LAND AND LEGACY AMENDMENT

On November 4, 2008, Minnesota voters approved the Clean Water, Land and Legacy Amendment to the Minnesota State Constitution which increased the general sales and use tax rate by three-eighths of one percentage point (0.375%) to 6.875% and dedicated the additional proceeds as follows:

- » 19.75% to a newly created Arts and Cultural Heritage Fund to be spent only for arts, arts education, and arts access, and to preserve Minnesota's history and cultural heritage.
- » 33% to a newly created Outdoor Heritage Fund to be spent only to restore, protect, and enhance wetlands, prairies, forests and habitat for game, fish and wildlife.
- » 33% to a newly-created Clean Water Fund to be spent only to protect, enhance, and restore water quality in lakes, rivers, streams and groundwater, with at least 5% of the fund spent to protect drinking water sources.
- » 14.25% to a newly created Parks and Trails Fund to support parks and trails of regional or statewide significance.

Funding from the Legacy Amendment is administered by a variety of agencies such as the Department of Natural Resources, Pollution Control Agency, Board of Water and Soil Resources, Department of Health, Historical Society, Minnesota State Arts Board and regional art councils. A number of new grant programs were created. Information about grant opportunities can be found on individual state department and organization websites.

BOARD OF WATER AND SOIL RESOURCES- CLEAN WATER FUND

Website: <http://www.bwsr.state.mn.us/cleanwaterfund/index.html>

Clean water legacy money dedicated to implementation of projects.

MINNESOTA POLLUTION CONTROL AGENCY- CLEAN WATER PARTNERSHIP & 319 PROGRAMS

Website: <http://www.pca.state.mn.us/index.php/water/water-types-and-programs/water-nonpoint-source-issues/clean-water-partnership/financial-assistance-for-nonpoint-source-water-pollution-projects-clean-water-partnership-and-section-319-programs.html>

The MPCA provides financial and technical assistance to local government and other water resource managers to address nonpoint-source water pollution through the State Clean Water Partnership (CWP) and Federal Clean Water Act Section 319 (Section 319) programs.

NPS RIVERS, TRAILS, AND CONSERVATION ASSISTANCE PROGRAM

Website: www.nps.gov/ncrc/programs/rtca/

The National Parks Service's (NPS) "Rivers, Trails and Conservation Assistance Program" (RTCA) is designed to provide communities technical assistance to conserve rivers, preserve open space, and develop trails and greenways. The RTCA program also implements the natural resource conservation and outdoor recreation mission of the National Park Service in communities across America. The NPS highly encourages communities to contact them before submitting an application for assistance.

THE ENVIRONMENTAL AND NATURAL RESOURCES TRUST FUND

Website: <http://www.legacy.leg.mn/funds/environment-natural-resources-trust-fund>

The Environment and Natural Resources Trust Fund was established following voter approval of a constitutional amendment in 1988. The money in the Trust Fund is generated by the Minnesota State Lottery. The Trust Fund holds assets that can be appropriated, "for the public purpose of protection, conservation, preservation, and enhancement of the state's air, water, land, fish, wildlife, and other natural resources."

Since 1991, the ENRTF has provided more than \$360 million to more than 800 projects around the state.

STATEWIDE HEALTH IMPROVEMENT PROGRAM

<http://www.health.state.mn.us/news/pressrel/2013/ship110413.html>

Continuing the effort to improve the health of Minnesotans, and reduce health care costs through low-cost, preventive measures, the Minnesota Department of Health (MDH) has awarded more than \$21.2 million in Statewide Health Improvement Program (SHIP) grants to counties and cities across Minnesota. The grants are by communities – in partnership with local businesses, schools, and local governments – to implement projects and programs that will promote exercise and physical activity, improve nutrition, and decrease tobacco use. Typically, eligible projects include:

- » Working with schools to encourage “Safe Routes to School” programs, so that kids arrive safely to school focused and ready to learn, and “Farm to School” programs, so that kids get healthy Minnesota produce and learn where their food comes from, all while benefiting local farmers.
- » Working with communities to encourage biking and walking, including “Complete Streets” with sidewalks and crosswalks, all designed to make it easier for people of all ages to get the physical activity they need.
- » Better access to healthy fruits and vegetables in corner stores in cities and convenience stores in greater Minnesota, and through more farmers markets, especially those accepting Electronic Benefit Transfer (EBT) so that more people can get the healthy food their families need.

For 2014-2015, Clay County (along with Wilkin, Becker and Otter Tail Counties) was awarded an ‘Innovation’ grant to explore new opportunities to improve health on a community wide-scale.

FOUNDATIONS & NON-PROFITS

There are foundations and non-profits that are interested in fulfilling their missions by supporting local projects. There are a number of on-line tools that can assist with the process of identifying additional foundations that may financially support park, trail, and bikeway improvements. The Minnesota Council of Foundations is a great starting point for identifying foundations. Another good starting point is to consider the businesses within Moorhead and using their websites to see if they have a foundation or charitable giving department. In addition to retailers and manufacturers, be sure to consider businesses such as the railroad, energy providers and communications companies.

COST ESTIMATES

GENERAL RECREATION & PARK CAPITAL, OPERATION, & MAINTENANCE COSTS

TABLE 83. CAPITAL, OPERATION, & MAINTENANCE COSTS

The following table is a tool that the City can use to initially evaluate and budget for new improvements and quickly grasp the general cost for new improvements. Equally important to the initial capital cost for a project are the on-going operations and maintenance costs. Adequately budgeting operations and maintenance ensures that facilities last their expected life and the River Corridor remains safe and welcoming.

	ELEMENT	CAPITAL COST	ANNUAL O&M COST	ESTIMATED LIFE (YEARS)
PARKS	Neighborhood Park (3-14 Acres)	no new neighborhood parks recommended	\$550 Per Acre	25-50
	Community Park (30+ Acres)	\$115,000 Per Acre	\$550 Per Acre	25-50
	New River Corridor Rec Node	\$50,000 Per Area	\$300 Per Area (assumes small parking area, natural surface loop trail, informational kiosk)	25-50
VEGETATION	Mowed Turfgrass (Non Irrigated)	\$25,000 Per Acre New Sod \$1,500 Per Acre New Seed	\$800 Per Acre (Includes: mowing, trimming, fertilizing, weed control, aerating & overseeding). \$400/ Acre (mowing and trimming only)	15-30
	Wetland Restoration	\$10,000 Per Acre	\$900 Per Acre	-
	Prairie - Savanna	\$5,000 Per Acre	\$300 Per Acre	-
	Floodplain Forest	\$4,000 Per Acre	\$400 Per Acre	-
	Invasive Species Management	\$500 Per Acre	\$200 Per Acre	-
	Tree Protection	\$20 Per Tree	Negligible	20
PARK BUILDING/ SHELTERS	Restrooms	\$250,000 (\$350-\$400 Sq. Ft.)	\$11,000 Per Bldg./Yr.	40
	Picnic Shelters (24-120 Capacity)	\$40,000-\$300,000 (\$125-\$150 Sq. Ft.)	\$3,800 Per Shelter/Yr.	40
TRAILS & SURFACES	Trails (10 Ft. Wide Asphalt)	\$140,000 Per Mile	\$5,280 Per Mile	30
	On-Road Bikeway	\$10,000-\$50,000 Per Mile	Re-striping and sign maintenance	-
	Natural Surface Hike/Ski Trail	\$30,000 Per Mile	\$500 Per Mile	-
	Parking Lots (Asphalt)	\$2,500-\$3,000 Per Stall	\$20-\$25 Per Stall	40
	Pedestrian Bridges	\$1,200 Lin. Ft.	\$3.50 Ln. Ft.	30

CAPITAL COST ESTIMATE

With a total estimated cost of over \$17 million prioritization and phasing will be essential to successful implementation. Planning level estimated capital, operations/maintenance, and long term capital replacement costs are identified in Table 84. While the table identifies phasing for projects, development will occur as funding becomes available and at the discretion of the City Council. The table identifies the full anticipated costs of the plan elements, though it is not anticipated that the City of Moorhead will be responsible for the full costs of improvements outlined.

TABLE 84. RIVER CORRIDOR COST ESTIMATES

Project ID	Project Name	Priority	Project Capital Cost	Operations & Maintenance Cost (Annual)	Capital Replacement Cost (Annual)
A-1	Design unified property boundary signage	Near Term	\$10,000.00	\$0.00	\$0.00
A-2	Develop and adopt landscape buffer design guidelines and a landscape buffer policy	Near Term	\$30,000.00	\$0.00	\$0.00
C-1	Develop wayfinding design standards and install wayfinding signs	Near Term	\$50,000.00	\$500.00	\$2,000.00
C-2	Bikeway – Red River to 15 th Avenue North (Wall Street North, Oakport Road North and North)	Near Term	\$312,000.00	\$23,636.36	\$0.00
C-4	New Bicycle – Pedestrian Bridge North of Moorhead Country Club	Visionary	\$1,200,000.00	\$500.00	\$1,000.00
C-6	Cross Country Ski Expansion within and South of M.B. Johnson Park	Near Term	\$30,000.00	\$568.18	\$1,500.00
C-7	Mountain Bike Trail Expansion South of Snaky Creek within M.B. Johnson Park	Near Term	\$50,000.00	\$946.97	\$2,500.00
C-8	On-road bikeway between 15th Avenue North and Homestead Park	Near Term	\$20,500.00	\$1,553.03	\$0.00
C-9	Paved Trail Homestead Park to Davy/Memorial Park	Near Term	\$365,750.00	\$3,850.00	\$18,287.50
C-10	Reconstruct Paved Trails from Davy/Memorial Park to Woodlawn Park	Near Term	\$893,000.00	\$9,400.00	\$44,650.00
C-14	Natural Surface hiking and cross country ski trail from Homestead Park to Davy/Memorial Park	Near Term	\$12,500.00	\$236.74	\$625.00
C-15	Realign Cross Country Ski Trails in Davy/Memorial Park, Riverfront Park and Viking Ship Park	Near Term	\$31,500.00	\$596.59	\$1,575.00
C-12	Replace Memorial/Oak Grove Bridge	Near Term	\$1,200,000.00	\$2,000.00	\$24,000.00
C-19	Relocate floating bridge from Woodlawn Park to Dike East Park in Fargo	Near Term	\$200,000.00	\$2,000.00	\$4,000.00
C-16	On road bikeway from Woodlawn Park to Gooseberry Mound Park (River Drive and 4 th Street South)	Near Term	\$20,500.00	\$0.00	\$0.00
C-17	Paved Trail from Gooseberry Mound Park to Horn Park	Near Term	\$427,500.00	\$4,500.00	\$21,375.00
C-21	Hiking Loop in Gooseberry Mound Park	Near Term	\$30,500.00	\$577.65	\$1,525.00
C-22	Cross Country Ski/Hiking Trail from Gooseberry Mound Park and Horn Park	Near Term	\$21,750.00	\$411.93	\$1,087.50
C-26	Bluestem Park to 60 th Avenue Southwest	Near Term	\$888,250.00	\$9,350.00	\$44,412.50
C-29	Cross Country Ski/Hiking Trail in River Oaks Park	Near Term	\$29,500.00	\$558.71	\$1,475.00
R-4	DNR Canoe Portage and Parking Improvements 15th Avenue North	Near Term	\$50,000.00	\$550.00	\$2,500.00
R-8	Improvements to Horn Park	Near Term	\$50,000.00	\$550.00	\$25,000.00
R-11	New Recreation Node at Riverview Circle South	Near Term	\$50,000.00	\$550.00	\$25,000.00
H-1	Prairie/Savannah Restoration at the New Recreation Node on Buffalo River Watershed District Land	Near Term	\$146,125.00	\$781.25	N/A
H-4	Prairie/Successional Floodplain Forest North of Moorhead Country Club	Near Term	\$61,300.00	\$375.00	N/A
H-5	Prairie/Savanna Restoration North of 15th Avenue North	Near Term	\$22,400.00	\$156.25	N/A
H-6	Prairie/Successional Floodplain Forest between Homestead and Davy/Memorial Parks	Near Term	\$9,800.00	\$93.75	N/A
H-11	Prairie Restoration/Successional Floodplain Forest from Gooseberry Mound Park to Horn Park	Near Term	\$39,600.00	\$312.50	N/A
H-12	Prairie/Oak Savanna Restoration in Horn Park	Near Term	\$22,990.00	\$125.00	N/A
H-13	Prairie/Successional Floodplain Forest/Tree Planting South of Horn Park	Near Term	\$70,125.00	\$468.75	N/A
H-14	Prairie/Oak Savanna Restoration at New Recreation Node at Riverview Circle South	Near Term	\$96,125.00	\$468.75	N/A
H-15	Prairie/Successional Floodplain Forest in River Corridor North of River Oaks Park	Near Term	\$18,315.00	\$93.75	N/A
H-16	Prairie/Oak Savanna Restoration in River Oaks Park	Near Term	\$22,725.00	\$156.25	N/A
Sub-total:			\$6,482,755.00	\$65,867.42	\$222,512.50

Funding will be a collaboration between the City, partner agencies, and organizations. In addition, all cost estimates are planning level, based on the level of detail outlined in this plan. Prior to implementation, refined cost estimates associated with desired design and anticipated operations and maintenance activities should be prepared.

The table identifies annual maintenance/operations costs for River Corridor improvements. It is important to note that for natural resource projects, a higher level of maintenance is anticipated for the first 5 years. For the purposes of this table, that additional maintenance cost is wrapped into the capital cost. Table 87 includes a breakdown of total capital and maintenance costs for natural resource projects for the 1-5 year time frame and 5-10 year timeframes.

Table 84 also includes yearly amortization of costs for major capital maintenance, or full facility replacement at the end of the lifecycle of each project (typically 25 years with 50 years for bridges).

Project ID	Project Name	Priority	Project Capital Cost	Operations & Maintenance Cost (Annual)	Capital Replacement Cost (Annual)
C-30	Cross Country Ski/Hiking Trails within and South of Bluestem Park	Long Term	\$91,750.00	\$1,737.69	\$4,587.50
C-27	Southern Pedestrian and Bicycle Bridge I (River Oaks Park)	Long Term	\$1,200,000.00	\$2,000.00	\$24,000.00
R-2	Improvements to M.B. Johnson Park	Long Term	\$636,000.00	\$3,400.00	\$31,800.00
R-3	New Recreation Node North of Moorhead Country Club	Long Term	\$50,000.00	\$550.00	\$2,500.00
R-5	Improvements to Original Homestead Park	Long Term	\$50,000.00	\$946.97	\$2,500.00
R-6	Improvements to Davy/Memorial/Riverfront Park/Viking Ship Park	Long Term	\$500,000.00	\$550.00	\$25,000.00
R-9	Improvements to Gooseberry Mound Park	Long Term	\$500,000.00	\$550.00	\$2,500.00
R-10	Improvements to River Oaks Park	Long Term	\$500,000.00	\$550.00	\$2,500.00
R-12	Improvements to Bluestem Park and Events Center	Long Term	\$500,000.00	\$550.00	\$25,000.00
I-1	Create a Comprehensive River Corridor Interpretation Plan	Long Term	\$75,000.00	\$0.00	\$0.00
H-2	Prairie Restoration at M.B. Johnson Park	Long Term	\$51,565.00	\$281.25	N/A
H-3	Wetland Restoration at M.B. Johnson Park	Long Term	\$31,025.00	\$281.25	N/A
H-7	Water Quality Improvements at Davy/Memorial Park, Riverfront Park, and Viking Ship Park	Long Term	\$27,405.00	\$156.25	N/A
H-10	Prairie/Oak Savanna Restoration in Gooseberry Mound Park	Long Term	\$44,945.00	\$218.75	N/A
H-18	Prairie seeding/Successional Floodplain Forest South of Bluestem Park	Long Term	\$88,975.00	\$468.75	N/A
Sub-total:			\$4,346,665.00	\$12,240.91	\$120,387.50
C-3	New Bicycle – Pedestrian Bridge at M.B. Johnson Park	Visionary	\$1,200,000.00	\$2,000.00	\$24,000.00
C-5	Ped-Bike- Ski Bridge over Snaky Creek in M.B. Johnson Park	Near Term	\$100,000.00	\$2,000.00	\$24,000.00
C-8.1	Riverside Trail 15th Avenue North and Homestead Park	Visionary	\$194,750.00	\$2,050.00	\$9,737.50
C-11	15 th Avenue North Toll Bridge Improvements	Visionary	\$38,000.00	\$400.00	\$1,900.00
C-13	Pedestrian and Bicycle Improvement to 1st Avenue Bridge	Visionary	\$38,000.00	\$400.00	\$1,900.00
C-19.1	Replace floating bridge from Woodlawn Park to Dike East Park in Fargo with a permanent structure	Visionary	\$1,200,000.00	\$2,000.00	\$24,000.00
C-16.1	Paved Trail from Woodlawn Park to Gooseberry Mound Park	Visionary	\$560,500.00	\$5,900.00	\$28,025.00
C-18	Paved Trail from Horn Park to River Oaks Park	Visionary	\$1,021,250.00	\$10,750.00	\$51,062.50
C-20	Natural Surface Cross Country Ski/Hiking Trail from Woodlawn Park to Gooseberry Mound Park	Visionary	\$62,250.00	\$1,178.98	\$3,112.50
C-23	Cross Country Ski/Hiking Trail from Horn Park to River Oaks Park	Visionary	\$51,000.00	\$965.91	\$2,550.00
C-24	Paved Trail from River Oaks Park to 46th Avenue South	Visionary	\$289,750.00	\$3,050.00	\$14,487.50
C-25	Paved Trail from 46th Avenue South to Bluestem Park	Visionary	\$41,000.00	\$776.52	\$2,050.00
C-28	Southern Pedestrian and Bicycle Bridge II (Bluestem Park)	Visionary	\$1,200,000.00	\$2,000.00	\$24,000.00
R-1	New Recreation Node on Buffalo River Watershed Land	Visionary	\$50,000.00	\$550.00	\$2,500.00
R-7	Improvements to Woodlawn Park	Visionary	\$500,000.00	\$550.00	\$25,000.00
H-8	Restored Wetland in Woodland Park	Visionary	\$51,700.00	\$250.00	N/A
H-9	Prairie/Successional Floodplain Forest South of Woodlawn Park	Visionary	\$47,300.00	\$937.50	N/A
H-17	Prairie and Potential Wetland Feature in Tessa Terrace Development	Visionary	\$90,650.00	\$562.50	N/A
Sub-total:			\$6,736,150.00	\$36,321.40	\$238,325.00
Total:			\$17,565,570.00	\$114,429.73	\$581,225.00

NATURAL RESOURCE PROJECTS – ONGOING MAINTENANCE

Natural resource restoration require a large investment at start up with potential cost savings in the long term (compared to mowed grass). Annual maintenance costs are higher during the first 5 years, when a native community is being established. After a establishment, these costs are lower. In areas that are currently being mowed, restoration can result in significant reductions in maintenance costs over the long term. As shown in the Table 84, it takes approximately 10 years for the initial investment in restoration to ‘pay-off’ with reduced annual maintenance costs. Figure 86 indicates the frequency of maintenance needed for natural and maintained landscapes. Maintained park areas require a continuous maintenance effort, while natural areas require maintenance one year or less.

FIGURE 86. ON-GOING MAINTENANCE EFFORT

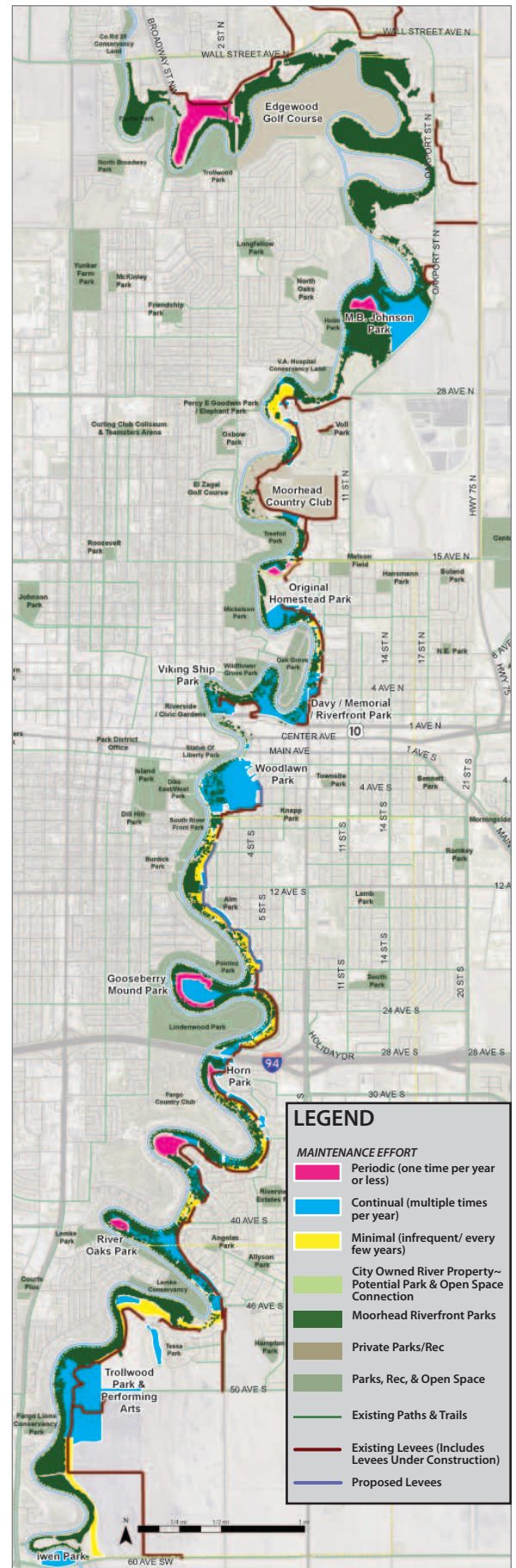


TABLE 87. ON-GOING MAINTENANCE COST ESTIMATES

Project #	Project	0-5		5-10		Total	
		Restoration	Mowing	Restoration	Mowing	Restoration	Mowing
H-1	Prairie/oak savanna restoration at the new recreation node on Buffalo Red River Watershed District Land	\$150,800		\$ 3,900		\$3,900	
H-2	Prairie/oak savanna restoration in M.B. Johnson Park	\$ 53,000	\$ 24,800	\$ 1,400	\$ 24,800	\$54,400	\$ 49,600
H-3	Wetland restoration in M.B. Johnson Park	\$ 32,400		\$ 1,400		\$33,800	\$ -
H-4	Prairie seeding/successional floodplain forest at area just north of Moorhead Country Club at N. River Dr.	\$ 51,900		\$ 1,000		\$52,900	\$ -
H-5	Prairie/oak savanna restoration at river just north of 15th Ave. N.	\$ 23,200	\$ 13,800	\$ 800	\$ 13,800	\$24,000	\$ 27,600
H-6	Prairie seeding/successional floodplain forest and tree planting on river corridor between Homestead Park and Davy/Memorial Park	\$ 21,100		\$ 900		\$22,000	\$ -
H-7	Water quality landscape improvements in Davy/Memorial/Riverfront and Viking Ship Parks	\$ 2,900		\$ 1,600		\$4,500	\$ -
H-8	Restored wetland in Woodlawn Park	\$ 54,200		\$ 1,500		\$55,700	\$ -
H-9	Native prairie seeding/ successional floodplain forest in corridor south of Woodlawn Park	\$ 50,000		\$ 3,100		\$53,100	\$ -
H-10	Prairie/oak savanna restoration in Gooseberry Mound Park	\$ 47,100	\$ 19,300	\$ 2,200	\$ 19,300	\$49,300	\$ 38,600
H-11	Prairie seeding/ successional floodplain forest in corridor between Gooseberry Mound Park and Horn Park	\$ 42,700		\$ 3,100		\$45,800	\$ -
H-12	Prairie/oak savanna restoration in Horn Park	\$ 24,200	\$ 11,000	\$ 1,300	\$ 11,000	\$25,500	\$ 22,000
H-13	Prairie seeding/ successional floodplain forest in corridor south of Horn Park	\$ 73,300		\$ 2,500		\$75,800	\$ -
H-14	Prairie/oak savanna restoration at open space at end of Riverview Circle South	\$ 98,500	\$ 41,300	\$ 2,300	\$ 41,300	\$100,800	\$ 82,600
H-15	Prairie seeding/ successional floodplain forest in corridor north of River Oaks Park	\$ 19,300		\$ 900		\$20,200	\$ -
H-16	Prairie/oak savanna restoration in River Oaks Park	\$ 24,300	\$ 13,800	\$ 1,600	\$ 13,800	\$25,900	\$ 27,600
H-17	Native prairie seeding and potential wetland feature in Tessa Terrace development	\$ 103,600		\$ 1,600		\$105,200	\$ -
H-18	Prairie seeding/ successional floodplain forest in corridor south of Bluestem Park	\$ 91,400		\$ 2,300		\$93,700	\$ -

Initial investment in project start-up, but in long term, costs associated with maintenance of restoration projects are significantly lower than costs associated with continued mowing

Does not include native plantings already installed along with flood mitigation structures, initial restoration costs may lower.

Cost estimates assume all work is to be done by contractors. If City staff, non-profits, volunteers, etc. do the work (implementation/ maintenance), costs may be significantly reduced.

Estimates for mowing were only provided for park areas that are currently maintained as turf grass. Costs for mowing were based on \$550/acre (most areas with mowing and trimming only, some with fertilizing, weed control, aerating, and over seeding).

