4135 - Drain 27 Wetland Restoration Project and Recreational Features

Application Details

Funding Opportunity:
3515-Outdoor Heritage Fund September 2020 - Round 17

Funding Opportunity Due Date: Sep 2, 2020 5:00 PM

Program Area: Outdoor Heritage Fund

Status: Under Review

Stage: Final Application

Initial Submit Date: Sep 1, 2020 11:44 AM

Initially Submitted By: Jason Benson

Last Submit Date: Sep 15, 2020 4:03 PM

Last Submitted By: Jason Benson

Contact Information

Primary Contact Information

Active User*: Yes

Type: External User

Name: Salutation Jason First Name Middle Name
Benson Last Name

Title: Cass County Engineer

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West Fargo City North Dakota State/Province

58078 Postal Code/Zip

Phone*: (701) 298-2372 Ext.
Phone
###-###-####

Organization Information

Status*: Approved

Name:*: Cass County

Organization Type:*: County Government

Tax Id:

Organization Website:: http://casscountynd.gov/

Address:*: 211 9 St S

Fargo North Dakota City State/Province

58103-0000 Postal Code/Zip

Phone:*: (701) 297-6000 Ext.
###-###-####

Fax:: ###-###-####

Benefactor:

Fax: (701) 298-2395
###-###-####

Comments:

Vendor ID:

PeopleSoft Supplier ID:

Comments::

Location Code:

SAM.gov Entity ID:

SAM.gov Name:

SAM.gov Entity ID Expiration Date:

State Issued ID:

Category #:

Year Begin:

Year Closed:

NCES#:

Budget

Objective of Grant

Objective of Grant:

The purpose of this grant is to assist in funding the Drain 27 recreational features, including OHF cost share to support the construction of trails and two trailhead nodes. This will assist in the recreational features to enhance the public use and educational components of the Drain 27 project.

Summary

Grant Request:	$443,000.00
Matching Funds:	$10,865,100.00
Total Project Costs:	$11,308,100.00
You must have at least 25% match	
Percentage of Match:	96.08%

Project Expenses

Project Expense Description	OHF Request	Match Share (Cash)	Match Share (In-Kind)	Match Share (Indirect)	Other Project Sponsor's Share	Total Each Project Expense
Wetland Construction	$0.00	$0.00	$0.00	$0.00	$2,208,100.00	$2,208,100.00
Land Acquisition	$0.00	$8,657,000.00	$0.00	$0.00	$0.00	$8,657,000.00
Recreational Features	$443,000.00	$0.00	$0.00	$0.00	$0.00	$443,000.00
	$443,000.00	**$8,657,000.00**	**$0.00**	**$0.00**	**$2,208,100.00**	**$11,308,100.00**

Budget Narrative

Budget Narrative:

The Drain 27 Wetland Restoration Project is a mitigation project associated with the FM Area Diversion Project. The Wetland Project is being led by the U.S. Army Corps of Engineers with the City of Fargo and the Metro Flood Diversion Authority being local sponsors. As local sponsors, the requirement to acquire the necessary land for the Wetland Project falls on the Diversion Authority, and through them, the Cass County Joint Water Resource District. The approximately $8.6M in land acquisition expenses is being funding through voter-approved sales taxes passed in Cass County and the City of Fargo. The $2.2M in federal construction costs are being funding through federal appropriations through Congress. Together, these funding sources make up 96% of the total project cost. The Outdoor Heritage Fund application is for $443,000 to enhance the features of the project consistent with the four directives of the Outdoor Heritage Fund.

Bid Attachments

Description	File Name	Type	Size	Upload Date
	No files attached.			

Match Funding

Match Amount	Funding Source	Match Type
$2,208,100.00	U.S. Army Corps of Engineers	Cash
$8,657,000.00	Cass County and Fargo Sales Tax Proceeds	Cash
$10,865,100.00		

In-Kind

In-Kind Total:

Description

Directives

Major Directive*: Directive C

Choose One

Additional Directive: Directive D
Choose All That Apply

Type of Agency*: Political Subdivision
Choose One

Abstract/Executive Summary

Abstract/Executive Summary*:

The Drain 27 Wetland Restoration Project is a mitigation project associated with the FM Area Diversion Project. The Wetland Project is being led by the U.S. Army Corps of Engineers with the City of Fargo and the Metro Flood Diversion Authority being local sponsors. In total, the Wetland Project is proposed to be $11.3M. As local sponsors, the requirement to acquire the necessary land for the Wetland Project falls on the Diversion Authority, and through them, the Cass County Joint Water Resource District. The approximately $8.6M in land acquisition expenses is being funding through voter-approved sales taxes passed in Cass County and the City of Fargo. The $2.2M in federal construction costs are being funding through federal appropriations through Congress. Together, these funding sources make up 96% of the total project cost. The Outdoor Heritage Fund application is to enhance the features of the project consistent with the directives of the Outdoor Heritage Fund to developing, enhancing, conserving and restoring wildlife and fish habitat on private and public lands;and conserving natural areas and creating other areas for recreation through the establishment and development of parks and other recreation areas.

Construction of the FM Area Diversion Project will result in unavoidable impacts to wetlands. Section 404 of the Clean Water Act requires that unavoidable impacts to aquatic resources be replaced through restoration, establishment, enhancement, and/or preservation of lost functions and services. Restoration of the Drain 27 site in Stanley Township will mitigate wetland impacts of the Southern Embankment component of the Diversion Project in North Dakota.

Conceptual plans to restore wetlands in the Drain 27 area involve the construction of a weir near the Southern Embankment to an elevation of 906.3.
The total size of the wetland restoration site is expected to be approximately 320 acres.
- The weir would pond water to reestablish wetland hydrology and vegetation to approximately 150 acres.
- A 50 foot buffer surrounding the restored wetland would result in another 70 acres.
- Several upland areas (about 100 acres) that become inefficient for farming or inaccessible would be incorporated into the site. The project will be designed, in
consultation with natural resource agencies, and constructed by the U.S. Army Corps of Engineers.

Project Duration

Project Duration*:

The Wetland Restoration is a permanent restoration project. Land acquisition and design are already underway with construction award planned for late 2021. Construction of the Wetland is expected to take place in the 2022 construction season. The recreational components will be a long-term public use with the operation and maintenance responsibility and ownership falling under the Metro Flood Diversion Authority, Cass County, City of Fargo, and the Cass County Joint Water Resources District.

Narrative

Narrative

Briefly summarize your organization's history, mission, current programs and activities. Include an overview of your organizational structure, including board, staff and volunteer involvement.

Organization Information*:

Cass County is a member of the Metro Flood Diversion Authority. The Diversion Authority was created in 2011 and solidified with a Joint Powers Agreement (JPA) in 2016 between the Cities of Fargo and Moorhead, along with Cass County (ND), Clay County (MN), and the Cass County Joint Water Resources District (CCJWRD)(ND). The purpose of the JPA was to establish a framework for the planning, design and management of the proposed Project. The Diversion Authority has partnered with the United States Army Corps of Engineers to plan, authorize, secure funding for, and construct a flood risk reduction project for the F-M metropolitan area. Ownership, operation, and maintenance of the 2016 Project was to be the collective responsibility of the Diversion Authority, the City of Moorhead, the City of Fargo, and other potential non-Federal sponsors.

The purpose of the Project is to reduce flood risk, flood damages, and flood protection costs related to flooding in the F-M metropolitan area, including the official purpose and need to Reduce flood risk potential associated with a long history of frequent flooding on local streams including the Red River, Sheyenne, Wild Rice, Maple, Rush and Lower Rush Rivers passing through or into the F-M metropolitan area, and Qualify substantial portions of the F-M metropolitan area for 100-year flood accreditation Reduce flood risk for floods exceeding the 100-year flood or greater, given the importance of the F-M metropolitan area to the region and recent frequencies of potentially catastrophic flood events.

The Diversion Authority is governed by a 13 person board, including 3 Cass County Commissioners (Steen, Peterson, Scherling), 3 Fargo City Commissioners (Mayor Mahoney, Piepkorn, Strand), 1 Cass County Joint Water Resource District Manager (Olson), 3 Moorhead Council Members (Mayor Judd, Hendrickson, Carlson), and 2 Clay County Commissioners (Campbell, Weyland).

The Executive Director of the Diversion Authority is Joel Paulsen.

Describe the proposed project identifying how the project will meet the specific directive(s) of the Outdoor Heritage Fund Program.

Identify project goals, strategies and benefits and your timetable for implementation. Include information about the need for the project and whether there is urgency for funding. Indicate if this is a new project or if it is replacing funding that is no longer available to your organization. Identify any innovative features or processes of your project.

Note: if your proposal provides funding to an individual, the names of the recipients must be reported to the Industrial Commission/Outdoor Heritage Fund. These names will be disclosed upon request.

If your project involves an extenuating circumstance to exempted activities please explain.

Purpose of Grant*:

The purpose of this grant is to assist in funding the Drain 27 recreational features. This includes OHF cost share to support the construction of trails and two trailhead nodes.

Construction of the FM Area Diversion Project will result in unavoidable impacts to wetlands. Section 404 of the Clean Water Act requires that unavoidable impacts to aquatic resources be replaced through restoration, establishment, enhancement, and/or preservation of lost functions and services. Restoration of the Drain 27 site in Stanley Township will mitigate wetland impacts of the Southern Embankment in North Dakota.

Wetland restoration simply means the process of returning a former or degraded wetland to conditions that more closely resemble what the land was historically. Wetland restoration sites are often areas that have been altered by human activities. Human action typically alters one or more of the three principle wetland characteristics (wetland vegetation, hydric soils, and hydrology). Historic wetlands identified for restoration often lack the benefits of functional wetlands. The goal of restoration is to reestablish lost functions.

The Diversion Authority contracted with the Fargo-Moorhead Metropolitan Council of Governments to develop an FM Greenway concept to look for opportunities along the Diversion Project that could promote additional public benefit. These opportunities would need to develop and seek funding outside of those funds dedicated for flood protection.

The development of the FM Greenway Master Plan was informed by input received from community stakeholders. A Study Review Committee (SRC) was established with members representing many of the cities adjacent the greenway, including Horace, West Fargo, Fargo, Fargo Parks, West Fargo Parks, Horace Parks, and Cass County, along with other local agencies, that provided valuable insight and guidance to the process. The SRC met six times over the course of the study. Two rounds of public engagement were held. The first round focused on identifying community-desired recreation activities. The second round solicited feedback on the draft Master Plan.

Area residents have expressed a clear desire for more trail experiences. The long-term vision for the FM Greenway is to provide year-round trail access for people to walk, jog, bike, and to ride horses and all-terrain vehicles. The snow season provides opportunities to also snowshoe, cross-country ski, and snowmobile.

The preparation of the FM Greenway Master Plan was funded in part by the United States Department of Transportation with funding administered through the North Dakota Department of Transportation, the Federal Highway Administration, and the Federal Transit Administration.

There are very limited outdoor recreation options, even more scarce are publicly accessible wetland trails, near the Fargo metro area. With one-fifth the population of North Dakota located within the Fargo-West Fargo area of Cass County, the Drain 27 Wetland Restoration Project is ideally located to share the Directives of the Outdoor Heritage Fund with a large population of North Dakotans that otherwise would have to travel a significant distance to enjoy in a key part of North Dakota's heritage.

Please list the counties that would be impacted by this project:

Counties*:	Cass
Is This Project Part of a Comprehensive Conservation Plan?*:	Yes
If Yes, Please Provide Copy of Plan:	12501_FargoMoorheadGreenway_RecreationMasterPlan_200803.pdf

Does Your Project Involve an Extenuating Circumstance?*: No

Please Explain:

Provide a description of how you will manage and oversee the project to ensure it is carried out on schedule and in a manner that best ensures its objectives will be met. Include a brief background and work experience for those managing the project.

Management of Project*:

The U.S. Army Corps of Engineers has received federal appropriations for the construction of the Wetland Mitigation Project. In addition, the voters of Fargo and Cass County have overwhelmingly approved sales tax initiatives to fund the required land acquisition for the Wetlands Project. The sales revenue collected by Cass County and the City of Fargo has been dedicated for use by the Metro Flood Diversion Authority, a North Dakota political subdivision, who has the legal requirement to manage and maintain the required mitigation, including the Wetland Project.

Indicate how the project will be funded or sustained in future years. Include information on the sustainability of this project after OHF funds have been expended and whether the sustainability will be in the form of ongoing management or additional funding from a different source.

Sustainability*:

Sales tax measures in Fargo and Cass County have been voter-approved until 2084. Funding received from these sales taxes can be used to fund the long-term operation and maintenance of the Wetland Project.

Indicate how the project will be affected if less funding is available than that requested.

Partial Funding*:

This grant is critical to funding the Drain 27 recreational features, including trails and two trailhead nodes. If no funding is received from the Outdoor Heritage Fund, then the public access and recreational features will not be included in the initial design and construction of the Wetland Project. Potentially they could be added at a later date if funding becomes available, but that would create inefficiencies and added costs. It is ideal to include potential features during the initial design and construction.

If you are a successful recipient of Outdoor Heritage Fund dollars, how would you recognize the Outdoor Heritage Fund partnership? * There must be signage at the location of the project acknowledging OHF funding when appropriate. If there are provisions in that contract that your organization is unable to meet, please indicate below what those provisions would be.

Partnership Recognition*:

There will be two identified trail heads included in the design of the recreational features. These trail heads will include signage and kiosks. The Outdoor Heritage Fund would be recognized at each trail head as a valued partner.

Do you have any supporting documents, such as maps or letters of support that you would like to provide? If so, please provide them in a single file.

Supporting Documents*: Yes

If Yes, Please Provide Copies in a Single File: Letter of Support - Drain 27 OHF Grant Application_09012020.pdf

Awarding of Grants - Review the appropriate sample contract for your organization. Sample Contract

Can You Meet All the Provisions of the Sample Contract?*: Yes

If there are provisions in that contract that your organization is unable to meet, please indicate below what those provisions would be:

Provisions Unable to Meet:

Tasks

Tasks

Task	Start Date	Completion Date
Construction	09/01/2021	10/01/2022
Environmental Assessment	06/30/2020	08/01/2020
Land Acquisition	08/01/2020	07/01/2021
Project Design	01/01/2020	06/01/2021

Description of Tasks

Please Describe Tasks:

Deliverables

Deliverables

Deliverable	Quantity	Unit of Measurement, if applicable
Bid Documents	1.000	USACE is the lead agency bidding the project with Diversion Authority review.
Design	1.000	USACE is the lead agency conducting the project design and plans with Diversion Authority review.
Final Project Ownership and Operations	1.000	Upon project acceptance the Diversion Authority will own, operate, and maintain this project.
Progress Reports	1.000	USACE will produce progress reports and conduct regular construction progress meetings.
Project Acceptance	1.000	USACE and Diversion Authority will certify the project is complete and accepted.
Project Management	1.000	USACE is the lead agency managing the project and construction with Diversion Authority oversight.

Certification

Certification

Certification: Yes

Name: Jason Benson
First Name Last Name

Title: Cass County Engineer
Title

Date: 09/01/2020

Internal Application Number

#/ID:

Industrial Commission Action

Industrial Commission Action

Date of Commission meeting*:

Did the Commission approve funding?*:

If Yes, what is the approved funding level?:

Are there any contingencies?*:

If Yes, what are the contingencies?:

Minutes:

FARGO - MOORHEAD GREENWAY

RECREATION MASTER PLAN

AUGUST 3, 2020 DRAFT

METROCOG
FARGO-MOORHEAD METROPOLITAN COUNCIL OF GOVERNMENTS

SRF

The preparation of this document was funded in part by the United States Department of Transportation with funding administered through the North Dakota Department of Transportation, the Federal Highway Administration, and the Federal Transit Administration. Additional funding was provided by the Minnesota Department of Transportation and through local contributions from the governments of Fargo, West Fargo, Horace, and Cass County in North Dakota; and Moorhead, Dilworth, and Clay County in Minnesota. The United States Government and the States of North Dakota and Minnesota assume no liability for the contents or use thereof.

PROJECT CONSULTANT TEAM

SRF

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TABLE OF CONTENTS

LIST OF FIGURES

EXECUTIVE SUMMARY

PROJECT INTRODUCTION

The Fargo-Moorhead (FM) Greenway is an opportunity to create a 30-mile, signature greenway that serves as a catalyst for year-round recreation and economic development. Today, there is a gap in signature recreational opportunities in eastern North Dakota. The FM Greenway will create an inviting, engaging and accessible regional destination that enhances the brand of the FM area. It will also provide a new space for programming and events, active recreation, and quiet enjoyment, and will extend the region's trail network.

PUBLIC ENGAGEMENT

The development of the FM Greenway Master Plan was informed by input received from community stakeholders. A Study Review Committee (SRC) was established with members representing many of the cities adjacent the greenway, along with other local agencies, that provided valuable insight and guidance to the process. The SRC met six times over the course of the study. Two rounds of public engagement were held. The first round focused on identifying community-desired recreation activities. The second round solicited feedback on the draft Master Plan.

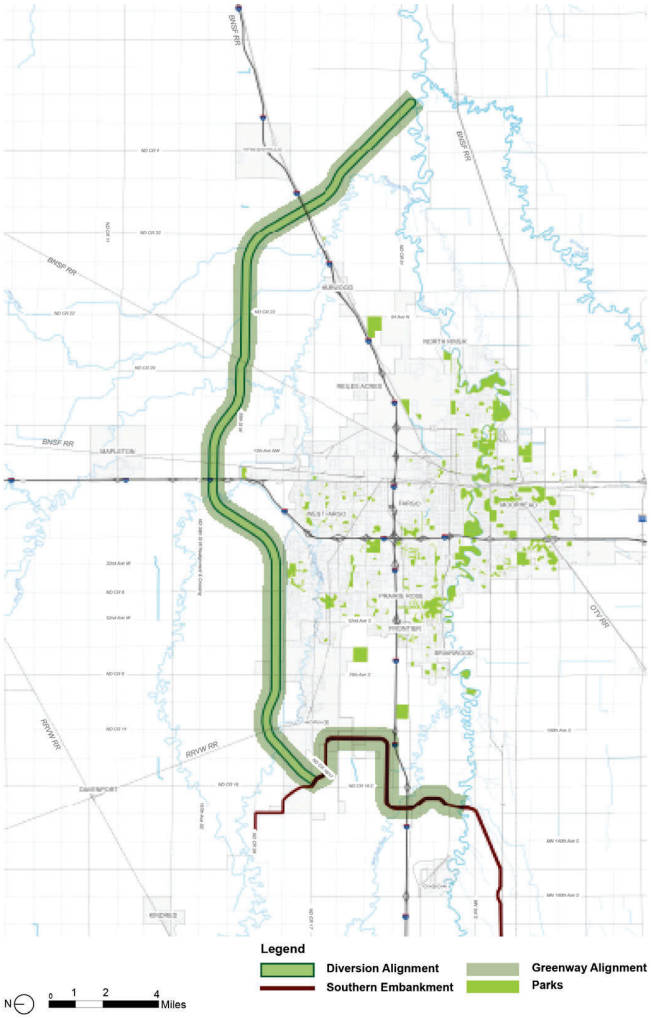
RECREATION VISION

Area residents have expressed a clear desire for more trail experiences. The long-term vision for the FM Greenway is to provide year-round trail access for people to walk, jog, bike, and to ride horses and all-terrain vehicles. The snow season provides opportunities to also snowshoe, cross-country ski, and snowmobile.

Nodes along the greenway will create a wide variety of recreation and cultural activities. Nature based recreation will include camping, fishing, and gathering for picnics. Athletic fields will be provided for people who participate in competitive sports such as baseball, softball, or soccer. Opportunities for local food production will be provided through community gardens and urban agriculture. Area residents also indicated a strong interest in social and cultural experiences that can be cultivated through seasonal festivals, performing arts, and public art. The greenway trails and nodes will be tied together with prairie plant communities that create habitat for birds, pollinators and other wildlife.

GREENWAY BENEFITS

The creation of the FM Greenway will generate significant net new value for the FM region. Recurring impacts accrue from increases in the value of existing residential assets, new multifamily development, visitor spending, and talent attraction.



TOURISM

Annually North Dakotans make over 160,000 trips to Minnesota for outdoor-based recreation, leading to the leakage of tourism spending and associated lost fiscal revenue that could otherwise remain local. Given the strong desire expressed by residents for additional recreational opportunities in the region, the FM Greenway presents the opportunity to capture back a portion of those trips. Gaining back just 20 percent of those trips will generate over $100 million over 20 years.

The FM Greenway will also attract net new local and regional visitors. Based on comparable greenways in similar climates, the FM Greenway has the potential to attract approximately 90,000 visitors per year, resulting in $18 million of new visitor spending over 20 years.

REAL ESTATE PREMIUMS

Public spaces increase the value of existing real estate assets within close walking distance, as residents and workers value proximity to public spaces. The opening of the FM Greenway will have a similar impact on the value of single-family homes, which is the primary real estate asset within close proximity of the greenway. Assuming an annual premium of nearly 8.5 percent for the first five years after the opening of the greenway, based on comparable open spaces, the FM Greenway will generate $145 million in economic output associated with increased real estate values.

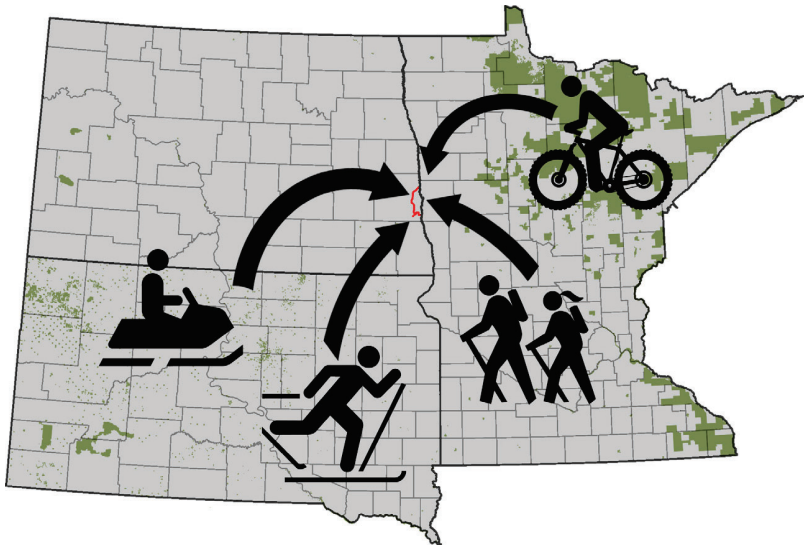
HEALTH BENEFITS

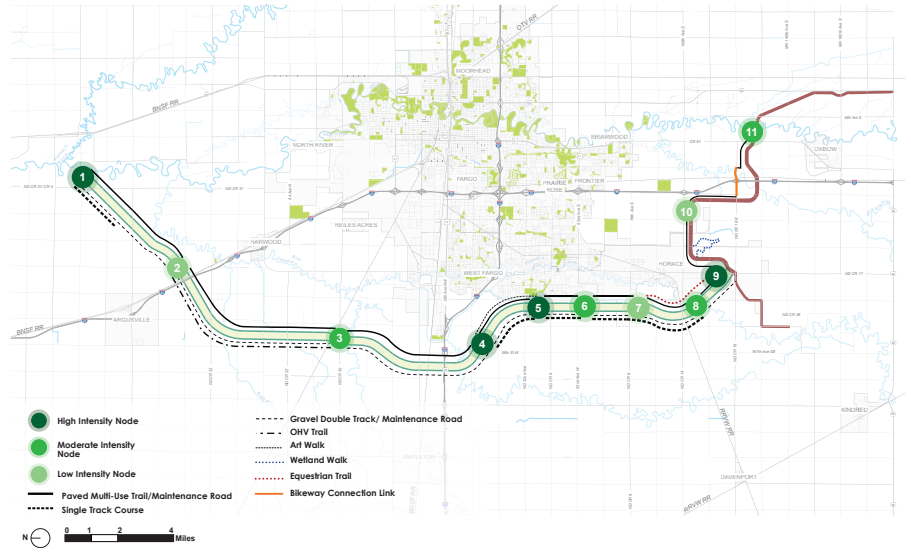
A variety of literature highlights the public health benefits of open spaces, from improved health outcomes to healthcare cost savings. Currently, Fargo residents experience health risks typical of what is found elsewhere in the country. The FM Greenway will create critical open space that has the potential to result in significant health and healthcare cost benefits for both the 24,000 residents that are projected to live within one mile of the greenway by 2045 and the more than 1 million residents that live within the average drive time for visits to destination open spaces.

BRAND VALUE

Finally, investments in signature recreation amenities like the greenway increases a region's brand value and helps attract business and investment as the vast majority of businesses and high-skill workers base location decisions on quality of life factors and access to open space.

These findings indicate the FM Greenway will provide significant benefit and support the continued growth and prosperity of the FM region.





IMPLEMENTATION

GREENWAY GOVERNANCE STRUCTURE

A key component to the successful implementation of the FM Greenway is the establishment of a governance structure for the design and implementation of recreation facilities and for on-going operations and programming. An analysis of potential governing entities was performed to determine each entity's capacity to provide the oversight and leadership needed to successfully govern the greenway. This evaluation resulted in a recommendation that Metro COG serve as the lead governing entity. Metro COG already has a broad mandate to enhance quality of life and improve economic development in the area. Through this mission, Metro COG can set up a structure to receive direction from FM area community representatives regarding regional recreation and establish relationships with recreation-provider partners.

COORDINATION WITH FARGO-MOORHEAD AREA DIVERSION IMPLEMENTATION

FM Greenway trails and select other recreation features will be implemented on the Fargo-Moorhead Area Diversion, taking advantage of land not needed for the direct conveyance of floodwater flows, such as the Excavated Material Berms (EMBs) and floodwater storage embankments. In order to expedite project implementation, the FM Diversion Authority and the United States Army Corps of Engineers (USACE) have established a split delivery approach. The FM Diversion Authority is leading the implementation of the diversion channel and associated infrastructure, such as aqueducts, inlets, EMBs, outlets and bridges over the channel using a public-private partnership (P_3) delivery process. The USACE is leading the implementation of the southern embankment and associated control structures. These design and construction processes will establish the base condition for the establishment of the greenway such as undulating EMBs, vegetation, and maintenance roads that will double as recreation trails. It would be beneficial for the lead governing entity to participate in the design review process to ensure these facilities are able to support future recreation to the greatest extent possible.

COORDINATION WITH IMPLEMENTATION PARTNERS

The successful provision of recreation along the greenway will require the lead governing entity to establish partnerships in order to identify recreation priorities and best use available capacity and resources. Based on conversations with potential partners, the following partnership opportunities should be discussed and analyzed further:

- North Dakota Parks and Recreation
- Cass County
- Fargo Park District
- Horace Park District
- West Fargo Park District
- Nonprofit organizations focused on education and natural resources
- Recreation clubs

METROCOG

IMPLEMENTATION PHASING

The FM Greenway presents a significant recreation opportunity for the FM community, yet it is a long-term vision that will require a sustained commitment towards implementation, operations and maintenance.

SHORT-TERM IMPLEMENTATION (2020 – 2026)

The following should be the focus of the early implementation activities.

- Establish a governing entity
- Secure recreation node parcels
- Secure recreation partnership agreements
- Initial diversion and associated trail construction

MID-TERM IMPLEMENTATION (2027 – 2036)

The following activities should be the focus of mid-term implementation activities.

- Recreation node and trail development
- Complete multi-use trail paving
- Greenway marketing, programming and maintenance

LONG-TERM IMPLEMENTATION (2037 – 2056)

The following activities should be the focus of long-term implementation activities.

- Complete recreation feature development
- Greenway marketing, programming and maintenance

PROJECT INTRODUCTION

The Fargo-Moorhead (FM) Greenway is an opportunity to create a 30-mile, signature greenway that will serve as a catalyst for year-round recreation and economic development. The greenway will parallel the FM Area Diversion spanning the western edge of the Fargo-Moorhead metropolitan area. While the primary purpose of the diversion is protection for infrequent flood events, this significant public infrastructure corridor can concurrently function as a greenway that provides recreation opportunities to FM residents on a daily basis. Today, there is a gap in signature recreational opportunities in eastern North Dakota. FM area residents typically need to travel over 50 miles to regional parks such as Turtle River and Fort Ransom State Parks or 'Lakes Country' in Minnesota. The FM Greenway will create an inviting, engaging and accessible regional destination that enhances the brand of the FM area. It will also provide a new space for programming and events, active recreation, and quiet enjoyment, and extend the region's trail network.

PROJECT BACKGROUND

Over the past 20 years, the FM area has experienced increased flooding events. Without protection, these flood events can have catastrophic consequences for area residents and businesses. In order to protect the community moving forward, the FM area established the FM Diversion Authority to guide the planning and implementation of enhanced flood protection. The FM Diversion Authority is coordinating with and receiving assistance from the United States Army Corps of Engineers (USACE) on this important project. A significant component of the planned flood protection is the creation of a diversion channel that will divert the Red River flood flows around the west side of the community while also intercepting and diverting flood flows from contributing rivers and overland surface flows. The channel will be supplemented with an earthen embankment south of the community that will temporarily hold water during large flood events and then divert this water to the diversion channel (Figure 1.1).

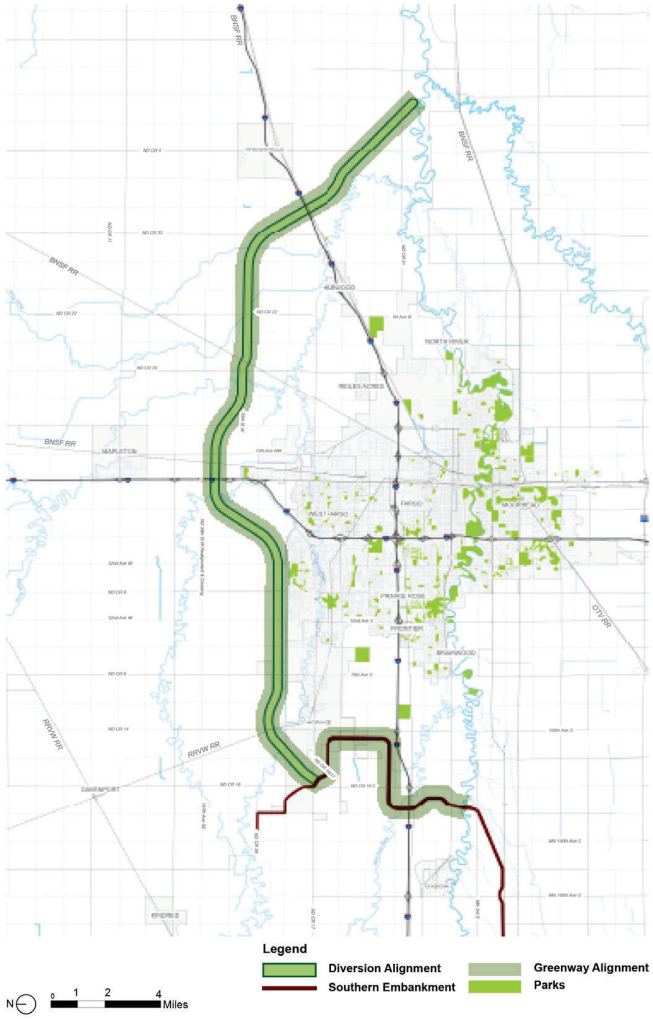


Figure 1.1 FM Area Diversion Alignment

In addition to the diversion channel and southern embankment, the diversion project is comprised of additional infrastructure elements (Figure 1.2), such as:

- Control structures on the Red and Wild Rice Rivers and at the inlet to the channel. These structures will control the flows passing into the protected area and into the diversion channel during large flood events
- Aqueducts over the channel to maintain base flows for the Sheyenne and Maple Rivers, along with spillways to divert flood flows from these rivers into the channel
- Channel inlet structures at Drain 14 and the Rush and Lower Rush Rivers
- An outlet structure where the channel drains back into the Red River

A number of these structures will include fish passages to minimize disruption of fish movement within the river system. The project will also include the construction of 19 new roadway bridges and four railroad bridges. The primary purpose of these structure is either for flood protection or to support transportation across the diversion. The design of these structures can either create barriers to recreational trail activity or support and facilitate recreation trail activity. To the extent feasible, it is desired that structures are designed to accommodate pedestrian and bicycle movement along and across the greenway.

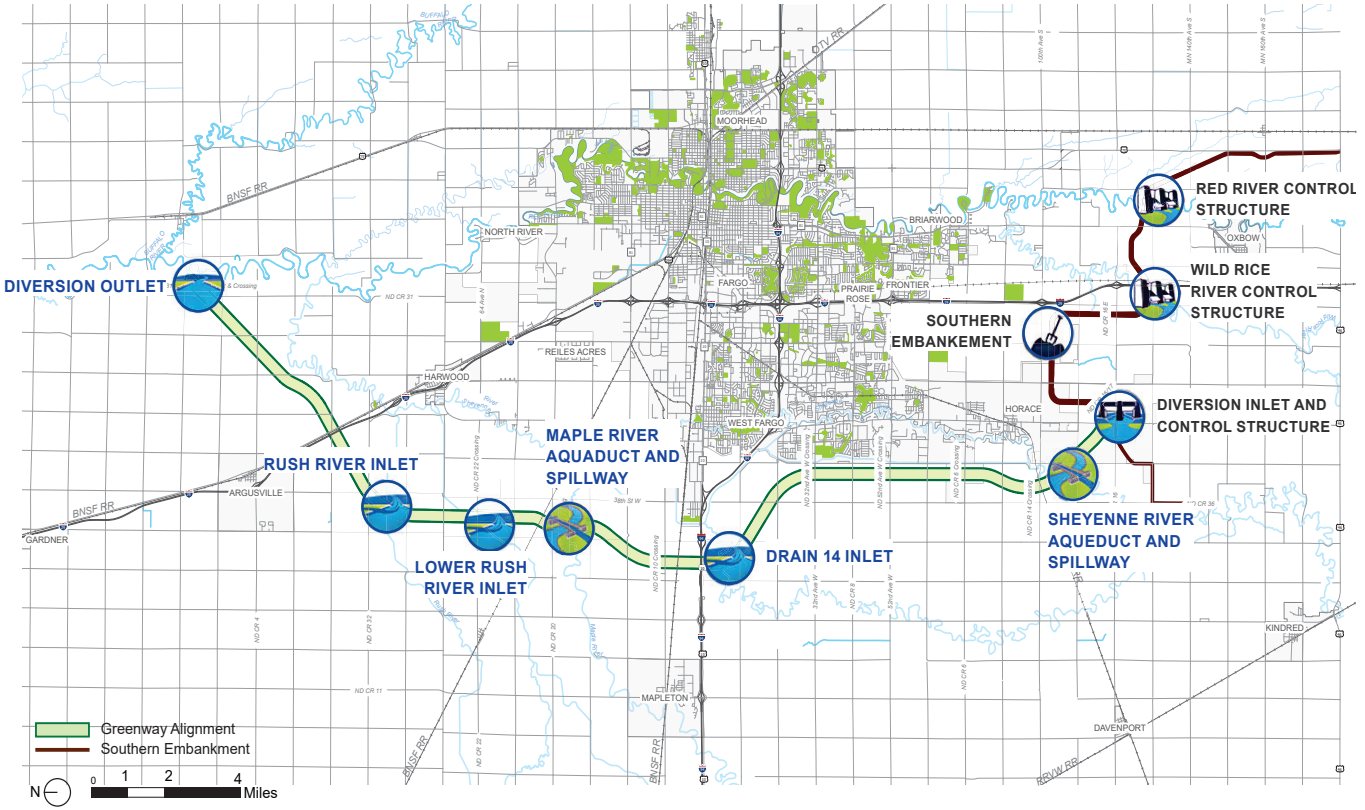


Figure 1.2 FM Area Diversion Infrastructure Elements

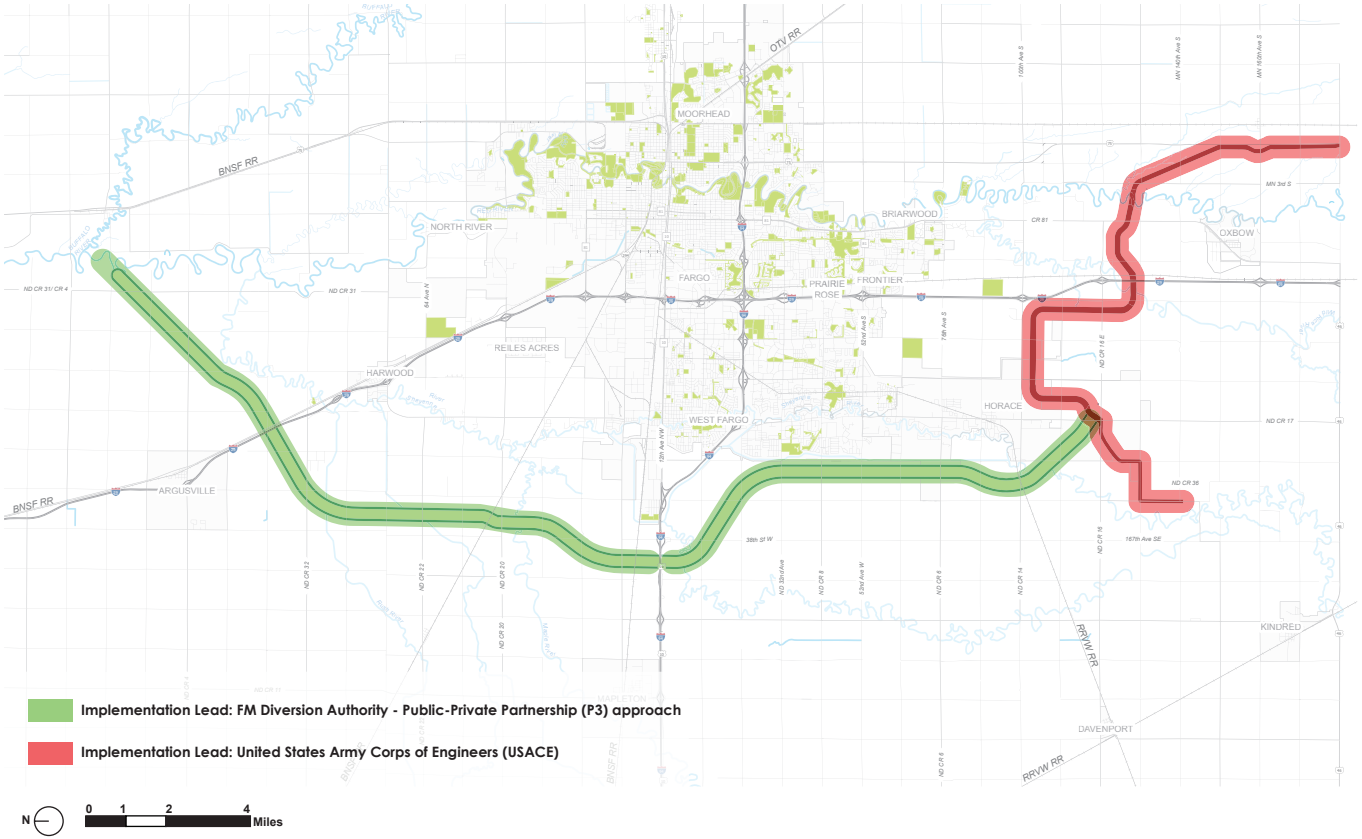


Figure 1.3 FM Area Diversion Split Delivery Approach

In order to expedite project implementation, the FM Diversion Authority and the USACE have established a split delivery approach. The FM Diversion Authority is leading the implementation of the diversion channel and associated infrastructure, such as aqueducts, inlets, outlet and bridges over the channel using a public-private partnership (P3) delivery process. The USACE is leading the implementation of the southern embankment and associated control structures (Figure 1.3).

The "channel" is comprised of several subcomponents (Figure 1.4). The "main" channel will be excavated below the existing ground line and will convey water during flood events. It will have a width of approximately 650 feet. When the Rush River and Lower Rush River intersect with the diversion channel, their flows will be permanently modified to follow the diversion channel northward until the channel empties into the Red River. In this section, the diversion channel will be modified to also include a "low flow channel."

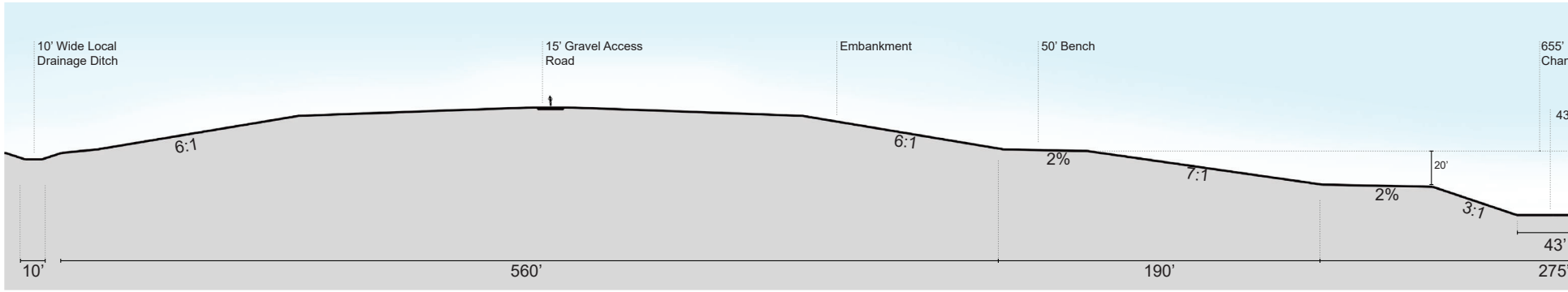
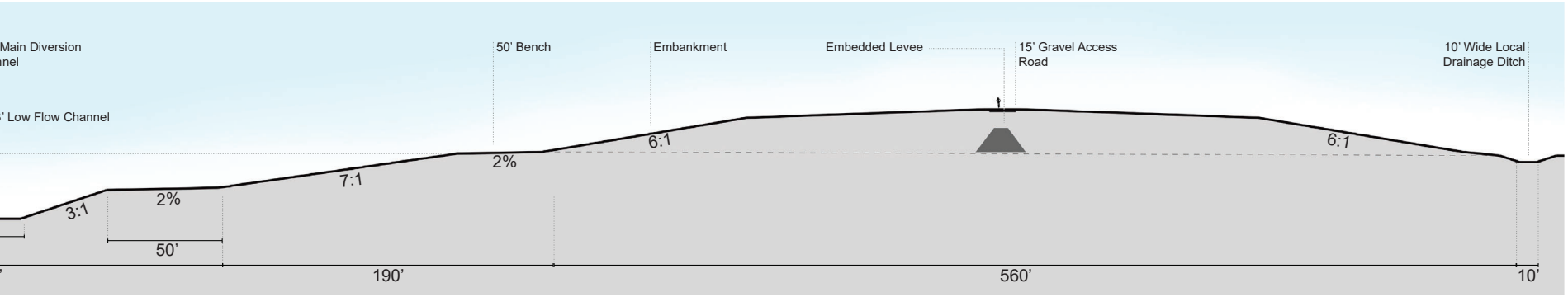


Figure 1.4 Diversion Channel Typical Section

Soil excavated to create the channel is expected to be deposited on both sides of the conveyance channel and are referred to as "excavated material berms" (EMBs). The EMB located on the east side of the channel closest to the metropolitan area will have a levee embedded in the EMB to prevent the channel from overflowing towards the protected communities. Smaller drainage ditches will be located outside of the EMBs to capture adjacent surface runoff. These ditches will drain into the larger channel at select locations. A typical width of an EMB and associated drainage channel is expected to be approximately 600 feet. In this report, the term "channel" encompasses the main channel, the EMBs and the outside drainage ditches. The typical width of the full channel is expected to be approximately 1850-feet or 1/3 of a mile. As stated earlier, the channel will be constructed by a P_3 developer. The P_3 process allows for flexibility regarding the size and placement of the EMBs, along with placement of the embedded levee within the EMBs. Therefore, the ultimate size of the EMBs and location of the embedded levee within the EMB may vary from described above and depicted in Figure 1.4.

The southern embankment will vary in height based on locational conditions and quantity of water to be temporarily stored. Soil used to construct the embankment will be excavated from an adjacent "borrow" area that will be used to store floodwaters (Figure 1.5). A local drainage ditch may be needed on the dry side of the embankment as determined by local drainage conditions.



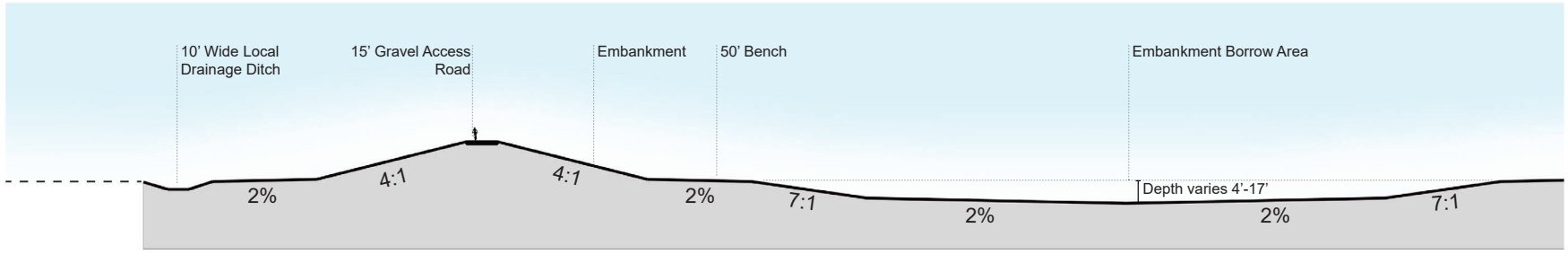


Figure 1.5 Southern Embankment Typical Section

PUBLIC ENGAGEMENT

The development of the FM Greenway vision was informed by input received from community stakeholders.

STUDY REVIEW COMMITTEE

A Study Review Committee (SRC) was established for the project with members representing many of the cities adjacent the greenway, along with other agencies, who provided valuable insight and guidance to the process.

Jason Benson..... Cass County
Matt Stamnes..... Cass County
Nathan Boerboom..... City of Fargo
Maegin Elshaug..... City of Fargo
Luke Morman..... City of Fargo
Barret Voigt..... City of Horace
Malachi Peterson..... City of West Fargo
Joel Paulsen..... Fargo Moorhead Area Diversion Authority
Paul Barthel..... Fargo Moorhead Area Diversion Authority
Adam Altenburg..... Fargo-Moorhead Metropolitan Council of Governments
Luke Champa..... Fargo-Moorhead Metropolitan Council of Governments
Cindy Gray..... Fargo-Moorhead Metropolitan Council of Governments
David Bietz..... Fargo Park District
Tyler Kirchner..... Fargo Park District
David Leker ..... Fargo Park District
Wade Frank..... Horace Park District
Barb Erbstoesser..... West Fargo Park District
Aaron Mikonowicz..... United States Army Corps of Engineers

The SRC met five times over the course of the study. Below is a brief summary of topics addressed at these meetings:

Meeting 1 - July 12, 2019

- Project introduction
- Review plan for first round of public engagement
- Project vision and goals

Meeting 2 - October 1,2019

- Inventory and analysis findings
- Site tour
- Vision and goals

Meeting 3 - November 14, 2019

- Public engagement findings
- Initial recreation concepts
- Governance structure analysis findings

Meeting 4 - January 16, 2020

- Revised recreation concepts
- Initial governance structure recommendations
- Benefits case for recreation
- Recreation branding

Meeting 5 -May 27, 2020

- Review draft Master Plan
- Review plan for second round of public engagement
- Review draft greenway informational video

FOCUS GROUP DISCUSSIONS

On October 1 and 2, 2019, seven focus group meetings were held with the following local agencies and nonprofits to better understand local recreation and environmental programming and economic development conditions and to determine if there was a possibility for these agencies and organizations to lead or be partners in the provision of recreation or educational activities along the greenway.

- Environmental programming nonprofits
- City and county economic vitality officials
- North Dakota Parks & Recreation
- County and city parks and recreation providers
- Public space programming/activation organizations
- Governance/revenue potential organizations
- Fargo-Moorhead Convention and Visitors Bureau

PUBLIC ENGAGEMENT - ROUND ONE

The project included two rounds of public engagement. The first round of engagement occurred early in the process and focused on introducing the project and soliciting input on what recreational activities people would like to see along the greenway. The following approaches were used to engage project stakeholders.

PRESENTATION TO ELECTED AND APPOINTED OFFICIALS

July 11, 2019..... Metro COG Transportation Technical Committee (TTC)

July 18, 2019..... Metro COG Policy Board

August 5, 2019 ..... Cass County Commission

August 5, 2019 ..... West Fargo City Council

August 6, 2019 ..... Fargo Park District Park Board

August 12, 2019..... Moorhead City Council

August 18, 2019..... Argusville Park Board

August 19, 2019..... Horace City Council

August 22, 2019..... FM Area Diversion Board of Authority

August 26, 2019..... Horace Park Board

September 3, 2019..... Clay County Commission

September 3, 2019..... Argusville City Council

September 9, 2019..... Fargo City Commission

September 9, 2019..... Harwood City Council

September 11, 2019... West Fargo Park Board

ONLINE SURVEY

An online survey was posted on the project website. The survey was active between August 15 and October 4, 2019. A total of 242 responses were received from 17 different cities located throughout the region.

POP-UP BOOTHS

To meet community residents where they were already at, pop-up booths were set up at four scheduled community events.

August 25, 2019.....Streets Alive

September 7, 2019.....Horace Bean Days

September 21, 2019.....West Fargo West Fest

September 28, 2019.....Red River Market

These venues provided casual engagement allowing for open and comfortable sharing of thoughts and views. The public was invited to complete the survey at the pop-up booth or were provided information regarding the online survey to fill out later.

PUBLIC OPEN HOUSE

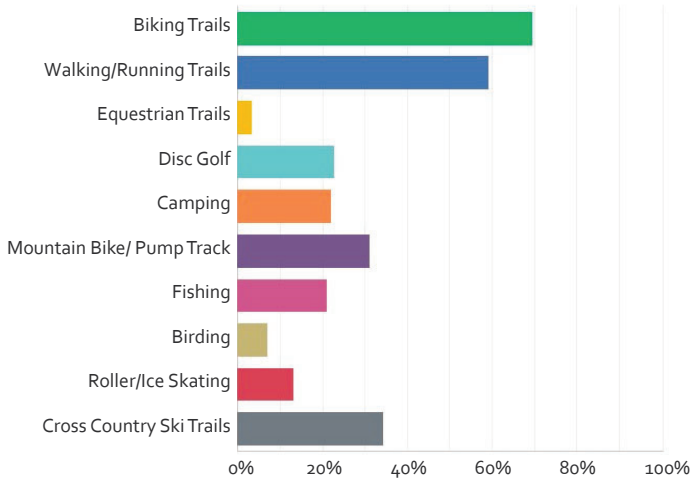
On October 2, a public open house was held at the Rustad Recreation Center in West Fargo, ND. Open house content introduced attendees to the study and provided information on the study approach, goals and objectives, and schedule. Project inventory and analysis findings and preliminary survey results were also shared.

ROUND ONE FINDINGS

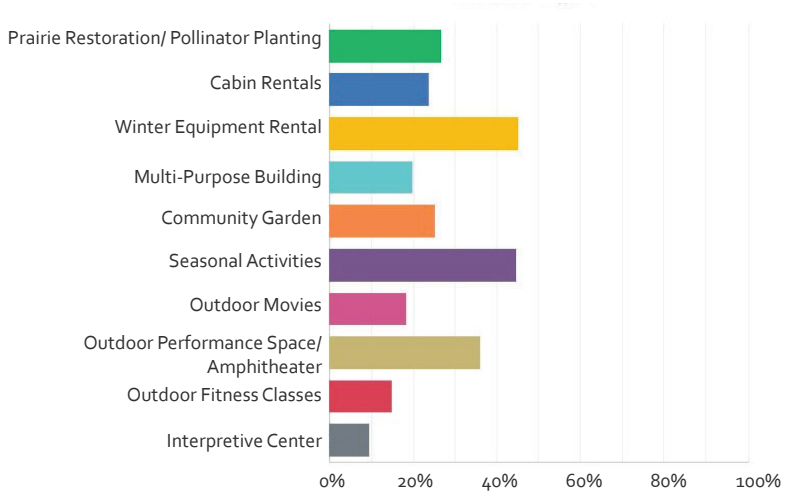
In total over 500 comments were received during the first round of public engagement. Overall, high interest was expressed for creating a recreation-based greenway. Survey respondents were provided a prepopulated list of potential recreation features, along with an opportunity to suggest other recreation activities not shown on the prepopulated list. By far, biking, walking and running trails were the most desired recreation features. High interest was also expressed for mountain biking and single-track biking, followed by cross-country ski trails and off-highway vehicle trails. Interest was also expressed for camping, fishing, disc golf, prairie and/or botanic gardens, bouldering/climbing walls, and swimming.

In terms of programmed activities or recreation support facilities, high interest was expressed for winter recreation equipment rental, such snowshoes and cross-country skis, followed by seasonal activities, such as festivals and celebrations, and outdoor performances.

ACTIVITIES SURVEY RESPONDENTS WANTED OFFERED ALONG THE GREENWAY



PLANNED ACTIVITIES OR SUPPORT FACILITIES SURVEY RESPONDENTS WANTED OFFERED ALONG THE GREENWAY



PUBLIC ENGAGEMENT - ROUND TWO

The second round of engagement occurred after the release of the draft master plan. It focused on heightening awareness of the draft master plan and then gauging support for the greenway itself and for the proposed recreation activities along the greenway.

DRAFT MASTER PLAN PRESENTATIONS

Presentations were made to elected and appointed officials to introduce the draft master plan and to share the second round of community survey results. Master Plan adoption was requested and received from the Metro COG Policy Board and the FM Area Diversion Board of Authority. Presentations regarding the draft master plan were also made to civic organizations. Below is a summary of presentations made.

June x, 2020.....Rotary Club

August 13, 2020.....Metro COG Transportation Technical Committee (TTC)

August 20, 2020.....Metro COG Policy Board

August 26, 2020.....FM Area Diversion Land Management Committee

August 27, 2020.....FM Area Diversion Board of Authority

Date, 2019 .....Cass County Commission

Date, 2019 .....West Fargo City Council

Date, 2019 .....Fargo Park District Park Board

Date, 2019.....Moorhead City Council

Date, 2019.....Argusville Park Board

Date, 2019.....Horace City Council

Date, 2019.....Horace Park Board

Date, 2019.....Clay County Commission

Date, 2019.....Argusville City Council

Date, 2019.....Fargo City Commission

Date, 2019.....Harwood City Council

Date, 2019.....West Fargo Park Board

ONLINE DRAFT MASTER PLAN AND SURVEY

The draft master plan, along with a second survey were posted on the project website. The survey was active from June 10 – July 17, 2020. A total of 67 survey responses were received.

WEBINAR PRESENTATION

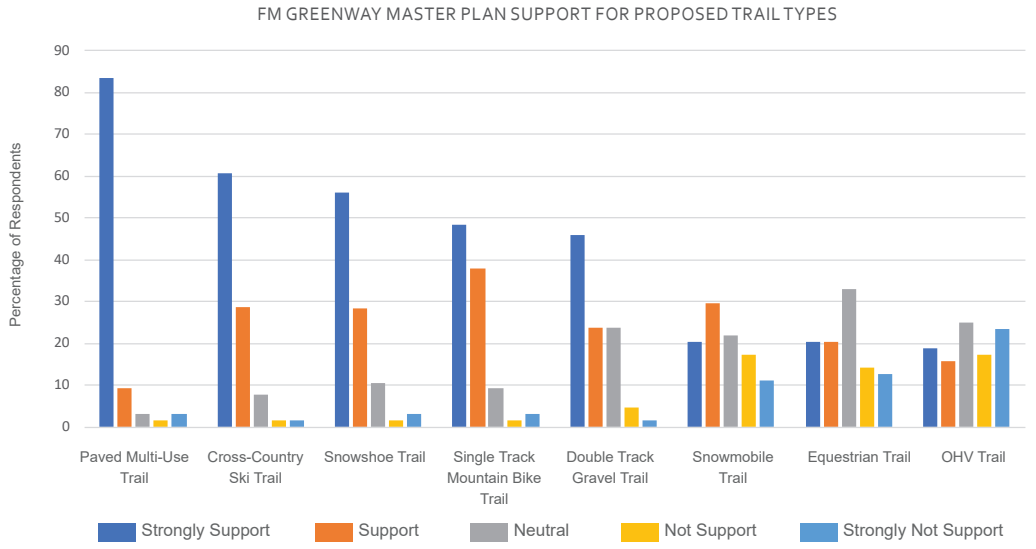
An online webinar was held on June 16, 2020, to present the draft master plan and to receive comments. There were 65 registered participants for the webinar.

ROUND TWO FINDINGS

Ninety-two percent of survey respondents indicated that they either strongly supported or supported the creation of the Greenway, with 77 percent indicating "strong support."

Seventy percent or greater of respondents indicated they either strongly supported or supported the following trail types along the greenway:

- Paved multi-use trails
- Cross-country ski trail
- Snowshoe trail
- Single track mountain bike trail
- Double track gravel trail



For paved multi-use trails, single track mountain bike trails, and double travel gravel trails, survey respondents preferred a trail length of 5 to 20 miles, followed by 1 to 5 mile trail lengths. For cross-county ski trails and snowshoe trails, survey respondents preferred a trail length of 1 to 5 miles, followed by 5 to 20 miles. There was wider variability in preferred trail lengths for snowmobile, OHV and equestrian trails.

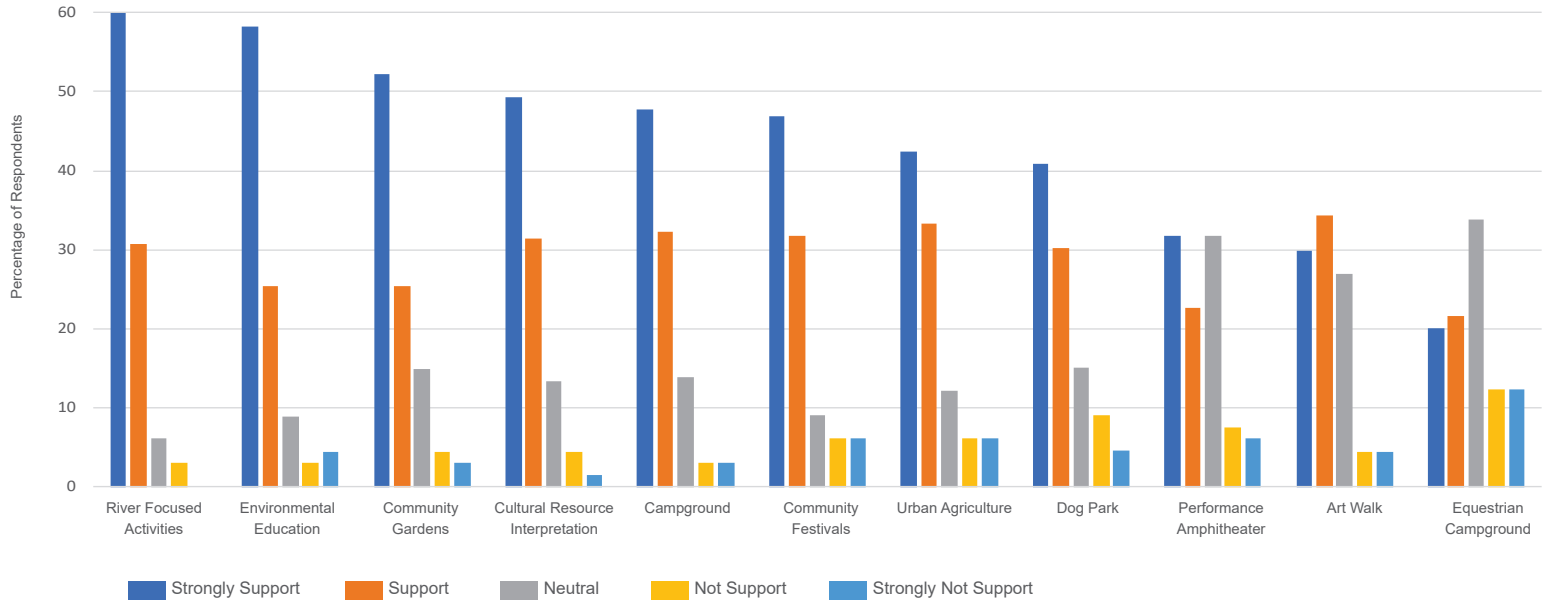
Recreation features and activities that 70 percent or greater of respondents indicated they either supported or strongly supported include:

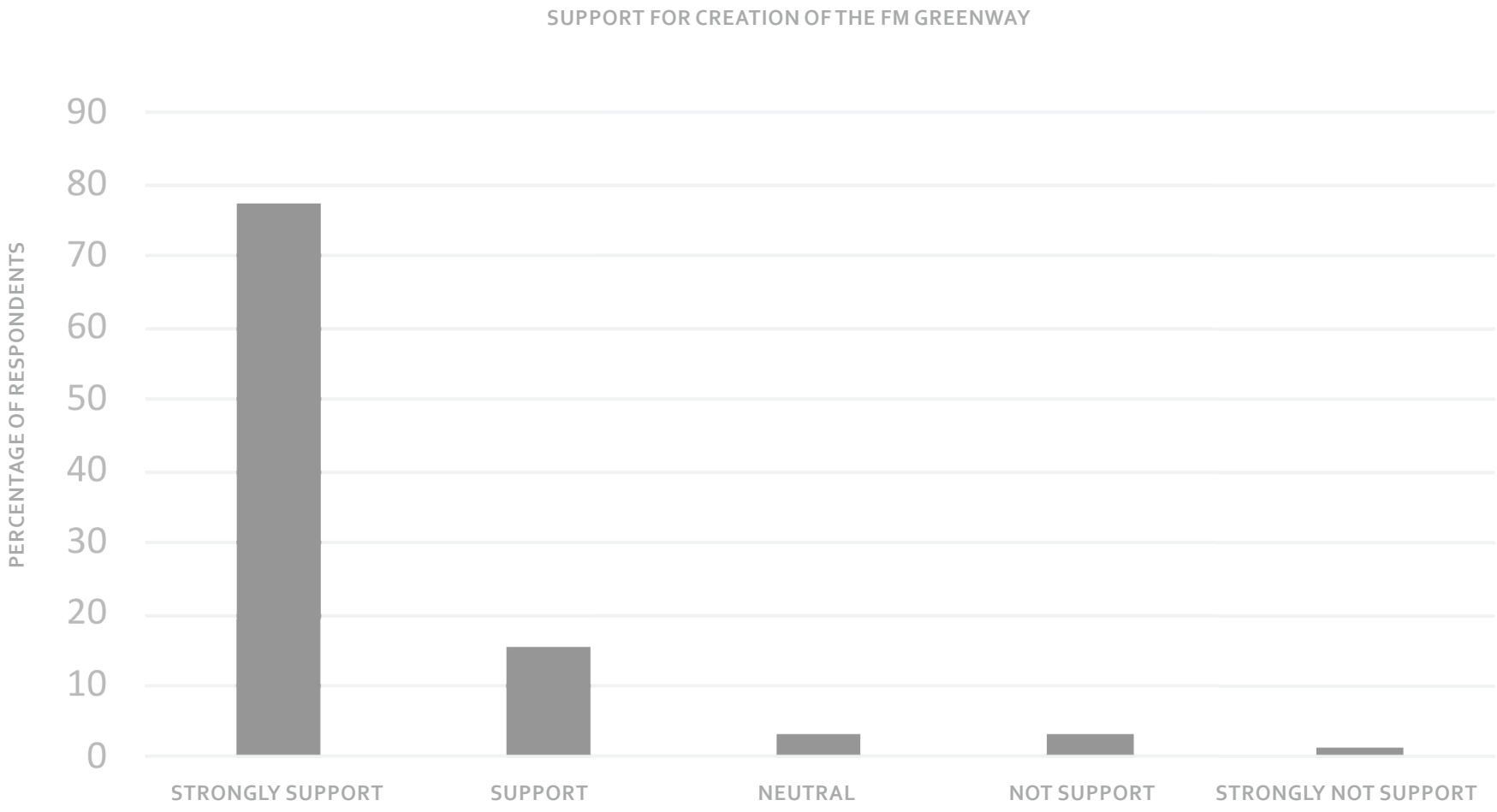
- Environmental education
- Cultural resource interpretation
- Camping
- Community festivals
- Community gardens
- Urban agriculture
- Dog park

While there were a few comments expressing disapproval of the project, a vast majority of comments were in favor of the project and felt it would provide a benefit to the Fargo-Moorhead area. Other themes in comments received included:

- Excitement of wildlife viewing opportunities the greenway will provide
- Desire to connect the greenway to other recreation and trail features
- Desire that the greenway provide a safe experience and include features to enhance the users comfort, such as wind protection, shade, seating, and access to water

FM GREENWAY MASTER PLAN SUPPORT FOR RECREATION FEATURES AND ACTIVITIES




SUPPORT FOR CREATION OF THE FM GREENWAY
PERCENTAGE OF RESPONDENTS
90
80
70
60
50
40
30
20
10
0
STRONGLY SUPPORT
SUPPORT
NEUTRAL
NOT SUPPORT
STRONGLY NOT SUPPORT

CORRIDOR ANALYSIS

The character of the landscape varies across the length of the FM Greenway. The following investigations were performed to better understand existing and expected future conditions, along with the associated opportunities and constraints for the provision of recreation activities. These investigations, along with stakeholder input, influenced which recreation activities were proposed for the greenway and their placement along the greenway.

FLOODING CHARACTERISTICS

While the FM Area Diversion protects the community from catastrophic flooding, it does not eliminate flooding completely. The projected extent of flooding associated with a 100-year flood event without the diversion project is depicted in Figure 3.1. With the introduction of the diversion project, flooding for a 100-year flood event is expected to be mitigated as depicted in Figure 3.2. Areas "inside" the diversion project expected to see flooding during a 100-year event are primarily located at the north and south ends of the project where there is an interplay between Red River and contributing river flooding.

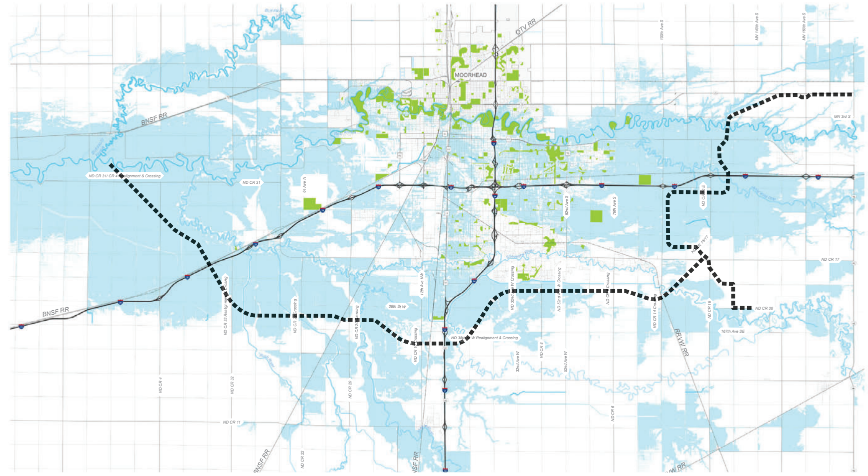


Figure 3.1 100 yr Flood with Existing Conditions

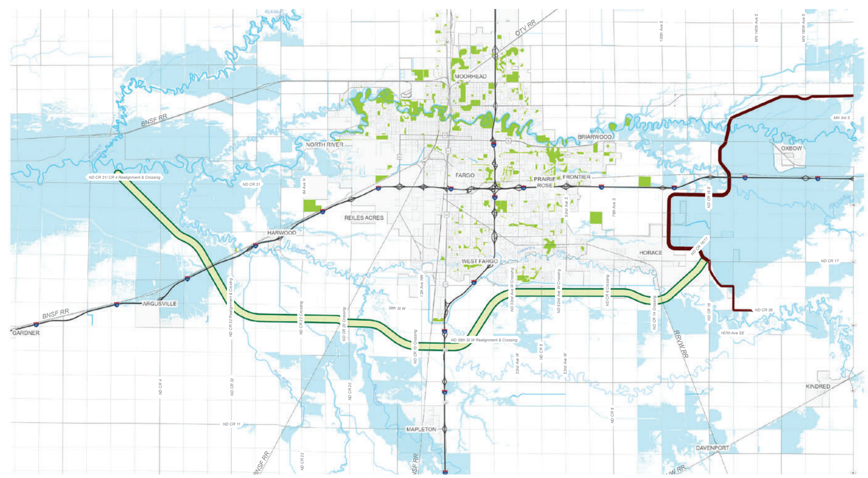


Figure 3.2 100 yr Flood with FM Area Diversion in Place

GREENWAY CROSSINGS

Several roadways and railroads will cross the greenway (Figure 3.3). These crossings will entail either the construction of new bridges to cross over the diversion channel or raising roadways to cross the diversion embankment. Four railroad bridges are also anticipated to be constructed over the diversion channel. Interstate 94 crosses the channel in one location and Interstate 29 crosses in two locations.

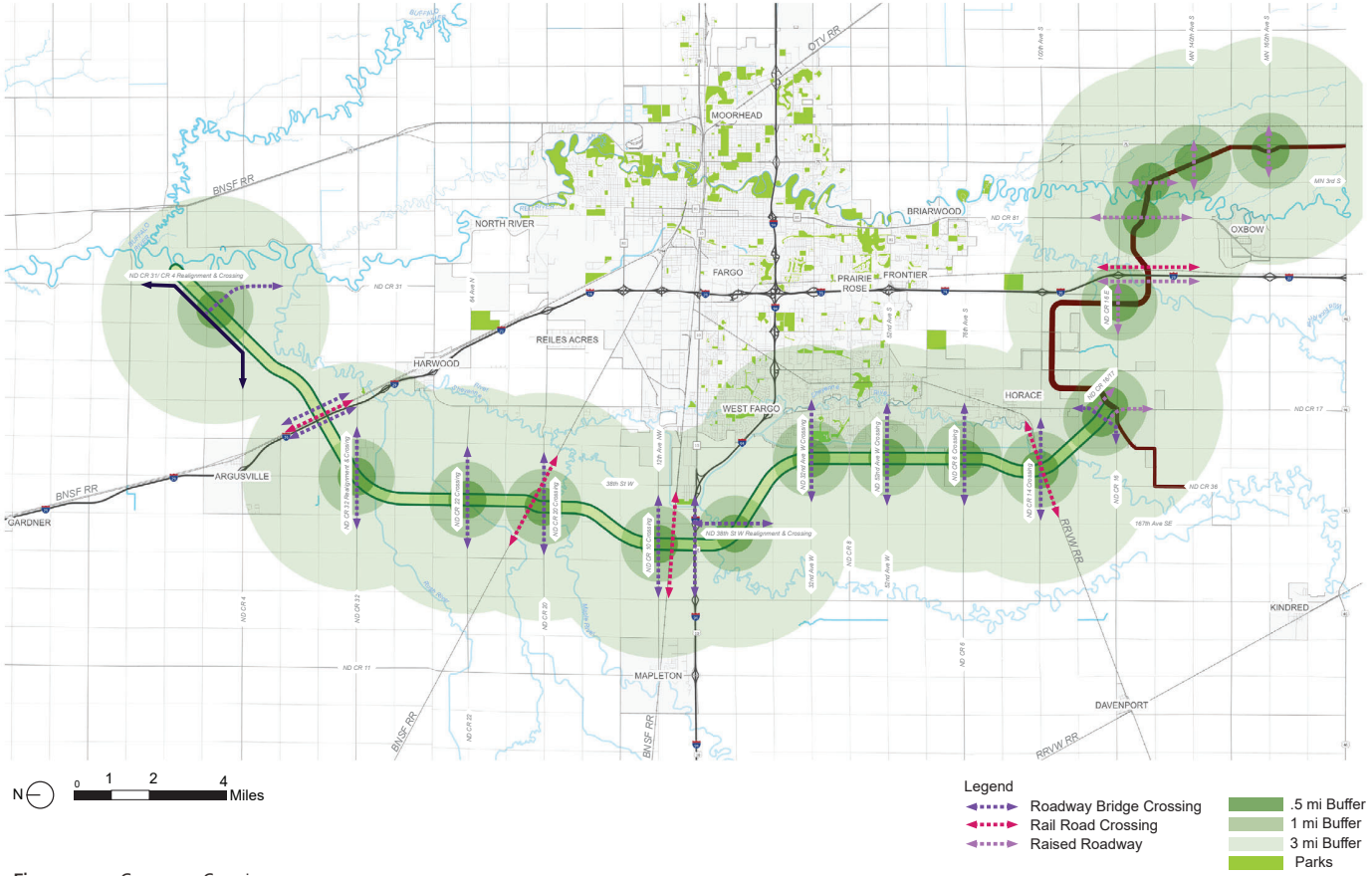


Figure 3.3 Greenway Crossings

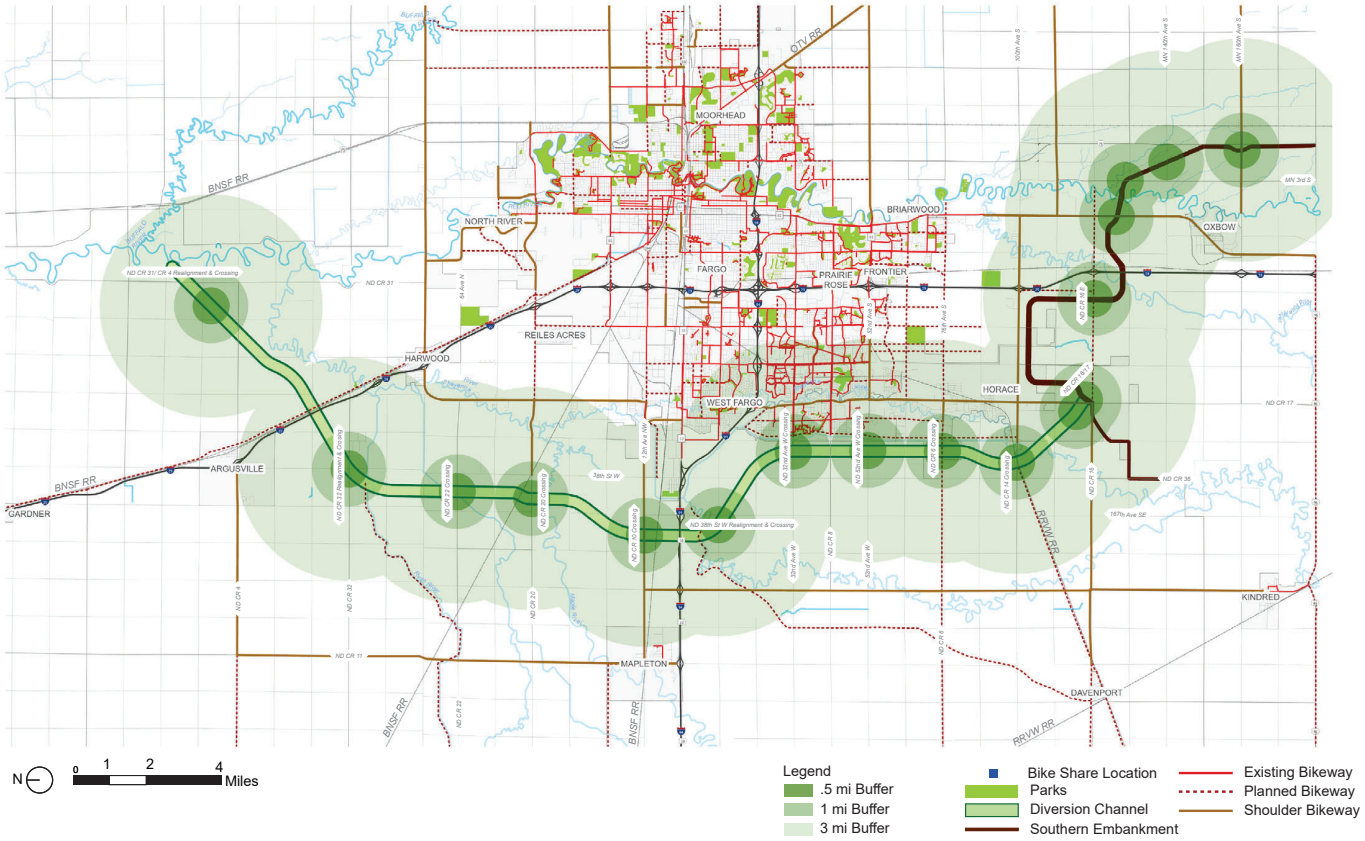


Figure 3.4 Existing and Planned Bikeway Network

BIKEWAYS

Metro COG, in collaboration with metro area jurisdictions, has developed a plan for a regional bicycle network. A portion of this network is comprised of multi-use trails that also serve pedestrians. Both existing and planned bikeways that provide broader regional connections across the community are depicted in Figure 3.4. Many of these planned bikeways intersect the greenway and would provide excellent locations for trail heads. Coordinating greenway trails with these planned regional bikeways has the potential to create many different "loops" of varying distances. In particular, the FM Greenway will improve neighborhood bikeway connectivity in areas that are adjacent to the greenway, such as in West Fargo and Horace by creating additional recreation and non-motorized transportation opportunities.

REGIONAL TRAILS

Currently, there is a shortage of established regional trails in the Fargo-Moorhead area (Figure 3.5). The Minnesota Department of Natural Resources (MN DNR) plans to extend the Heartland State Trail west to Fargo-Moorhead. Similarly, the U.S. National Park Service operates the North Country National Scenic Trail, which passes through the Sheyenne National Grasslands south of the FM area, with no connection to Fargo-Moorhead. Finally, a nonprofit organization called Adventure Cycling that promotes bicycle tourism across the United States has a designated national bike route that passes through Fargo and Moorhead, mainly following the Red River. The FM Greenway could serve as an extension of the Heartland State Trail or portions of the North Country trail. A portion of the Adventure Cycling route could be re-routed to incorporate the greenway.

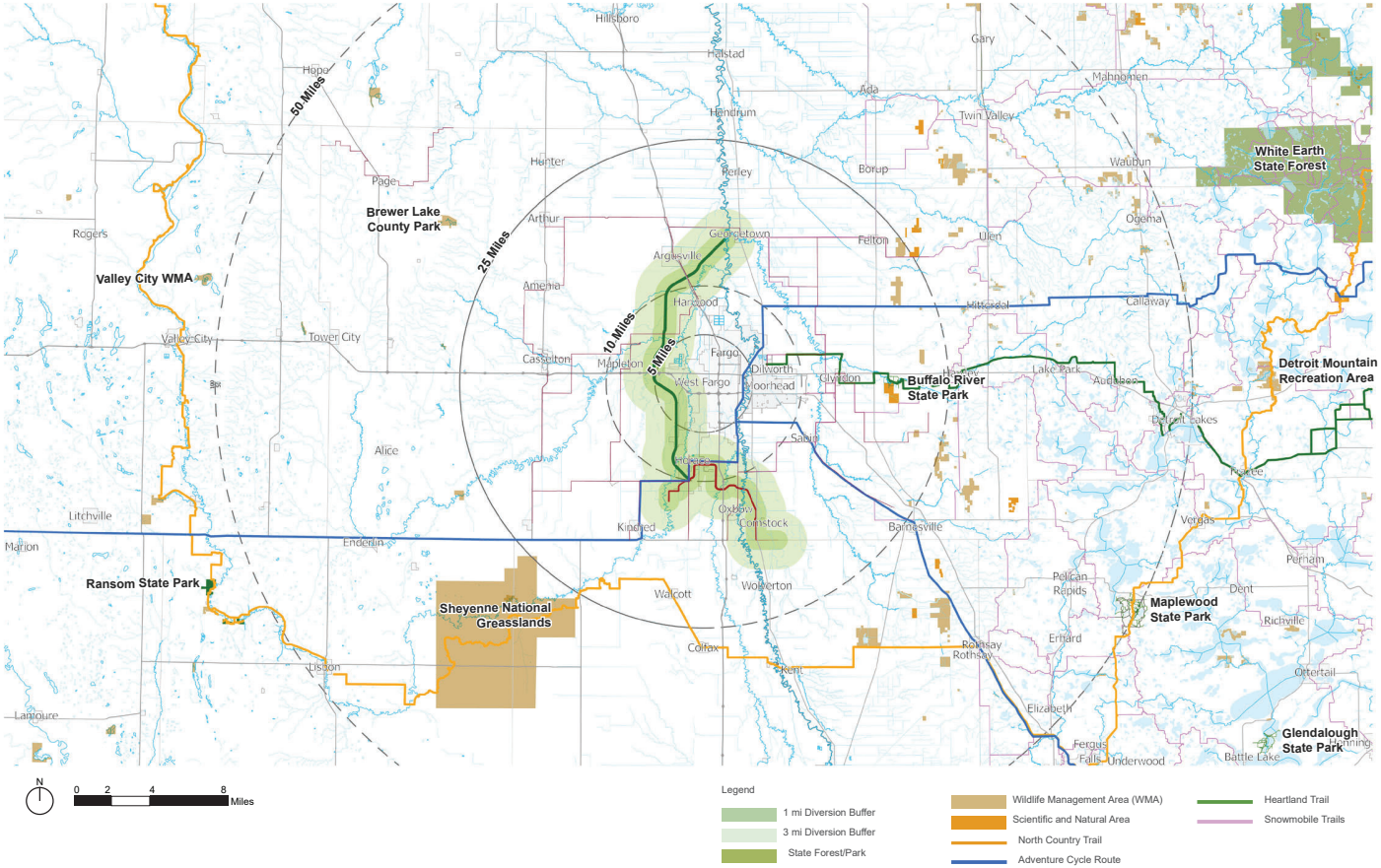


Figure 3.5 Regional Trails

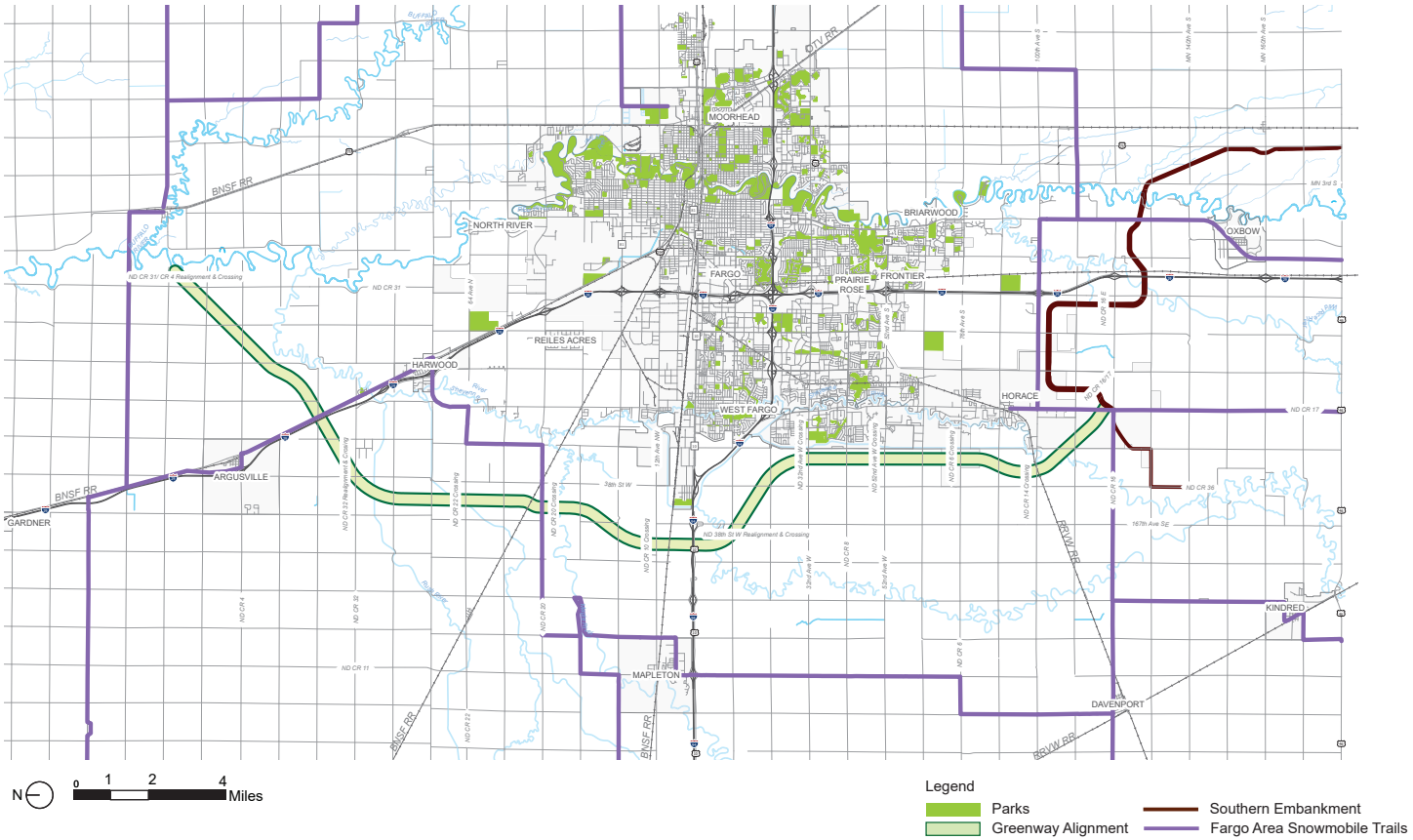


Figure 3.6 Existing Snowmobile Trails

SNOWMOBILE TRAILS

There is a network of local snowmobile trails in excess of 380 miles that provide connections between cities in North Dakota and Minnesota (Figure 3.6). There are three snowmobile clubs in the region: the Rural Cass Snowmobile Club and the Red River Sno-riders Snowmobile Club in North Dakota and the Clay County Trailblazers in Minnesota. The Clay County Trailblazers Club maintains over 180 miles of trails. Rural Cass Snowmobile Club, and the Red River Sno-riders Snowmobile Club each maintain more than 100 miles of snowmobile trails as part of the Snowmobile North Dakota Trail System. These clubs actively manage their trails with regular grooming, volunteer search and rescue and maintaining a strong relationship with local law enforcement.

CURRENT LAND USE

Land use adjacent to the greenway is primarily agriculture (Figure 3.7). Pockets of single-family residential land use are common along the Red River and its tributaries. Downtown Fargo is surrounded by single-family housing on the north and south. West of downtown, to the municipal border with West Fargo, the land use is a mix of industrial and commercial. The airport and the campus of North Dakota State University occupy a substantial amount of land northwest of downtown Fargo. Beyond the airport, the land use changes rapidly to agriculture. West Fargo is predominantly developed between Main Avenue and Interstate 94. New residential and mixed-use development is rapidly extending south of Interstate 94 and is projected to continue southward. The City's most recent comprehensive plan indicates opportunities for development south of Interstate 94 between the Sheyenne Diversion and FM Area Diversion. Commercial development is projected to occur in the northwest portion of the city. Horace is also experiencing increased residential development activity, which is expected to continue. The portion of the greenway paralleling West Fargo and Horace will be the only portion of the corridor located close or adjacent to urban land uses.

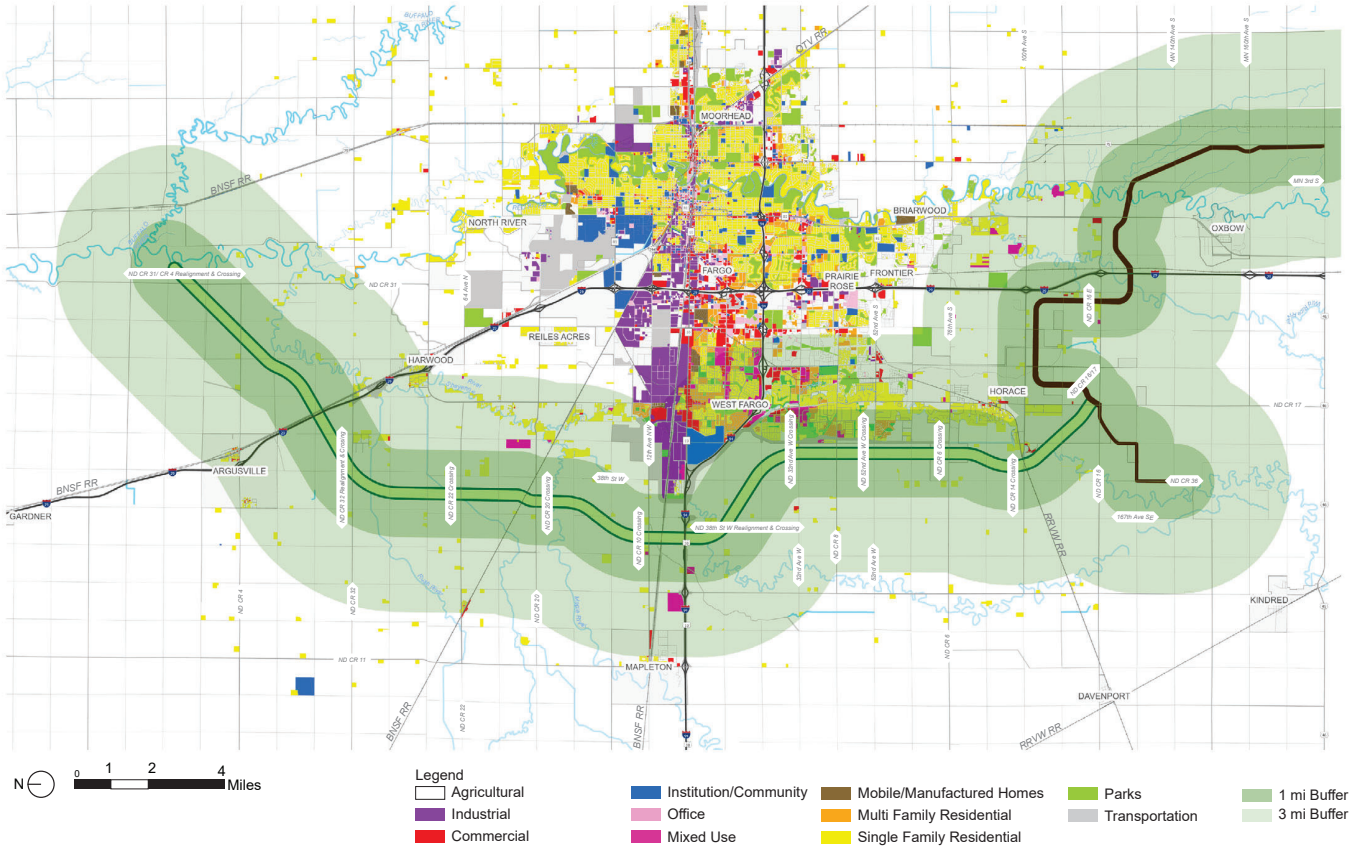


Figure 3.7 Current Land Use

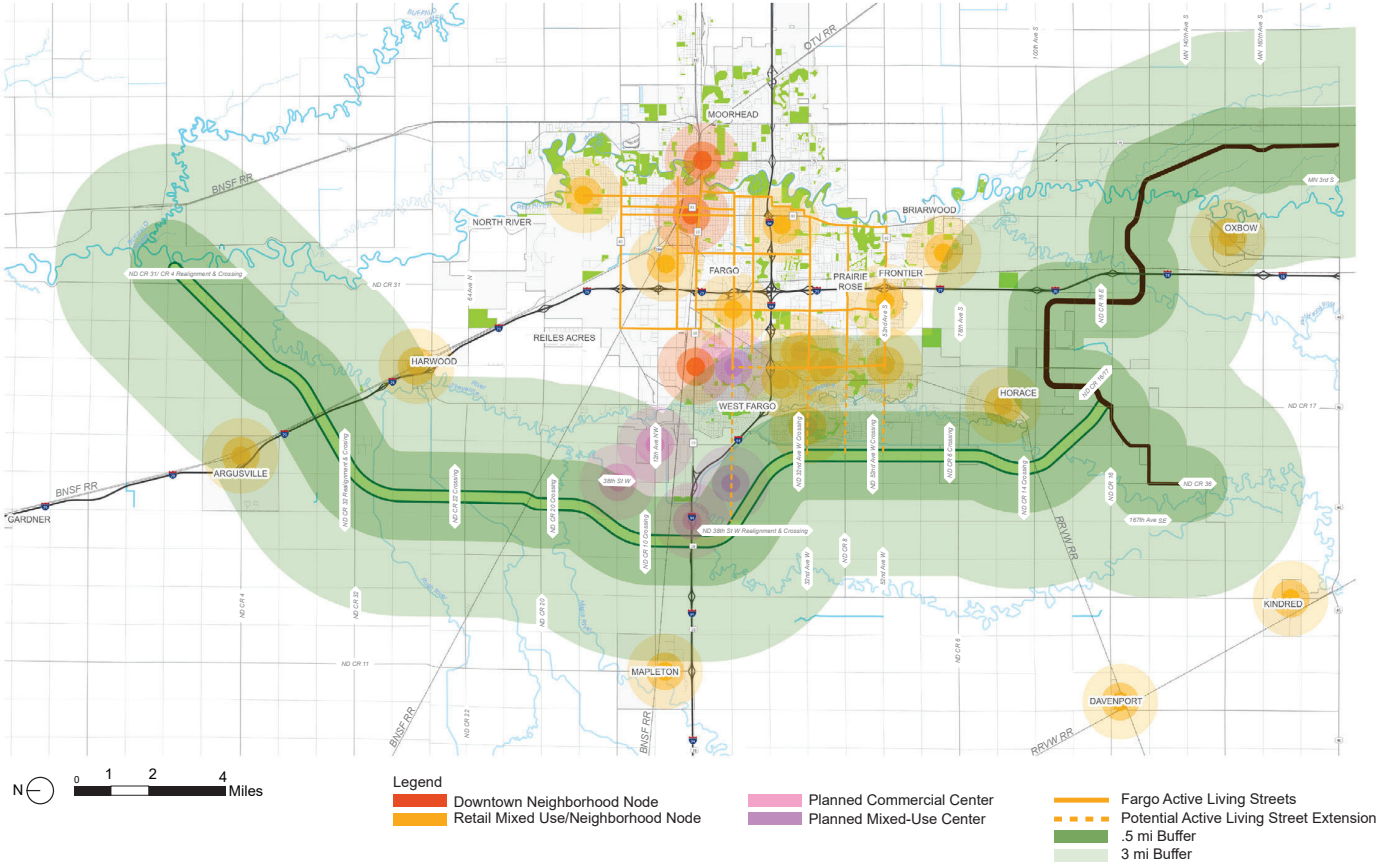


Figure 3.8 Commercial Centers

COMMERCIAL CENTERS

Understanding the land use composition of each neighborhood is important for the planning and programming of the greenway in order to complement activities and amenities offered adjacent to the corridor. Retail and Mixed-Use Centers, Downtown Neighborhoods, Fargo Active Living Streets and potential extensions of these living streets are identified to gain a sense of the proximity of these high activity areas to the greenway. There are two commercial centers of particular interest due to their proximity to the greenway. One is a newly developing center located at the intersection of 32nd Avenue W and Sheyenne Street and the other is a planned mixed-use center located between the Sheyenne Diversion and the FM Area Diversion (Figure 3.8).

VISION, GOALS AND OBJECTIVES

The FM Greenway is an opportunity for the FM region to create a 30-mile greenway that will serve as a catalyst for year-round recreation and economic development. A vision statement has been developed to define the long-term aspiration for the greenway. The vision statement is supplemented with goals and objectives. The goals provide additional insight regarding greenway aspirations. The objectives define strategies that will help achieve the identified goals. Taken together, the intent of the vision statement, goals and objectives is to provide guidance to project stakeholders as they work towards greenway implementation.

VISION STATEMENT

The FM Greenway will be a significant open space attraction for area residents and visitors. The greenway will host a wide range of recreation trails and activities, reinforce the natural landscape and wildlife habitat, generate economic benefit, and support the continued growth and prosperity of the Fargo-Moorhead region.

GOALS AND OBJECTIVES

1. **Provide greenway amenities that will serve the recreation needs of the community and support economic vitality.**
    a. Locate and design multi-use trails to enhance the metropolitan area bicycle and pedestrian trail network.
    b. Design, locate, and program recreation features/uses to supplement planned or existing recreation amenities and programs.

2. **Design and program recreation attractions that will draw recreation regional visitors.**

3. **Recreation elements will be designed to strengthen FM greenwaywayfinding, identity and image.**
    a. Wayfnding signage/elements will be strategically located to inform users as to their location and adjacent destinations.
    b. Wayfinding and recreation features will be designed to reinforce the greenway's distinct brand and character.

4. **Seek opportunities to integrate interpretation, education, and public art into recreation facilities.**
    a. Seek partnership opportunities with nonprofit, education, and arts organizations for development and programming of recreation features and activities.
    b. Interpretation, education, and public art opportunities could address cultural resources, historic events, local ecosystems, flooding, and/or diversion engineering.

5. **Provide a public open space that promotes access and full use for all FM area residents.**
    a. Provide a diverse range of recreation features and programming to support the recreation needs of various age groups, and cultural and ethnic communities in the FM area.
    b. Provide opportunities for both passive and active recreation uses.
    c. Create access for a variety of trail modes that address four season use.
    d. Provide and promote greenway access via alternate forms of transportation, such as bicycling, walking and transit.
    e. Encourage multiple use options through flexible facilities that can be used for multiple uses.

6. **Recreation amenities will not interfere with diversion operations or maintenance.**
    a. Locate trails outside the main diversion channel.
    b. Locate recreation features to minimize damage to them during maintenance activities.

7. **Recreation features/uses will be compatible with adjacent land uses.**
    a. Recreation features should not disrupt adjacent land use activities.

8. **Select and utilize recreation construction materials that require minimal or limited maintenance, are sustainable, and are food tolerant or easily removed prior to a food event.**
    a. "Floodable" elements will be constructed from durable materials that can withstand damage from food waters.
    b. "Floodable" elements will be designed for easy debris removal/cleaning after a food event.
    c. "Removable" elements will be designed for ease of removal, transport and storage during food events.

9. **Recreation amenities will be well maintained, safe, and attractive.**
    a. Recreation areas will be adequately policed to protect facilities from vandalism and to deter activities with negative repercussions on the quality of the recreation amenity and/or user experience.
    b. Timely maintenance and repairs will be performed (e.g. trash pick-up, graffiti removal) to provide a safe and comfortable user experience.
    c. Recreation features will be designed to provide safe access to natural features (e.g. safe boat launches).

10. **Vegetation will enhance user comfort and reinforce the landscape character of the area.**
    a. Locate woody vegetation to provide shade for users.
    b. Locate woody vegetation to block northwest winter winds and allow southeast summer breezes to reach users.
    c. Install native vegetation and design for ecological diversity to the extent possible.
    d. Install vegetation to provide habitat for birds, waterfowl and animals.

11. **Sensitive natural resources will not be negatively affected by recreation facilities or activities.**
    a. Recreation features will be located to complement and preserve sensitive natural resources.
    b. Construction techniques will be employed to minimize disruption and damage to natural resources such as waterways, woodlands, sensitive or unique plant communities and wildlife habitat.

12. **Recreation opportunities will be integrated into diversion structures, where feasible.**
    a. Seek opportunities to integrate recreation amenities into planned structures (e.g. aqueducts, bridges, inlets and outlets).
    b. Provide safe, secure locations for recreation activities if located near diversion infrastructure.

13. **Ensure ADA compliance for recreation features, as applicable.**

PREFERRED CONCEPT

The preferred concept provides a framework for the incorporation of trails and recreation activities along the greenway. The recreation components are sited in a manner to be sensitive to the local context and anticipated FM Area Diversion features. The concept is a long-term vision that will take years to fully implement. The preferred concept presents an ambitious, yet compelling recreation vision for FM Greenway. Over time, the greenway framework may evolve as local conditions and/or recreational preferences change.

CHARACTER SEGMENTS

FM Greenway will be divided into three general segments: the Rural Segment, Urbanizing Segment, and the Embankment Segment as depicted in Figure 5.1. Each segment is reflective of and responsive to the adjacent land use and FM Area Diversion features.

RURAL SEGMENT

The Rural Segment extends from the outfall of the diversion channel into the Red River south to Interstate 94. This area is characterized by surrounding agricultural land uses. The Rush River and Lower Rush River will be permanently diverted into the diversion channel, generally supporting a base flow of water in a portion of this segment. During large flood events, there will be flooding on the inside of the diversion in the northern most portion of this segment. FM Area Diversion reports prepared by the USACE indicate there may be cultural resources in the vicinity of the Maple River that may provide an opportunity for interpretation. An early trading post, the Hudson Bay Trading Post, was located at the confluence of the Buffalo River and Red River just north of where the diversion channel outfalls into the Red River.

URBANIZING SEGMENT

This segment extends from Interstate 94 to the diversion inlet control structure. Due to its adjacency to the developing cities of West Fargo and Horace, it expected that this greenway segment will support the heaviest recreation activity. Another unique feature of the Urbanizing Segment is its adjacency to the existing Sheyenne diversion,which also hosts intermittent water flowage.

EMBANKMENT SEGMENT

The Embankment Segment is located on the south end of the greenway and will be comprised of earthen embankments that will hold back flood waters for release into the diversion channel in the event of a major flood. This segment will extend between the diversion inlet control structure and the Red River Control Structure. Most of the land in this area is agricultural, however, the developed portion of Horace is less than a mile from this segment with expectations that the city will continue to develop and extend south towards this segment.

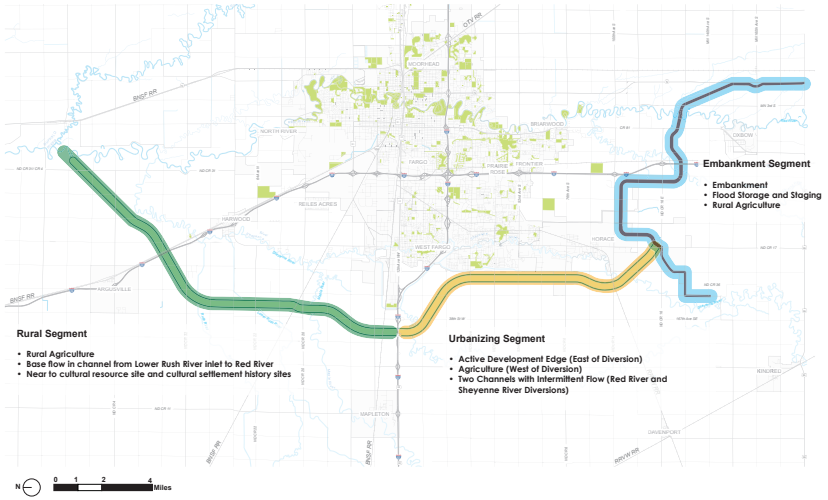


Figure 5.1 Greenway Character Segments

RECREATION NODES

Specific locations along the greenway were identified as potential nodes of recreation activity (Figure 5.2). The selection of nodes was influenced by various factors. Several sites were selected to take advantage of recreational opportunities associated with rivers. Several nodes were selected to complement and build upon adjacent land uses, such as parks and future mixed-use centers, while others were sited adjacent major roadways to provide convenient trailhead access. There is a higher concentration to recreation nodes near West Fargo and Horace. The greenway's adjacency to areas of population density is expected to generate higher levels of recreation activity along this segment.

The recreation nodes are assigned an anticipated level of recreation intensity. High intensity sites are generally located near the areas of highest residential density, with associated higher levels of greenway recreational activities anticipated. Moderate intensity nodes are located next to natural resource features and could potentially play a reginal park function. Low intensity nodes are expected to primarily serve as trailheads, providing access to the greenway trail system.

The greenway is envisioned as a 30-mile corridor that is wide enough to encompass the southern embankment and the FM Area Diversion channel, as applicable. The recreation nodes are proposed to be

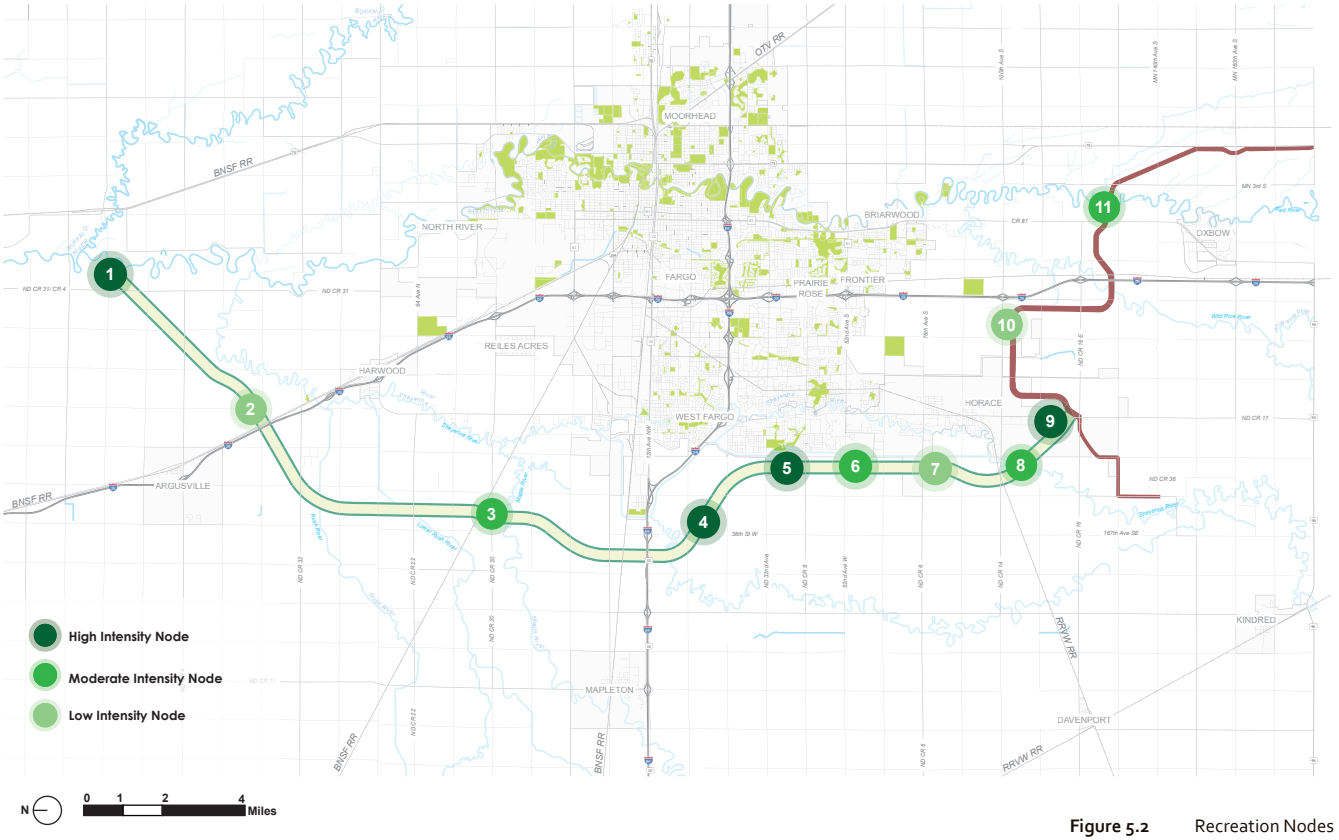


Figure 5.2 Recreation Nodes

Node 1

- Regional park
- Red River focused recreation
- Trailhead for summer and winter-oriented trails
- Campground

Node 2

- Trailhead for summer-oriented trails
- Wildlife viewing

Node 3

- Regional park
- Maple River and prairie environmental education
- Cultural resources interpretation

Node 4

- Art and culture activities
- Community festivals

Node 5

- Winter recreation focus
- Athletic fields

Node 6

- Dog park
- Community gardens

Node 7

- Urban agriculture

Node 8

- Regional park
- Sheyenne River focused recreation
- Equestrian campground

Node 9

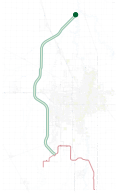
- Ballfield complex

Node 10

- Trailhead for summer-oriented trails
- Wildlife viewing

Node 11

- Regional park
- Red River focused recreation
- Trailhead for summer-oriented trails



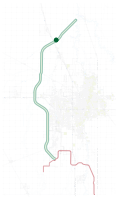
an exception to the defined greenway width. As parcels are acquired by the FM Diversion Authority for the construction of the diversion, there are times that the property acquired exceeds what is needed to physically accommodate the diversion project. In general, this excess land will be sold off. But this excess property also provides a unique opportunity to create greenway recreation nodes. Conceptual recreation features proposed for each recreation node, along with associated opinions of probable construction costs can be found in Appendix A. Brief descriptions of each proposed recreation node follow.

NODE 1

Node 1 is the northern-most greenway node, located at the outfall of the diversion channel into the Red River. This node is envisioned as a future regional or state park. This location provides a rare opportunity to experience a riparian landscape and plant community distinct from neighboring vegetation. Many of the proposed recreation features focus on river-related activities, such as a boat launch and shore fishing locations. Several small picnic shelters and/or a large picnic shelter, all of which would be supplied with picnic tables and grills, are proposed to take advantage of this beautiful natural setting. Playground equipment is proposed to accompany the picnic shelters. A parking lot is proposed to support these riverine activities.

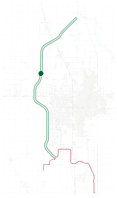
Public engagement indicated a strong community interest in more camping opportunities. Located on the Red River with associated woodland vegetation, the site is a potential candidate site for a campground that could accommodate tents, recreational vehicles (RVs), and/or camper cabins. A shower and restroom building would support campers.

A visitor center is proposed at Node 1 as part of a regional or state park. The visitor center could serve campground needs, as well as a winter warming house with winter equipment rentals, and as a trailhead for a variety of year-round trails. The visitor center could also provide cultural interpretation of the nearby historic Hudson Bay Trading Post site that was located at the confluence of the Red River and Buffalo River. A drawback for siting a campground at Node 1 is the expected flooding activity that will occur. Node 1 would require specific design features to accommodate flood waters, along with flood preparation and cleanup activities.



NODE 2

Located just east of CR 81 and Interstate 29 between the cities of Harwood and Argusville, Node 2 will serve as a trailhead to support greenway trails. It will also support prairie wildlife viewing. The trailhead will offer portable restrooms, wayfinding and parking. The node is adjacent to a proposed solar farm and pollinator field. The solar farm and pollinator fields will provide an opportunity to partner with power companies and/or research institutions, such as North Dakota State University (NDSU).



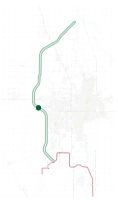
NODE 3

This node is recommended to be a regional park due to its location on the Maple River and its proximity to the planned Maple River aqueduct structure. These features could offer unique recreation experiences for visitors. This node is close to a cultural resource site and would be a logical location for cultural resource interpretation. The primary feature proposed for Node 3 is a visitor center that could focus on environmental education, cultural resource interpretation, diversion infrastructure education, and wildlife observation. A segment of the greenway south of Node 3 is proposed to incorporate a solar farm. The visitor center could also potentially support local research initiatives associated with prairie landscapes or energy generation. Picnic shelters equipped with tables and grills are proposed for Node 3 to provide places for people to gather and enjoy the adjacent prairie habitat. Node 3 could also serve as an alternate location for a potential state park or campground.

Finally, it is desired that the proposed Maple River aqueduct be designed to accommodate pedestrian crossings over the diversion channel to provide convenient access between this regional park and trails located on the west EMB.

Aqueduct illustrated above is for conceptual illustrative purposes only. Not a representation of any structure proposed.

Figure 5.3 Representative Art Walk and Amhitheater Illustration



NODE 4

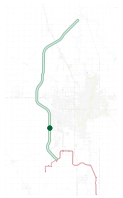
Node 4 is adjacent to a future growth area identified in the most recent West Fargo Comprehensive Plan and is proposed to be programmed to accommodate a growing, urban community. An amphitheater is proposed for Node 4 that could accommodate large gatherings, such as community movies and performances, farmers markets, and seasonal festivals (Figure 5.3). The amphitheater's terraced seating set into the EMB would create a versatile space to comfortably watch a show or lounge when no performance is taking place. An adjacent plaza, framed by newly developed mixed-use buildings could create a flexible space to support vendors during farmers markets or seasonal festival programming. This plaza could serve non-programmed activities, such as outdoor dining and flexible seating for adjacent businesses and residences or a small skateboard park. Node 4 is also an entry point for a proposed Art Walk.

NODE 5

This node's location is unique as it is adjacent to a regionally scaled park in West Fargo, Rendezvous Park, and is also adjacent to the Sheyenne Diversion. Node 5 is envisioned as a high intensity node that would provide year-round recreation amenities that complement the features and programming currently available in Rendezvous Park. In particular, Node 5 is proposed to be a winter recreation hub for the community (Figure 5.4). A multi-purpose building is proposed to serve as a winter warming house with winter equipment rentals, such as cross-country skis, snowshoes, and ice skates. The adjacent EMB is proposed to be used as a sledding hill and an existing stormwater pond adjacent the Sheyenne Diversion may potentially serve as an ice skating pond. In addition, the feasibility of transforming the Sheyenne Diversion into a winter skating ribbon should be investigated.

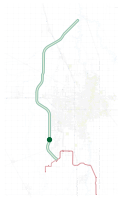
Node 5 will also provide access to the proposed art walk between Nodes 4 and 5. The multi-purpose building could complement the arts theme and provide space for community art classes. In summer months, Node 5 is proposed to serve as a trailhead, as well as provide a nature-based play area and an athletic field complex. This node is located adjacent a thin sliver of land between the Sheyenne and FM Area diversions that is wide enough to support the construction of a complex of athletic fields. With a growing population, an increased demand for additional athletic fields is likely and Node 5 could serve this anticipated need for the community.

Figure 5.4 Representative Winter Recreation Hub Illustration



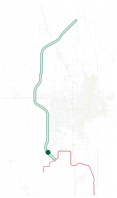
NODE 6

Node 6 is proposed where 52nd Avenue W crosses the greenway. It is a moderate intensity node that will primarily serve as a dog park and community garden where community residents can rent a garden plot. The node will also serve as a greenway trailhead with parking.



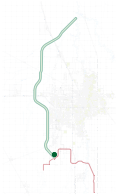
NODE 7

A low intensity node, Node 7 is located where County Road 6 crosses the greenway. Located next to an area in Horace that may not develop for a while, the node is proposed to serve an urban agriculture purpose to support locally produced agricultural products. Land at this node could be leased to local food producers, who would then sell their produce to local restaurants and/or farmers markets.



NODE 8

Located along the Sheyenne River, this moderate intensity node is recommended to function as a regional park and would provide fishing opportunities and an equestrian campground. It would also serve as a trailhead for various trails proposed along the greenway near this node. The Sheyenne River aqueduct structure is located at this node. It is desired that the aqueduct be designed to accommodate pedestrian crossings over the diversion channel to provide convenient access between this regional park and trails located on the west EMB. On either side of the Sheyenne River aqueduct, areas could be maintained to provide opportunities for shore fishing. Located at the midway point of a proposed five-mile equestrian trail, the Node 8 equestrian campground would provide RV campsites and appropriate features to support horses. Other proposed park amenities include a picnic shelter with tables and grills as well as an enclosed restroom building. Node 8 could also serve as an alternate location for a potential state park or campground.

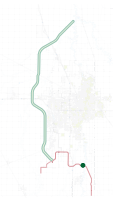


NODE 9

Node 9 is located south of Horace near the diversion inlet structure. This high intensity node is envisioned as a ballfield complex to support high school athletics, local and regional recreation leagues, and tournaments. The node is proposed to include eight softball fields, arranged in two pinwheel formations, and two high school sized baseball fields. The ballfields will be supplemented with a concession/restroom/storage building, playground equipment and parking.

NODE 10

Located just west of the Interstate 94 and County Road 14 interchange, Node 10 will be a low intensity node near the southern embankment that primarily functions as a trailhead, providing access to the greenway. A wetland is planned to be constructed near this node, which would provide a unique opportunity for some soft surface trails to facilitate wildlife observation near this node.



NODE 11

The southern-most node of the greenway, located at the intersection of the southern embankment and the Red River, Node 11 is recommended to function as moderate intensity regional park. This node will support a boat launch on the Red River, shore fishing opportunities, a picnic shelter and portable restrooms. The park will also serve as a trailhead. While Node 11 does experience some flooding during major flood events, the extent of flooding is not projected to be as extensive as what is anticipated at Node 1. Node 11 could also serve as an alternate location for a potential state park or campground.

TRAILS

A variety of year-round trail types are envisioned along the FM Greenway that include both motorized and non-motorized uses. Trails are proposed to be located on top of the southern embankment and on the EMBs (Figure 5.5 and 5.6). It is anticipated that all trails will be prohibited within the main channel of the diversion in order to minimize any potential erosion issues. Trail type selection and trail placement along the greenway was done in a context sensitive manner. Trail users are expected to primarily originate from the core communities of Fargo, Moorhead, West Fargo and Horace. Therefore, most of the trail activity is located on the east EMB, closest to these communities.

A comprehensive wayfinding system is recommended along the greenway trails. The wayfinding system should include kiosks with trail mapping at each recreation node to help users orient themselves and navigate the trail network. Trail mileage markers are also beneficial to inform users how far they have traversed along the trails. Directional wayfinding is important for winter trail users as these trail systems are typically a series of interconnected loops.

Trails are presented based on expected season(s) of primary use.

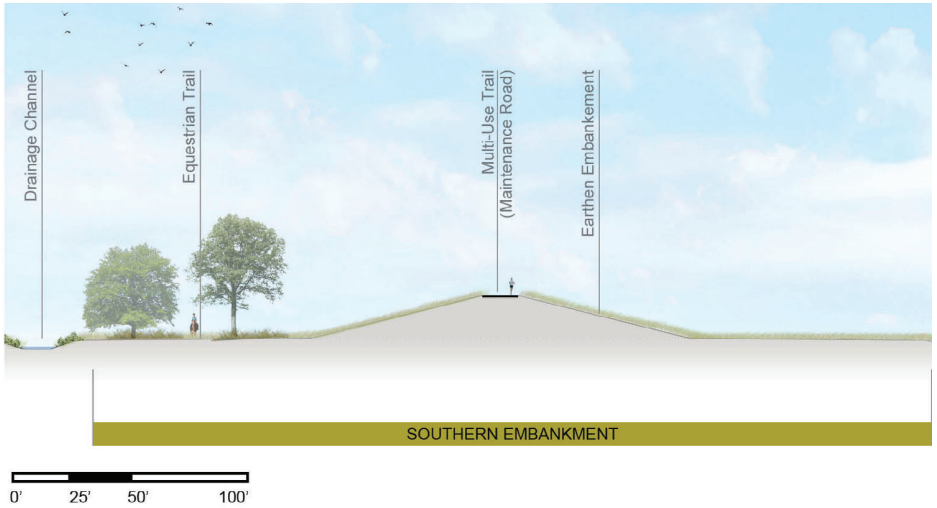


Figure 5.6 Southern Embankment with Trail: Typical Section

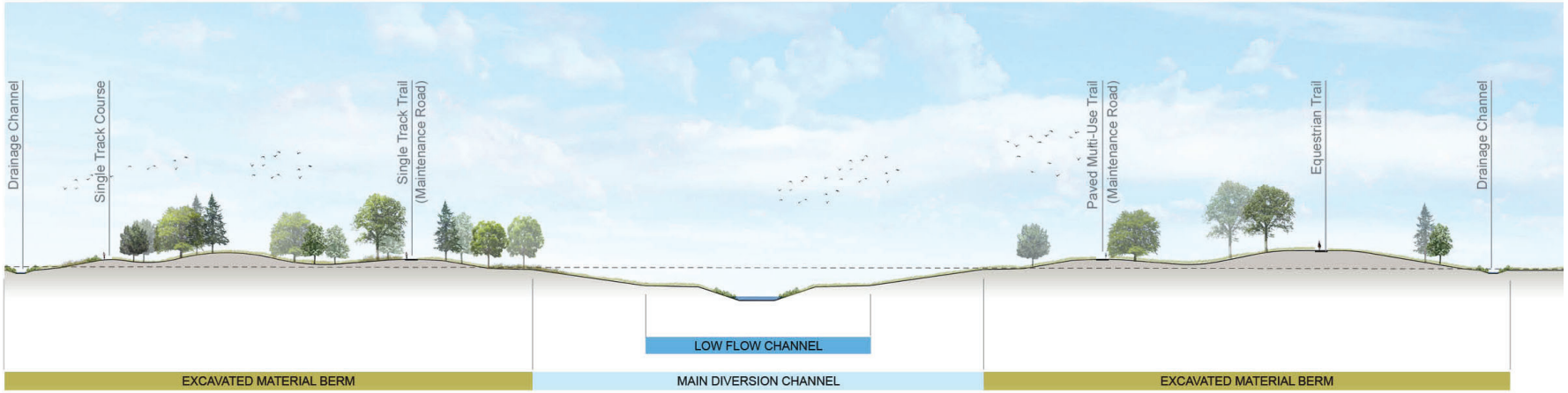


Figure 5.5 Excavated Material Berms with Trails: Typical Section

Figure 5.7 Representative Multi-use Trail Illustration

Figure 5.8 Representative Art Walk Illustration

SUMMER TRAILS

PAVED MULTI-USE TRAIL

A 30-mile, paved multi-use trail is proposed to extend the entire length of the greenway on the east side EMB (Figure 5.7 and 5.9). The paved trail will also function as a FM Area Diversion maintenance and emergency access road for the east EMB. This trail will connect to many existing and planned bikeways that intersect the greenway, expanding the Fargo-Moorhead regional trail network while also creating numerous smaller walking and biking loops of various lengths to serve a wide variety of trail users. In the southern segment of the greenway, the bikeway will move away from the southern embankment for approximately 1.5 miles in order to cross Interstate 29 using the CR 16 bridge. Whether this short trail segment will be an on - or off-roadway facility is yet to be determined.

A portion of the paved multi-use trail will double as an art walk between Nodes 4 and 5 (Figure 5.8). This walk will essentially function as an outdoor sculpture park, with either permanent or rotating outdoor artworks located adjacent to the trail. Small landscaped seating areas will accompany several of the artworks to allow visitors opportunities to rest and enjoy the art.

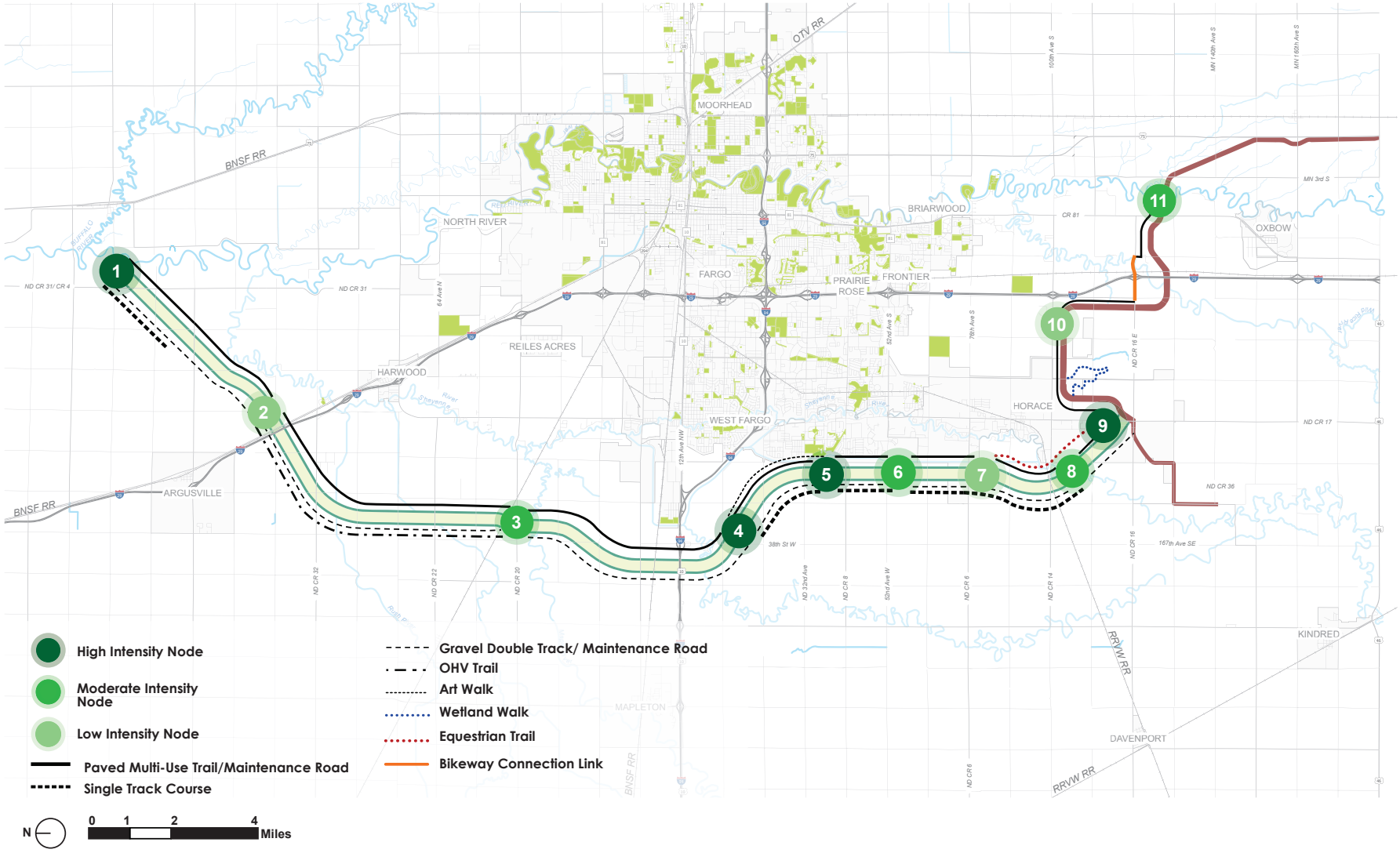


Figure 5.9 Summer Trails

Figure 5.10 Representative Equestrian Trail Illustration

EQUESTRIAN TRAIL

An equestrian trail is proposed between Nodes 7 and 9 (Figure 5.10). This will allow trail riders to ride both north and south of the equestrian campground proposed for Node 8. Several horse farms and equine training facilities are located within several miles of the proposed greenway equestrian trails. While located on the east EMB along with the paved multi-use trail, the equestrian trail will be spatially separated from the multi-use trail to avoid bicyclists and walkers potentially startling horses. The equestrian and multi-use trails may need to come together for short segments as part of consolidated roadway crossings.

DOUBLE TRACK/MAINTENANCE ROAD

A gravel maintenance road is envisioned to serve as a double track bike trail on the east EMB between the Red River and Interstate 94. A double track bike trail/ maintenance road will also be located on the west EMB between the Red River and Node 9. The west EMB trail will likely have intermittent trail breaks due to barriers caused by river channels and high volume roadways that do not include roadway underpasses.

SINGLE TRACK COURSE

A single track course is recommended to start from Node 1 and extend south-east towards Node 2 for approximately 2 miles. This course will provide mountain bike loops of varying difficulty and distance. The course will take advantage of the undulations that are expected to be incorporated into the EMBs (Figure 5.11).

OFF-HIGHWAY VEHICLE (OHV) TRAIL

The proposed OHV trail will create an opportunity for motorized recreation along the corridor. The proposed trail will extend approximately seven-miles between Nodes 2 and 3. This greenway segment is adjacent agricultural land uses, where any potential noise impacts associated with this trail type are expected to be minimal. The OHV trail will share the aggregate maintenance road on the west EMB with the double track bike trail.

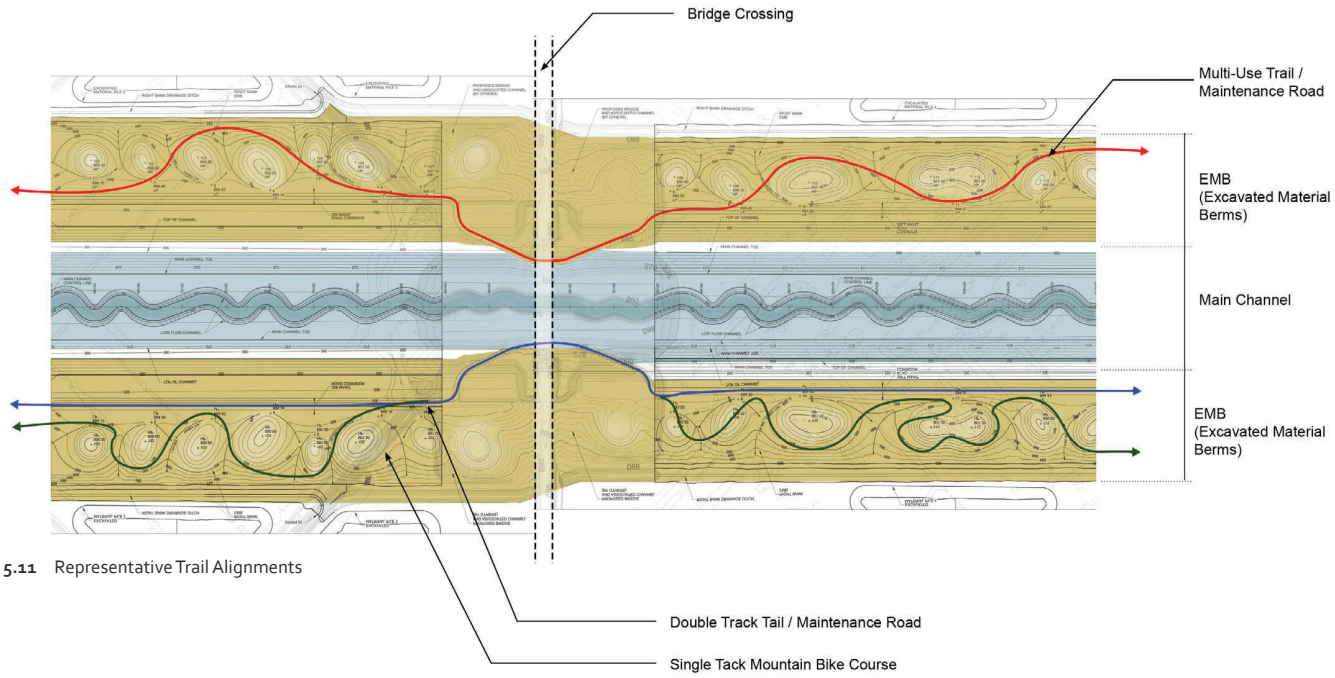


Figure 5.11 Representative Trail Alignments

WINTER TRAILS

Figure 5.12 depicts that various trails that will primarily be used in winter.

SNOWMOBILE TRAIL

A groomed snowmobile trail is proposed along the entirety of the west EMB. The trail will connect to the other trails in the area, creating a more extensive network of loops for riders, and potentially increase visits to neighboring community businesses.

CROSS-COUNTRY SKI TRAILS

Groomed country-ski trails are proposed on the east side EMB extending southwest approximately 3 miles from Node 1 and for a six-mile stretch between Nodes 4 and 8. These trails should be designed to pass between the EMB undulations creating a variety of views and experiences. They should also incorporate trail loops of varying distances. Cross-country ski trails between Nodes 4 and 8 should be accessible from any of the four nodes they pass by.

SNOWSHOE TRAILS

Similar to the cross-country ski trails, snowshoe trails are proposed on the east side EMB extending southwest approximately two miles from Node 1 and for a six-mile stretch between Nodes 4 and 8. These trails should be designed to pass between the EMB undulations creating a variety of views and experiences. They should also incorporate trail loops of varying distances. The trails between Nodes 4 and 8 should be accessible from any of the four nodes they pass by.

ICE SKATING RIBBON

The Sheyenne Diversion provides a unique opportunity to provide a linear ice skating ribbon, extending south from Node 5. Ice ribbons are becoming popular and usually are located on either rivers or man made surfaces. An additional feasibility study will be needed to determine if water levels, along with ice thickness and quality will be adequate to support ice skating. Sheyenne Diversion culvert underpasses of roadways will also need to be assessed to determine if skaters could safely pass through the culverts.

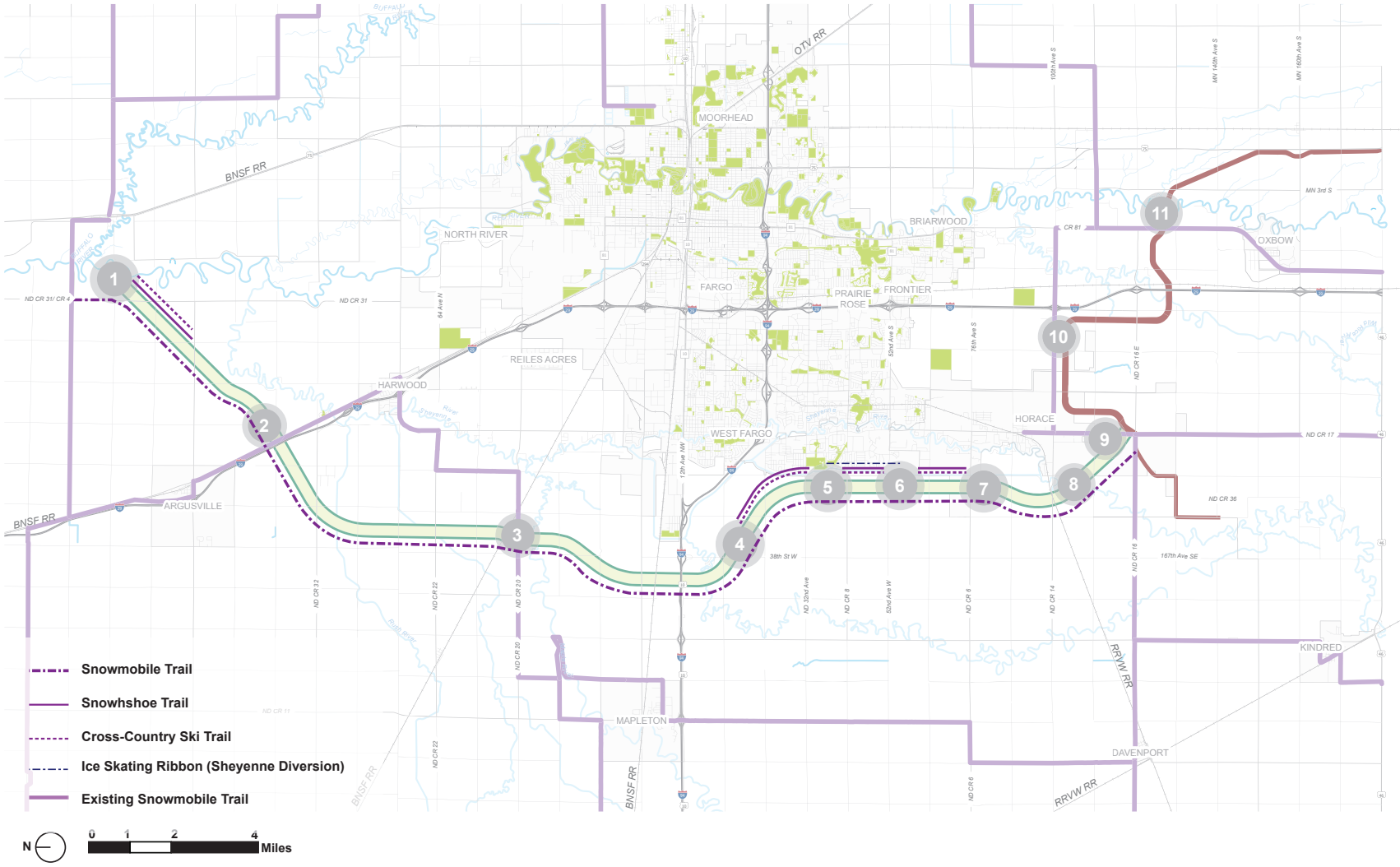


Figure 5.12 Winter Trails

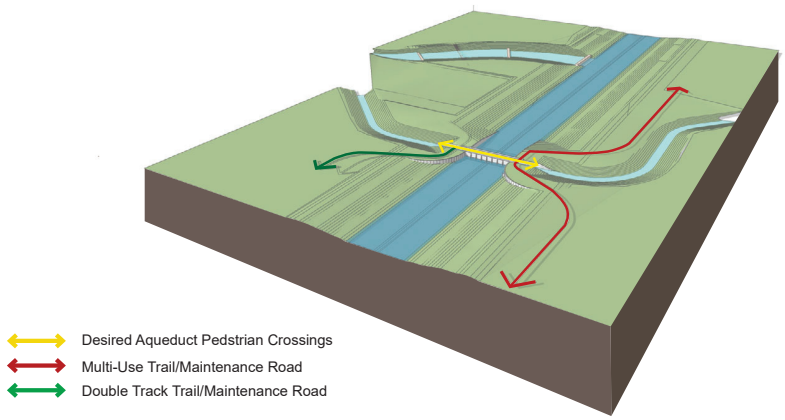


Figure 5.13 Aqueduct Crossing

STRUCTURE CROSSINGS

There will be aqueduct and bridge structures along the greenway to carry tributary rivers, vehicles, and trains, over the diversion channel. Providing trail users a safe way to cross over or under these structures, while not interfering with the intended purpose of these structures, will be important for trail continuity.

Aqueducts will be constructed at the Maple and Sheyenne Rivers to allow flows in these rivers to pass over the diversion channel. If feasible, it is desired that pedestrians be allowed to cross these structures (Figure 5.13).

Proposed trails along the greenway will be located on the excavated material berms adjacent the main channel. Locations where interstate bridges and railroad bridges cross the greenway will require the trails on the east EMB to be constructed down the side slopes of the main channel so that the trail can pass underneath these bridge structures (Figure 5.14) Trails along the west EMB may be terminated at these structures. It is recommended that lighting be incorporated under these bridges to further enhance trail users' sense of safety as they pass under these structures. When greenway trails intersect with local and county roadways, it is desirable that these crossings also be grade separated to enhance the safety of trail users. This is particularly true for the 32nd Avenue W and 52nd Avenue West bridges. These bridges will be located adjacent urban development and will likely see higher trail and roadway traffic volumes, which increases the risk of conflicts between trail users and automobiles. In cases where grade separation is deemed not feasible, the trails will cross at-grade over these roadways at a consolidated crossing point that is enhanced with signage, pavement markings and lighting (Figure 5.15).

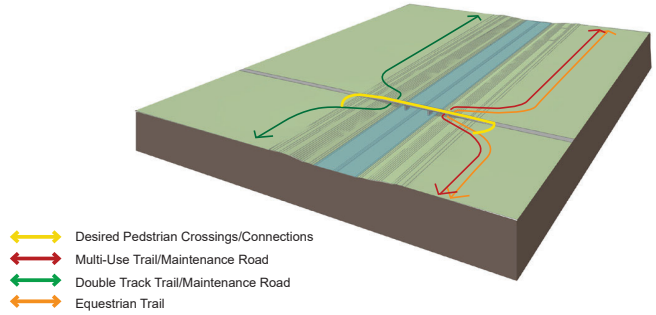


Figure 5.14 Bridge Underpasses

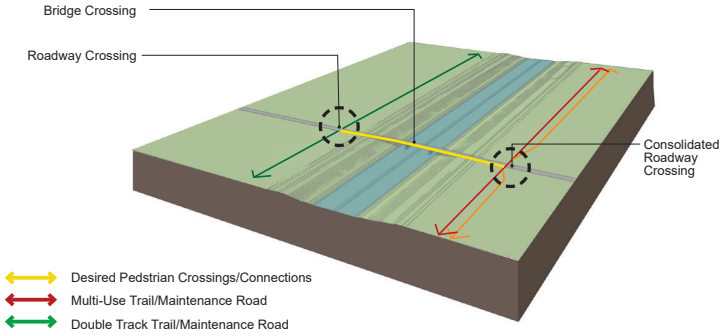


Figure 5.15 At Grade Roadway Crossings

Many of the new bridges crossing the greenway will be used by bicyclists and pedestrians to gain access to the greenway or destinations beyond (Figure 5.16). It is recommended that the following roadway bridges over the diversion channel include pedestrian and bicycle facilities.

- CR 81
- CR 20
- CR 10
- 38th Street W
- 32nd Avenue W
- 52nd Avenue W
- CR 6
- CR 14
- CR 16/17

All these bridges, except the 52nd Avenue W bridge, align with proposed bike routes in the community. The 52nd Avenue W bridge is near urban development with expected higher levels of pedestrian and bicycle crossing activity. There are several bridges where low volumes of pedestrian and bicycle crossings are anticipated. While designated trail facilities are not recommended on these bridges, it is expected that when needed, pedestrians and bicycles will cross these bridges using the vehicular travel lanes.

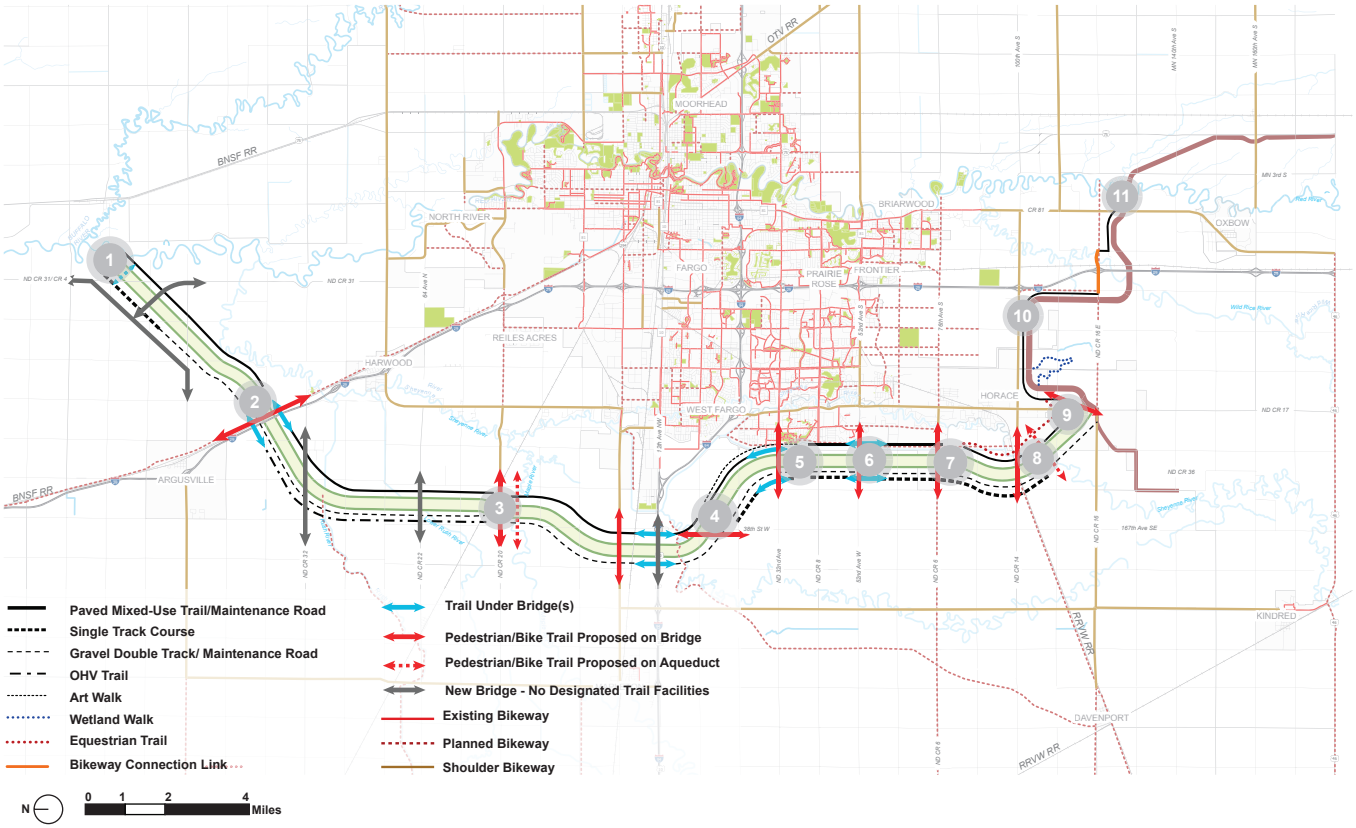


Figure 5.16 Recommended Bridge Crossings and Underpasses

VEGETATION

The vegetation strategy for the FM Greenway will help reflect the native plant communities of the region. Three plant community types are proposed for the EMBs: Prairie, Savannah, and Woodland (Figure 5.17). The EMB vegetation will complement the planned vegetation within the diversion channel, which is expected to consist of mesic and dry prairie plant communities that can withstand intermittent periods of flooding.

The Prairie plant community will have a canopy cover of no more than 10 percent and will cover the entire southern embankment. On the east EMB, the prairie plant community is planned north of Node 4, extending to 35th St SE. It then begins at Node 3, extending north to CR 22. On the west EMB, the prairie community will begin just north of Node 4 and extend approximately two miles north of Interstate 29.

The Savannah community will have a canopy cover between 10 -30 percent. This community makes up most of the vegetation cover along the greenway. The intent of the Savannah plant community is to provide some contrast to the flat, agricultural landscape that surrounds the greenway. Savannah trees will provide protection from wind, sun and snow, making a more comfortable trail and recreation experience. The added trees also offer wind protection to developments in West Fargo. On the west EMB, the Savannah plant community is located at Node 4, and along a segment that extends south from Node 7 to the channel inlet control structure. On the east EMB, the savannah community extends from Node 8 north to Node 4, 35th St SE north to Node 3, and from County Rd 22 north to the diversion channel outlet at Node 1.

The Woodland vegetative community has a canopy cover of 30-50 percent. Similar to the savannah, the woodland areas are intended to add contrast to the surrounding landscape and create protection from sun and wind for more enjoyable recreation experiences.

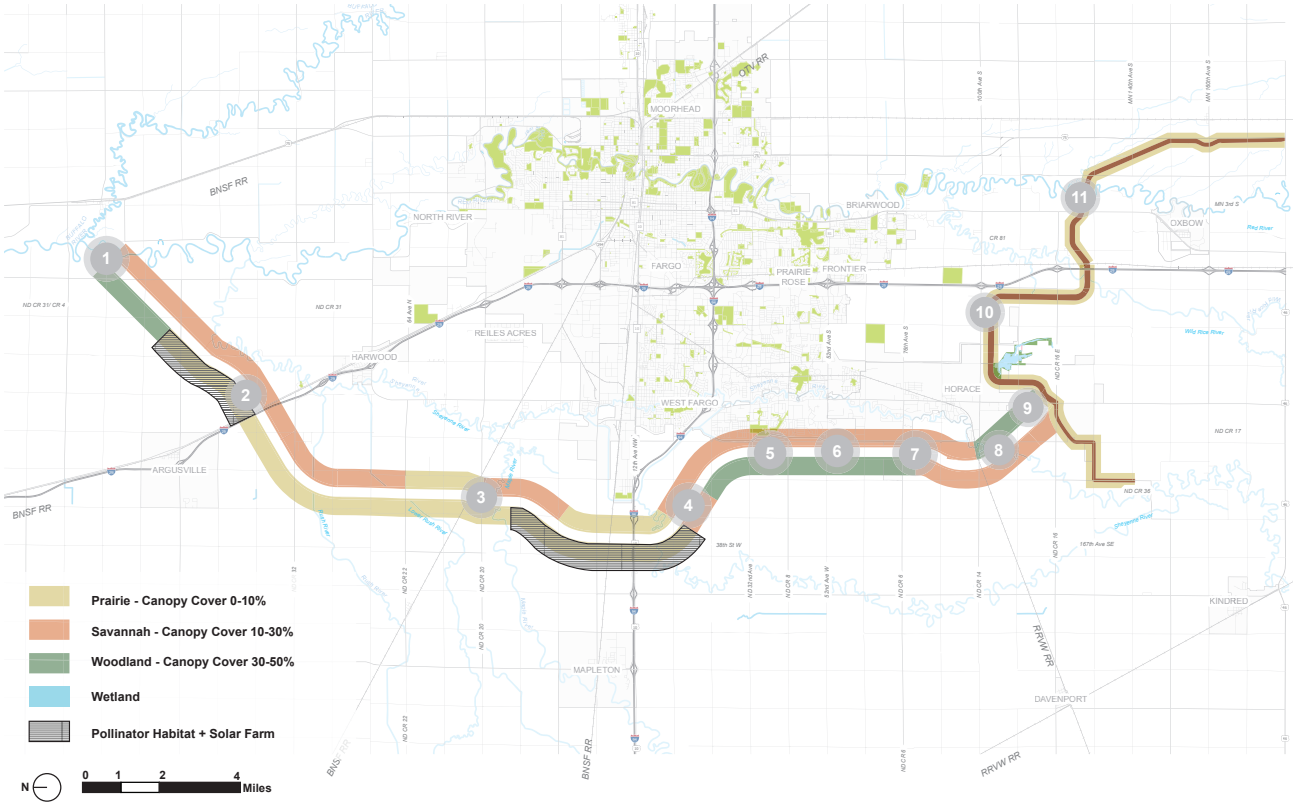


Figure 5.17 Greenway Vegetation

On the east EMB, Woodland cover is proposed only between Nodes 8 and 9. The added canopy here will create visual separation between the equestrian trail and the multi-use trail. On the west EMB, woodland is proposed between Nodes 4 and 7. This combined with savannah on the east side, will provide enhanced wind protection for these nodes. Woodland is also suggested on the west EMB extending southwest from Node 1 for approximately two miles.

A wetland is planned inthe vicinity of Node 10. Plant species will be appropriate to the anticipated wetland water levels.

While vegetation along the entire greenway will support pollinators, areas adjacent two proposed solar farms are proposed to have increased emphasis on pollinator habitat creation. The first segment will stretch from Node 4 north across interstate 94 to the Maple River. The second segment will begin at Interstate 29 near Node 2 and extend northeast for approximately three to four miles. The pollinator-solar land uses are suggested in these locations so they can be visible from the interstate highways for enhanced awareness and to provide convenient access to the power grid located along the roadways. The solar farms provide an opportunity to create partnerships with power companies and/or research institutions like NDSU.

EXCAVATED MATERIAL BERMS

The excavated material berms (EMBs) will be constructed from soil excavated to create the main diversion channel. The east side EMB will have an embedded levee to prevent the channel from overflowing towards the protected communities. A typical width of an EMB is expected to be approximately 560 feet. Given the P3 process allows for flexibility regarding the size and placement of the EMBs, the ultimate size of the EMBs may vary from the typical dimensions depicted in this study. Assuming that EMBs will be placed on both sides of the diversion channel, it is recommended that the EMBs be sculpted to create an undulating landform that provides topographic variability along the corridor and visual interest. The inspiration for the undulations is taken from the nearby Sheyenne National Grassland that has a distinct undulating landform. The proposed undulating topography will also support trail activities. In particular, the undulations can be used to create single track mountain bike courses that provide a variety of slopes and challenges that will appeal to a broad range of cyclists with varying skill levels. The undulations will also serve as a visual buffer between the equestrian trails and multi-use trails to minimize the possibility of bicyclists and pedestrians startling horses.

While beneficial for some recreation activities, undulating the EMBs is not necessary for the full length of the greenway. Figure 5.18 depicts EMB segments where undulations can best support proposed recreational trail uses.

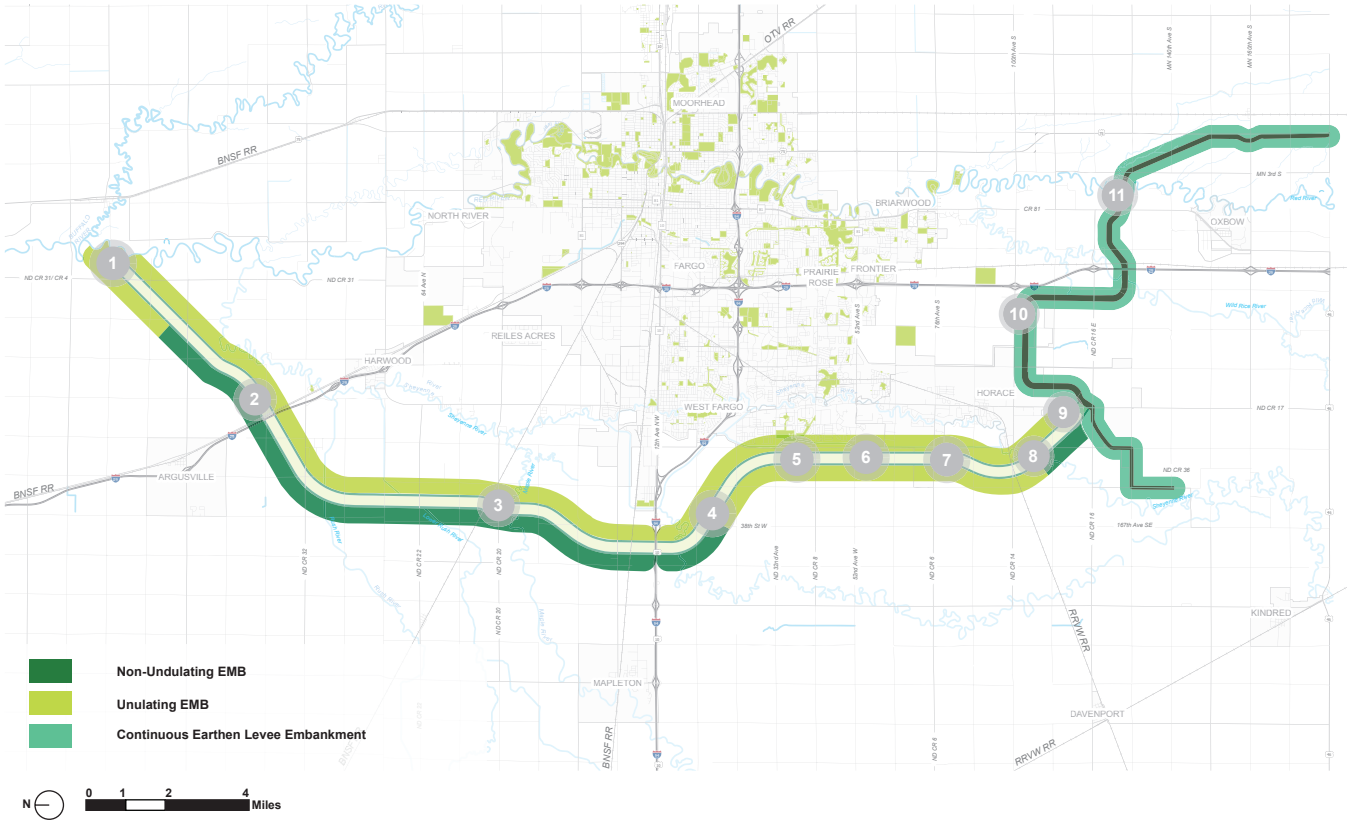


Figure 5.18 Excavated Material Berm Undulation Areas

Figure 5.19 Representative Conceptual Aqueduct Illustration

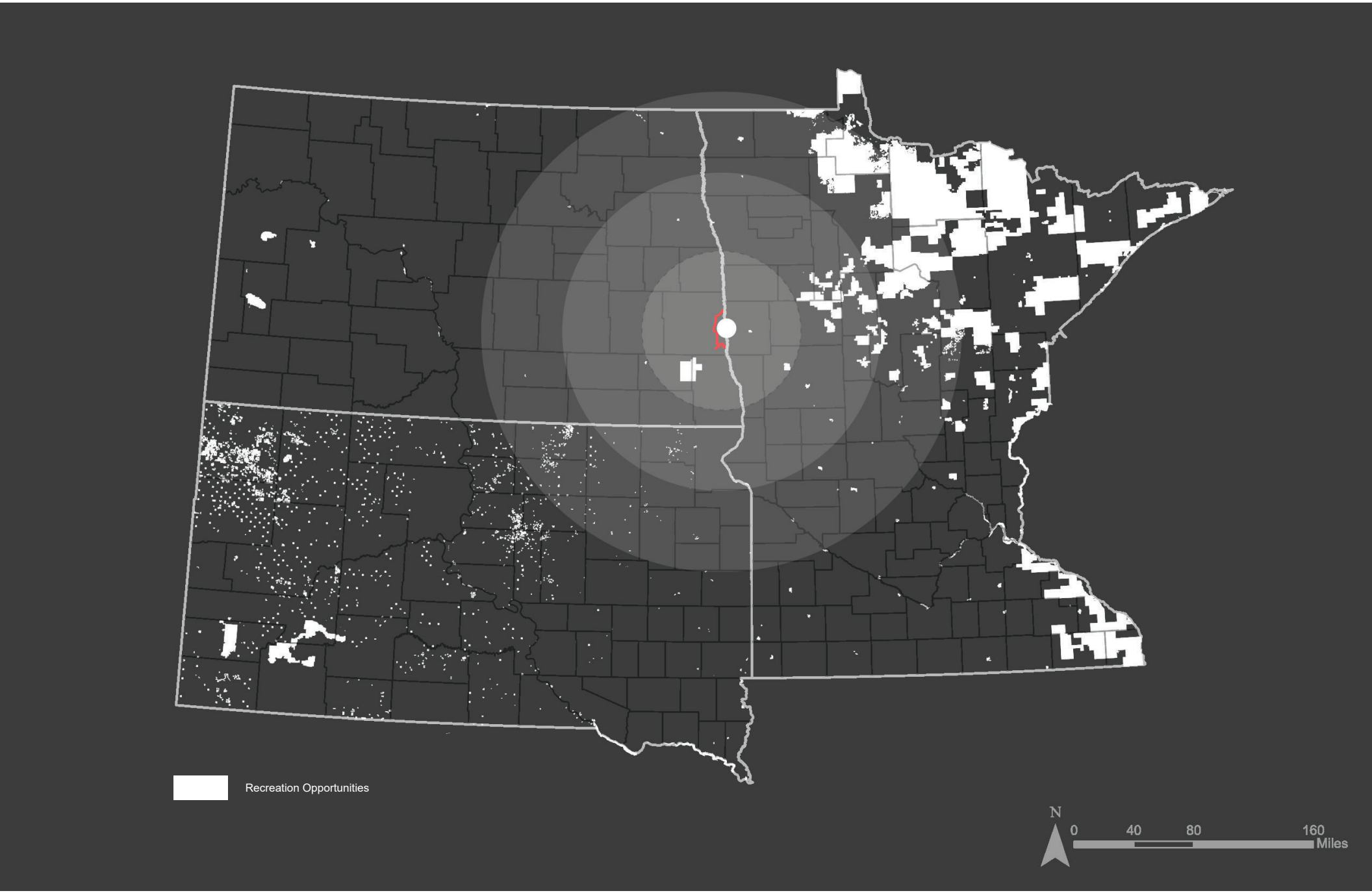
GREENWAY STRUCTURES VISUAL QUALITY

The visual character of structural infrastructure along the greenway, such as aqueducts, river inlets, and control structures, will influence the users' corridor experience. These infrastructure elements also can serve to create a unified greenway brand and serve as wayfinding elements. The development of a consistent color palette and a design vocabulary for bridgeheads, railings, and architectural surface treatments can transform a utilitarian structure into a community amenity. These structures can also be designed in a manner that incorporates public art into the structure. Figure 5.19 depicts a conceptual aqueduct structure and includes several conceptual approaches for integrating public art, such as casting artwork imagery, text or poetry into the interior aqueduct walls and providing vertical artworks on the bridgeheads that reinforce wayfnding and/or highlight cultural resources or natural systems, such as wind speed and direction.

Figures 5.20 and 5.21 depict the design vocabulary that the USACE is incorporating into control structures and bridges being constructed as part of the southern embankment. A design vocabulary has not been established for the diversion channel portion of the greenway that will be constructed using the P3 approach. This segment will include both the Sheyenne and Maple River aqueduct structures and numerous roadway and railroad bridges over the greenway. It is recommended that the design vocabulary established for the diversion channel complement the design vocabulary established for the southern embankment in order to create a visually unified greenway experience.

Figure 5.20 Representative Control Structure Illustration

Figure 5.21 Representative Conceptual Roadway Bridge Illustration


Recreation Opportunities
N
0
40
80
160
Miles

BENEFITS CASE FOR RECREATION

The FM Greenway is an opportunity for the FM region to create a 30-mile greenway that serves as a catalyst for year-round recreation and economic development. Today, there is a gap in signature recreational opportunities in eastern North Dakota. The greenway will create an inviting, engaging and accessible regional destination that enhances the brand of the FM area. It will also provide a new space for programming and events, active recreation and quiet enjoyment, and extend the region's trail network.

ECONOMIC DEVELOPMENT BENEFITS

The creation of the greenway will generate significant net new value for the FM region. Recurring impacts accrue from increases in the value of existing residential assets, new multifamily development, visitor spending, and talent attraction while construction of the greenway and the associated recreational amenities will result in a one time benefit.

TOURISM

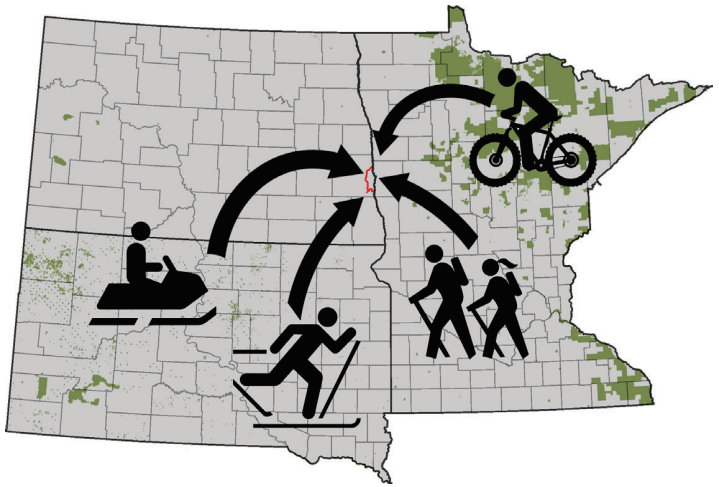
Annually North Dakotans make over 160,000 trips to Minnesota for outdoor-based recreation, leading to the leakage of tourism spending and associated lost fiscal revenue that could otherwise remain local. Given the strong desire expressed by residents for additional recreational opportunities in the region, the FM Greenway presents the opportunity to capture back a portion of those trips. The greenway will retain a portion of the recreation currently occurring in Minnesota, with the associated recreation-based revenue being retained locally. Gaining back just 20 percent of those trips will generate over $100 million over 20 years.

The FM Greenway will also attract net new local and regional visitors in addition to recapturing lost trips. Based on comparable greenways in similar climates, the greenway has the potential to attract approximately 90,000 visitors per year, resulting in another $18 million of new visitor spending over 20 years.

REAL ESTATE PREMIUMS

Public spaces increase the value of existing real estate assets within close walking distance, as residents and workers value proximity to public spaces. The opening of the greenway will have a similar impact on the value of single-family homes, which is the primary real estate asset within close proximity of the greenway. Assuming an annual premium of nearly 8.5 percent for the first five years after the opening of the greenway, based on comparable open spaces, the FM Greenway will generate $145 million in economic output associated with increased real estate values.

The greenway will also create demand for new multifamily developments, which are becoming a more popular choice for area residents. Growth premiums for new multifamily developments as a result of a new amenity in line with the proposed greenway can increase the rates at which developments come online.



$393M
Current total assessed property value of the 1,500 homes within one mile of the diversion channel centerline

8.45%
*Average annualized growth rate for homes near new parks and recreation areas**

$145M
increase in property values attributable to the recreational component, 5-year NPV

JOB CREATION

Greenway implementation will generate job creation via construction activity associated with new recreation features and new adjacent development. This construction activity will in turn generate additional business and household spending.

OTHER BENEFITS

Beyond economic benefit, the greenway will create additional value for the FM area through improved public health, along with enhanced employer and talent attraction.

HEALTH BENEFITS

A variety of literature highlights the public health benefits of open spaces, from improved health outcomes to healthcare cost savings. Currently, Fargo residents experience health risks typical of what is found elsewhere in the country (Figure 6.1). The FM Greenway will create critical open space that has the potential to result in significant health and healthcare cost benefits for the 24,000 residents that are projected to live within one mile of the greenway by 2045 and for more than 1 million residents that live within the average drive time for visits to destination open spaces.

BRAND VALUE

Finally, investments in signature recreation amenities like the greenway increases a region's brand value and helps attract business and investment as the vast majority of businesses and high-skill workers base location decisions on quality of life factors and access to open space. Precedent projects shown in Figure 6.2 provide an indication of potential community benefit that may result from the implementation of the FM Greenway.

In addition, professional talent and college students are drawn to places with outdoor recreation and outdoor-based academic opportunities with studies showing that campus recreation facilities and practical learning programs influencing student decision-making. Given that NDSU is already advancing research on prairie ecosystems, the opening of the greenway with the opportunity to conduct hands-on research on prairie ecosystems should help attract both students and professors alike. These findings indicate the greenway will provide significant benefit and support the continued growth and prosperity of the FM region.

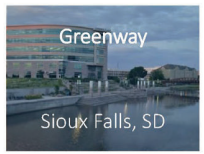
Additional detail regarding benefit calculations can be found in Appendix B.

HEALTH CONDITION	FARGO RESIDENTS	U.S. RESIDENTS
HIGH BLOOD PRESSURE	25 %	33 %
OBESITY	33 %	33 %
ASTHMA	8 %	9 %

Figure 6.1 Health Risk Table

Doubled the Number of Riverwalk vendors and increased profits by 164% from 2014 to 2018.

Helped to catalyze the establishment of at least 4 new businesses within a 3-block radius.



3 in 5 vistors patronziz local businesses before or after visiting thte greenway.

9 in 10 of users shop or dine within 1/2 mile of thepark before or after visiting.

Figure 6.2 Business Attraction Precedents

IMPLEMENTATION

GREENWAY GOVERNANCE STRUCTURE

A key component to the successful implementation of the FM Greenway is the establishment of a governance structure for the design and implementation of recreation facilities and for on-going operations and programming. An effective governance structure should be guided by the following principles:

- Leverage existing capacity of existing recreation, cultural and educational institutions
- Produce high quality operations and programming
- Support FM Greenway brand development
- Secure diverse funding streams
- Ensure accountability to the public

GOVERNANCE STRUCTURE ROLES AND RESPONSIBILITIES

The key governance roles and responsibilities for the development and operation of the greenway's recreational components will evolve as the greenway moves through the following three phases:

- Planning and Design
- Construction
- Stewardship

Given the scale of the FM Greenway, it is expected that various segments or nodes along the greenway will advance through planning, design and construction quicker than other segments/nodes.

PLANNING AND DESIGN PHASE

During the planning and design phase, the governing entity should focus on crafting a publicly supported vision to build project champions and attract funders. Key governance functions during this phase may include:

- **Vision Stewardship and Design**. Implementation of the FM Greenway will require strong leadership that promotes and advocates for the greenway vision and ensures the greenway final design is consistent with the vision.
- **Marketing**. The greenway vision and brand will need to be marketed in order to generate enthusiasm and support for its implementation.
- **Stakeholder Engagement and Advocacy**. Continued engagement with project stakeholders will help to refine the vision, as well as establish project partners and advocates.
- **Capital and Operating Fundraising**. Initial approaches for capital and operating fundraising must be developed in order to establish the feasibility of the greenway vision.
- **Land Acquisition Oversight**. Early identification of land acquisition needs and potential approaches to secure the land is critical to vision realization. This is particularly important as property is being acquired for the construction of the FM Area Diversion. The diversion land acquisition process will result in excess property that had to be purchased but is not directly needed for the diversion. Some of the "excess" land located near identified recreation nodes could be re-purposed as recreation nodes.
- **Contracting for Designers.** The governing entity may need to contract out the final design of specific recreation features along the greenway and then provide oversight over the design process to ensure the greenway vision is brought forward as intended.

During this phase, it is also important to start focusing on ways to activate the greenway. Activation is key for attracting constituents for the greenway, and if done properly, will in turn build excitement for the greenway and enhance the FM Greenway brand.

CONSTRUCTION PHASE

Construction of the greenway will take a phased approach. Initially, the primary underlying structure of the greenway, the FM Area Diversion, will be constructed by a P3 Developer and the USACE. These entities will be responsible for constructing the diversion channel and the southern embankment, which will be the foundation on which the recreation trails will be placed. The governing entity should closely collaborate with these entities during this initial construction to ensure that construction of diversion features is done in a manner that does not preclude the implementation of additional recreation features in the future. Once the underlying structure of the greenway is constructed via the P3 Developer and the USACE, the governing entity will be responsible for the long-term implementation of additional recreation features either on, or adjacent to, the diversion channel and southern embankment. This phase of construction will require the governing entity to support capital fundraising, secure regulatory approvals and manage construction activities.

STEWARDSHIP

A successful FM Greenway will necessitate that the governing entity build capacity to deliver robust programming and high-quality operations. Key governance functions during the stewardship phase include:

- **Programming**, which is key to provide high quality experiences for the community and tourists.
- **Routine Operations and Maintenance** needed to ensure facilities provide safe and comfortable recreation experiences.
- **Ongoing Operating Fundraising** as user fees charged for recreation programming is rarely at a level to fully cover associated programming expenses.
- **Ongoing Marketing** is needed to ensure potential users are aware of available programs, to maintain and build the greenway brand, and to continue drawing in recreation-based tourism.
- **Ongoing Community Engagement** to ensure the greenway continues to deliver relevant and desired recreation facilities and programing.

IDENTIFICATION OF A LEAD GOVERNING ENTITY

At the start of the study, multiple entities appeared well-positioned to participate in the implementation of recreation along the greenway including:

- Audubon Dakota
- Cass County
- Fargo Park District
- FM Diversion Authority
- Metro COG
- North Dakota Parks and Recreation
- River Keepers
- Sierra Club Dacotah Chapter
- West Fargo Park District

After initial focus group discussions, it was clear that Metro COG or the FM Diversion Authority were best suited to serve as the lead governing entity in charge of all management decisions and execution of the greenway, given limited existing capacity and a limited desire to create a new entity.

An analysis of Metro COG and the FM Diversion Authority highlighted that Metro COG is the best entity to govern the greenway. In addition, the FM Diversion Authority expressed their primary role should be continued flood risk reduction for communities in the FM area. Therefore, Metro COG is recommended as the lead governing entity. Metro COG already has a broad mandate to enhance quality of life and improve economic development in the area. Through this mission, Metro COG can set up a structure to receive direction from FM area community representatives regarding regional recreation. The expansion of Metro COG's mission and function to include park operations can be accomplished solely as an internal decision by Metro COG's Policy Board.

As the lead governing entity for the FM Greenway, it is recommended that Metro COG:

- Serve as the primary point of contact with the P3 Developer and the USACE as they design and construct their respective components of the diversion
- Serve as the primary point of contact with the P3 Developer and the FM Diversion Authority as they operate and maintain their respective components of the diversion
- Provide initial vision and ongoing stewardship
- Market the recreational component
- Engage with the local community
- Promote philanthropic fundraising and sponsorship for capital and operational needs
- Manage programming, for specific nodes and between nodes
- Contract for routine operations and maintenance for specific greenway recreation features not maintained by other entities

PROGRAMING AND MAINTENANCE PARTNERS

The successful provision of recreation along the greenway will require partnerships between the lead governing entity and other recreation providers in order to identify recreation priorities and to best use available capacity and resources. Some of the partnerships could take the form of a consortium of area Park Districts. The consortium will allow the Park Districts to discuss and jointly agree upon equitable approaches for raising and dispersal of funds for capital, operations, and maintenance of recreation features. Based on conversations with potential partners, the following partnership opportunities should be discussed and analyzed further:

NORTH DAKOTA PARKS AND RECREATION

North Dakota Parks and Recreation is interested in exploring programming and operating a node. In particular, they are interested in further investigating Nodes 1, 3, 8 or 11 as a potential partnership location. Should a recreation node be identified by North Dakota Parks and Recreation, they would want to be involved in the final design of that node. They can request funding from the North Dakota State Legislature, which meets on a biennial basis.

CASS COUNTY

Cass County is not able to operate a node, given limited existing capacity and no revenue stream to support programming and maintenance. Yet, the County may be able to contribute a modest amount of funding to the greenway out the County's general fund if authorized by the County Commissioners.

FARGO PARK DISTRICT

The Fargo Park District may be willing to join the consortium of recreation partners.

HORACE PARK DISTRICT

Horace Park District may be willing to operate Nodes 8 and 9, located in the City's borders. Given the city is just starting to expand, the Park District has limited experience operating parks and will require time to increase its capacity to program and operate parks. The Park District does have the ability to secure funding through the general fund, the recreation fund, and special assessments.

WEST FARGO PARK DISTRICT

West Fargo Park District staff expressed interest in potentially operating Nodes 4, 5 and 6. The Park District is planning to undertake the development of a park system master plan in the near future that will allow the community to further explore recreational opportunities associated with these nodes. The Park District currently can leverage a land dedication mechanism or a special assessment to generate revenue for capital upgrades. The Park District's limited ability to raise funds may influence its ability to operate these nodes.

NONPROFIT ORGANIZATIONS

There are numerous nonprofit organizations in the FM area that may be feasible partners for the provision of recreation, education and cultural programming. There are numerous higher education institutions that may be interested in using a portion of the greenway to advance their research and education missions. Diverse local arts organizations may be interested in providing art education and programming. Environment-focused organizations may find an opportunity to expand their programming and services along the greenway.

Recreation clubs in the FM area that may be feasible partners for recreational trail development, operations and maintenance. It is assumed that OHV, mountain bike, equestrian and snowmobile clubs will recognize the recreation opportunities afforded by the greenway and take lead in the development, operations and maintenance of these trail types. Club partnerships will also assist with the development of trail use rules and their enforcement. For the most part, partnership relationships such as those recommended here are typical operating protocol for these recreation clubs. It is anticipated that all partnership trails will be prohibited within the main channel of the diversion in order to minimize any potential erosion issues.

PRIVATE COMPANIES

Beyond pure recreation, the greenway may provide opportunities for local job creation. Three opportunities identified in this plan include urban agriculture, native seed harvesting, and solar energy production. These potential jobs will provide additional environmental benefits, such as locally sourced food and renewable energy.

RECREATION DESIGN GUIDANCE AND STANDARDS

Recreation features should be incorporated into the FM Greenway in a manner that is safe, comfortable and attractive to users, and cannot adversely impact the flood protection function of the FM Area Diversion. Recreation features located within property owned by the FM Diversion Authority need to comply with FM Diversion Authority and USACE design requirements, as applicable. Recreation features should also adhere to all local, county, state and federal regulations. The following design standards are provided as a reference resource for when the greenway components advance to the design phase.

AMERICANS WITH DISABILITIES ACT (ADA)

In accordance with the ADA and the Federal Highway Administration, everyone should have the opportunity to experience and enjoy the natural environment. People with and without disabilities, older people, families, and children all benefit from being able to enjoy parks and trails. To the maximum extent feasible, trails and recreation facilities should be designed to accommodate the access needs of all users.

Park and open space recreation features should be designed in compliance with the following accessibility design standards and guidelines:

- Americans with Disabilities Act Accessibility Guidelines (ADAAG)
- Architectural Barriers Act (ABA)
- ADA Accessibility Guidelines for Recreation Facilities
- Accessibility Guidelines for Outdoor Developed Areas
- Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG)

SUSTAINABLE DESIGN AND MANAGEMENT GUIDELINES

With limited resources available for the construction and maintenance of public recreation facilities, it is important they be designed in a sustainable manner. Sustainable designs work with natural systems, thus maintaining or restoring habitat and reducing long term cost of operations and maintenance. Popular design guidelines for sustainable landscape and building design include the following:

- The Sustainable Sites Initiative: U.S. Green Building Council
- LEED Certification, U.S. Green Building Council

U.S. ARMY CORPS OF ENGINEERS DESIGN STANDARDS

Development of recreation features for areas under USACE jurisdiction shall be in accordance with:

- EM 1110-2-38, Engineering and Design - Environmental Quality in Design of Civil Works Projects, 3 May 1971.
- EM 1110-1-2009, Engineering and Design - Architectural Concrete, Corps of Engineers, 31 October 1997.
- ETL 1110-2-583 Engineering and Design: Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures, 30 April 2014
- EM 1110-1-400, Engineering and Design – Recreation Facility and Customer Services Standards, 1 November 2004.
- EM 1110-2-410, Engineering and Design - Design of Recreation Areas and Facilities - Access and Circulation, 31 December 1982.
- ER 1110-2-400, Engineering and Design - Design of Recreation Sites, Areas, and Facilities, Corps of Engineers, 31 May 1988.
- ER 1165-2-400, Water Resources Policies and Authorities - Recreation Planning, Development,

TRAIL DESIGN AND MAINTENANCE GUIDELINES

Greenway trails should be designed in accordance with the following design standards and guidelines:

MULTI-USE TRAILS

- AASHTO Guide for the Development of Bicycle Facilities, 2012, or most recent edition.
- AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities, 1st Edition, 2004.
- Manual on Uniform Traffic Control Devices (MUTCD), 2009 update, or most recent edition.
- Trail Planning, Design, and Development Guidelines, Minnesota Department of Natural Resources, Parks and Trails Division, 2007.
- Bicycle Facility Design Manual, Minnesota Department of Transportation, 2020.

EQUESTRIAN TRAILS

- Equestrian Design Guidebook for Trails, Trailheads, and Campgrounds, Jan Hancock, United States Department of Agriculture, United States Forest Service, Technology & Development Program, Publication 0723-2816-MTDC, 2007.
- Trail Planning, Design, and Development Guidelines, Minnesota Department of Natural Resources, Parks and Trails Division, 2007.

OHV TRAILS

- Great Trails: Providing Quality OHV Trails and Experiences, Dick Dufourd in association with the National Off-Highway Vehicle Conservation Council, 2015.
- Trail Planning, Design, and Development Guidelines, Minnesota Department of Natural Resources, Parks and Trails Division, 2007.

MOUNTAIN BIKE TRAILS

- Guidelines for a Quality Trail Experience, International Mountain Bicycling Association (IMBA), 2017.
- Managing Mountain Biking: IMBA's Guide to Providing Great Riding, 2007
- Planning and Managing Environmentally Friendly Mountain Bike Trails, Bureau of Land Management (BLM). Shimano Corporation, and Arizona State University, 2006.
- Trail Solutions: IMBA's Guide to Building Sweet Singletrack, 2004.
- Trail Planning, Design, and Development Guidelines, Minnesota Department of Natural Resources, Parks and Trails Division, 2007.

SNOWMOBILE TRAILS

- Snowmobile North Dakota
  - » Guidelines for Snowmobile Trail Signing and Placement
  - » Trail Program's 2015 Groomer Operator Guidelines
  - » Trail Program 2015 Guidelines
- Trail Planning, Design, and Development Guidelines, Minnesota Department of Natural Resources, Parks and Trails Division, 2007.

CROSS-COUNTRY SKI TRAILS

- Trail Planning, Design, and Development Guidelines, Minnesota Department of Natural Resources, Parks and Trails Division, 2007.
- Minnesota Cross-county Ski Trails Assistance Program Manual, Minnesota Department of Natural Resources, Appendices A and B, 2007

SNOWSHOE TRAILS

- Trail Planning, Design, and Development Guidelines, Minnesota Department of Natural Resources, Parks and Trails Division, 2007.

MULTI-USE TRAIL DESIGN ELEMENTS

The following provide general design guidance for multi-use trails based on local experience (Figure 7.1). Final design of trails will be responsive to official design guidance and local conditions.

SURFACE TYPE

Local multi-use trail providers prefer multi-use trail surfaces of concrete because concrete trails require less long-term maintenance. Multi-use trails will typically be constructed of four inches of reinforced concrete over a base of five inches of Class 5 aggregate over 12 inches of compacted sub-grade.

SLOPES

In accordance with ADA standards, the maximum allowable running slope on trails without landings or guardrails shall be five percent. Trail cross slopes are recommended at one percent and shall not exceed two percent (AASHTO, 2012).

TRUNCATED DOMES

Detectable warnings are an Americans with Disabilities Act (ADA) requirement in the current Americans with Disabilities Act Accessibility Guidelines (ADAAG) for detecting the boundary between sidewalks or trails and the street. Truncated domes shall be included at street crossings.

TRAIL WIDTH

The width required for a multi-use trail is a primary design consideration. Under most conditions, the recommended width for a two-directional multi-use trail is ten feet. Increasing the trail width (11 – 14 feet) may be necessary or desirable if substantial use by bicyclists, joggers, in-line skaters, pedestrians or large maintenance vehicles is projected (AASHTO, 2012). See Figure 7.1 for typical section.

VERTICAL AND HORIZONTAL CLEARANCES

Shoulders of three to five feet with a maximum 16 percent slope should be maintained on both sides of the trail. At a minimum, a two-foot area with a maximum 16 percent slope should be provided for clearance from lateral obstructions. When the trail is adjacent to ditches or slopes steeper than 33 percent, a minimum separation of five feet should be considered. Depending on the conditions in the embankment or bottom of slope, a physical barrier such as a railing or fence may be needed at the top of the slope (AASHTO, 2012).

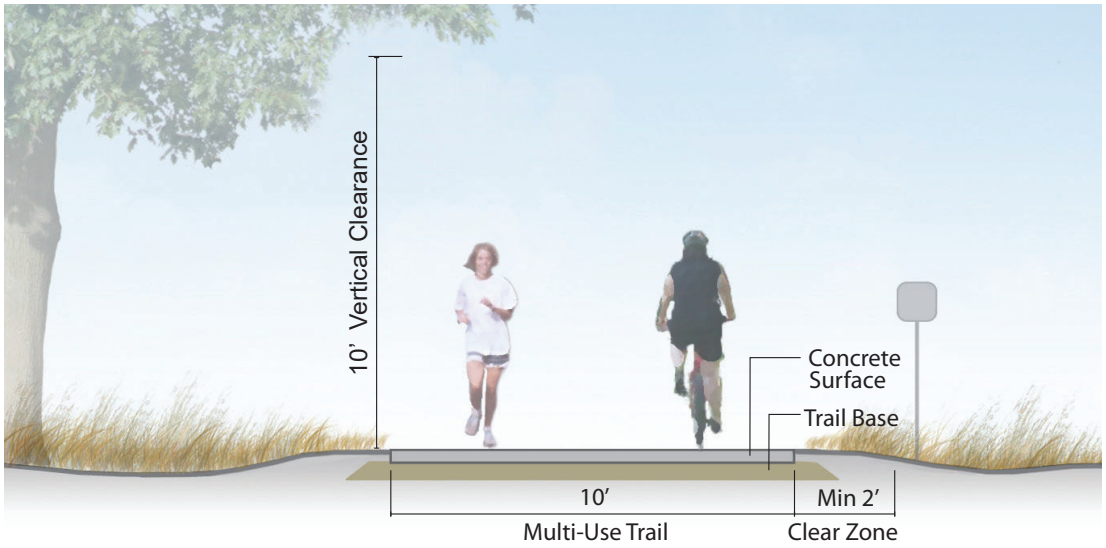


Figure 7.1 Multi Use Trail Typical Section

OTHER RECREATION FEATURES: DESIGN AND MAINTENANCE GUIDELINES

The following resource documents provide design guidance on various other recreation facilities proposed for the greenway.

GENERAL RECREATION FACILITIES

The following two resources provide broad guidance on the development of recreation facilities, including camping, picnicking, boating and fishing.

- Recreation Facility Design Guidelines, U.S. Department of the Interior, 2013
- Recreation Site Handbook, Chapter 10 - Planning and Design of Developed Recreation Sites and Facilities, U.S. Forest Service, FSH 2309.13 – Recreation Site Handbook, 2018.

DOG PARKS

- Establishing a Dog Park in Your Community, American Kennel Club.

COMMUNITY GARDENS

- Community Gardening Policy Reference Guide, Public Health Law Center at Mitchell Hamline School of Law, 2017.

BOAT LAUNCHES

- Prepare to Launch! Guidelines for Assessing, Designing and Building Access Site for Carry-in Watercraft, River Management Society, 2018.
- River Access Planning Guide: A Decision-making Framework for Enhancing River Access, National Park Service, American Whitewater, and River Management Society, 2019.
- Ohio Boating Facilities Standards and Guidelines, First Edition, Ohio Department of Natural Resources, Division of Watercraft, Resource Planning Section, 2003.

COORDINATION WITH FARGO-MOORHEAD AREA DIVERSION IMPLEMENTATION

FM Greenway trails and select other recreation features will be implemented on the FM Area Diversion, taking advantage of land not needed for the direct conveyance of floodwater flows, such as the EMBs and floodwater storage embankments. In order to expedite project implementation, the FM Diversion Authority and the USACE have established a split delivery approach. The FM Diversion Authority is leading the implementation of the diversion channel and associated infrastructure, such as aqueducts, inlets, outlet and bridges over the channel using a P3 delivery process. The USACE will lead the implementation of the southern embankment and associated control structures.

DIVERSION CHANNEL IMPLEMENTATION

The FM Diversion Authority is planning to enter into an agreement with a private developer for the final design and construction of the channel and associated infrastructure. The P3 design and construction process will be done in a manner that will not preclude the implementation of future recreation features.

The construction of the channel will provide the base condition for the establishment of the greenway. The P3 developer will construct and sculpt the EMBs to create topographic interest that is desired for recreation trail features. The P3 delivery process allows for design flexibility by the P3 developer in order to provide opportunities for cost efficiencies while still meeting flood protection requirements. As it relates to the FM Greenway, the size and placement of the EMBs may vary from what is depicted in this plan. Recommended segments of EMB to receive undulations as depicted in Figure 5.18 are provided for the P3 developers consideration.

The EMBs on each side of the main channel will each have a 15-foot wide maintenance road. While meeting a needed flood protection use, the maintenance roads will also serve as recreation trails. The maintenance road on the east side EMB will provide a continuous travel corridor for the length of the channel section. It will have an aggregate surface material from the Red River outlet to Interstate 94. South of the Interstate 94 to the channel inlet control structure, the maintenance road will be constructed from concrete to further enhance trail users' comfort and safety. The maintenance road on the west side EMB will have an aggregate surfacing. While continuity is desired for the west side maintenance road, there may be some breaks in the maintenance road when the EMB intersects with larger roadways, rivers, and drainage channels. The P3 developer will also construct trail connections from the maintenance road/recreation trail to designated recreation nodes.

The P3 developer will also be responsible for vegetation establishment along the channel, including grasses, wildflowers and trees. Vegetation will be established consistent with recommendations depicted in Figure 5.17.

The P3 design process flexibility will also apply to structural elements along the greenway, such as aqueducts and roadway bridges. All structure illustrations included in this report relate either to structures to be constructed by the USACE or are conceptual illustrations and do not imply that structures to be built as part of the P3 process will look like these illustrations.

At the time of this report, it is estimated that bids from potential P3 developers will be received by the end of 2020, with final design and construction starting in 2021. The channel segment is estimated to be open and operational by 2026 or 2027. Once constructed and operational, the selected developer will also be responsible for operations and maintenance of the channel and associated infrastructure for a period of 30 years. At the end of this 30-year period, operations and maintenance of the channel segment will be turned over to the FM Diversion Authority.

Implementation of recreation features, beyond the combined maintenance road/recreation trail, during the 30-year operations and maintenance period will require authorization from the P3 developer, who will have the authority to exclude from the channel segment any of the recreation features proposed in this recreation master plan.

SOUTHERN EMBANKMENT IMPLEMENTATION

The USACE is taking lead on the design and construction of the southern embankment and associated structures, including the Red River and Wild Rice River control structures and the channel inlet control structure. There will be a 15-foot wide aggregate maintenance road on the top of the embankment that will also serve as a recreational trail. There will be some roadway work performed under the direction of the FM Diversion Authority, such as road raises of I-29 and CR 81 that may divert the recreational trail off portions of the embankment.

The USACE will be responsible for vegetation establishment along the southern embankment, including grasses and wildflowers.

The estimated time frame for USACE design and construction of the southern embankment and associated structures has not been determined. Once constructed, the operations and maintenance of these flood control facilities will be the responsibility of the FM Diversion Authority.

OPINIONS OF PROBABLE CONSTRUCTION COSTS

High level opinions of probable construction costs have been developed for the proposed recreation features that will not be constructed by the P3 developer, USACE, or proposed partnering recreation clubs. Opinions of probable construction costs were developed for recreation nodes and for trail segments. Trail segments are further broken out between short-term and long-term Probable Construction Costs. These opinions of probable construction costs include estimated design and construction observation fees and are based on 2020 estimated construction costs. The opinions of probable construction costs are summarized here. A detailed breakout of the opinions of probable construction costs can be found in Appendix A.

NODE	PROBABLE CONSTRUCTION COSTS
Node 1	$ 11,600,000
Node 2	$ 90,000
Node 3	$ 7,600,000
Node 4	$ 1,800,000
Node 5	$17,900,000
Node 6	$ 260,000
Node 7	$ 90,000
Node 8	$ 2,800,000
Node 9	$ 13,500,000
Node 10	$80,000
Node 11	$ 350,000
Total	**$56,070,000**

TRAIL SEGMENT	SHORT-TERM PROBABLE CONSTRUCTION COSTS	LONG-TERM PROBABLE CONSTRUCTION COSTS
Rural Segment	$ 140,000	$ 10,100,000
Urbanizing Segment	$ 140,000	$ 30,000
Embankment Segment	$ 40,000	$ 5,200,000
Total	**$ 320,000**	**$ 15,330,000**

IMPLEMENTATION PHASING

The Fargo-Moorhead Greenway presents a significant recreation opportunity for the FM community, yet it is a long-term vision that will require a sustained commitment towards implementation.

SHORT-TERM IMPLEMENTATION (2020 – 2026)

The following activities should be the focus of the early implementation phase.

ESTABLISH A GOVERNING ENTITY

Metro COG should make a determination regarding the feasibility of taking on the lead governing entity role. If it is deemed feasible and approval is received from the Metro COG Policy Board, work should proceed to establish the Metro COG governing structure, policies, and funding mechanisms. If it is deemed not feasible, the FM Diversion Authority will need to develop an alternate governing approach.

While the FM Area Diversion will not be constructed and operational until 2026 or 2027, it is important to establish the lead governing entity as soon as possible. The P3 development design process will require review and approval of proposed designs. It would be beneficial for the designated governing entity to be at the table during the design review process to ensure design is supporting future recreation to the greatest extent possible. A lead governing entity is also crucial to the successful advancement of other short-term.

SECURE RECREATION NODE PARCELS

As the FM Diversion Authority acquires land necessary for the construction of the diversion, at times entire parcels are being acquired, even though only a portion of the parcel is needed for the diversion. It may be feasible to direct some of this "excess" or "remnant" land to serve as recreation nodes adjacent the diversion. The excess land available should be reviewed and evaluated for its feasibility as a recreation node. If some of these parcels are deemed feasible for use as a recreation node, processes should be initiated to secure this land for future recreation node use.

SECURE RECREATION PARTNERSHIP AGREEMENTS

Conversations should occur with potential recreation partners. It may be beneficial to tour potential recreation node parcels with potential partners to help determine the feasibility of available parcels for use as recreation nodes. Securing and documenting partnership agreements during the short-term implementation window allows partners to solicit and secure funding sources. It also allows them to start developing final designs that will allow development of their recreation features to begin once the diversion has been constructed.

ESTABLISH A CONSORTIUM OF POTENTIAL PARTNER PARK DISTRICTS

A consortium of area park districts should be established to jointly develop equitable approaches for raising and dispersal of recreation funding for capital, operations and maintenance of recreation features and trails. Specifically, the feasibility of raising taxes as a potential way to generate revenue for park operations should be discussed.

INITIAL DIVERSION AND ASSOCIATED TRAIL CONSTRUCTION

The construction of the FM Area Diversion, along with the associated vegetation and trail/maintenance road is projected to be complete and operational in 2026 or 2027. The opening of the trail/maintenance roads for community recreation use should be celebrated as an important early implementation achievement for the greenway. Programmed trail activities will encourage its use and build enthusiasm for the long-term greenway vision.

MID-TERM IMPLEMENTATION (2027 – 2036)

The following activities should be the focus of the mid-term implementation phase.

RECREATION NODE AND TRAIL DEVELOPMENT

Mid-term implementation should focus on developing final designs, securing funding, constructing and operating recreation nodes, trails, and trailheads where established partnership agreements are in place. Work should continue to identify and secure recreation partnerships for the remaining recreation nodes and trail types.

COMPLETE MULTI-USE TRAIL PAVING

Initial construction of the diversion channel by the P3 developer will include paving of the maintenance road to serve as a multi-use trail along the urbanizing segment of the greenway. The master plan vision calls for a paved multi-use trail that extends the full length of the greenway. Efforts should be made to secure funding to pave the remainder of the maintenance road/trail on the east EMB. This will result in the creation of an extended, safe and comfortable trail experience for a variety of users, which in turn, will draw additional greenway visitors.

GREENWAY PROGRAMMING AND MARKETING

Programming and marketing the greenway trail and other developing greenway recreation features should be a focus during the mid-term phase. Local and regional visitors should be made aware of the recreational opportunity afforded by the greenway. Increasing levels of use will generate additional enthusiasm and support for the continued development of the Greenway.

LONG-TERM IMPLEMENTATION (2037 – 2056)

The following activities should be the focus of the long-term implementation phase.

COMPLETE RECREATION FEATURE DEVELOPMENT

Securing final needed partnerships, funding, and constructing the final recreation features of the greenway master plan should be the focus of the long-term implementation phase. As time passes, some of the recreation features that didn't gain traction should be re-evaluated to determine if there are other greenway recreation opportunities that could better serve the community. Updating the FM Greenway Master Plan may be worthwhile during this time frame to ensure it is meeting current recreation needs and trends.

GREENWAY OPERATIONS AND MAINTENANCE

With the development of recreation features, more effort and funding should be directed towards operations and maintenance. Continued marketing and programming, as well as quality maintenance, will be vital to the greenway's brand and long-term success.

APPENDIX A

OPINIONS OF PROBABLE CONSTRUCTION COSTS

High-level opinions of probable construction costs were developed for the proposed recreation features that will not be constructed by the P3 developer, USACE, or proposed partnering recreation clubs. These "level-of-magnitude" probable construction costs are based on current assumed recreation features and require additional evaluation and refinement.

Individual opinions of probable construction costs were developed for each recreation node. Opinions of probable construction costs for trails are broken out by segments (e.g., rural, urbanizing, or embankment) and further broken out between estimated short-term and long-term costs. These opinions of probable construction costs include estimated design and construction observation fees and are based on 2020 estimated construction costs.

PROBABLE CONSTRUCTION COST: NODE 1

Notes	Item	Unit Measure	Unit Cost	Qty		Estimated Cost	Rounded
	Site landscaping	AC	$ 7,500	20		$ 150,000	
	Boat Launch	Each	$ 66,000	1		$ 66,000	
	Shore Fishing Node	Each	$ 20,000	2		$ 40,000	
	Large Parking Lot (paved surface)	Each	$ 160,000	1		$ 160,000	
4.	Entry Drive/Internal Circulation (asphalt)	SY	$ 35	27,000		$ 945,000	
	Node Wayfinding Signage/Kiosk	Each	$ 5,000	1		$ 5,000	
	Visitor Center Building (10,000 SF)	Each	$ 4,500,000	1		$ 4,500,000	
	Picnic Shelters (Large)	Each	$ 100,000	1		$ 100,000	
	Picnic Shelters (Small)	Each	$ 50,000	2		$ 100,000	
	Grills	Each	$ 500	4		$ 2,000	
	Trash Receptacle	Each	$ 600	6		$ 3,600	
	Picnic Tables	Each	$ 1,200	30		$ 36,000	
	Bike racks	Each	$ 1,000	2		$ 2,000	
	Play Equipment	Each	$ 75,000	1		$ 75,000	
	Entrance Sign Monument (Major)	Each	$ 75,000	1		$ 75,000	
	Camp Site (RV)	Campsite	$ 20,000	25		$ 500,000	
	Camp site (Tent)	Campsite	$ 9,000	25		$ 225,000	
	Shower/Restroom Building (600 SF)	LS	$ 240,000	1		$ 240,000	
	RV Dump station	Each	$ 30,000	1		$ 30,000	
	Site/cultural Interpretation kiosk	LS	$ 15,000	1		$ 15,000	
					Subtotal	$ 7,269,600	
					Site Grading & Erosion Control (5%)	$ 363,480	
					Contingency (30%)	$ 2,180,880	
						$ 9,813,960	
					Design (10%)	$ 981,396	
					Const. Mgmt (8%)	$ 785,117	
					Total Estimated Cost	**$ 11,580,473**	**$ 11,600,000**

1. All costs are assumed in 2020 dollars
2. Costs do not include property acquisiton costs
3. Clearing of existing trees will not be needed
4. Entrance driver of approximately 1000 LF

PROBABLE CONSTRUCTION COST: NODE 2

Notes	Item	Unit Measure	Unit Cost	Qty		Estimated Cost	Rounded
	Node wayfinding signage/kiosk	Each	$ 5,000	1		$ 5,000	
	Restrooms (Portable Toilet Enclosure)	Each	$ 5,000	2		$ 10,000	
	Small Parking Lot (aggregate surface)	Each	$ 16,500	1		$ 16,500	
	Entrance Sign Monument (Minor)	Each	$ 20,000	1		$ 20,000	
	Bench (Basic)	Each	$ 700	2		$ 1,400	
	Trash Receptacles	Each	$ 600	2		$ 1,200	
					Subtotal	$ 54,100	
					Site Grading & Erosion Control (5%)	$ 2,705	
					Contingency (30%)	$ 16,230	
						$ 73,035	
					Design (10%)	$ 7,304	
					Const. Mgmt (8%)	$ 5,843	
					Total Estimated Cost	**$ 86,181**	**$ 90,000**

1. All costs are assumed in 2020 dollars
2. Costs do not include property acquisiton costs
3. Assumes clearing of existing trees will not be needed

PROBABLE CONSTRUCTION COST: NODE 3

Notes	Item	Unit Measure	Unit Cost	Qty		Estimated Cost	Rounded
	Site landscaping	AC	$ 7,500	5		$ 37,500.00	
	Small Parking Lot (paved surface)	Each	$ 44,000	1		$ 44,000.00	
3.	Small Scale Farming	LS	$ -	1		$ -	
	Visitor Center Building (10,000 SF)	Each	$ 4,500,000	1		$ 4,500,000.00	
	Site/cultural Interpretation kiosk	LS	$ 15,000	1		$ 15,000.00	
	Picnic Shelters (Small)	Each	$ 50,000	1		$ 50,000.00	
	Grills	Each	$ 500	1		$ 500.00	
	Picnic Tables	Each	$ 1,200	2		$ 2,400.00	
	Trash Receptacle	Each	$ 600	2		$ 1,200.00	
	Bike racks	Each	$ 1,000	1		$ 1,000.00	
	Entrance Sign Monument (Major)	Each	$ 75,000	1		$ 75,000.00	
	Bench (Basic)	Each	$ 700	2		$ 1,400.00	
	Node Wayfinding Signage/Kiosk	Each	$ 5,000.00	1		$ 5,000.00	
					Subtotal	$ 4,733,000.00	
					Site Grading & Erosion Control (5%)	$ 236,650.00	
					Contingency (30%)	$ 1,419,900.00	
						$ 6,389,550.00	
					Design (10%)	$ 638,955.00	
					Const. Mgmt (8%)	$ 511,164.00	
					Total Estimated Cost	**$ 7,539,669.00**	**$ 7,600,000**

1. All costs are assumed in 2020 dollars
2. Costs do not include property acquisiton costs
3. No capital costs assumed for small scale farming
4. Assumes clearing of existing trees will not be needed

PROBABLE CONSTRUCTION COST: NODE 4

Notes	Item	Unit Measure	Unit Cost	Qty		Estimated Cost	Rounded
	Site landscaping	AC	$ 7,500	5		$ 37,500	
	Amphitheater	LS	$ 350,000	1		$ 350,000	
	Farmers Market Plaza	Each	$ 500,000	1		$ 500,000	
5	Shower/Restroom Building (600 SF)	LS	$ 240,000	1		$ 240,000	
	Entrance Sign Monument (Major)	Each	$ 75,000	1		$ 75,000	
6	Artwork presenation areas	Each	$ 7,500	10		$ 75,000	
	Node wayfinding signage/kiosk	Each	$ 5,000	1		$ 5,000	
	Bike racks	Each	$ 1,000	4		$ 4,000	
	Benches (Amenity)	Each	$ 2,000	4		$ 8,000	
	Benches (Basic)	Each	$ 700	4		$ 2,800	
					Subtotal	$ 1,297,300	
					Site Grading & Erosion Control (5%)	$ 64,865	
					Contingency (30%)	$ 389,190	
						$ 1,751,355	
					Design (10%)	$ 175,136	
					Const. Mgmt (8%)	$ 140,108	
					Total Estimated Cost	**$ 2,066,599**	**$ 1,800,000**

1. All costs are assumed in 2020 dollars
2. Costs do not include property acquisiton costs
3. Parking occurs on street or as part of adjacent development
4. Assumes clearing of existing trees will not be needed
5. Assumes connection to city utilities
6. Does not include costs for artworks

PROBABLE CONSTRUCTION COST: NODE 5

Notes	Item	Unit Measure	Unit Cost	Qty		Estimated Cost	Rounded
	Site landscaping	AC	$ 7,500	8		$ 60,000	
	Visitor Center Building (20,000 SF)	Each	$ 9,000,000	1		$ 9,000,000	
	Large Parking Lot (paved surface)	Each	$ 160,000	3		$ 480,000	
	Entry Drive/Internal Circulation (asphalt)	SY	$ 35	27,000		$ 945,000	
	Athletic Field	Each	$ 95,000	6		$ 570,000	
	Entrance Sign Monument (Major)	Each	$ 75,000	1		$ 75,000	
	Node wayfinding signage/kiosk	Each	$ 5,000	1		$ 5,000	
	Play Equipment	Each	$ 75,000	1		$ 75,000	
	Benches (Amenity)	Each	$ 2,000	4		$ 8,000	
	Trash Receptacle	Each	$ 600	2		$ 1,200	
	Bike racks	Each	$ 1,000	4		$ 4,000	
					Subtotal	$ 11,223,200	
					Site Grading & Erosion Control (5%)	$ 561,160	
					Contingency (30%)	$ 3,366,960	
						$ 15,151,320	
					Design (10%)	$ 1,515,132	
					Const. Mgmt (8%)	$ 1,212,106	
					Total Estimated Cost	**$ 17,878,558**	**$ 17,900,000**

1. All costs are assumed in 2020 dollars
2. Costs do not include property acquisiton costs
3. Assumes no capital costs for ice skating on either Sheyenne Diversion channel or adjacent pond
4. Assumes sledding occurs on adjacent excavated material berm (no assumed capital cost)
5. Assumes clearing of existing trees will not be needed
6. Assumes connection to city utilities

PROBABLE CONSTRUCTION COST: NODE 6

Notes	Item	Unit Measure	Unit Cost	Qty		Estimated Cost	Rounded
	Site landscaping	AC	$ 7,500	2		$ 15,000	
	Dog Park	SF	$ 1	27,780		$ 23,335	
	Small Parking Lot (aggregate surface)	Each	$ 16,500	1		$ 16,500	
	Restrooms (Compost)	Each	$ 25,000	1		$ 25,000	
3.	Community Gardens	LS	$ -	1		$ -	
	Trash Receptacle	Each	$ 600	2		$ 1,200	
	Benches (Basic)	Each	$ 700	4		$ 2,800	
	Picnic Shelters (Small)	Each	$ 50,000	1		$ 50,000	
	Picnic Tables	Each	$ 1,200	2		$ 2,400	
	Entrance Sign Monument (Minor)	Each	$ 20,000	1		$ 20,000	
	Node wayfinding signage/kiosk	Each	$ 5,000	1		$ 5,000	
	Bike racks	Each	$ 1,000	1		$ 1,000	
					Subtotal	$ 162,235	
					Site Grading & Erosion Control (5%)	$ 8,112	
					Contingency (30%)	$ 48,671	
						$ 219,018	
					Design (10%)	$ 21,902	
					Const. Mgmt (8%)	$ 17,521	
					Total Estimated Cost	**$ 258,441**	**$ 260,000**

1. All costs are assumed in 2020 dollars
2. Costs do not include property acquisiton costs
3. Assumes no capital costs for community gardens
4. Assumes clearing of existing trees will not be needed

PROBABLE CONSTRUCTION COST: NODE 7

Notes	Item	Unit Measure	Unit Cost	Qty		Estimated Cost	Rounded
	Site landscaping	AC	$ 7,500	1		$ 7,500	
	Small Parking Lot (aggregate surface)	Each	$ 16,500	1		$ 16,500	
	Restrooms (Portable Toilet Enclosure)	Each	$ 5,000	1		$ 5,000	
3.	Small Scale Farming	LS	$ -	1		$ -	
	Entrance Sign Monument (Minor)	Each	$ 20,000	1		$ 20,000	
	Node wayfinding signage/kiosk	Each	$ 5,000	1		$ 5,000	
	Trail Furnishings (urbanized trail)	Mile	$ 1,300	1		$ 1,300	
					Subtotal	$ 55,300	
					Site Grading & Erosion Control (5%)	$ 2,765	
					Contingency (30%)	$ 16,590	
						$ 74,655	
					Design (10%)	$ 7,466	
					Const. Mgmt (8%)	$ 5,972	
					Total Estimated Cost	**$ 88,093**	**$ 90,000**

1. All costs are assumed in 2020 dollars
2. Costs do not include property acquisiton costs
3. Assumes no capital costs for small scale farming
4. Assumes clearing of existing trees will not be needed

PROBABLE CONSTRUCTION COST: NODE 8

Notes	Item	Unit Measure	Unit Cost	Qty		Estimated Cost	Rounded
	Site landscaping	AC	$ 7,500.00	20		$ 150,000.00	
	Fishing Platform	Each	$ 20,000.00	2		$ 40,000.00	
	Large Parking Lot (paved surface)	Each	$ 160,000.00	1		$ 160,000.00	
	Entry Drive/Internal Circulation (asphalt)	SY	$ 35.00	27,000		$ 945,000.00	
	Camp Site (RV)	Campsite	$ 20,000.00	6		$ 120,000.00	
	Horse Corral	LF	$ 12.00	175		$ 2,100.00	
	RV Dump station	Each	$ 30,000.00	1		$ 30,000.00	
	Restrooms (Compost)	Each	$ 25,000.00	1		$ 25,000.00	
	Picnic Shelters (Large)	Each	$ 100,000.00	1		$ 100,000.00	
	Picnic Shelters (Small)	Each	$ 50,000.00	1		$ 50,000.00	
	Grills	Each	$ 500.00	3		$ 1,500.00	
	Picnic Tables	Each	$ 1,200.00	25		$ 30,000.00	
	Trash Receptacle	Each	$ 600.00	5		$ 3,000.00	
	Entrance Sign Monument (Major)	Each	$ 75,000.00	1		$ 75,000.00	
	Node wayfinding signage/kiosk	Each	$ 5,000.00	1		$ 5,000.00	
	Bike racks	Each	$ 1,000.00	1		$ 1,000.00	
					Subtotal	$ 1,737,600	
					Site Grading & Erosion Control (5%)	$ 86,880	
					Contingency (30%)	$ 521,280	
						$ 2,345,760	
					Design (10%)	$ 234,576	
					Const. Mgmt (8%)	$ 187,661	
					Total Estimated Cost	**$ 2,767,997**	**$ 2,800,000**

1. All costs are assumed in 2020 dollars
2. Costs do not include property acquisiton costs
3. Assumes clearing of existing trees will not be needed

PROBABLE CONSTRUCTION COST: NODE 9

Notes	Item	Unit Measure	Unit Cost	Qty		Estimated Cost	Rounded
4.	Site landscaping	AC	$ 7,500	2		$ 15,000	
	Large Parking Lot (paved surface)	Each	$ 160,000	4		$ 640,000	
	Baseball Field	Each	$ 1,200,000	2		$ 2,400,000	
	Softball Fields	Each	$ 600,000	8		$ 4,800,000	
	Concession Stand Building	Each	$ 400,000	1		$ 400,000	
	Play Equipment	Each	$ 75,000	1		$ 75,000	
	Entrance Sign Monument (Major)	Each	$ 75,000	1		$ 75,000	
	Node wayfinding signage/kiosk	Each	$ 5,000	1		$ 5,000	
	Bike racks	Each	$ 1,000	4		$ 4,000	
					Subtotal	$ 8,414,000	
					Site Grading & Erosion Control (5%)	$ 420,700	
					Contingency (30%)	$ 2,524,200	
						$ 11,358,900	
					Design (10%)	$ 1,135,890	
					Const. Mgmt (8%)	$ 908,712	
					Total Estimated Cost	**$ 13,403,502**	**$ 13,500,000**

1. All costs are assumed in 2020 dollars
2. Costs do not include property acquisiton costs
3. Assumes clearing of existing trees will not be needed
4. Assumed area outside athletic fields/diamonds

PROBABLE CONSTRUCTION COST: NODE 10

Notes	Item	Unit Measure	Unit Cost	Qty	Estimated Cost	Rounded
	Small Parking Lot (aggregate surface)	Each	$ 16,500	1	$ 16,500	
	Restrooms (Portable Toilet Enclosure)	Each	$ 5,000	1	$ 5,000	
	Entrance Sign Monument (Minor)	Each	$ 20,000	1	$ 20,000	
	Node wayfinding signage/kiosk	Each	$ 5,000	1	$ 5,000	
				Subtotal	$ 46,500	
				Site Grading & Erosion Control (5%)	$ 2,325	
				Contingency (30%)	$ 13,950	
					$ 62,775	
				Design (10%)	$ 6,278	
				Const. Mgmt (8%)	$ 5,022	
				Total Estimated Cost	**$ 74,075**	**$ 80,000**

1. All costs are assumed in 2020 dollars
2. Costs do not include property acquisiton costs
3. Assumes clearing of existing trees will not be needed

PROBABLE CONSTRUCTION COST: NODE 11

Notes	Item	Unit Measure	Unit Cost	Qty		Estimated Cost	Rounded
	Site landscaping	AC	$ 7,500	1		$ 7,500	
	Small Parking Lot (aggregate surface)	Each	$ 16,500	1		$ 16,500	
	Boat Launch	Each	$ 66,000	1		$ 66,000	
	Fishing Platform	Each	$ 20,000	2		$ 40,000	
	Picnic Shelters (Small)	Each	$ 50,000	1		$ 50,000	
	Picnic Tables	Each	$ 1,200	2		$ 2,400	
	Trash Receptacle	Each	$ 600	1		$ 600	
	Benches (Basic)	Each	$ 700	2		$ 1,400	
	Grills	Each	$ 500	2		$ 1,000	
	Restrooms (Portable Toilet Enclosure)	Each	$ 5,000	1		$ 5,000	
	Entrance Sign Monument (Minor)	Each	$ 20,000	1		$ 20,000	
	Node wayfinding signage/kiosk	Each	$ 5,000	1		$ 5,000	
	Bike racks	Each	$ 1,000	1		$ 1,000	
					Subtotal	$ 216,400	
					Site Grading & Erosion Control (5%)	$ 10,820	
					Contingency (30%)	$ 64,920	
						$ 292,140	
					Design (10%)	$ 29,214	
					Const. Mgmt (8%)	$ 23,371	
					Total Estimated Cost	**$ 344,725**	**$ 350,000**

1. All costs are assumed in 2020 dollars
2. Costs do not include property acquisiton costs
3. Assumes clearing of existing trees will not be needed

RURAL SEGMENT: SHORT TERM PROBABLE CONSTRUCTION COST

Notes	Item	Unit Measure	Unit Cost	Qty	Estimated Cost	Rounded
2	Trail Furnishings (rural trail)	Mile	$ 660	36.5	$ 24,104	
2	Trail signage (2 signs per mile)	Mile	$ 500	36.5	$ 18,261	
2	Trail Signage (per roadway crossing)	Each	$ 4,000	10	$ 40,000	
				Subtotal	$ 82,365	
				Site Grading & Erosion Control (5%)	$ 4,118	
				Contingency (30%)	$ 24,709	
					$ 111,193	
				Design (10%)	$ 11,119	
				Const. Mgmt (8%)	$ 8,895	
				Total Estimated Cost	**$ 131,207**	**$ 140,000**

1. All costs are assumed in 2020 dollars

RURAL SEGMENT: LONG TERM PROBABLE CONSTRUCTION COST

Notes	Item	Unit Measure	Unit Cost	Qty	Estimated Cost	Rounded
	Multi-use trail	LF	$ 65	96,902	$ 6,298,650	
	Winter Trail Signage (2 signs per mile)	Mile	$ 500	11	$ 5,500	
				Subtotal	$ 6,304,150	
				Site Grading & Erosion Control (5%)	$ 315,207	
				Contingency (30%)	$ 1,891,245	
					$ 8,510,602	
				Design (10%)	$ 851,060	
				Const. Mgmt (8%)	$ 680,848	
				Total Estimated Cost	**$ 10,042,510**	**$ 10,100,000**

.. All costs are assumed in 2020 dollars

URBANIZING SEGMENT: SHORT TERM PROBABLE CONSTRUCTION COST

Notes	Item	Unit Measure	Unit Cost	Qty	Estimated Cost	Rounded
2	Trail Furnishings (urbanized trail)	Mile	$ 1,300	27.7	$ 35,972	
2	Trail signage (2 signs per mile)	Mile	$ 500	27.7	$ 13,835	
2, 3	Trail Signage (per roadway crossing)	Each	$ 4,000	8	$ 32,000	
				Subtotal	$ 81,807	
				Site Grading & Erosion Control (5%)	$ 4,090	
				Contingency (30%)	$ 24,542	
					$ 110,440	
				Design (10%)	$ 11,044	
				Const. Mgmt (8%)	$ 8,835	
				Total Estimated Cost	**$ 130,319**	**$ 140,000**

1. All costs are assumed in 2020 dollars
2. Assumes placement on both EMBs
3. Assumes no signage for roadway underpasses as shown in Figure 3.13

URBANIZING SEGMENT: LONG TERM PROBABLE CONSTRUCTION COST

Notes	Item	Unit Measure	Unit Cost	Qty	Estimated Cost	Rounded
	Winter Trail Signage (2 signs per mile)	Mile	$ 500	26	$ 13,000	
				Subtotal	$ 13,000	
				Site Grading & Erosion Control (5%)	$ 650	
				Contingency (30%)	$ 3,900	
					$ 17,550	
				Design (10%)	$ 1,755	
				Const. Mgmt (8%)	$ 1,404	
				Total Estimated Cost	**$ 20,709**	**$ 30,000**

1. All costs are assumed in 2020 dollars

EMBANKMENT SEGMENT: SHORT TERM PROBABLE CONSTRUCTION COST

Notes	Item	Unit Measure	Unit Cost	Qty	Estimated Cost	Rounded
	Trail Furnishings (rural trail)	Mile	$ 660	9	$ 6,191	
	Trail signage (2 signs per mile)	Mile	$ 500	9	$ 4,690	
	Trail Signage (per roadway crossing)	Each	$ 4,000	3	$ 12,000	
				Subtotal	$ 22,882	
				Site Grading & Erosion Control (5%)	$ 1,144	
				Contingency (30%)	$ 6,865	
					$ 30,890	
				Design (10%)	$ 3,089	
				Const. Mgmt (8%)	$ 2,471	
				Total Estimated Cost	**$ 36,451**	**$ 40,000**

1. All costs are assumed in 2020 dollars

EMBANKMENT SEGMENT: LONG TERM PROBABLE CONSTRUCTION COST

Notes	Item	Unit Measure	Unit Cost	Qty	Estimated Cost	Rounded
	Multi-use trail	LF	$ 65	49,632	$ 3,226,080	
				Subtotal	$ 3,226,080	
				Site Grading & Erosion Control (5%)	$ 161,304	
				Contingency (30%)	$ 967,824	
					$ 4,355,208	
				Design (10%)	$ 435,521	
				Const. Mgmt (8%)	$ 348,417	
				Total Estimated Cost	**$ 5,139,145**	**$ 5,200,000**

1. All costs are assumed in 2020 dollars

APPENDIX B

BENEFITS CASE SOURCE MATERIALS

The following benefits case source materials for the greenway were developed by the consulting team over the course of the study. Key findings from this work are reflected in the body of the study report. This material provides additional information on assumptions used to develop benefit dollar values reflected in the report.

BENEFITS CASE

1 REGIONAL RECREATION AMENITY

The recreational component will boost growth in the FM region by providing an amenity for both local residents and regional visitors.

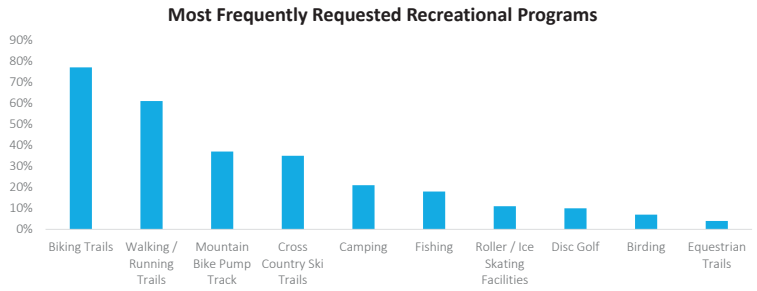
2 RECREATION GAP

There is currently a gap in signature recreational opportunities in mid-eastern North Dakota.

Source: North Dakota Parks & Recreation

3 REQUESTED RECREATIONAL PROGRAMS

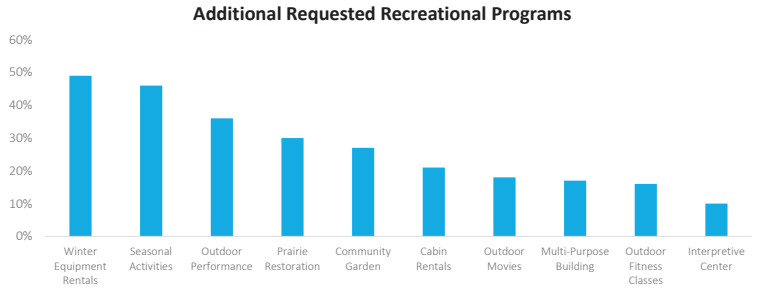
Residents are excited about this recreational amenity, particularly the biking, walking/running, and cross-country ski trails.



Source: SRF Survey

4 REQUESTED SEASONAL PROGRAMMING

Residents are also interested in seasonal programming.



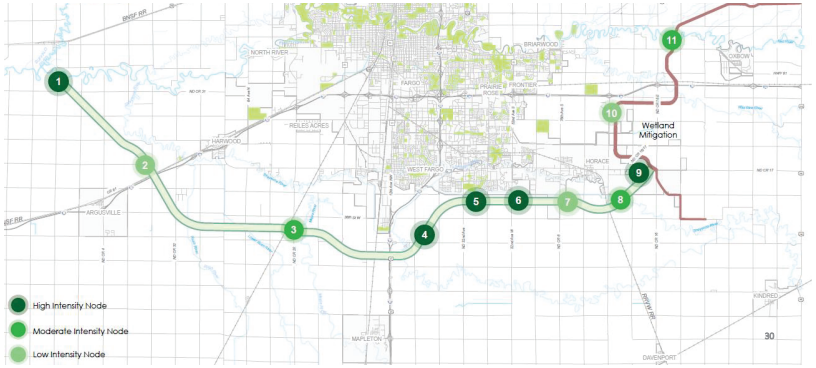
Source: SRF Survey

5 GENERATE ECONOMIC IMPACTS

The recreational aspect will generate ongoing economic impacts for the region from real estate premiums, visitor spending, and jobs.

6 ESTIMATED ECONOMIC IMPACTS

Estimated economic impacts for the recreational component will be driven by programming, design, and anticipated visitation levels.



7 REAL ESTATE PREMIUMS

Real Estate Premiums | The opening of the recreational component will increase the value of existing single-family homes nearby.

$393M
Current total assessed property value of the 1,500 homes within one mile of the diversion channel centerline

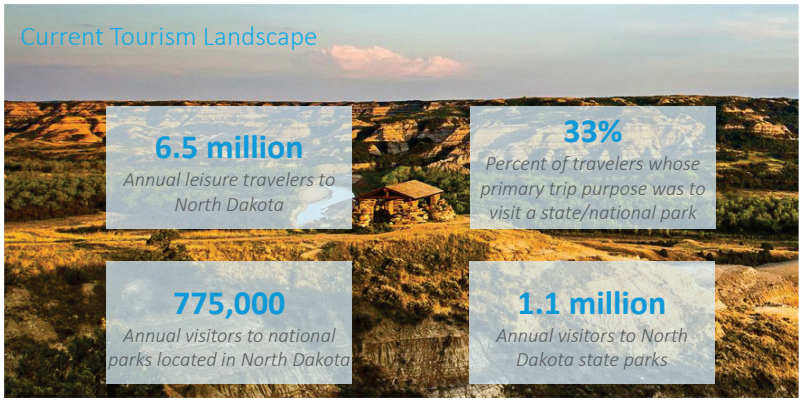
8.45%
*Average annualized growth rate for homes near new parks and recreation areas**

$145M
increase in property values attributable to the recreational component, 5-year NPV

** Comparable parks indicate that property values within ½ mile of a park increase on average by 50% over 5 years. Comparable parks include: Yanaguana Garden (San Antonio), Katy Trail (Dallas), The 606 (Chicago), and Sioux Falls Greenway (Sioux Falls).*

Sources: HR&A Analysis, City of West Fargo Geographic Information Systems; Landscape Performance Series Case Study Briefs, Landscape Architecture Foundation

8 NORTH DAKOTA TOURISM



9 VISITOR SPENDING LOST

Visitor Spending | The recreational component will reduce North Dakota residents that travel to Minnesota for recreation.

North Dakota residents make over 1.17 million overnight trips and 1.15 million day trips each year to neighboring Minnesota. Of those tourists, approximately 9% (overnight) and 5% (daytrip) are visiting Minnesota primarily* for outdoors activities, representing significant leakage.

* Estimates for primary purpose of trip apply to all visitors. It is likely that a higher percentage of visitors who originate in North Dakota are traveling to Minnesota for outdoors and recreational opportunities, so this is a conservative estimate.

Sources: HR&A Analysis, Explore Minnesota Traveler Profile, 2014

10 RECAPTURED VISITOR SPENDING

Visitor Spending | The recreational component will reduce North Dakota residents that travel to Minnesota for recreation.

$154
per person/per day spending, day trip

$115
per person/per day spending, overnight

3 nights
average trip length

If North Dakota was able to recapture just 20%* of residents who leave the state for recreational opportunities in Minnesota**, it would lead to nearly

$101 million

in recaptured visitor spending (20-year NPV)

*Cass County residents make up 23% of North Dakota's population.
** Planned recreational opportunities along the recreational path are similar in nature to opportunities in Minnesota.
Sources: HR&A Analysis, North Dakota Tourism Division, Visitor Profile 2014.

11 NEW VISITOR SPENDING

Visitor Spending | The recreational component will also attract net new visitors, in addition to recapturing leakage.

Projected Annual Visitation
90,000 Visitors
HR&A calculated a capture rate based on comparable recreational trails, and then applied the capture rate to Fargo's total visitation market (residents and tourists) to determine projected visitation.

Percentage Out of Town
62%
We then multiplied the percentage expected to hail from out of town to total visitors to understand net new overnight visitors.

Net New Overnight Visitors
8,550 Visitors
Past HR&A analysis based on conversations with park operators indicate that out-of-town visitors extend the duration of their stay by .25 days on average.

Average Daily Spend
$115/visitor
To determine the economic impact, we then multiplied net new visitors by average daily spend.

$11.0M
new overnight visitor spending, 20-year NPV

12 NEW VISITOR SPENDING

Visitor Spending | The recreational component will also attract net new visitors, in addition to recapturing leakage.

Projected Annual Visitation
90,000 Visitors
HR&A calculated a capture rate based on comparable recreational trails, and then applied the capture rate to Fargo's total visitation market (residents and tourists) to determine projected visitation.

Percentage from Nearby
38%
We then multiplied the percentage expected to hail from nearby to total visitors to understand net new day visitors.

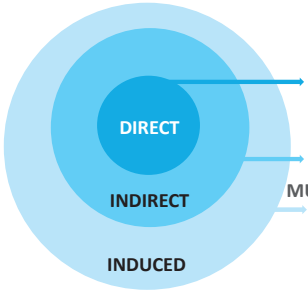
Net New Day Visitors
3,760 Visitors
Past HR&A analysis based on conversations with park operators indicate that local visitors extend the duration of their stay by .11 days on average.

Average Daily Spend
$154/visitor
To determine the economic impact, we then multiplied net new visitors by average daily spend.

$6.5M
new day visitor spending, 20-year NPV

13 EMPLOYMENT OPPORTUNITIES

Job Creation | The recreational component will bring employment opportunities to the region.*



DIRECT IMPACTS

Effects from **jobs created by construction of *new development* and *recreational buildings (e.g., amphitheater)***

MULTIPLIER IMPACTS

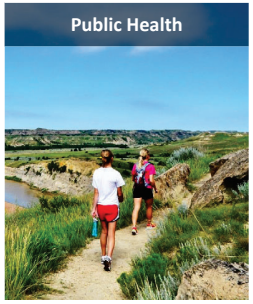
Effects from **business spending** resulting from direct activities

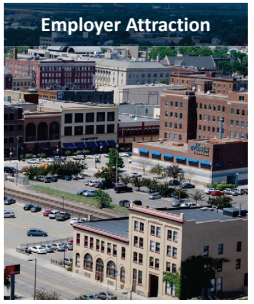
Effects from **household spending** resulting from direct & indirect activities

* An input-output modeling program (such as IMPLAN) can quantify the direct, indirect, and induced benefits in the form of jobs, economic impact, and total wages.

14 OTHER BENEFITS

The recreational component will also create a range of benefits beyond the economic value.





15 IMPROVE HEALTH

Health Benefits | Fargo residents experience health risks typical of the country, and parks and open spaces can improve health outcomes.

1 in 4 Fargo residents have high blood pressure

1 in 3 U.S. residents

Nearly 1 in 3 Fargo residents are obese

1 in 3 U.S residents

8% of Fargo residents have asthma

9% of U.S. residents

A city's park quality score (a composite measure of park access, park spending, and park acreage) is significantly correlated to both physical activity levels and physical health across a sample of 59 cities.

Sources: Trust for Public Land; Centers for Disease Control, 500 Cities Project, 2018; "Assessing the Relationship Between a Composite Score of Urban Park Quality and Health, 2018."

16 CREATE CRITICAL OPEN SPACE

Health Benefits | The recreational component will create critical open space that will improve health outcomes.

- The 6,900 people who live within one mile of the recreational trail will gain convenient access to recreational and exercise opportunities immediately upon opening.
- More than a million additional people live within approximately 140 miles of the park, the average travel distance for similar recreational amenities.

Sources: ESRI Business Analyst; 2017 American Camper Report

17 IMPROVE HEALTH OUTCOMES

Health Benefits | The recreational component will create critical open space that will improve health outcomes and save on healthcare costs.

Health

- Living in an area with parkland density is associated with a 20% increase in the odds of meeting federal physical activity guidelines.[1]
- On average, parks increase vigorous physical activity by 50% in for those living within 0.5 miles of the park.[2]

Costs

- Parks encourage active lifestyles, which can save $1,500 per person in health care costs per year.[3]
- Every $1 spent on creating and maintaining parks saves nearly $3 on healthcare.[4]

Sources: 1)After School Alliance, 2017 2) Quantifying the Contribution of Neighborhood Parks to Physical Activity, 2013 3) City Parks Alliance, 2019 4)Here's How Cities Can Get the Most out of Their Parks, 2017

18 INCREASE BRAND VALUE

Business Attractiveness | Investment in signature parks increases a region's brand value and helps attract business and investment.

- 76% of corporate executives say quality of life factors (e.g. access to amenities) are "very important" or "important" in their site-location decisions.[1]
- 72% of communities use images of urban parks and public spaces, outdoor amenities (e.g., mountains, lakes, trails), or recreational and cultural facilities (e.g., aquatic facilities, amphitheaters) in their economic development marketing materials.[2]
- Open space is the #5 driver of site selection for commercial tenants and investors.[3]

Images from Fargo-Moorhead Tourism Website

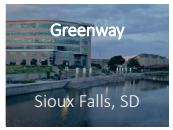
Sources: 1) Promoting Parks & Recreation's Role in Economic Development, NRPA 2018 2)Ibid 3)Investing in Open Space, Gensler 2012

19 ATTRACT BUSINESSES

Business Attractiveness | Investment in signature parks increases a region's brand value and helps attract business and investment.

Doubled the number of Riverwalk vendors and increased profits by 164% from 2014 to 2018.

Helped to catalyze the establishment of at least 4 new businesses within a 3-block radius



3 in 5 visitors patronize local businesses before or after visiting the greenway.

9 in 10 of users shop or dine within 1/2 mile of the park before or after visiting.

Sources: Landscape Performance Series Case Study Briefs, Landscape Architecture Foundation

20 ATTRACT BUSINESSES

Business Attractiveness | Investment in signature parks increases a region's brand value and helps attract business and investment.

There are over 500 businesses with close to 7,500 employees within approximately 1 mile of the length of the recreational component. This additional amenity will attract new businesses, spur growth, and increase spending at existing area businesses.

Katy Bike Rental along the Katy Trail in Missouri
Sales have increased 16x since 2002, spurred by high demand from trail users. The shop now employs 30 local residents.

Sources: ESRI Business Analyst; "Pathway to Prosperity: Missouri's Katy Trail Is a Beautiful Model for Commerce," Rails to Trails Conservancy.

21 ATTRACT TALENT

Talent Attraction | College students and professional talent are drawn to places with recreational and outdoor opportunities.

- The presence of amenities (like parks) in a city is correlated with the presence of high-skill workers.[1]
- The vast majority of students consider green spaces to be important for the image of the university and an essential part of the campus environment.[2]
- 68% of students report that campus recreation facilities and programs influence their decision of which university to attend.
- NDSU is already advancing research on prairie ecosystems, and the opening of the recreational component close to the university should help attract both students and professors alike.

Images from university websites

Sources: 1) "Human Capital, Quality of Place, and Location", 2000; 2) "Everyday encounters with nature: Students' perceptions and use of university campus green spaces," 2013; 3) "The Benefits of Campus Recreation," NIRSA, 2014

22 SUMMARY OF BENEFITS

Summary | The creation of the recreational component will generate significant value for the Fargo Moorhead region.

$145M
Increased property value, 5-year NPV

$119M
Net new visitor spending, 20-year NPV

New jobs and increased residential development, health savings, business attractiveness and competitiveness, and talent attraction

FM AREA DIVERSION PROJECT

April 2020

Informational Sheet

Drain 27 Wetland Restoration Project

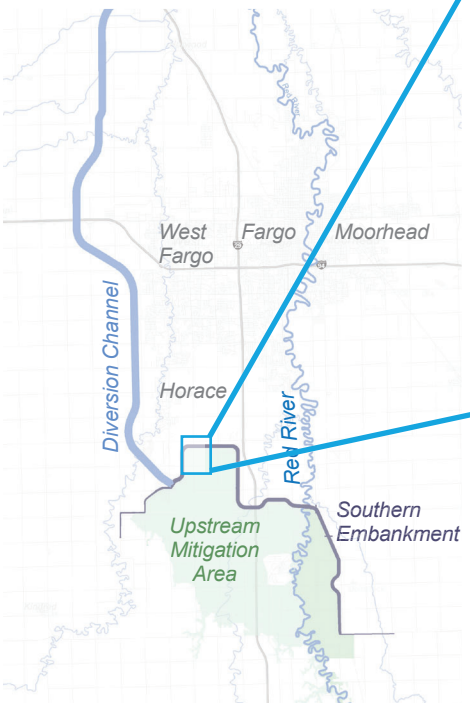
What is a Wetland?

A wetland is a physical feature that is wet enough during the growing season in most years to develop specific soil characteristics and will support vegetation tolerant of wet conditions.

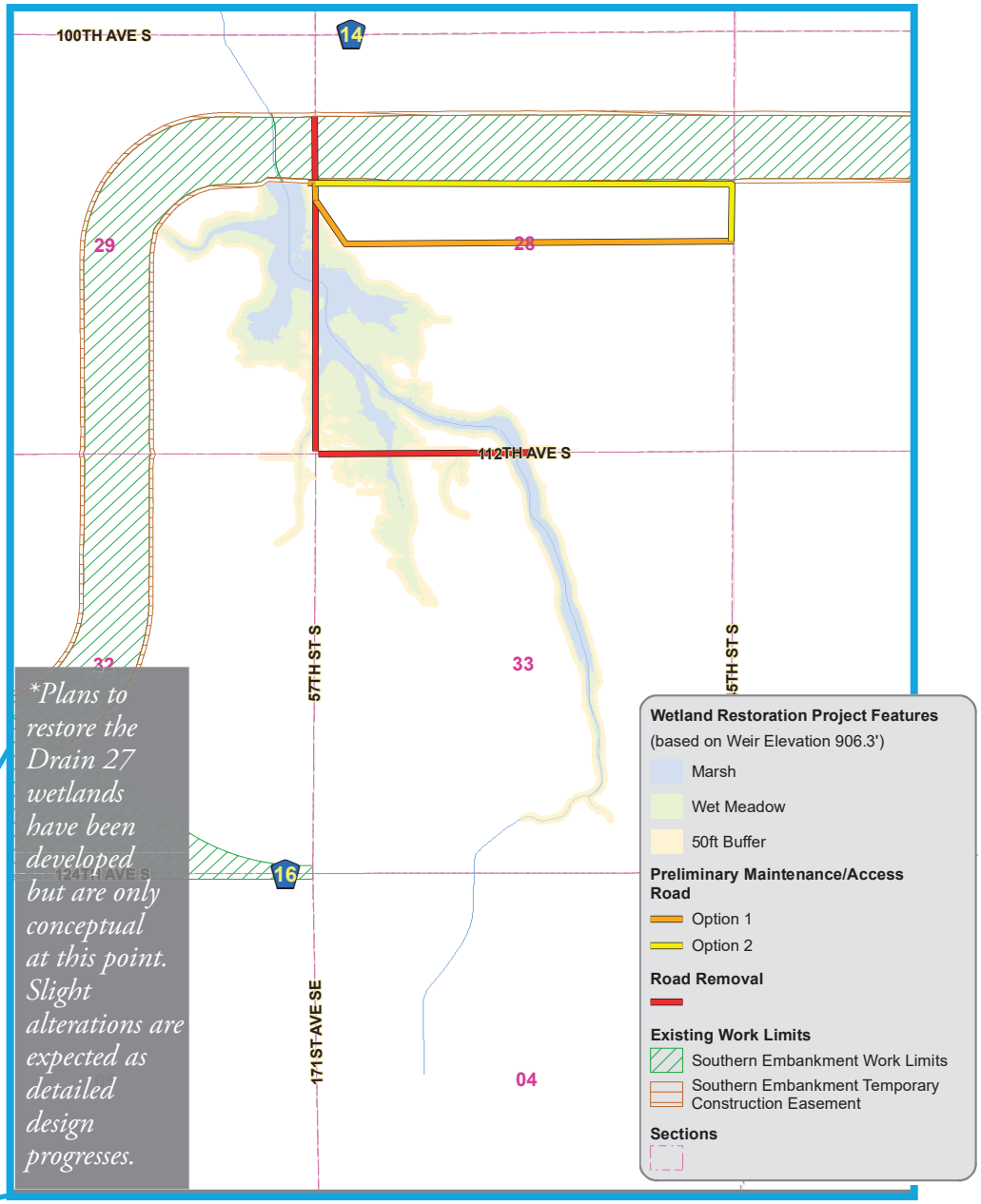
Wetlands come in a variety of forms. Some wetland types found in the greater Fargo-Moorhead area include marshes, wet meadows, seasonally flooded basins, and forested wetlands.

Wetlands such as swamps and marshes are obvious, but some wetlands are not easily recognized, often because they are dry during part of the year or don't appear to be visibly wet.

Where is the Drain 27 Wetland Restoration Project Located?



Map of Wetland Restoration Project Area



Why are Wetlands Important?

Wetlands can provide a number of functions, including water purification, flood storage, processing of carbon and other nutrients, erosion control, support of rare plants and animals, and recreational opportunities such as hunting, bird watching, canoeing, and hiking.

Nearly half of North Dakota's wetlands have been drained or filled since settlement.

Restoring historic wetland areas will mitigate FM Area Diversion Project impacts

Why restore wetlands at the Drain 27 Wetland Restoration Site?

The Southern Embankment of the FM Area Diversion Project intersects Drain 27, cutting off flows to the north. Despite efforts to design features that would provide adequate drainage to the area, it became apparent that frequent flooding along Drain 27 was unavoidable. This would create challenging conditions for the continued agricultural use of the area.

When Drain 27 was established to increase the efficiency of drainage on surrounding lands. These lands have characteristics of a historic wetland. Reestablishing hydrology will likely result in restored wetland functions to the area.

Construction of the FM Area Diversion Project will result in unavoidable impacts to wetlands. Section 404 of the Clean Water Act requires that unavoidable impacts to aquatic resources be replaced through restoration, establishment, enhancement, and/or preservation of lost functions and services. Restoration of the Drain 27 site in Stanley Township will mitigate wetland impacts of the Southern Embankment in North Dakota.

What will the Drain 27 Wetland Restoration Project look like?

The entire Wetland area is expected to be about 320 acres.

Conceptual plans to restore wetlands in the Drain 27 area involve the construction of a weir near the Southern Embankment to an elevation of 906.3.

The total size of the wetland restoration site is expected to be approximately 320 acres.

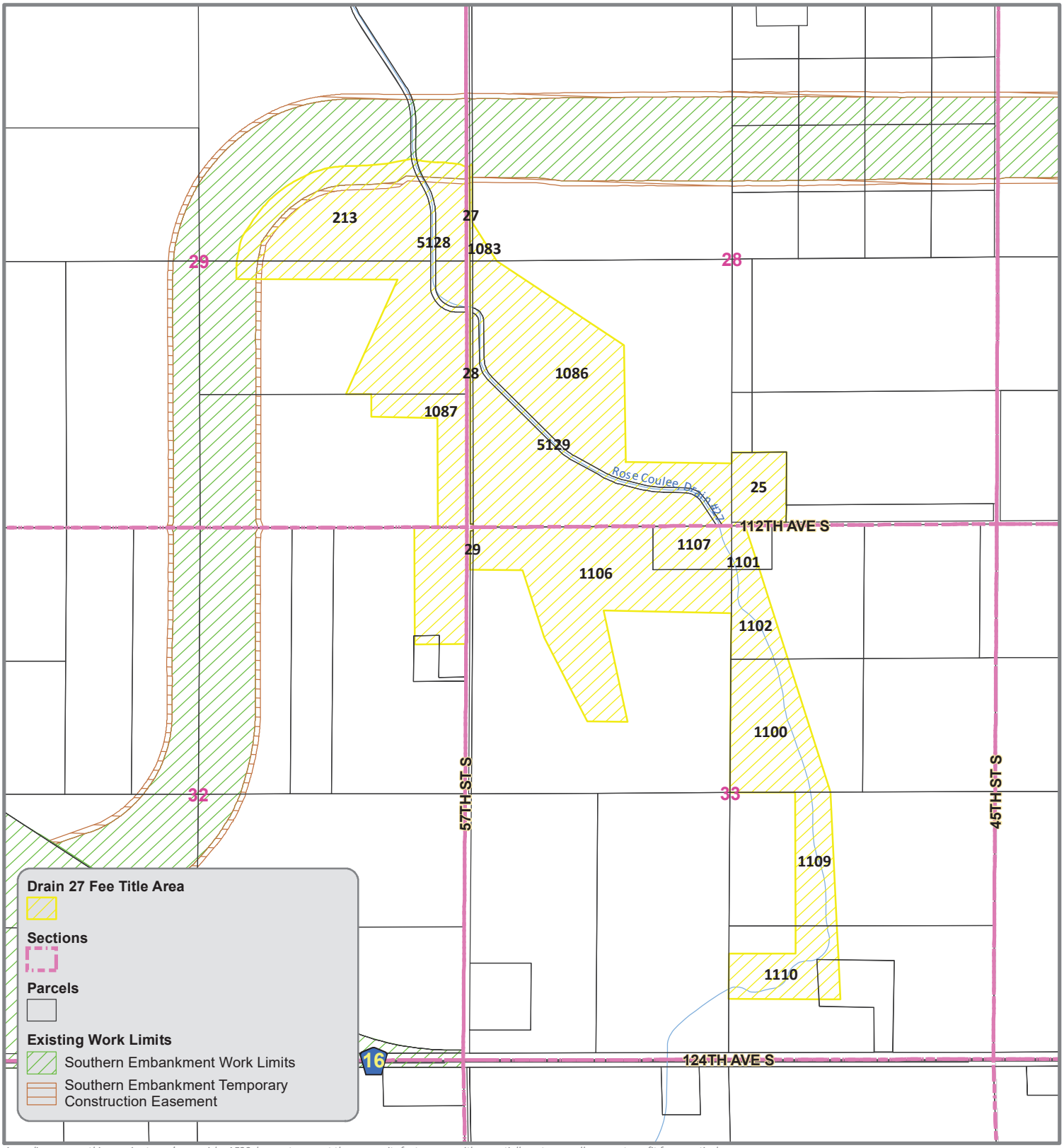
- The weir would pond water to reestablish wetland hydrology and vegetation to 150 acres.
- A 50 foot buffer surrounding the restored wetland would result in another 70 acres.
- Several upland areas (about 100 acres) that become inefficient for farming or inaccessible would be incorporated into the site. The project will be designed, in consultation with natural resource agencies, and constructed by the U.S. Army Corps of Engineers.

What is wetland restoration?

Wetland restoration simply means the process of returning a former or degraded wetland to conditions that more closely resemble what the land was historically.

Wetland restoration sites are often areas that have been altered by human activities. Human action typically alters one or more of the three principle wetland characteristics (wetland vegetation, hydric soils, and hydrology).

Historic wetlands identified for restoration often lack the benefits of functional wetlands. The goal of restoration is to reestablish lost functions.



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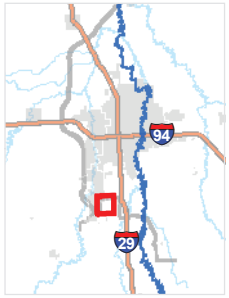
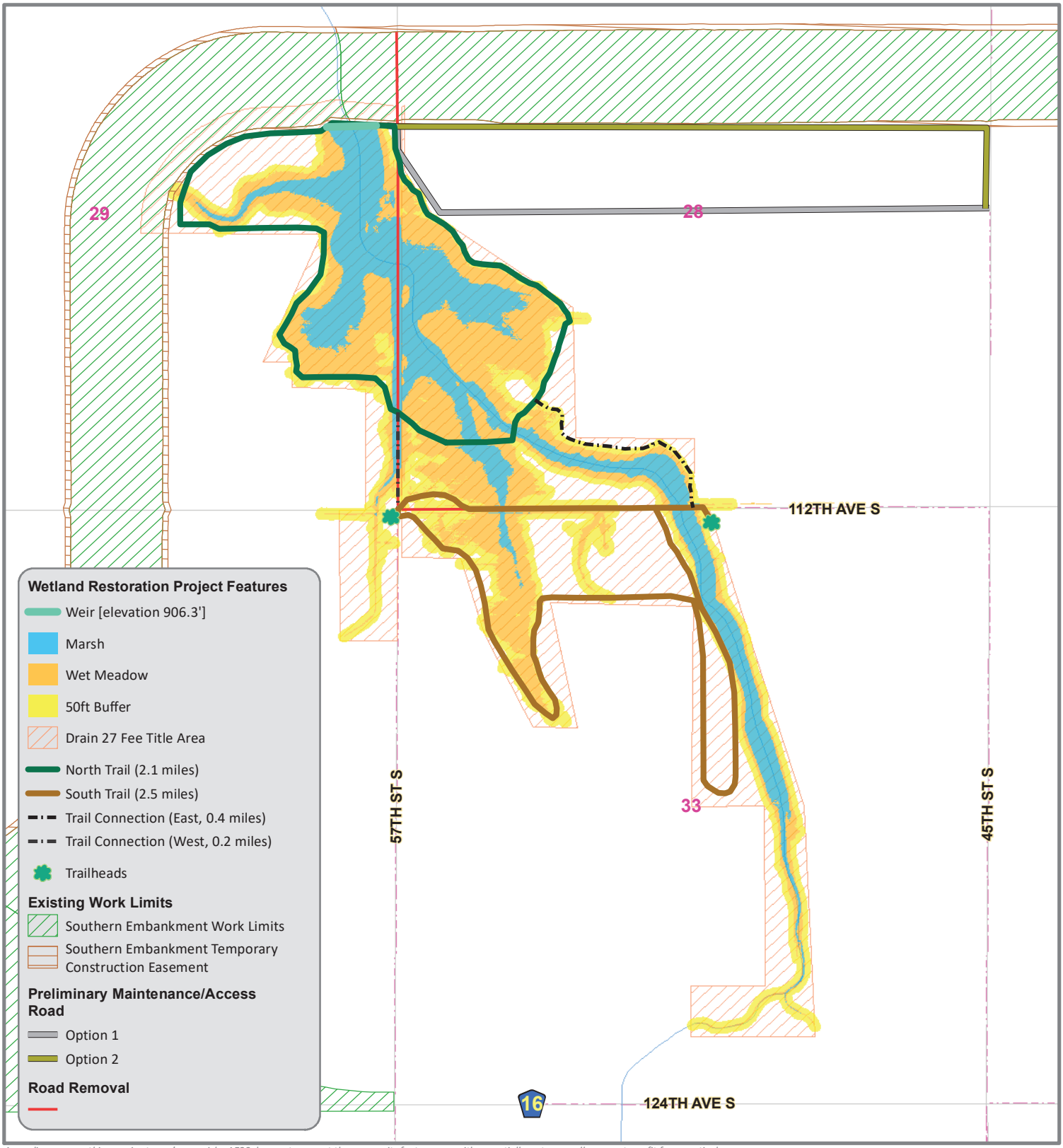


DRAIN 27
WETLAND RESTORATION PROJECT

FM AREA DIVERSION
Map Date: 8/28/2020

FM AREA DIVERSION PROJECT



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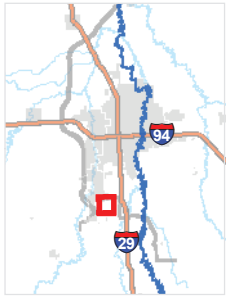


DRAIN 27
WETLAND RESTORATION PROJECT
PROPOSED TRAIL NETWORK

FM AREA DIVERSION
Map Date: 8/24/2020

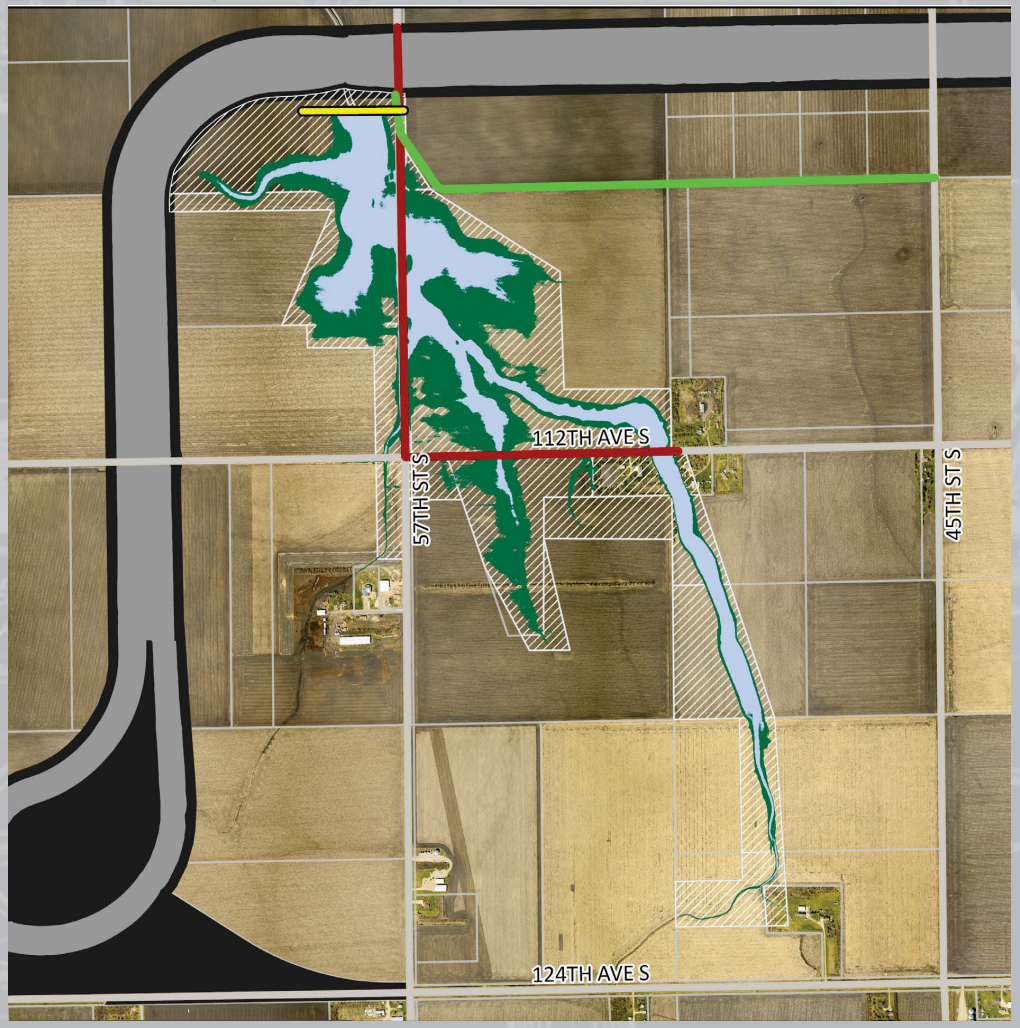
FM AREA DIVERSION PROJECT

DRAIN 27 WETLAND RESTORATION

Environmental Assessment Virtual Public Meeting

July 21st, 2020

4:00 PM



U.S. ARMY

US Army Corps of Engineers®

MISSISSIPPI VALLEY DIVISION
US ARMY CORPS OF ENGINEERS

BUILDING STRONG®

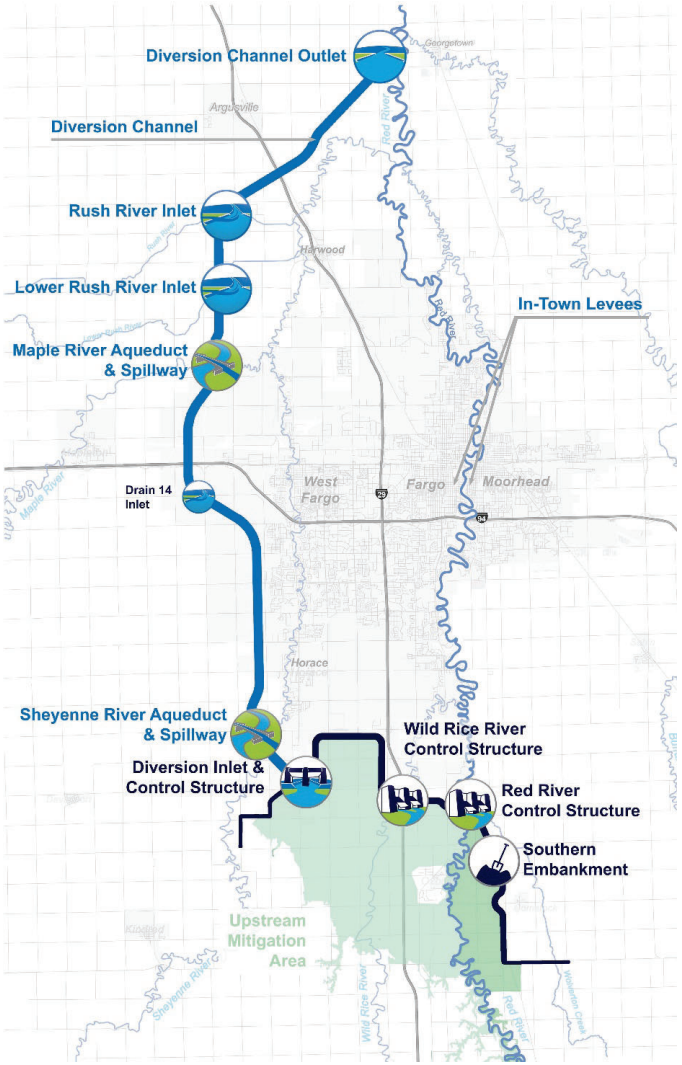
and Taking Care of People!

MEETING AGENDA

- FM Diversion Project Overview
- Wetlands background
- Reasons for Drain 27 Wetland Restoration Project
- Design
- Impacts
- Schedule
- Comments/Questions

OVERALL PROJECT

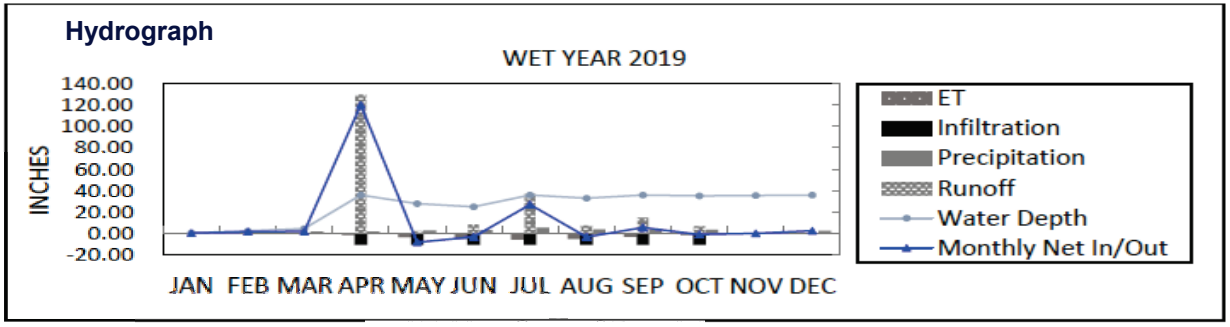
- Project includes
  - Diversion Channel
  - River Control Structures
  - In-Town Protections
  - Southern Embankment
  - Upstream Mitigation Area
- Construction on the Diversion Inlet and Wild Rice River Structure is ongoing
- Split delivery



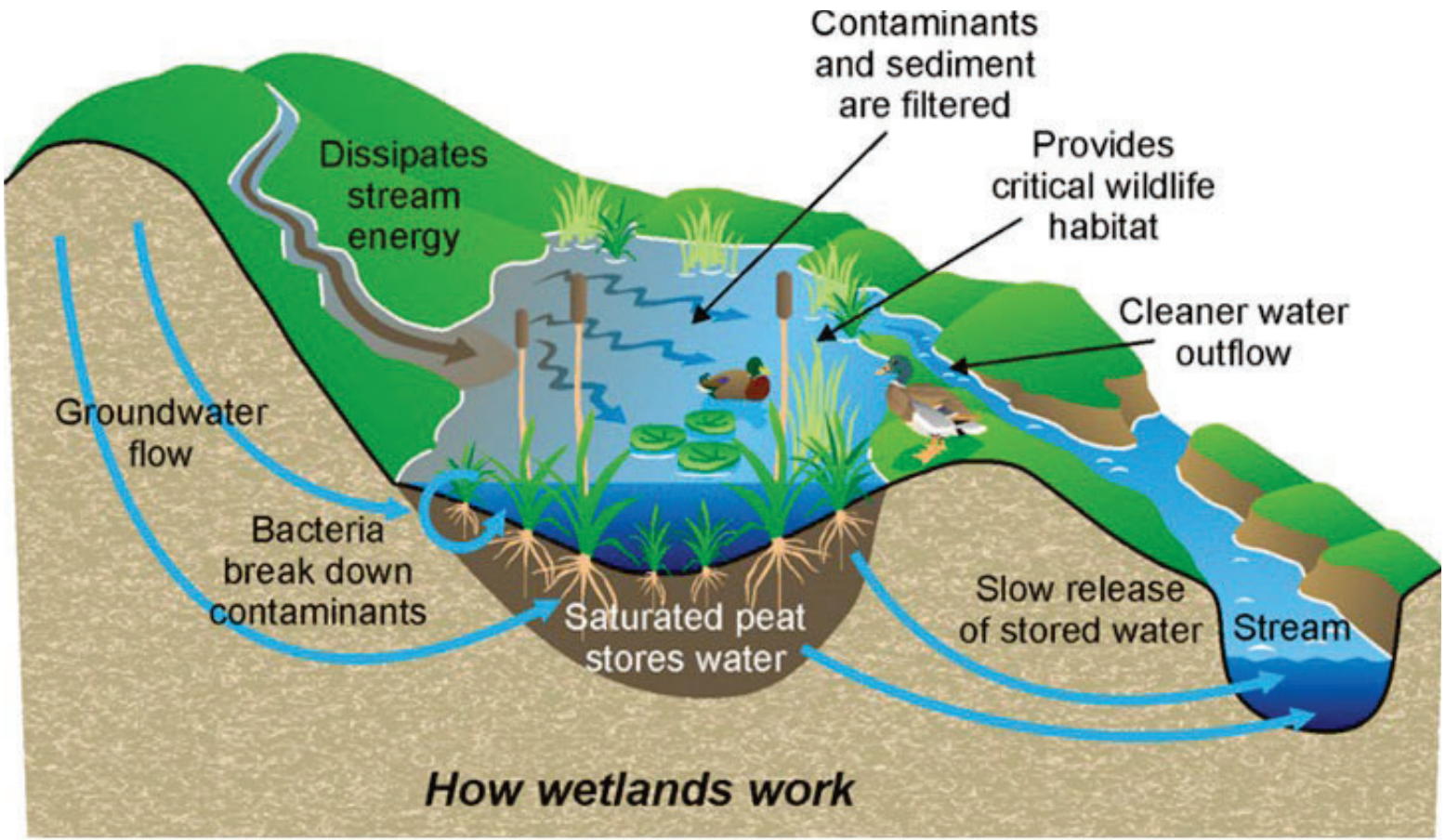
WHAT IS A WETLAND?

3 general characteristics

- Hydric soils
- Hydrology
- Vegetation



WHY ARE WETLANDS IMPORTANT?



WHY ARE WETLANDS IMPORTANT?

Tundra swan

Tiger salamander

WHAT IS WETLAND RESTORATION?

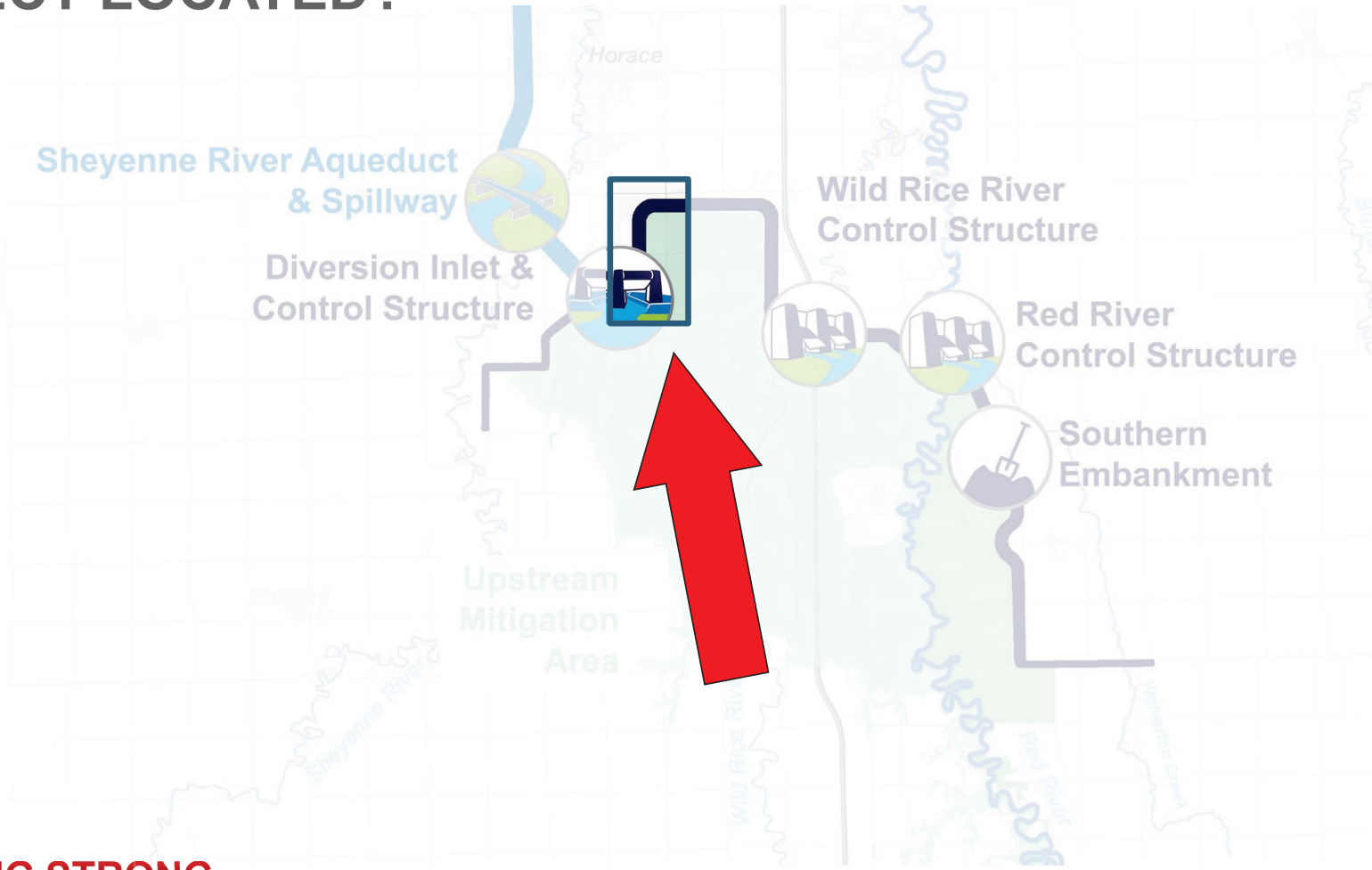
Return wetland characteristics to site(vegetation, soils, hydrology)

Reestablish lost functions

WHY IS THIS PROJECT BEING CONSIDERED?

- Mitigate unavoidable wetland impacts.
- Challenges for continued agricultural use.
- Area has characteristics of a historic wetland.

WHERE IS THE DRAIN 27 WETLAND RESTORATION PROJECT LOCATED?

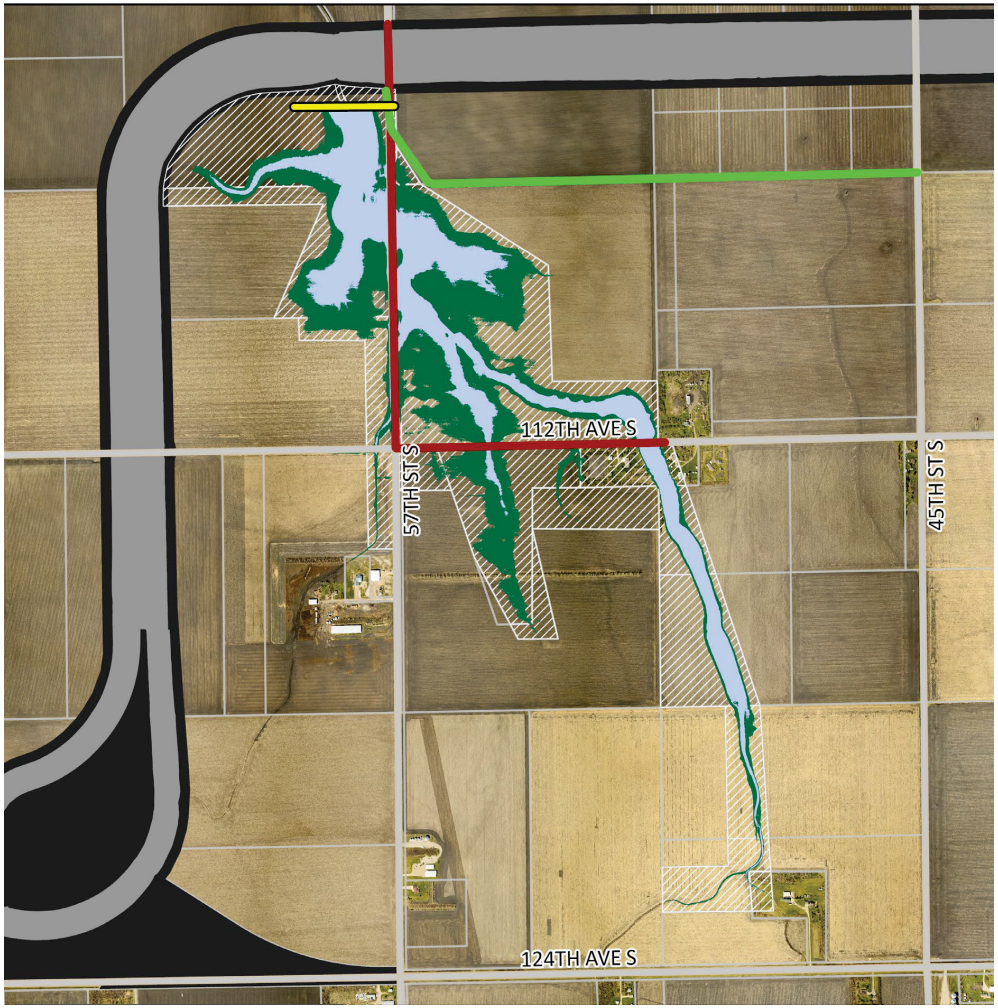


DESIGN

WHAT WILL THE AREA LOOK LIKE?

Total of 320 acres

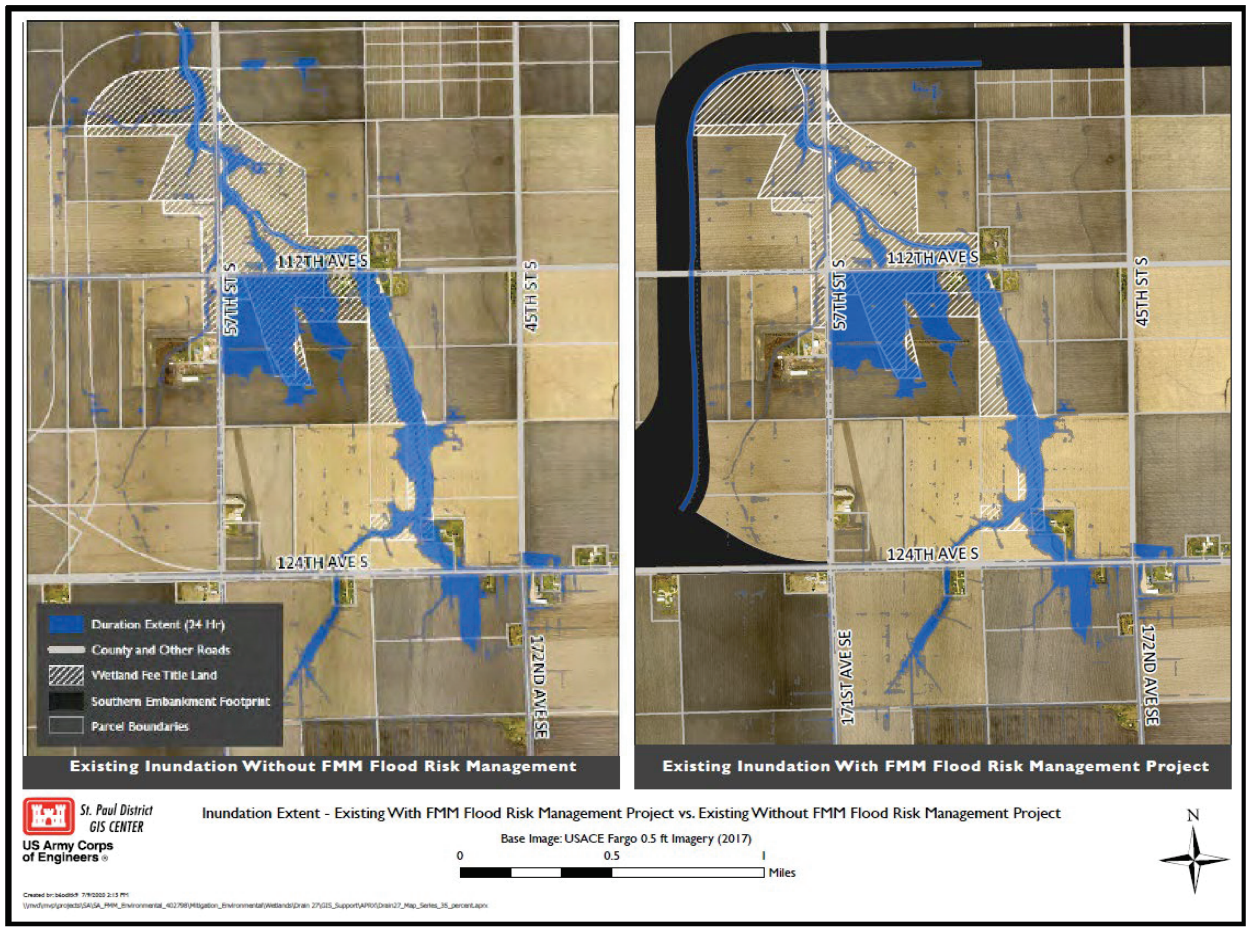
- 150 acres of wetland
- 70 acres of wetland buffer
- 100 acres of inefficient/inaccessible land



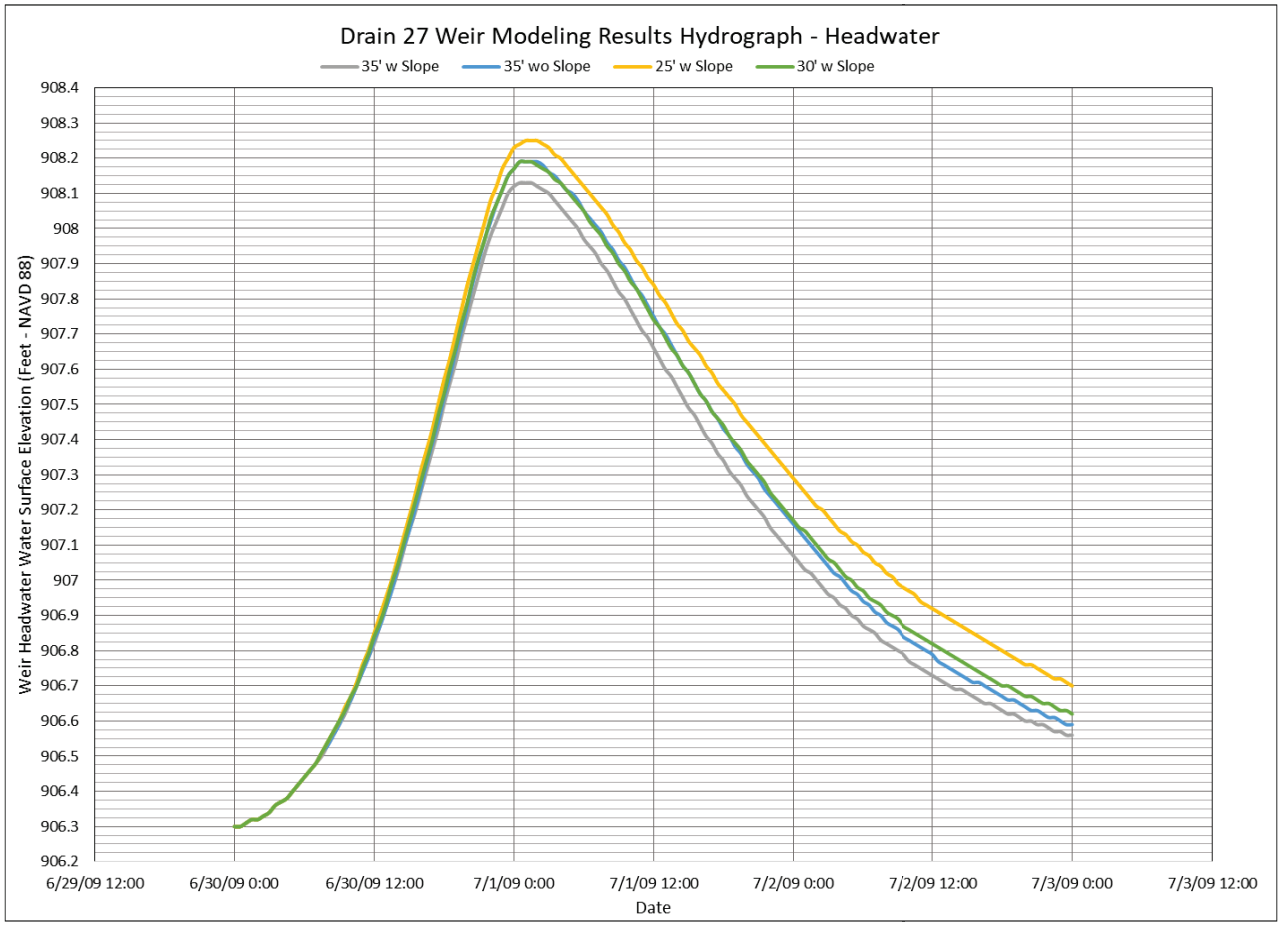
DESIGN – WEIR

Hydraulic Goal: Design the weir to maximize the extent and duration of the inundation within the wetland fee parcels following the 10-year, 24-hour event, while maintaining adjacent property owner flood duration to less than 24 hours from the peak pool elevation.

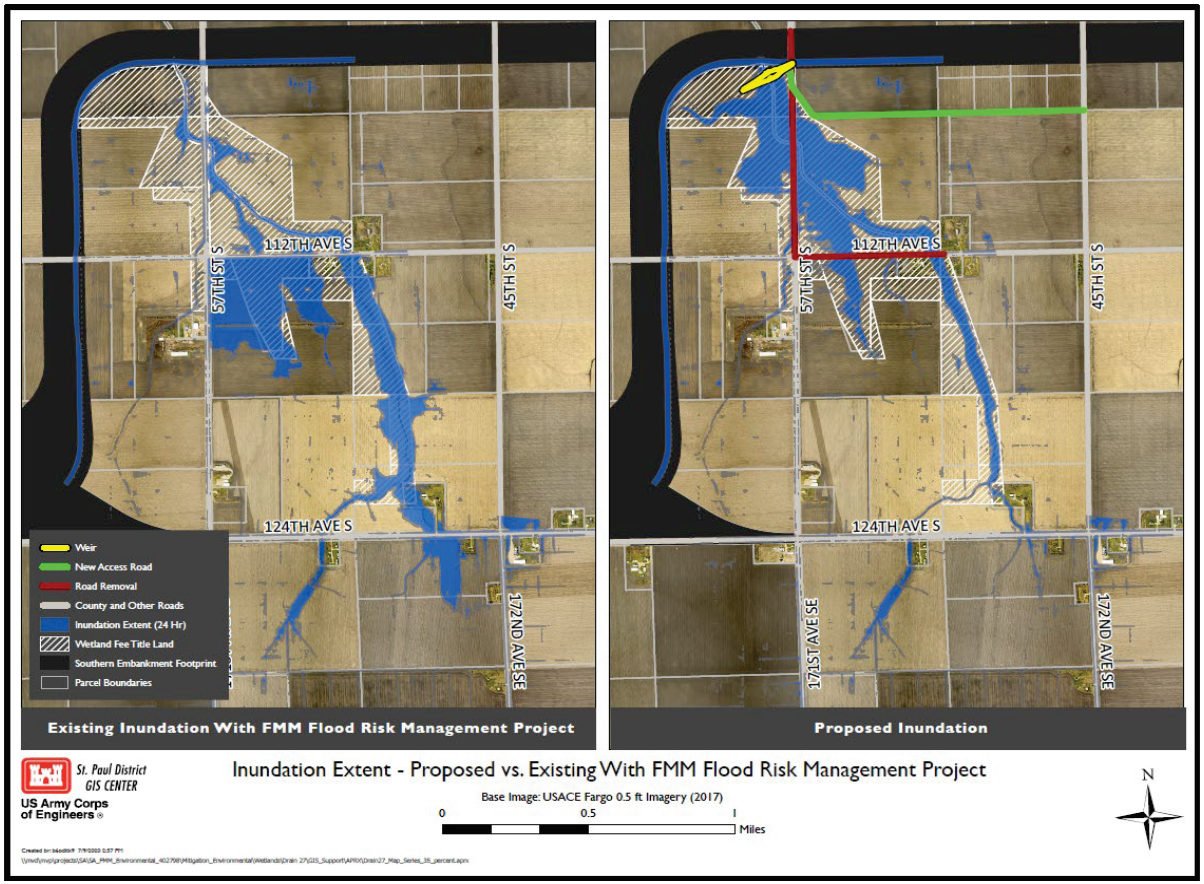
DESIGN – HYDRAULICS



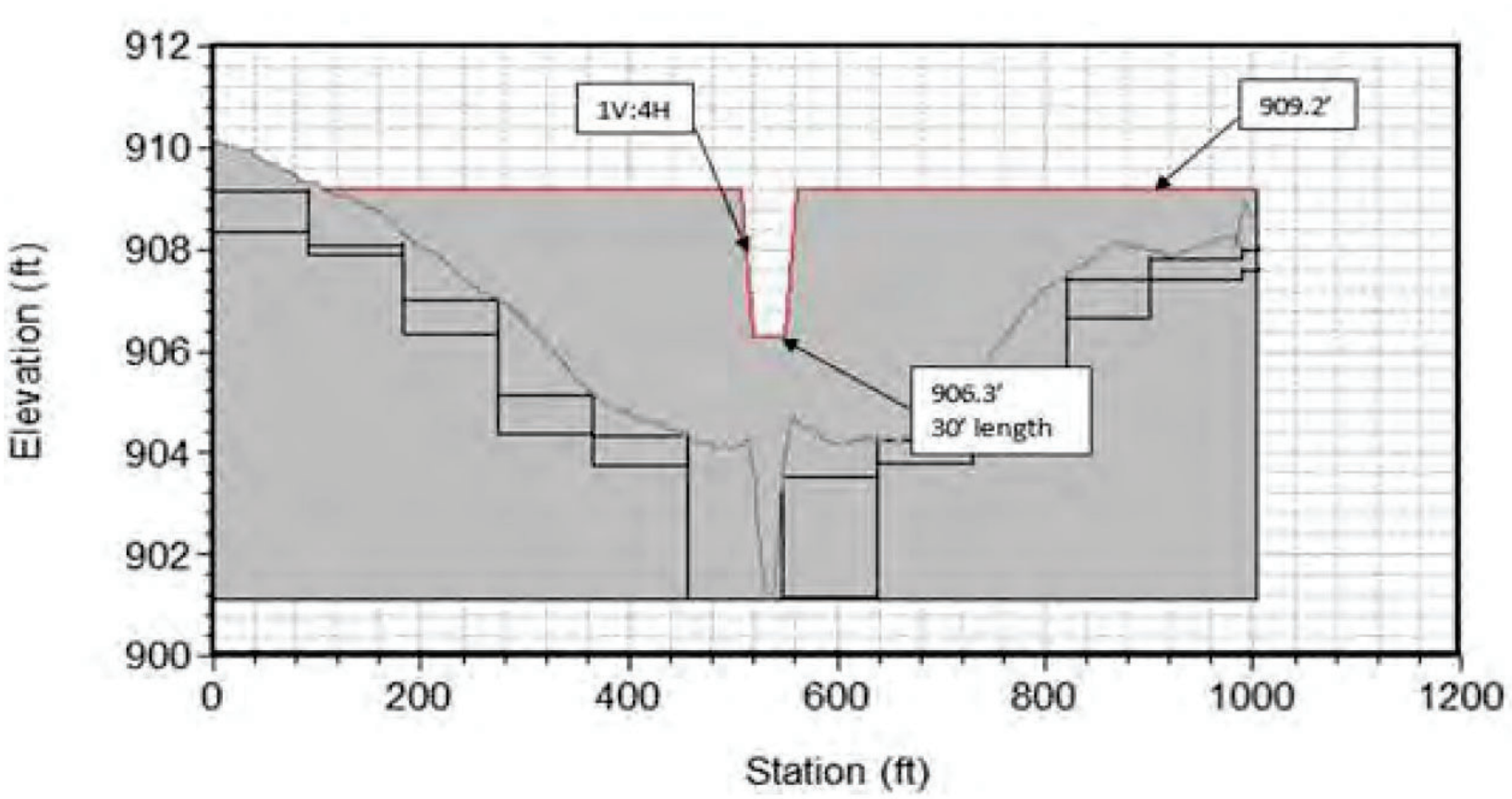
DESIGN – HYDRAULICS



DESIGN – HYDRAULICS

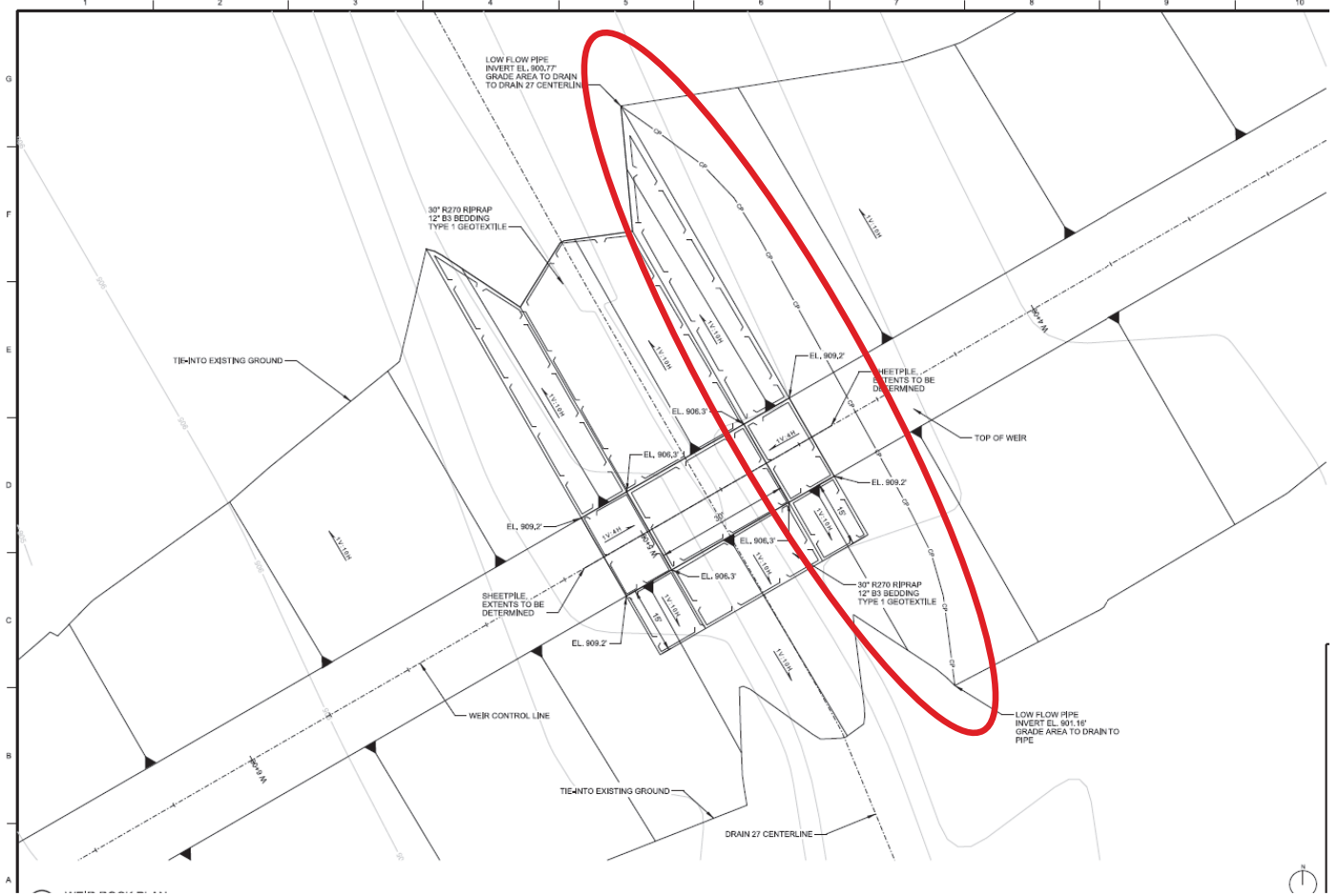


DESIGN - WEIR


912
910
908
906
904
902
900
Elevation (ft)
0
200
400
600
800
1000
1200
Station (ft)
1V:4H
909.2'
906.3'
30' length

WEIR CONSIDERATIONS

- Earthen vs. Sheetpile
- Low-flow pipe



DESIGN - RECREATION

- Recreation features being considered but not a part of this project at this time

- Metro COG looking at recreation as part of the Agassiz Greenway Master Plan

http://fmmetrocog.org/AgassizGreenway

- Features being considered include: trails, kiosks, and trail access locations

Rendering courtesy of Metro COG

DRAINAGE

DRAINAGE

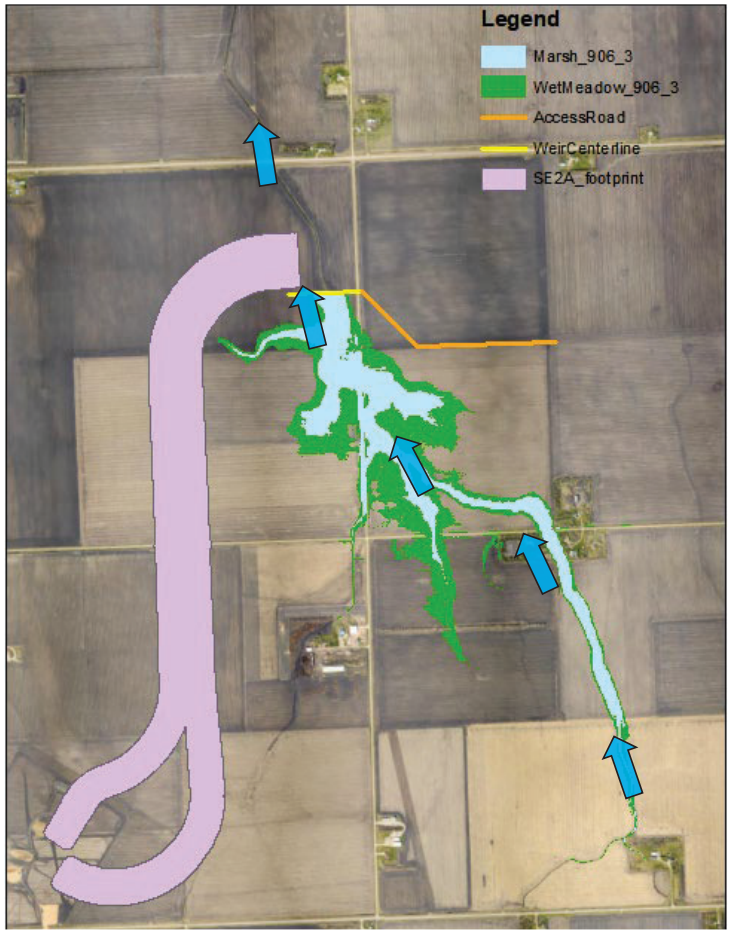
- Existing Conditions:
  - Drainage through Drain 27

DRAINAGE

- Wetland Construction:
  - 2022 construction season
  - Drainage through Drain 27 downstream of project

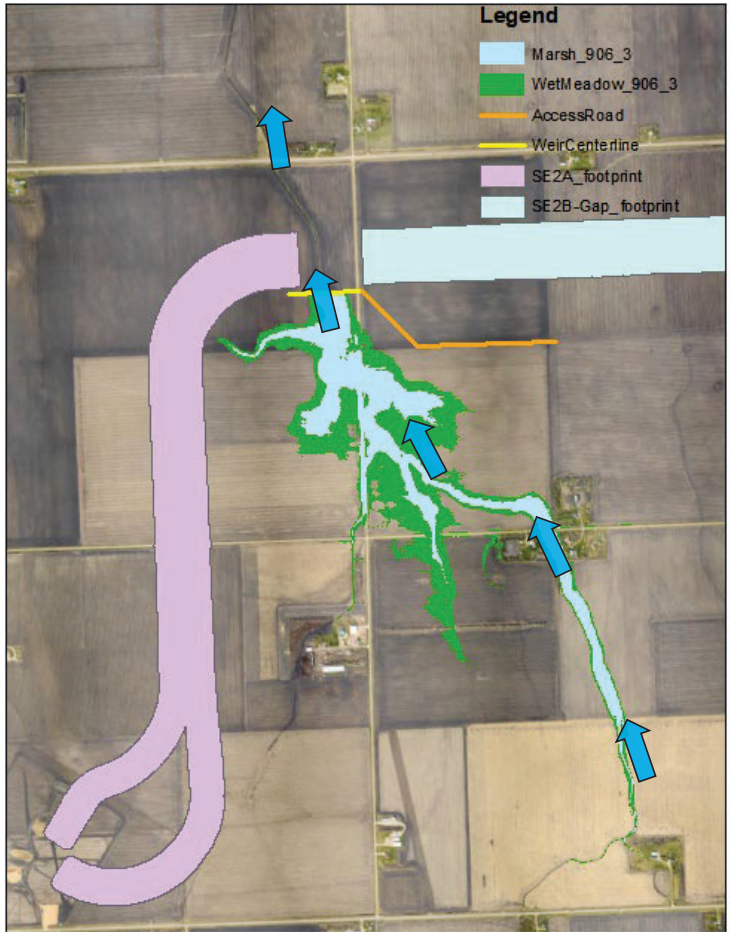
DRAINAGE

- Southern Embankment SE-2A Construction:
  - 2022 through 2023
  - Drainage through Drain 27 downstream of project



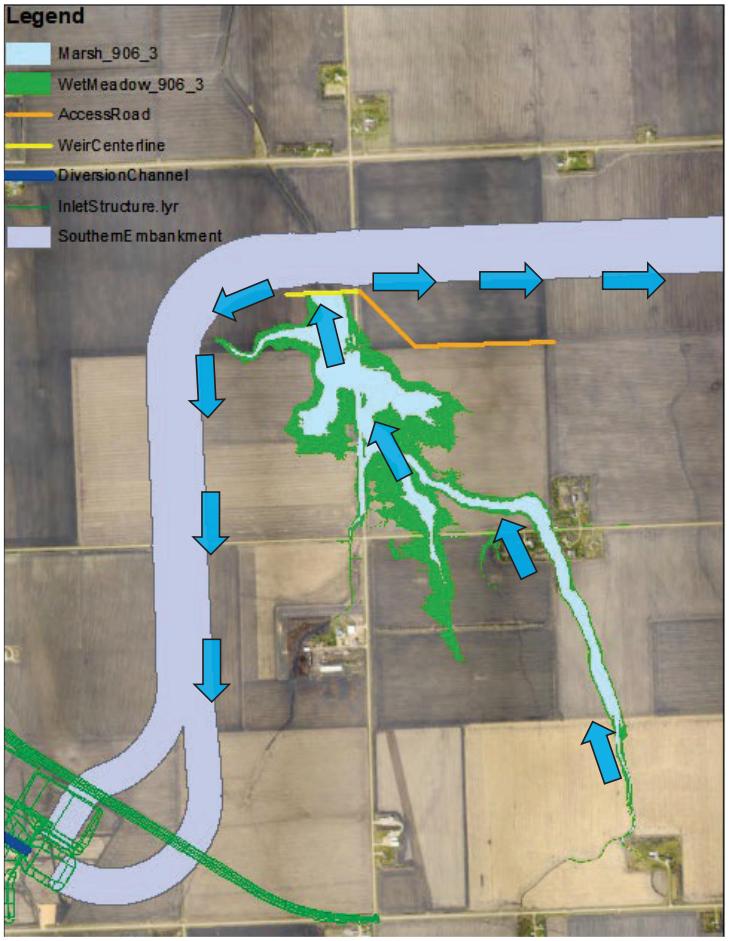
DRAINAGE

- Southern Embankment SE-2B Construction:
  - 2023 through 2024
  - Gap left in S. Embankment
  - Drainage through Drain 27 downstream of project

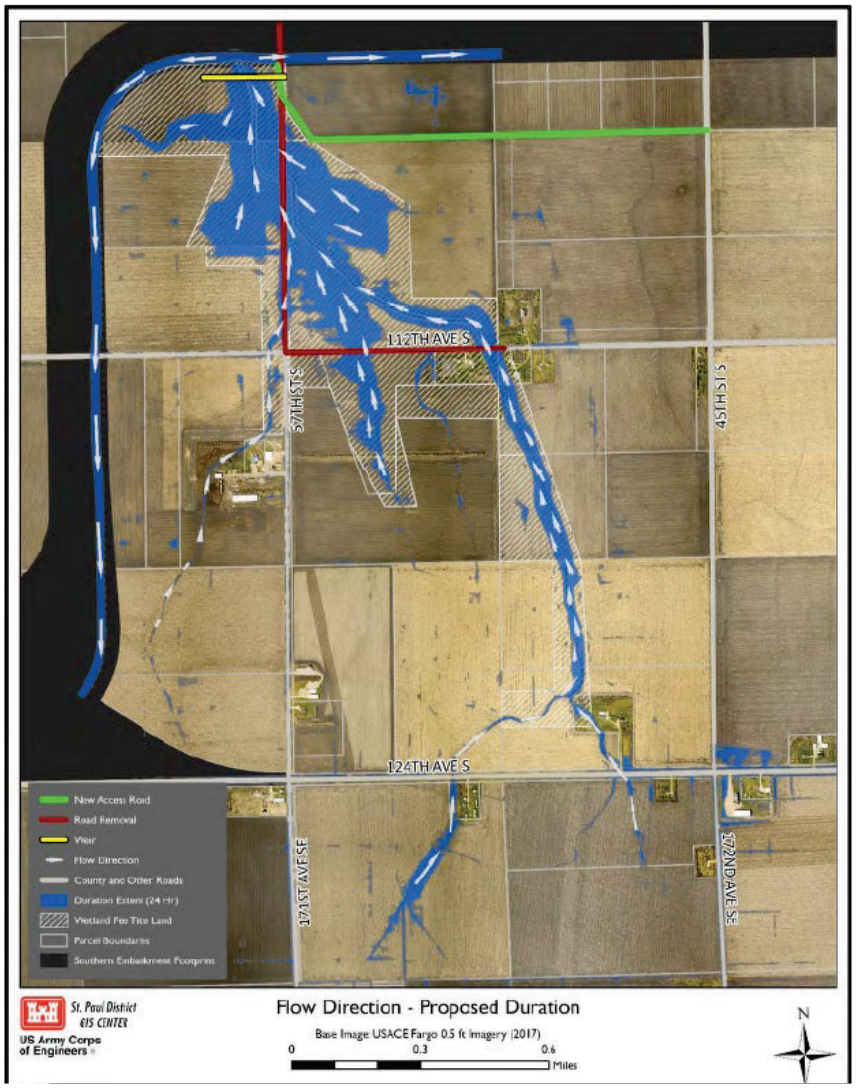


DRAINAGE

- Gap filled in Southern Embankment:
  - One of the last phases to be constructed
  - Estimated for construction in 2026/2027



FINAL DRAINAGE



WHAT ARE THE ENVIRONMENTAL EFFECTS?

- **Agriculture**
  - ~1 mile of Drain 27 would be abandoned and ~300 acres of land currently being farmed would be taken out of production
  - Wetland restoration project designed to ensure farmland and crops outside of the project parcels are not inundated for more than 24 hours following a large summer rainfall

- **Transportation**
  - To fully restore the wetland, 4,300 linear feet of 57th Street and 2,700 linear feet of 112th Street would be removed
  - Affected residents would have alternate routes for traveling in and out of the area

WHAT ARE THE ENVIRONMENTAL EFFECTS?

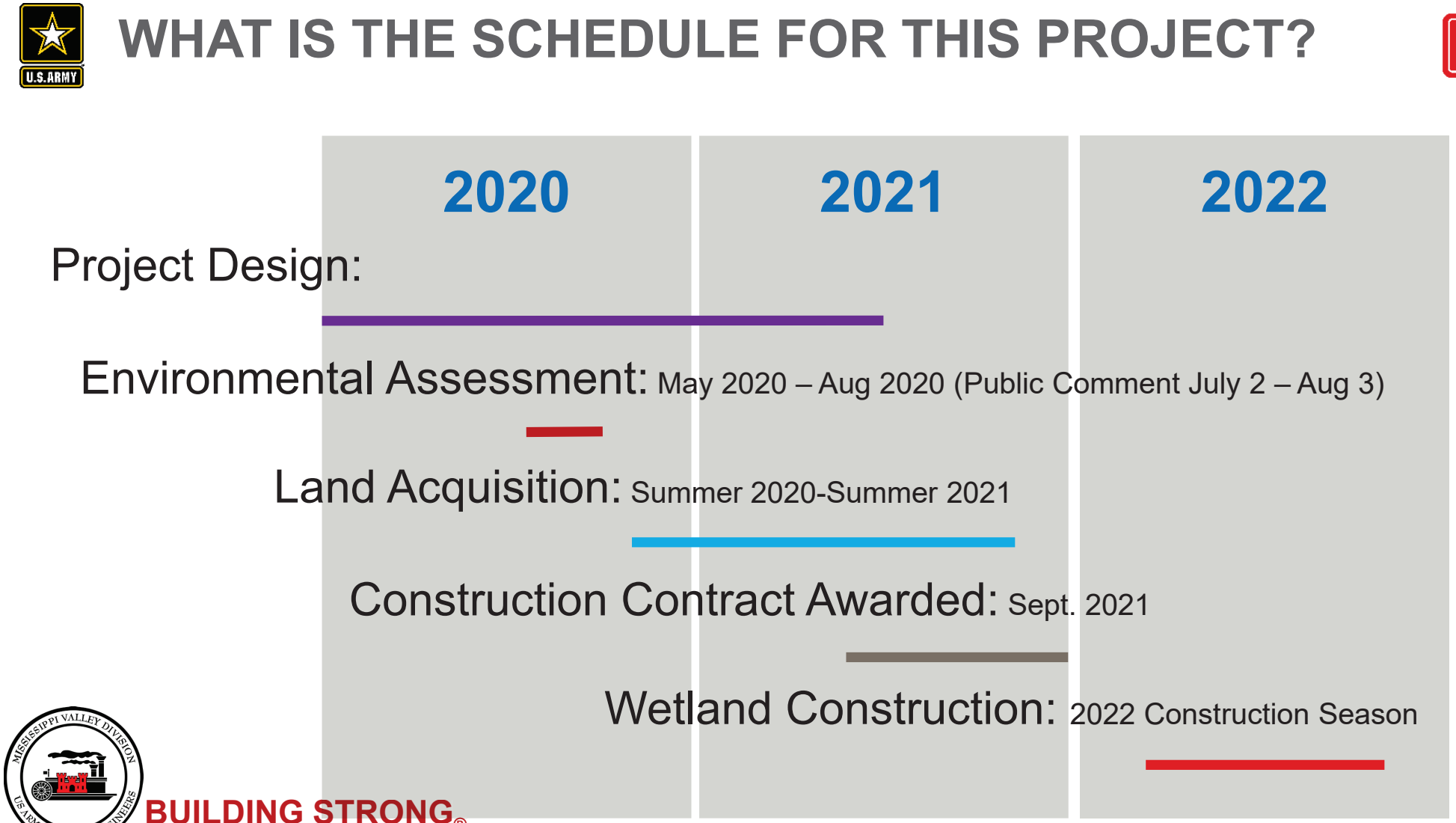
- **Wetlands**
  - Long-term beneficial effect by restoring ~84 acres of wet meadow and 66 acres of marsh
  - Restoration of wetland would provide:
    - habitat for wildlife by increasing habitat diversity
    - water quality improvements by filtering sediments, nutrients, & pollutants

- **Vegetation**
  - Wetland restoration project would change vegetation from row crops to approximately 150 acres of native wetland and 170 acres of prairie vegetation

ENVIRONMENTAL ASSESSMENT

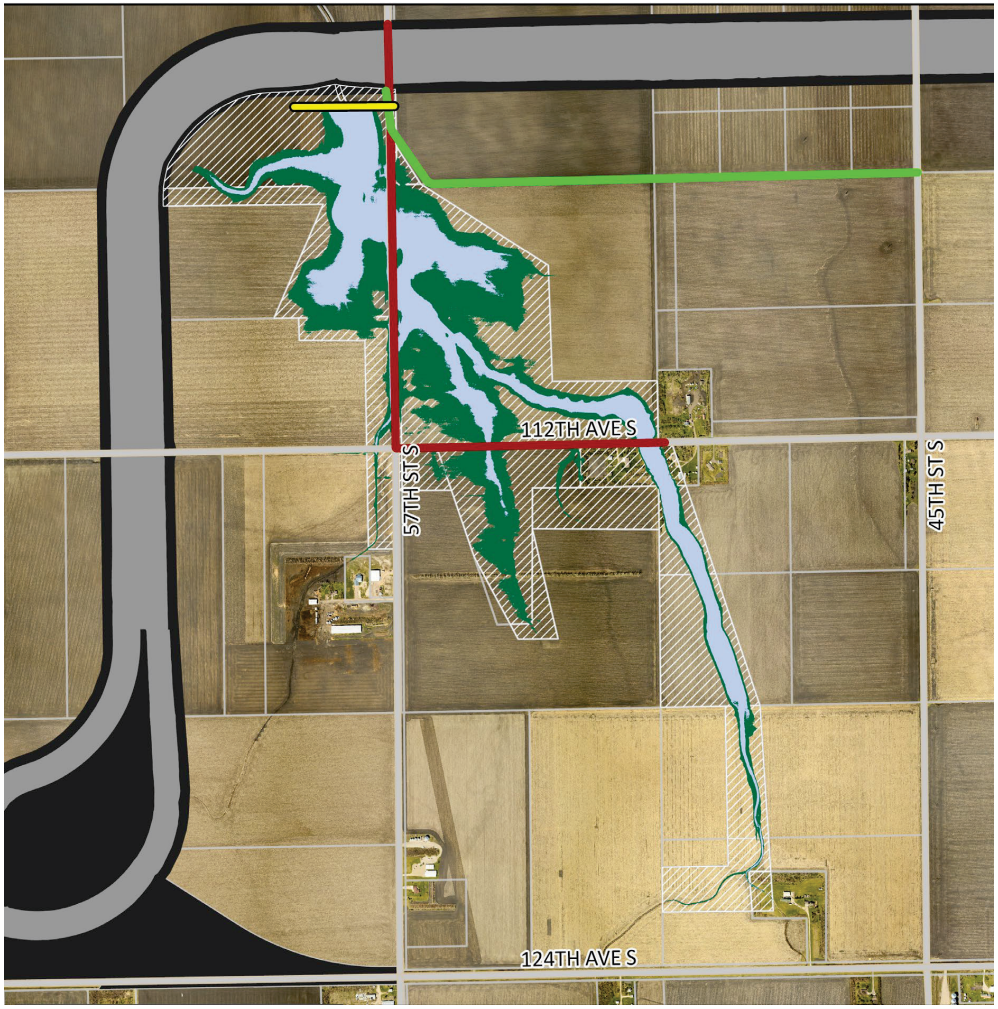
- Released 2 July 2020
- https://www.mvp.usace.army.mil/Home/Public-Notices/
- Questions on the project or comments on the Environmental Assessment can be directed to Derek Ingvalson at (651) 290-5252 or at Derek.S.Ingvalson@usace.army.mil
- Comment period ends 3 August 2020

WHAT IS THE SCHEDULE FOR THIS PROJECT?



QUESTIONS?

- Questions on the project or comments on the Environmental Assessment can be directed to Derek Ingvalson at (651) 290-5252 or at Derek.S.Ingvalson@usace.army.mil
- Smaller meetings to discuss individual concerns can also be requested.



Drain 27 Wetland Restoration Project Budget

Project Type	Detail	Quantity	Unit	Unit Price	OHF Request	Federal USACE Match	Total
Wetland Construction							
	Stripping	15,000	CY	$ 6.00	$ -	$ 90,000.00	$ 90,000.00
	Excavation	130,000	CY	$ 10.00	$ -	$ 1,300,000.00	$ 1,300,000.00
	Topsoil Respread	10,000	CY	$ 6.00	$ -	$ 60,000.00	$ 60,000.00
	Geotextile Fabric	15,500	SY	$ 3.00	$ -	$ 46,500.00	$ 46,500.00
	B3 Bedding	180	CY	$ 90.00	$ -	$ 16,200.00	$ 16,200.00
	R270 Riprap	450	CY	$ 100.00	$ -	$ 45,000.00	$ 45,000.00
	Sheet Pile	1,438	SF	$ 60.00	$ -	$ 86,280.00	$ 86,280.00
	Aggregate Surface	3,500	CY	$ 35.00	$ -	$ 122,500.00	$ 122,500.00
SubTotal					$ -	$ 1,766,480.00	$ 1,766,480.00
	25% Construction Contingency				$ -	$ 441,620.00	$ 441,620.00
Construction Total					**$ -**	**$ 2,208,100.00**	**$ 2,208,100.00**
						Applicant's Local Match	
Land Acquisition		489.1	Acres		$ -	**$ 8,657,000.00**	**$ 8,657,000.00**
Recreational Features							
	Aggregate Parking Lot	2		$ 16,500.00	$ 33,000.00	$ -	$ 33,000.00
	Restroom (portable)	2		$ 5,000.00	$ 10,000.00	$ -	$ 10,000.00
	Entrance Sign	2		$ 20,000.00	$ 40,000.00	$ -	$ 40,000.00
	Kiosk	2		$ 5,000.00	$ 10,000.00	$ -	$ 10,000.00
	Trail (natural)	5	Mi	$ 10,000.00	$ 50,000.00	$ -	$ 50,000.00
	Trail Boardwalk Crossing	0.2	Mi	$ 1,500,000.00	$ 300,000.00		$ 300,000.00
Recreation Total					**$ 443,000.00**		**$443,000**
Project Total					**$ 443,000.00**	**10,865,100**	**$11,308,100**
Percent of Total					**3.92%**	**96.08%**	

METROCOG Fargo-Moorhead Metropolitan Council of Governments

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September 1, 2020

Robert Kuylen, Chair
Outdoor Heritage Fund Advisory Board
State Capitol, 14th Floor
600 E Boulevard Avenue Dept 405
Bismarck, ND 58505-0840

RE: Drain 27 Wetland Restoration Project and Recreational Features

To the Outdoor Heritage Fund Advisory Board:

As a regional transportation planning organization, the Fargo-Moorhead Metropolitan Council of Governments (Metro COG) has been fortunate to work with Cass County in the planning of numerous recreation opportunities in the Fargo-Moorhead metropolitan area.

In 2019 and 2020, Cass County participated in the development of the FM Greenway Recreation Master Plan. This plan envisions a 30-mile greenway that will become an inviting, engaging, and accessible regional destination with year-round recreation opportunities and other key amenities. The plan identifies the area near the Drain 27 Wetland Restoration Project as a unique opportunity to create a low-intensity recreation node, with soft surface trails, facilities, and signage to facilitate wildlife observation and outdoor exploration. The recreation features associated with this node and the Drain 27 restoration project would be the first step in making the FM Greenway Recreation Master Plan a reality.

Cass County also collaborated in the development of the Metropolitan Transportation Plan, a document that informs transportation decision-making in the Fargo-Moorhead metropolitan area over a 25-year time period. This plan notes the benefits of pedestrian accessibility, recreational trails, and other amenities that improve public health, enhance the environment, and provide value to the community. The plan highlights numerous multimodal transportation goals, objectives, and prioritization metrics, including the promotion of environments conductive to outdoor activities and ensuring that trails and other non-motorized facilities be given equal consideration in transportation planning projects in the region.

With this, we ask that the Outdoor Heritage Fund Advisory Board consider funding for the proposed natural trails and recreation features as part of the Drain 27 Wetland Restoration Project. We believe that this project is consistent with the directives of North Dakota's Outdoor Heritage Fund in developing distinct recreation areas that provide access the wildlife habitats and restore natural environmental systems.

Sincerely,

Cindy Gray, AICP
Executive Director – Metro COG