



MOORHEAD RIVER CORRIDOR MASTER PLAN

EXECUTIVE SUMMARY

Moorhead, Minnesota

April 30, 2014



Introduction

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 posed a consistent concern and 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 its flood mitigation goals but reconnect to the river corridor and transform it 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.

MASTER PLANNING PROCESS

The 18 month planning process was organized into two phases.

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

This phase identified the needs and issues related to the River Corridor.

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.

MASTER PLAN PURPOSE

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:

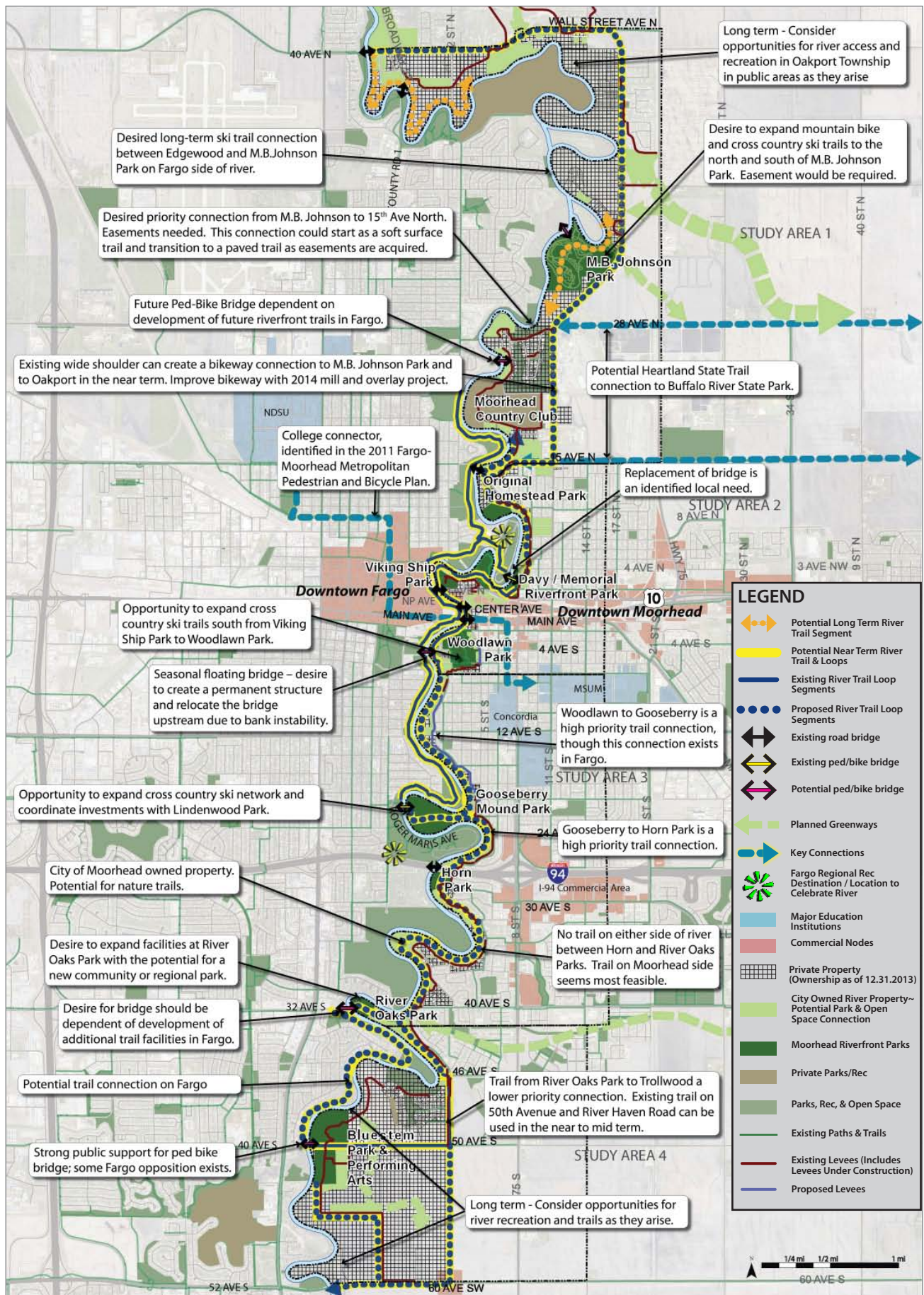
- » Addresses flood mitigation strategies
- » Proposes policy for lease/sale of public lands along the river corridor
- » Outlines strategies for the delineation of public & private land
- » Identifies a continuous river trail alignment, pedestrian bridge locations, and priorities
- » Defines activities 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

Existing Conditions

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 to neighborhoods along the river. 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.

Flood protection in Moorhead consists of existing levees, proposed levees, and levees that are under construction. Proposed levees are those that are desired by the City, but for which easements and acquisitions are required for project completion.

RIVER CORRIDOR NEEDS AND OPPORTUNITIES



Moorhead River Corridor Vision

“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.



PRINCIPLE 2: ATTRACTIVE RIVER CORRIDOR

Attractive River Corridor means creating a destination for the community with attention to clear delineation of public and private land, aesthetics, and safety, and to create a positive economic impact.



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.



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 including group and individual sports and nature-related activities, are recommended to draw people to 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.



PRINCIPLE 6: INTERPRETATION

Informational, cultural, historical, and environmental interpretation can be communicated in many ways, including: signage, organized events and programs, classes, tours, interactive technology, and brochures.

The Plan

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.

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.

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 (see page 12 for more 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.

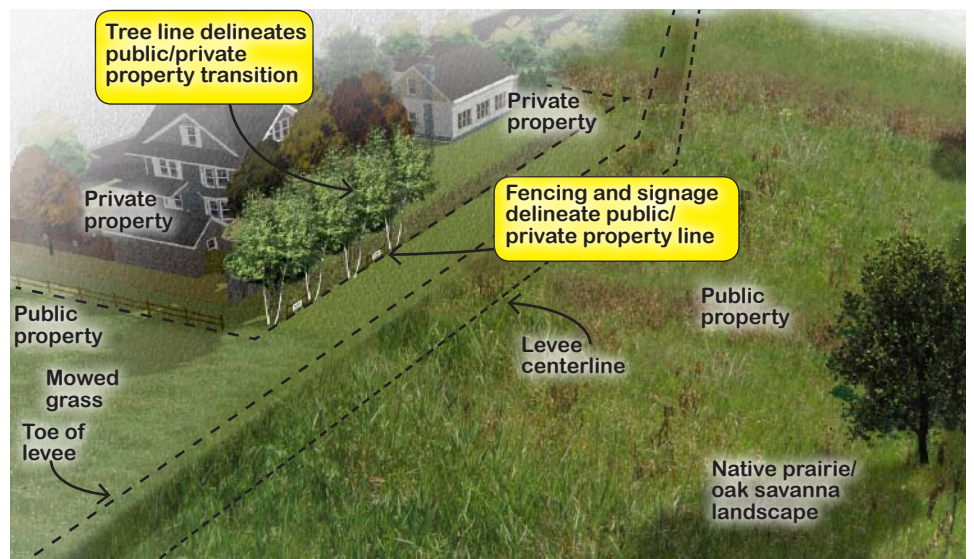


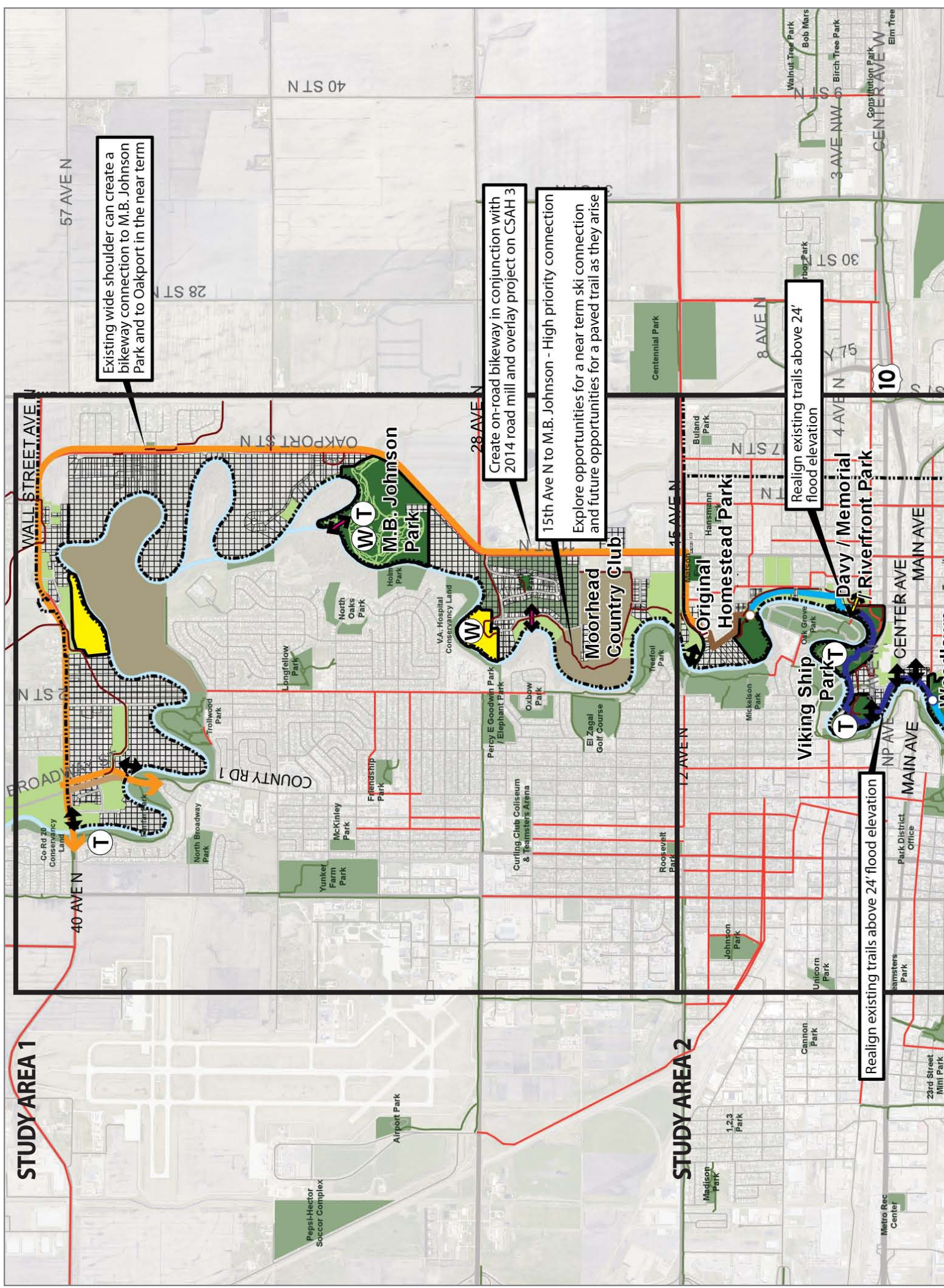
PROPOSED BOUNDARY SIGN DESIGN

TYPICAL ROADSIDE TRAIL



TYPICAL DELINEATION BETWEEN PUBLIC AND PRIVATE PROPERTY





Existing wide shoulder can create a bikeway connection to M.B. Johnson Park and to Oakport in the near term

Create on-road bikeway in conjunction with 2014 road mill and overlay project on CSAH 3

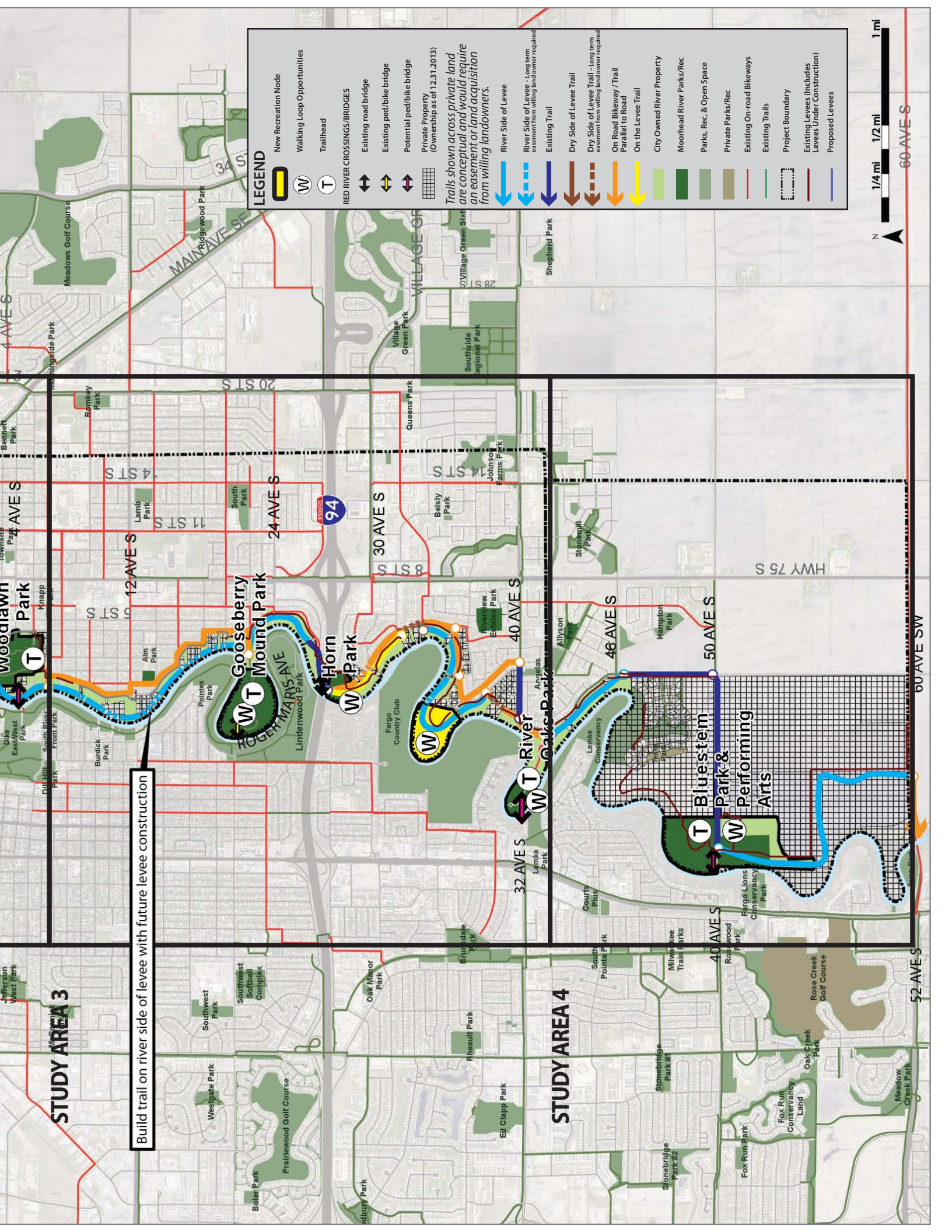
15th Ave N to M.B. Johnson - High priority connection
Explore opportunities for a near term ski connection and future opportunities for a paved trail as they arise

Realign existing trails above 24' flood elevation

Realign existing trails above 24' flood elevation

STUDY AREA 1

STUDY AREA 2



STUDY AREA 3

Build trail on river side of levee with future levee construction

STUDY AREA 4

LEGEND

- New Recreation Node
- Walking Loop Opportunities
- Trailhead
- RED RIVER CROSSINGS/BRIDGES**
- Existing road bridge
- Existing ped/bike bridge
- Potential ped/bike bridge
- Private Property (Ownership as of 12.31.2013)
- Trails shown across private land are conceptual and would require an easement or land acquisition from willing landowners.*
- River Side of Levee
- River Side of Levee - Long term easement from willing landowner required
- Existing Trail
- Dry Side of Levee Trail
- Dry Side of Levee Trail - Long term easement from willing landowner required
- On Road Bikeway / Trail Parallel to Road
- On the Levee Trail
- City Owned River Property
- Moorhead River Parks/Rec
- Parks, Rec, & Open Space
- Private Parks/Rec
- Existing On-road Bikeways
- Existing Trails
- Project Boundary
- Existing Levees (Includes Levees Under Construction)
- Proposed Levees

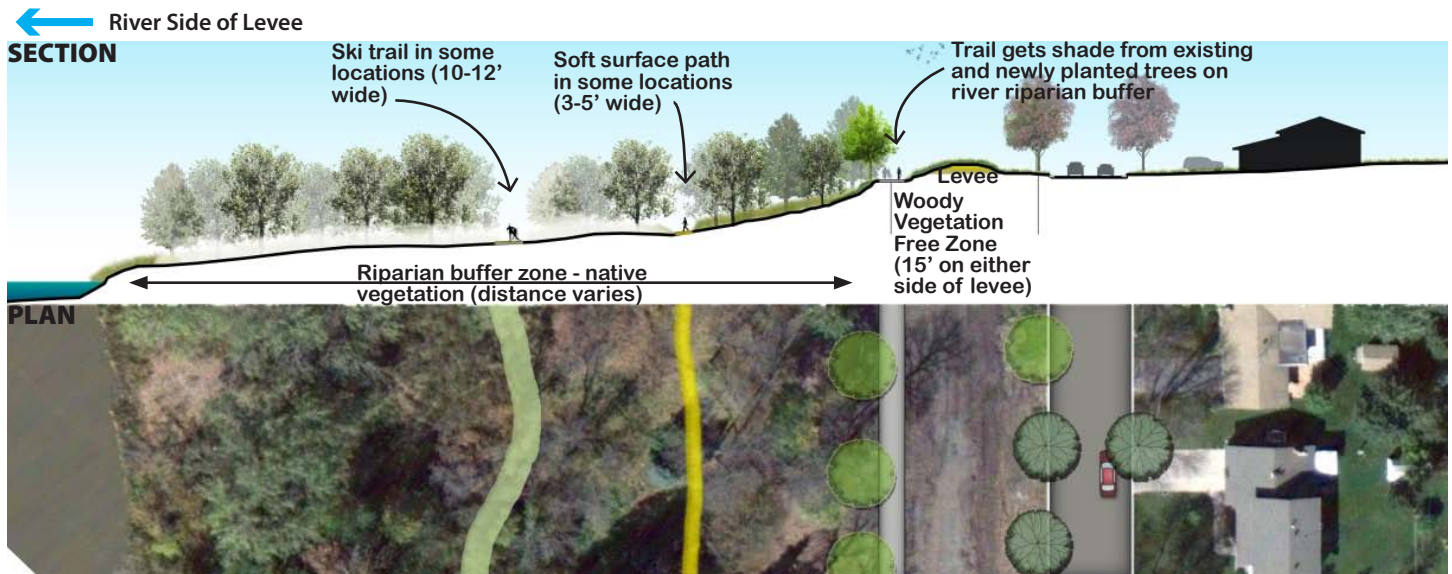


CONNECTIVITY PLAN

Connectivity 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.

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.

CORRIDOR SECTION - TRAIL ON RIVER SIDE OF LEVEE



HABITAT ENHANCEMENT AND WATER QUALITY PLAN

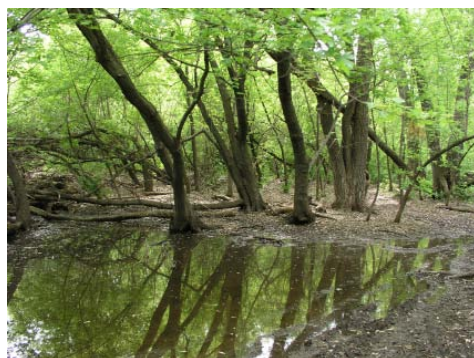
HABITAT ENHANCEMENT



Prairie

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.

WATER QUALITY



Floodplain forest

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.

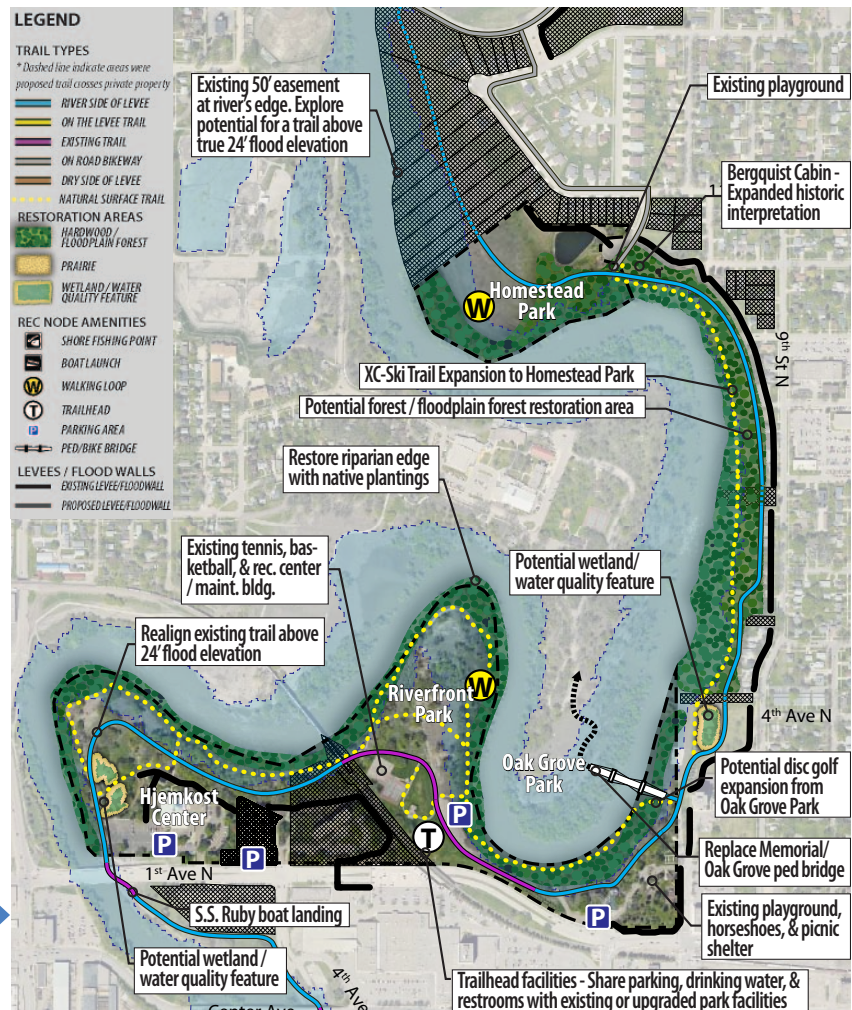
RECREATION PLAN

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, or recreation nodes, 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, including elements such as small walking loops, restoration, and signage.

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, and 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. It has the potential to expand into a 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.

IMPROVEMENTS TO ORIGINAL HOMESTEAD/VIKING SHIP/MEMORIAL/RIVERFRONT PARKS PLANS



INTERPRETATION PLAN

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.

Potential interpretive themes include:

- » River Recreation
- » The Changing Landscape
- » The Changing River
- » River History
- » Transportation
- » Agricultural History

Implementation

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 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.

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.

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 more long term benefits.

The following criteria were used in prioritizing key projects:

- » Enhances year round use
- » Improves the user experience
- » Contributes positively to the corridor’s character
- » Improves natural habitat and/or water quality and is ecologically sustainable
- » Respects private property
- » Contributes to corridor safety
- » Is technically feasible – can the project physically be built within a reasonable cost?
- » Is fundable/has funding available (capital and O & M)

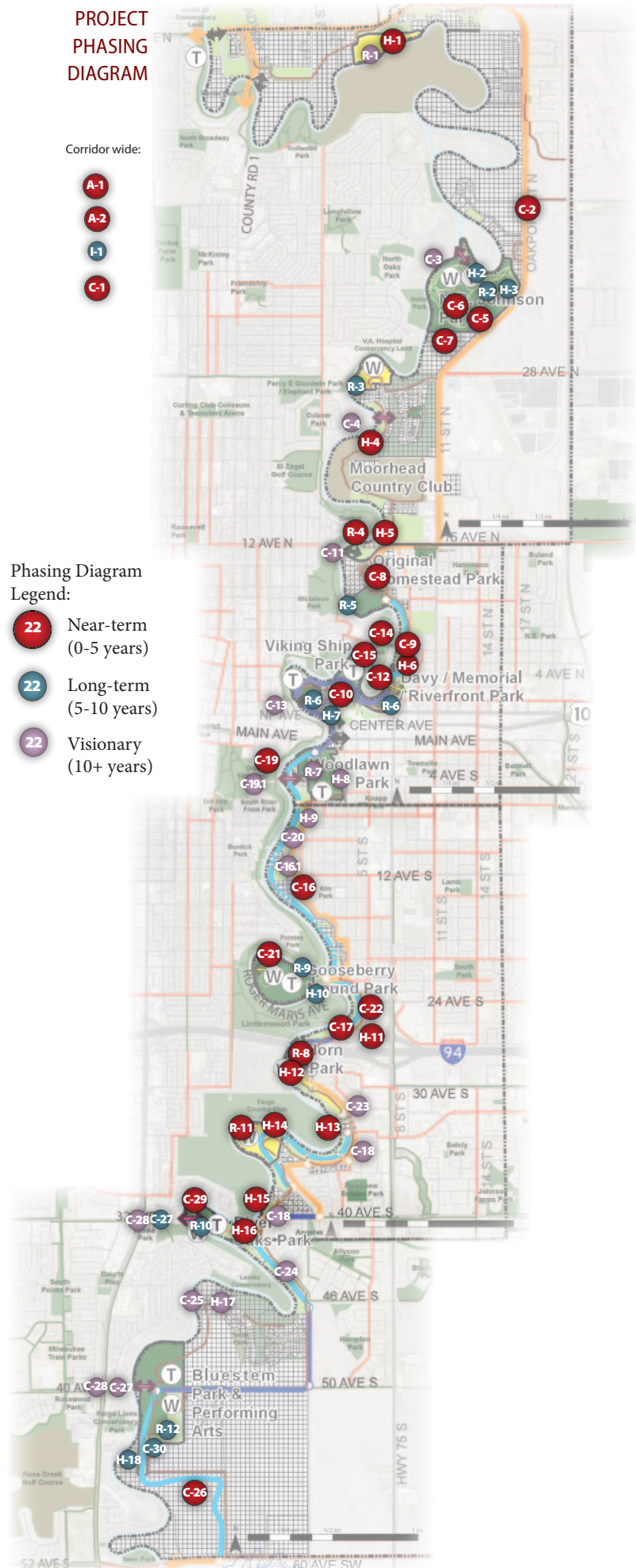
PROJECT PHASING DIAGRAM

Corridor wide:

- A-1
- A-2
- L-1
- C-1

Phasing Diagram Legend:

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



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/Savanna 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 | | High Priority |
| C-30 | Cross Country Ski/Hiking Trails within and South of Bluestem Park | \$ | 4 | Partnership | |
| R-2 | Improvements to M.B. Johnson Park | \$\$\$ | 1 | | Medium Priority |
| 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 | | Low Priority |
| 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 | | High Priority |
| C-13 | Pedestrian and Bicycle Improvement to 1st Avenue Bridge | \$\$\$ | 2 | | |
| C-18 | Paved Trail from Horn Park to River Oaks Park | \$\$\$ | 3 | | Medium Priority |
| 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 | | Low Priority |
| 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

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.

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.

FUNDING SOURCES

There is a significant funding gap between funding available within current City budgets (estimated at approximately \$900,000 - 1,000,000 over the next ten years) and needed funding to fulfill the River Corridor vision (estimated over \$18,000,000). 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.

Potential funding sources include:

- » General funds
- » Dedicated tax levy
- » Bonding
- » General park bond issue
- » State aid funds
- » Park and trail dedication
- » Franchise fees
- » Partnerships
- » Donations
- » Grants (MnDNR, Minnesota DOT and MAP-21, Clean Water, Land, and Legacy Amendment, BWSR - Clean Water Fund, MnPCA - Clean Water Partnership and 319 Programs, NPS Rivers, Trails, and Conservation Assistance Program, the Environmental and Natural Resources Trust Fund, Statewide Health Improvement Program)
- » Foundations and Non-profits