



FM Area Diversion Project Update

Kris Bakkegard, MFDA Director of Engineering

Past Fargo Flooding



1897



1943



1969



1997



2009



2010

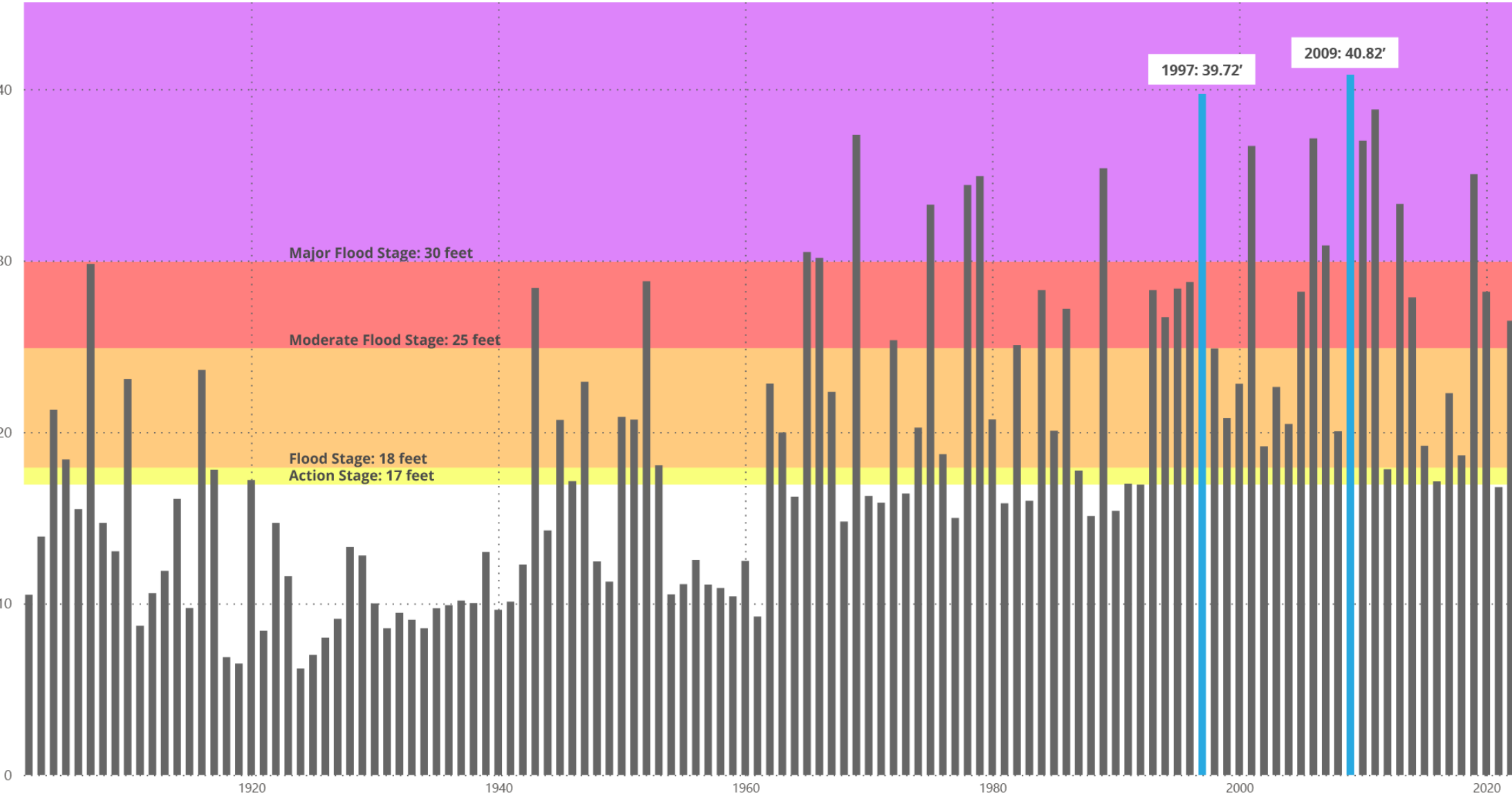


2011

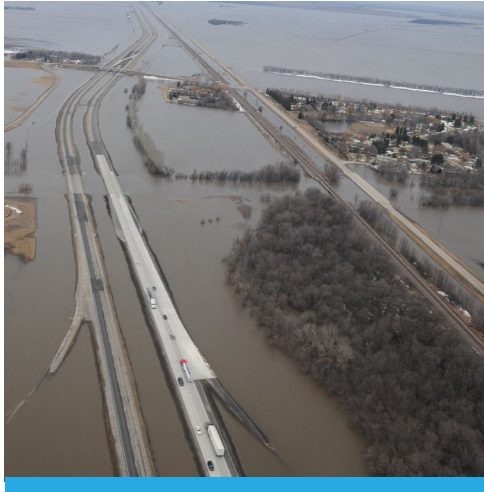


2019

Changing 100-Year Floodplain



Fighting the Record 2009 Flood



40.82'

Red River
crest on
March 28,
2009



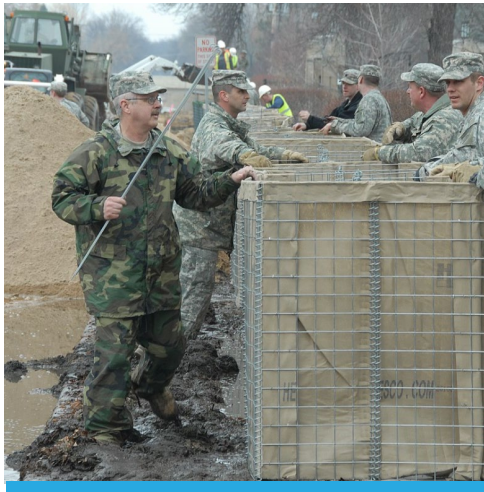
69

Miles of
emergency
measures



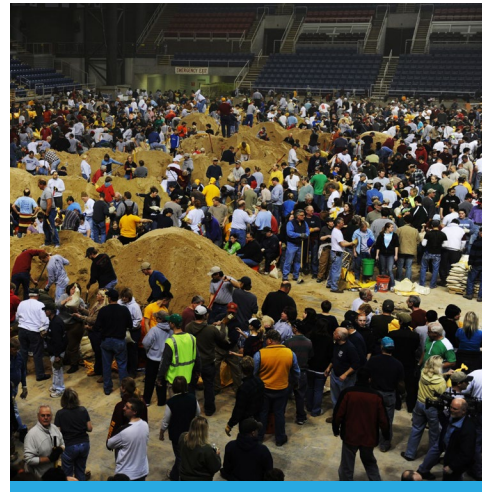
7.3M⁺

Sandbags
used



8

Miles of
Hesco
barriers
placed



150K

Volunteer
hours



\$8.4M

Spent to fight
the flood



EMERGENCY EXIT





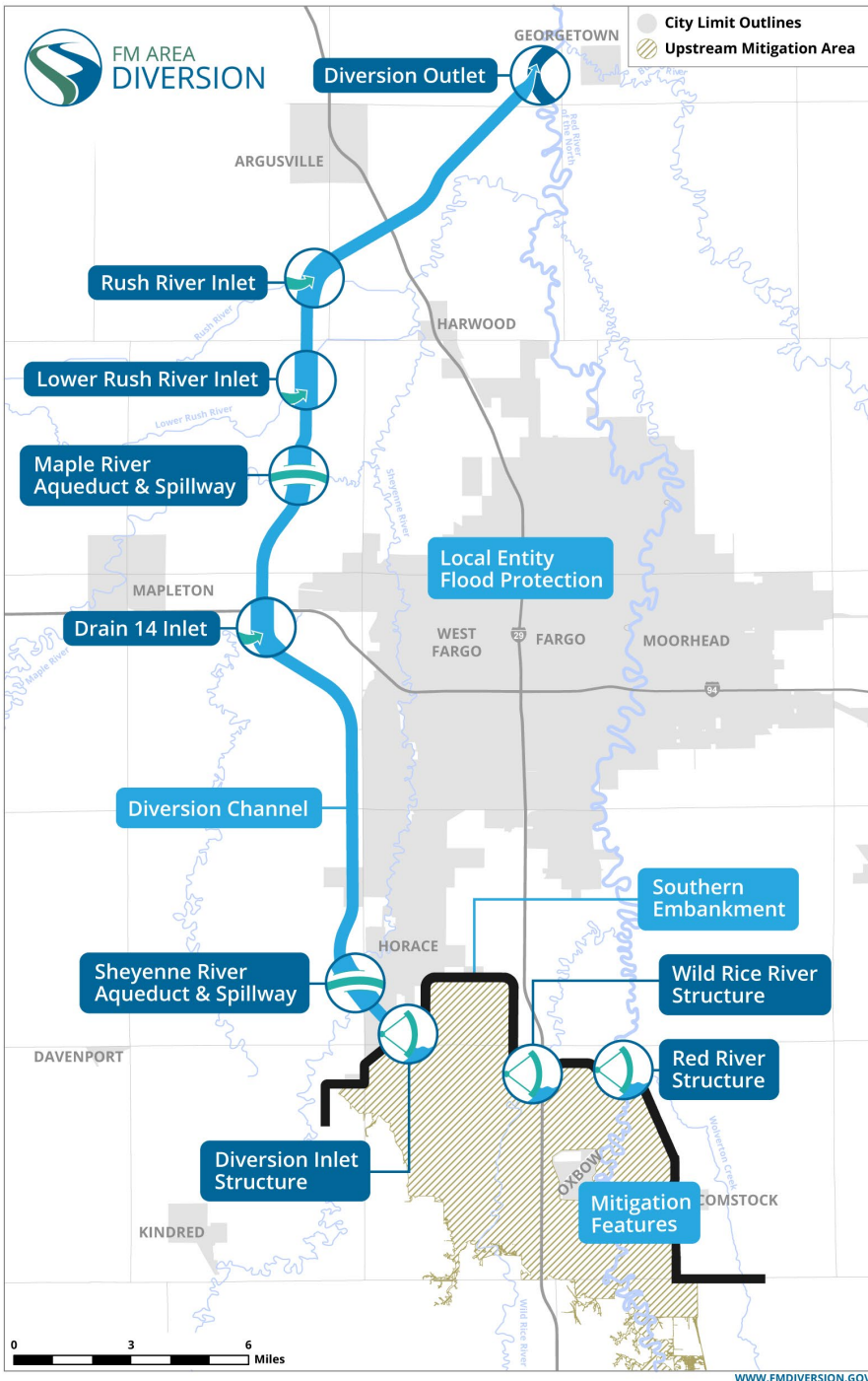


05/05/2009 15:12





Project Overview



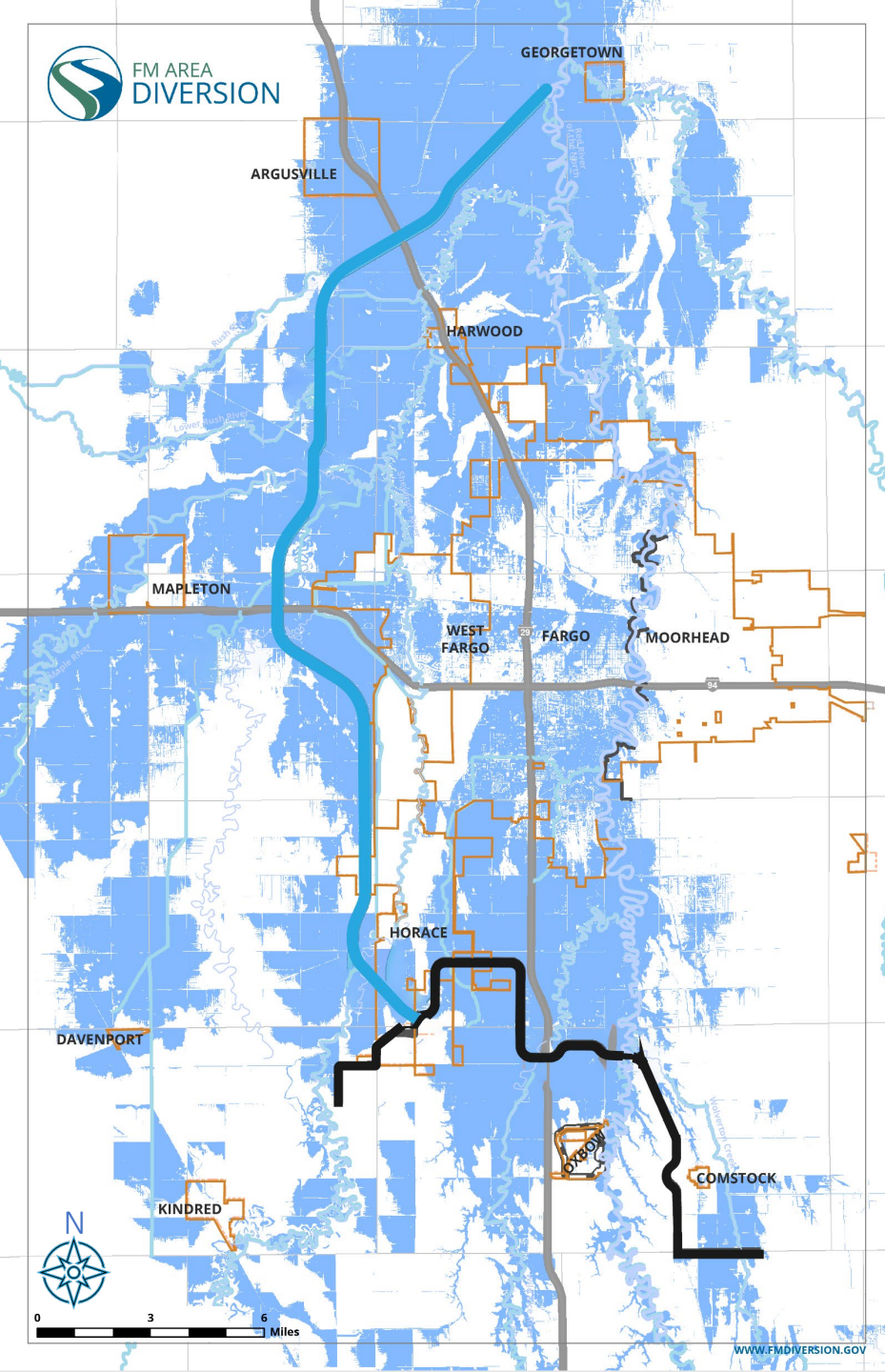
Project Goals

100-year flood protection minimum

37-foot river stage through town

500-year fightable protection

40-foot river stage through town

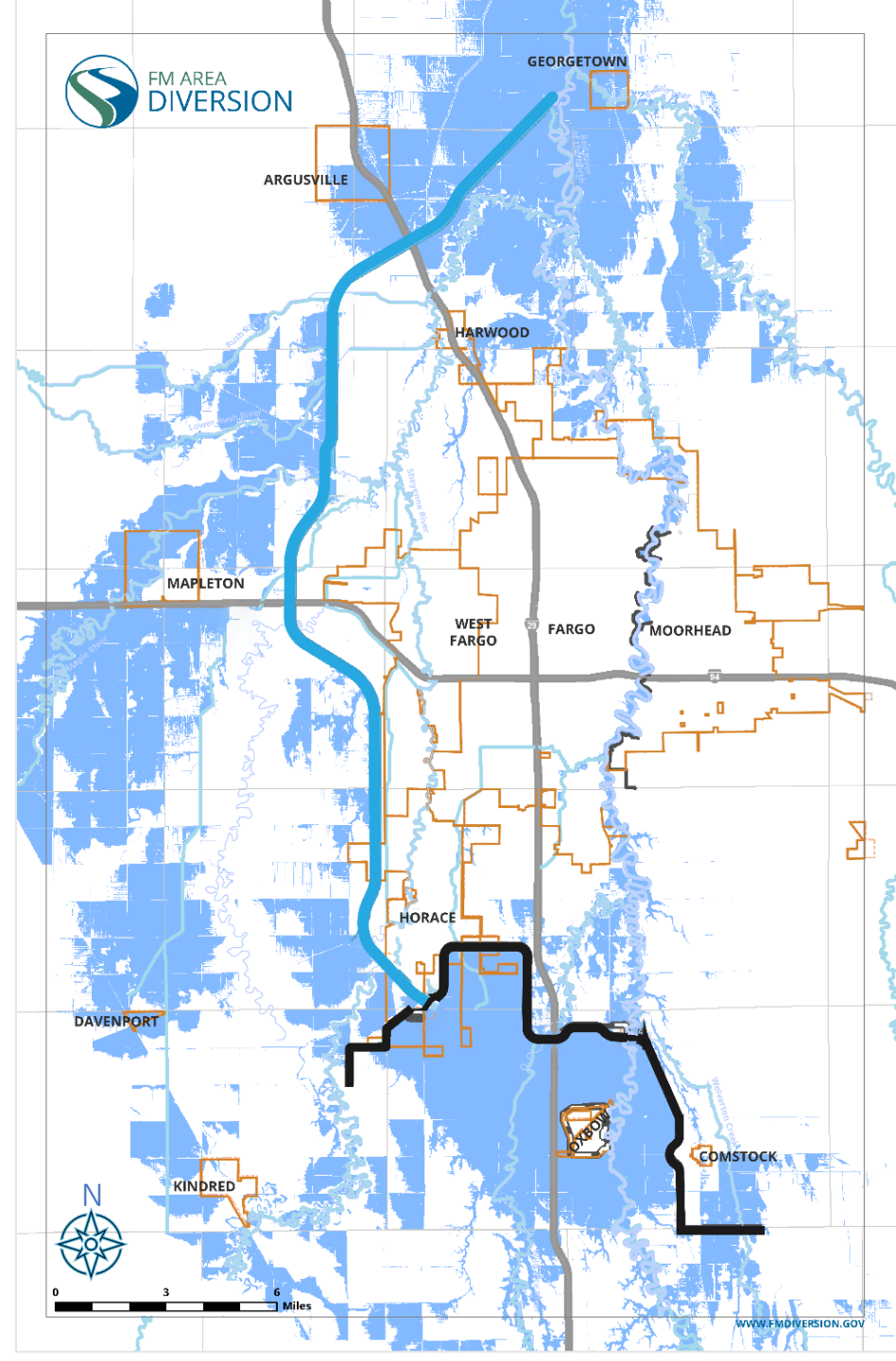


100-Year Floodplain

Existing Conditions



With Project



Project Flyover



Construction Progress

New Features Under Construction

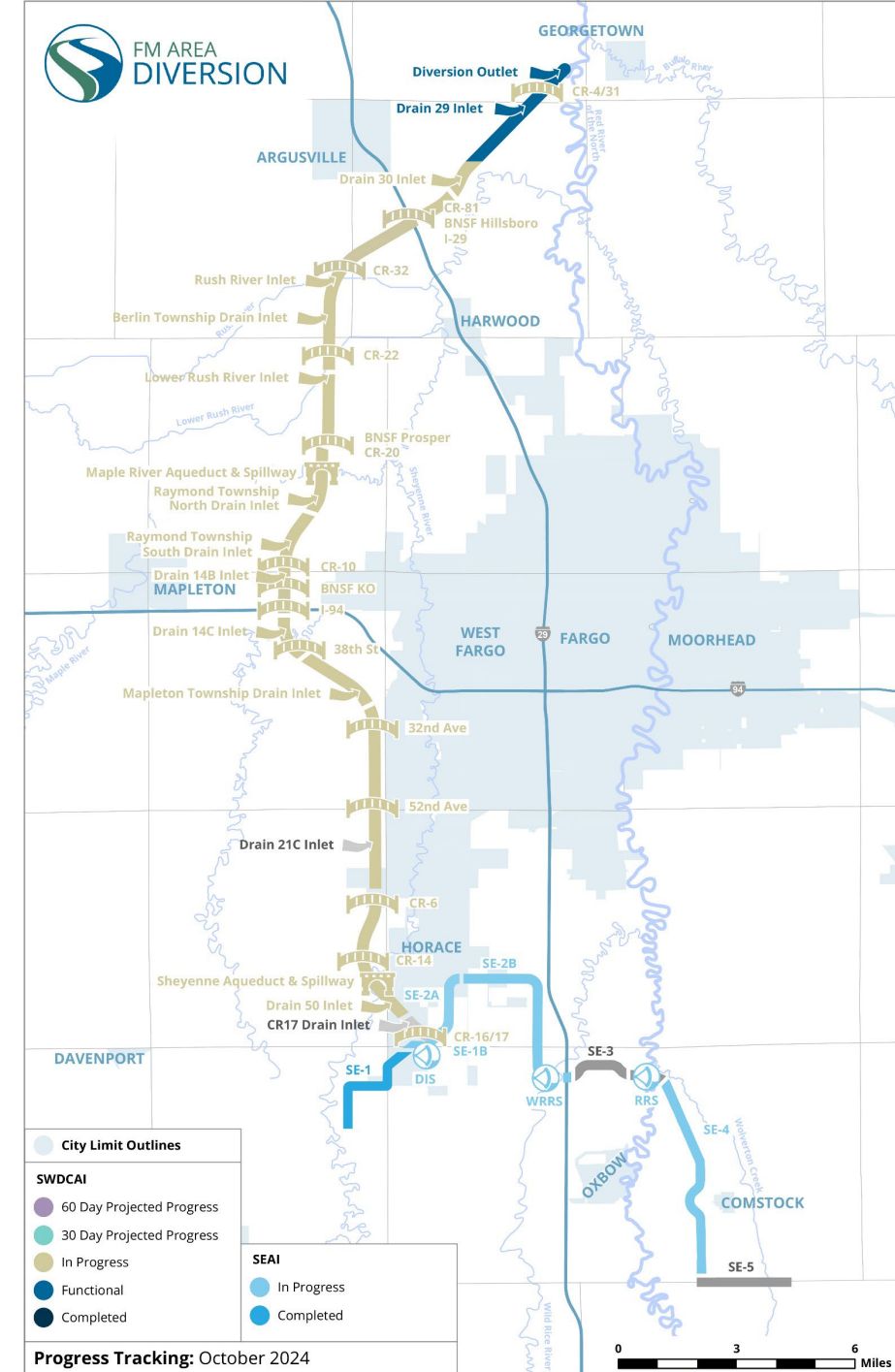
- Drain 50 Inlet
- Southern Embankment Reach 4

30- to 60-Day Outlook

- CR-4/31 (Open to Traffic / Functional)
- Drain 30 Inlet (Functional)
- Reach 1 & 2 (Functional)
- CR-32 (Open to Traffic / Functional)

Misc. Highlights

- Channel Reaches 1, 2, & 3 (portions undergoing permanent seeding; tree plantings getting underway; maintenance road graveling underway)
- Bridge deck placements
 - I-29 southbound
 - County Road 10
 - 38th St. W.
- I-94 (setting bridge girders)





Stormwater Diversion Channel & Associated Infrastructure (SWDCAI)



Components

30-Mile Diversion Channel

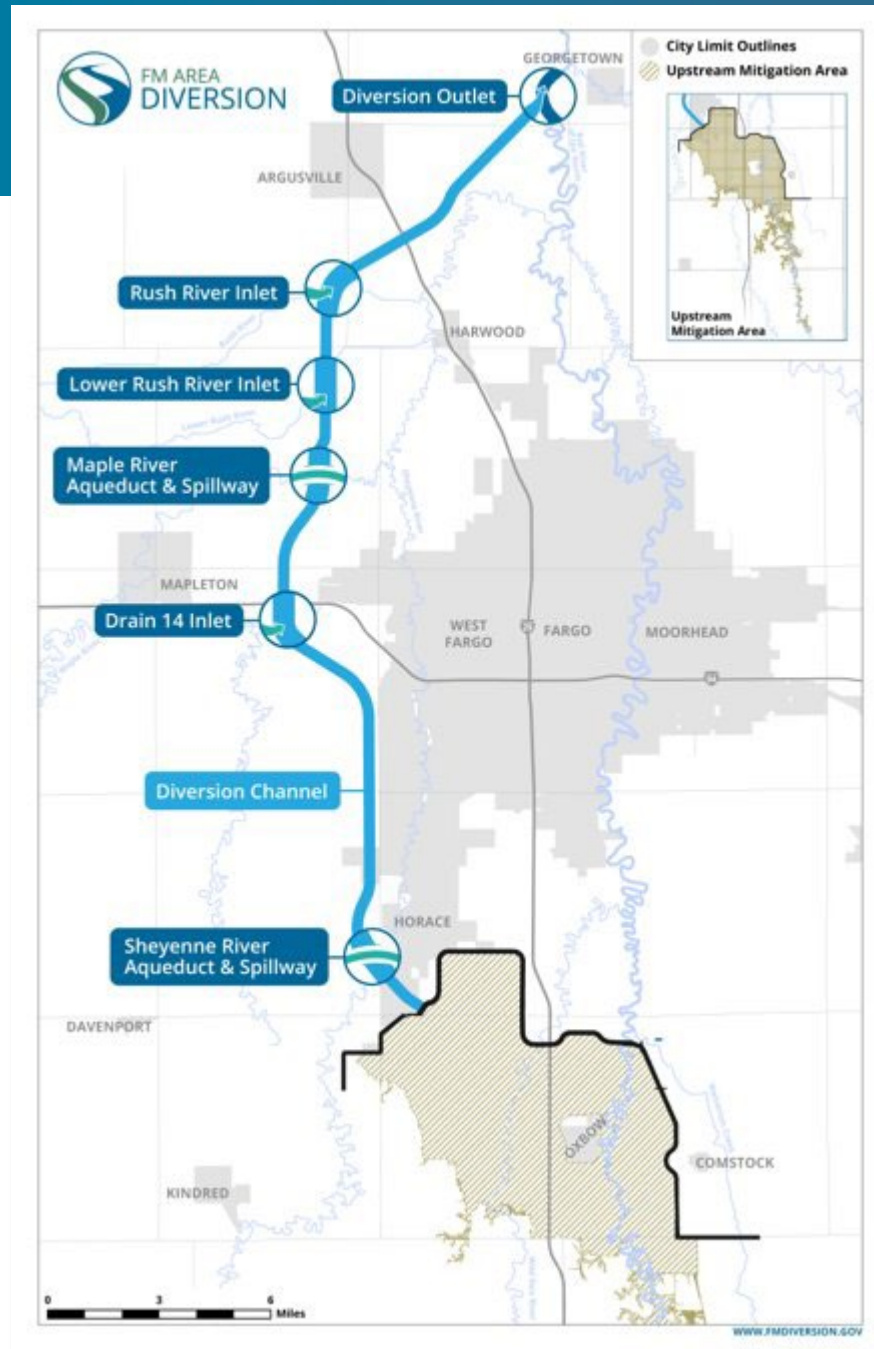
3 Structures

- Diversion Outlet
- Maple River Aqueduct
- Sheyenne River Aqueduct

14 Drainage Inlets

Transportation Features

- 3 Railroad Crossings
- 4 Interstate Crossings
- 12 County Road Crossings



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Stormwater Diversion Channel



Construction Overview

Builder: ASN Constructors
(P3)

Start Date: August 2022

Scheduled Completion:
Early 2027

Component Details

Length: 30 miles

Excavation Totals: 45 million
cubic yards

Utility Relocations:
coordinating with 18
companies



Stormwater Diversion Channel

Toe Drains

Low Flow Channel

Levee

Main Channel

Excavated Material Berm

Channel Construction Phases



Excavating



Maintenance Roads



Planting Trees



Seeding Native Grasses

Maple River Aqueduct



Construction Overview

Builder: ASN Constructors (P3)

Start Date: June 2023

Scheduled Completion: Q4 2025

Component Details

Length: 250 feet

Width: 50 feet

Concrete: 10,000 cubic yards

Piling: 48,194 linear feet of H pile

June 2024



Sheyenne River Aqueduct



Construction Overview

Builder: ASN Constructors (P3)

Start Date: 2024

Scheduled Completion: early 2027

Component Details

Length: 250 feet

Width: 35 feet

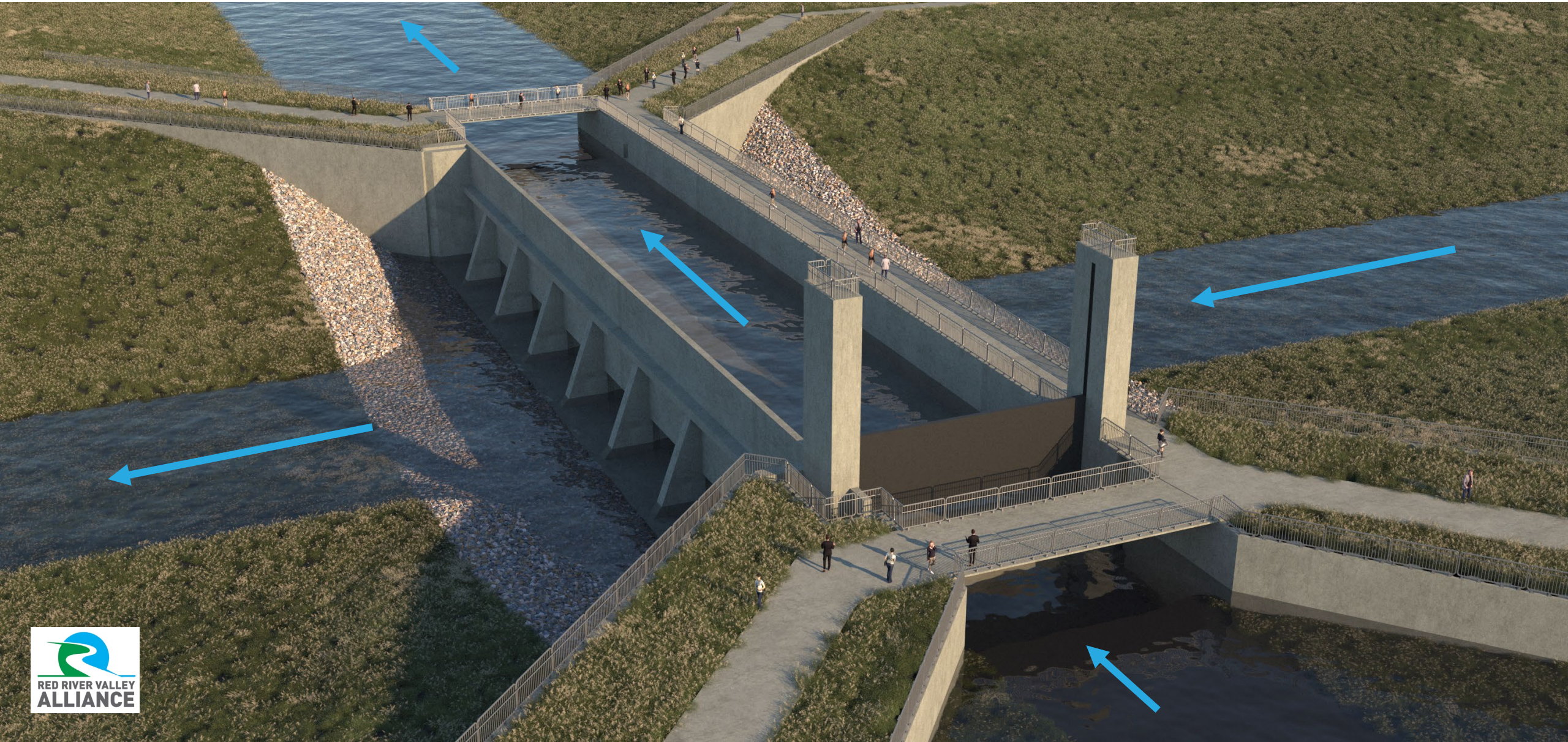
Concrete Used: 8,000 cubic yards

Piling: 9,642 linear feet of sheet pile

May 2024

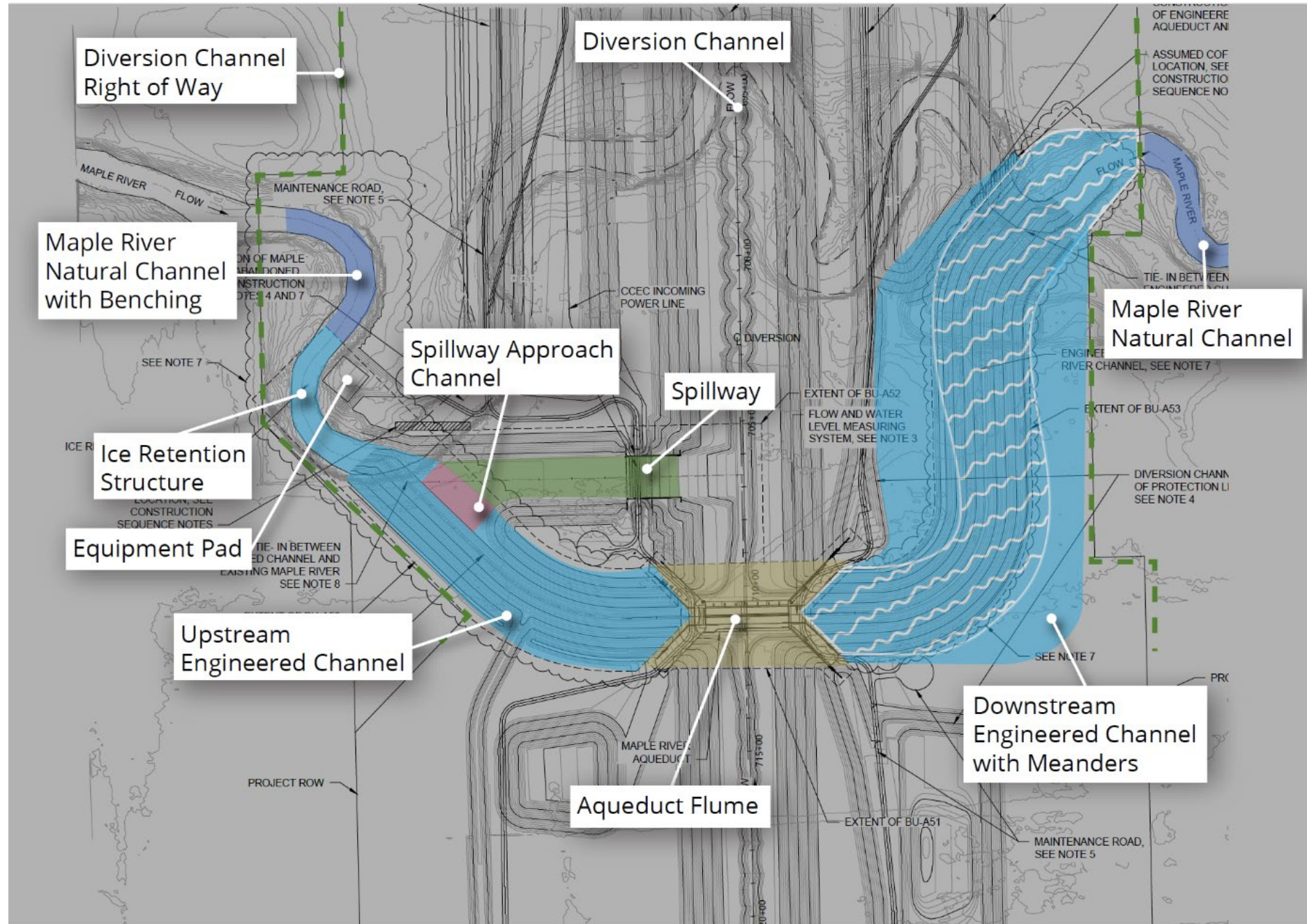


Aqueduct Design



Maple River Aqueduct

- **Conceptual Design**



Diversion Outlet



Construction Overview

Builder: ASN Constructors (P3)

Start Date: 2023

Completion Date: 2024

Component Details

Length: 1,500 feet

Width: 300 feet

Riprap: 24,000 cubic yards

Boulders: 450+ placed as rock weir to promote fish passage

November 2023



County & Local Road Crossings



County Road - Deck Pour



County Road - Deck Forming



County Road - Girders



County Road - Substructures



County Road - Piling



County Road - Preload

Drains & Inlets



Drain 14B



Drain 14C



Drain 29



Drain 30



Lower Rush Inlet



Southern Embankment & Associated Infrastructure (SEAI)



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Components

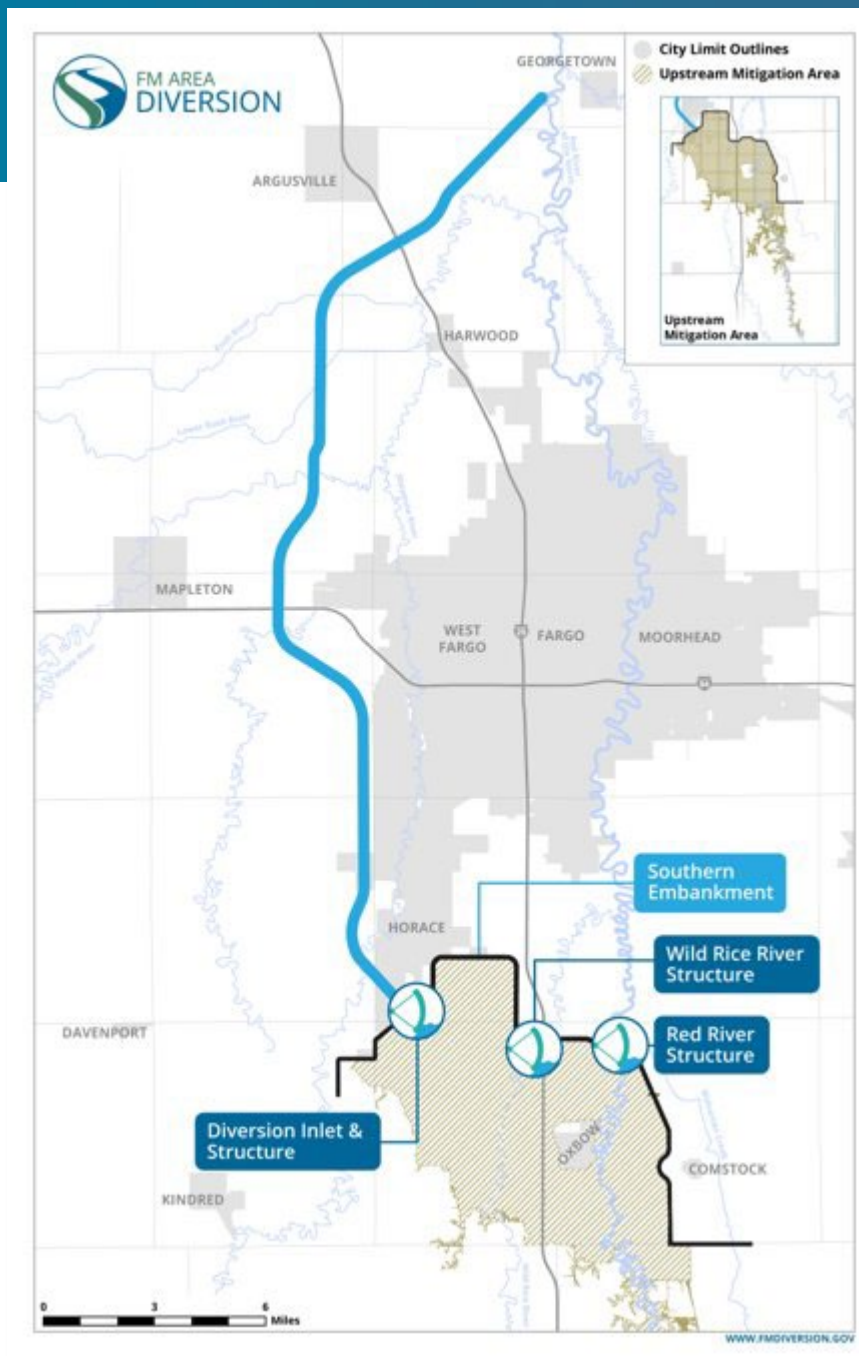
22 Miles of Earthen Embankment

3 Control Structures

- Diversion Inlet Structure
- Wild Rice River Structure
- Red River Structure

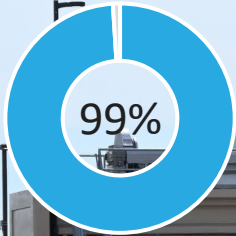
Transportation Features

- I-29 crossing bridge
- County and township crossings
- 4-mile grade raise on I-29



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Diversion Inlet Structure



Construction Overview

Builder: Ames Construction
(USACE contractor)

Start Date: 2017

Scheduled Completion:
2025

Component Details

Excavation: 264,000 cubic yards

Steel Piling: 55,400 linear feet

Concrete: 11,700 cubic yards

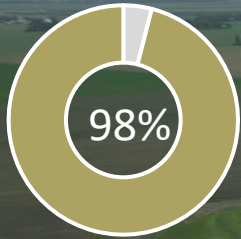
Riprap: 20,000 cubic yards

Gates: 50 feet wide by 26 feet tall

August 2023



Wild Rice River Structure



Construction Overview

Builder: Ames Construction
(USACE contractor)

Start Date: 2020

Scheduled Completion:
2025

Component Details

Excavation: 420,000 cubic yards

Steel Piling: 70,200 linear feet

Concrete: 13,000 cubic yards

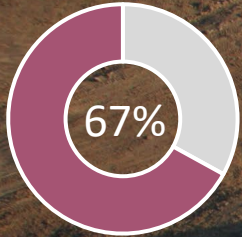
Riprap: 14,500 cubic yards

Gates: 40-by-40 feet

June 2023



Red River Structure



October 2024



Construction Overview

Builder: Ames Construction
(USACE contractor)

Start Date: 2022

Scheduled Completion:
March 2026

Component Details

Excavation: 1.8 million cubic yards

Steel Piling: 87,000 linear feet

Concrete: 72,000 cubic yards

Riprap: 26,200 cubic yards

Gates: 50 feet wide by 52.5 feet tall

Southern Embankment



Reach 1A – 100% Completed



Reach 1B – 23% Completed



Reach 2A – 70% Completed



Reach 2B – 20% Completed

Up Next

Reach 3 – Starting in 2025

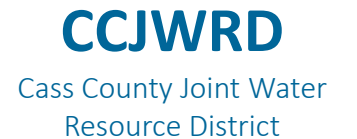
Reach 4 – Contractor Selected
May 2024

Reach 5 – Starting in 2025





Local Entity Flood Protection & Associated Infrastructure (LFPAI)



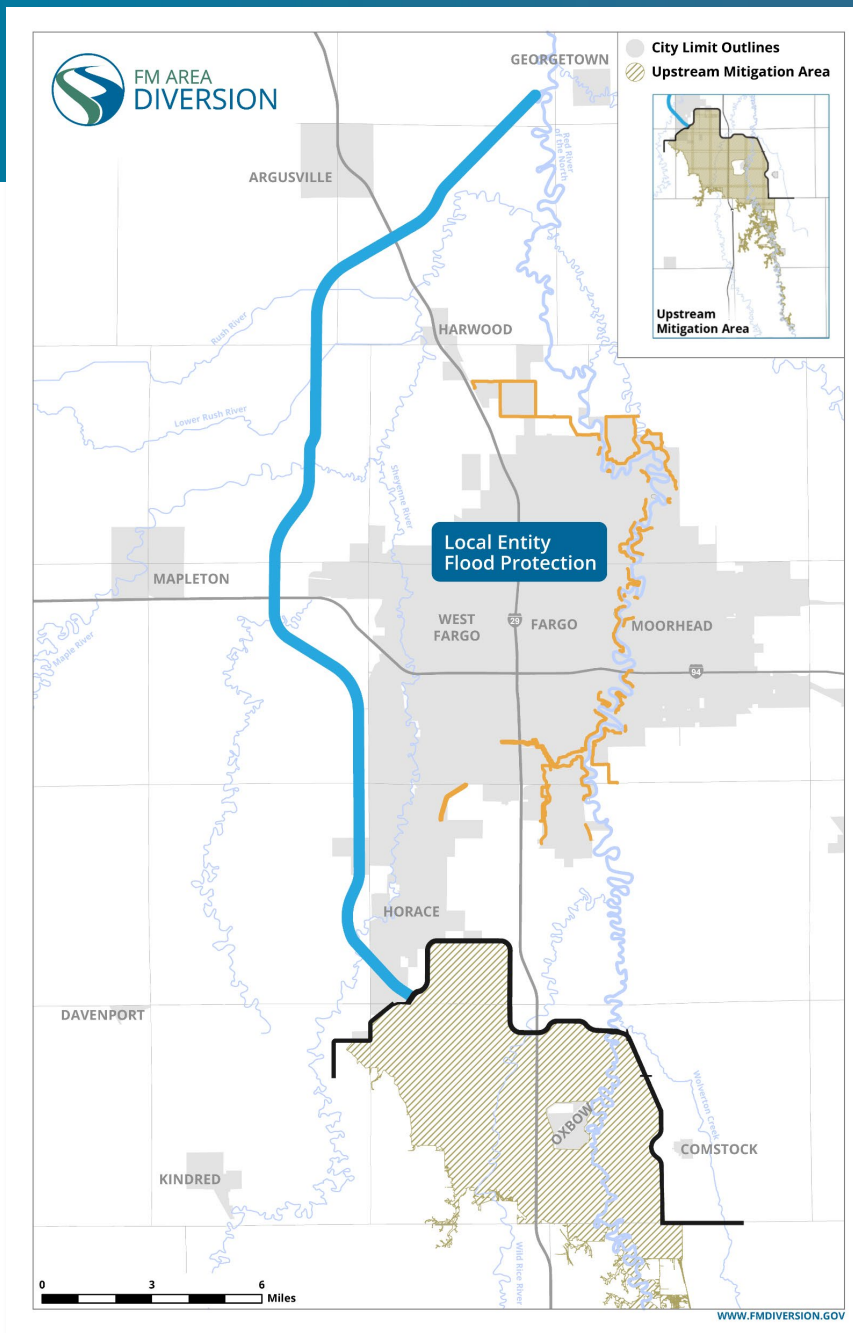
Components

Levees & floodwalls

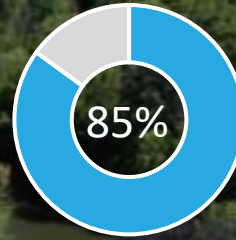
Stormwater lift stations

County & township road improvements and grade raises

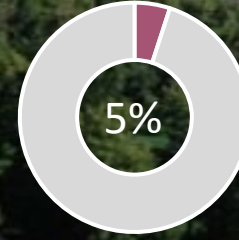
Goal: safely pass as much as 37 feet of water through town during a 100-year flood without the need for emergency measures



In-Town Flood Protection



Fargo



Cass County



Construction Overview

Projects began in 2009 to allow for up to 37 feet of floodwater to flow safely through town

Project Details

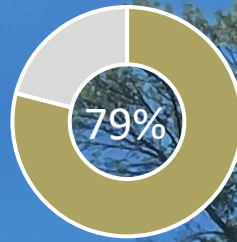
18 stormwater lift stations

259 property acquisitions

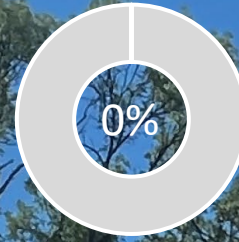
4.4 miles county road improvements/
grade raises

26.2 miles of levees/floodwalls

In-Town Flood Protection



Moorhead



Clay County



Construction Overview

Projects began in 2009 to allow for up to 37 feet of floodwater to flow safely through town

Project Details

19 storm structure modifications

276 property acquisitions

4 miles road improvements/grade raises

12.7 miles of levees/floodwalls



Mitigation Features & Associated Infrastructure (MFAI)



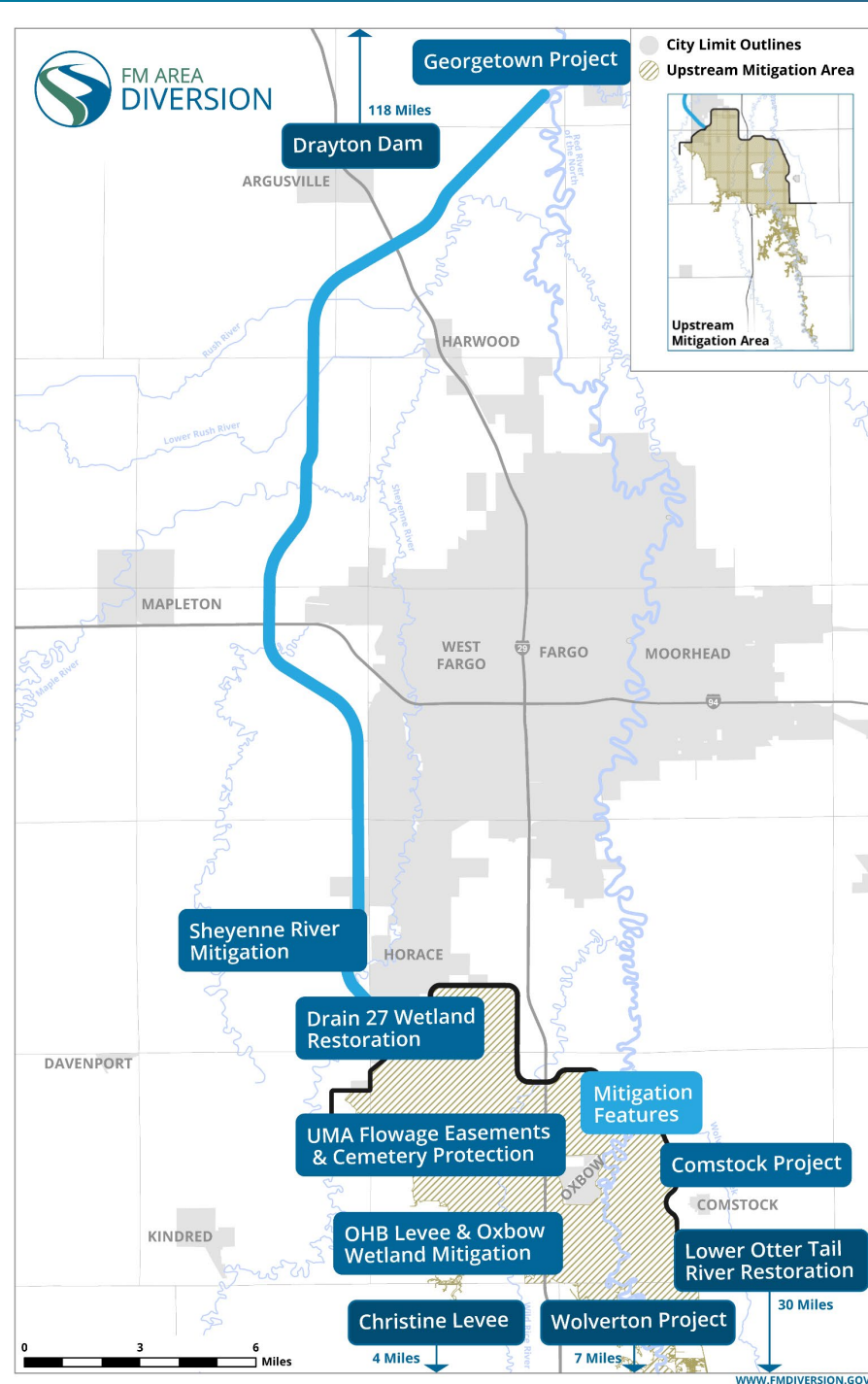
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Components

- Cemetery mitigation*
- Christine Levee*
- Comstock Project*
- Drain 27 Wetland Mitigation
- Drayton Dam
- Flowage easements*
- Georgetown Project*
- Lower Otter Tail River Restoration Project
- OHB Levee
- Oxbow Wetland Mitigation
- Sheyenne River Mitigation
- Wolverton Project*



* Projects being completed by MFDA and member entities; other projects being completed by USACE

Oxbow Wetland Mitigation



Project Overview

Contractor: Industrial Builders Inc.

Start Date: Fall 2020

Completed: Spring 2023

Component Details

Size: 10.6 wetland acres with 8.2 acres of 50-foot upland buffers

Growth: 63.1 acres of seedlings planted

Drayton Dam Mitigation



Project Overview

Contractor: HSG Park Joint Venture (USACE Contractor)

Start Date: May 2022

Scheduled Completion: Fall 2023

Location: 120 miles north of Fargo-Moorhead

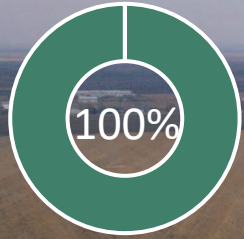
Component Details

- Constructing a rock rapids fishway structure
- Offsets project impacts to biotic connectivity on the Red River

August 2023



Drain 27 Mitigation



Project Overview

Contractor: HSG Park Joint Venture (USACE contractor)

Start Date: Spring 2022

Completed: Fall 2022

Component Details

Size: 320 acres of wetland

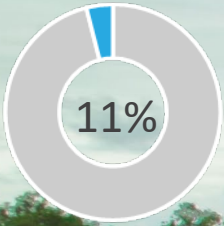
Excavation: 436,000 cubic yards

Native Plant Seeding: 485 acres

April 2023



OHB Ring Levee



Project Overview

Contractor: Hendrickson Transportation (USACE contractor)

Start Date: Spring 2024

Completion: August 2025

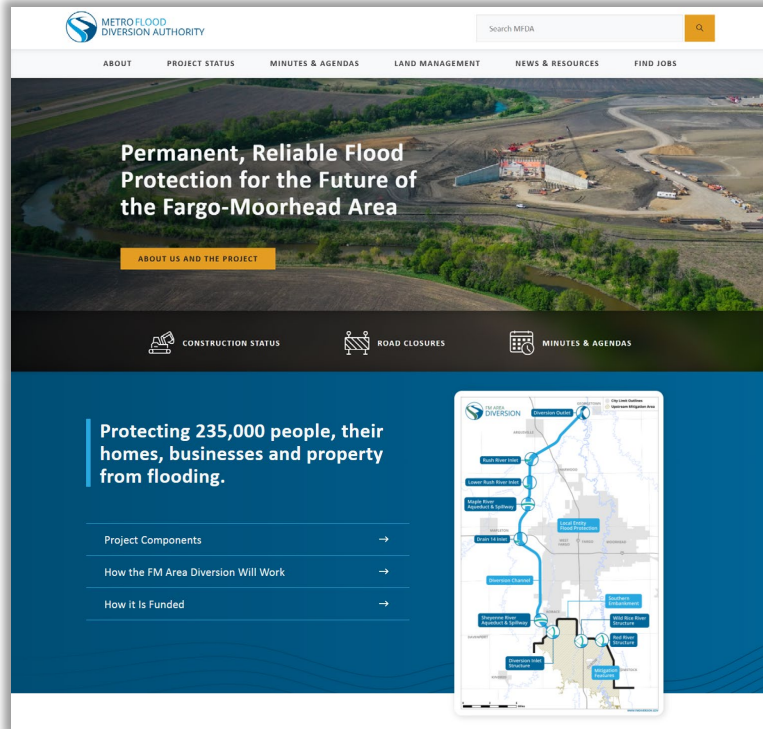
Component Details

Excavation: 11,500 cubic yards

June 2024



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