METROCOG

West Metro Perimeter Highway Study

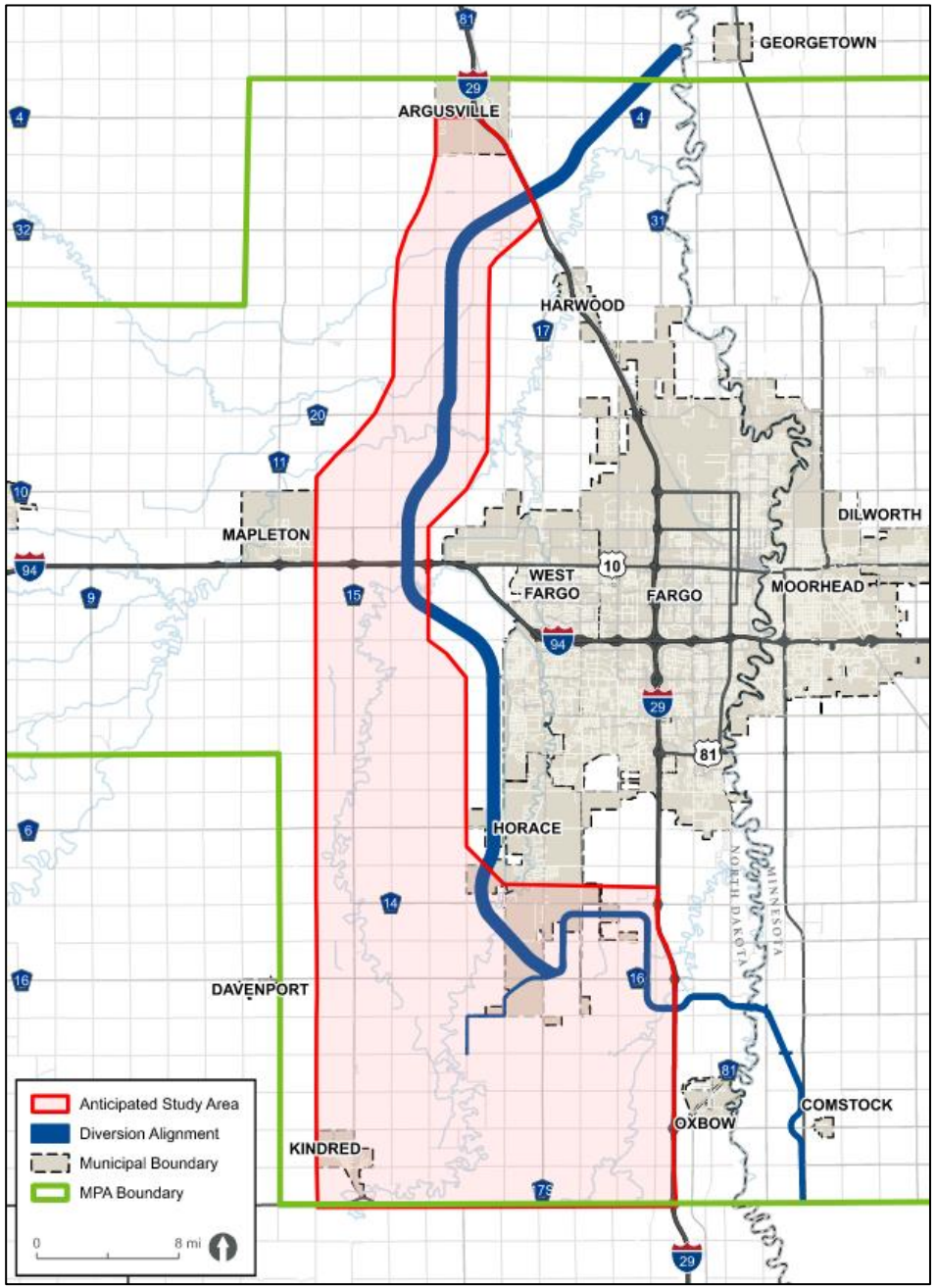
EXISTING & PLANNED CONDITIONS MEMO

Introduction

This memo summarizes the data collection efforts for existing and planned conditions for the West Metro Perimeter Highway study area, shown in Figure 1. Data was collected from MetroCOG, Cass County, West Fargo, Harwood, Horace, the FM Diversion Authority, and other publicly available sources. The Table of Contents below lists sections that are covered in this memo.

Contents

Figure 1. West Metro Perimeter Highway Study Area



Literature Review

A literature review of previous studies and plans surrounding the study area was completed, and included:

- 2023 FM-Area Interstate Operations Study (FM IOS)
- 2045 Fargo-Moorhead Metropolitan Transportation Plan (MTP)
- Fargo-Moorhead Greenway Recreation Master Plan
- 2022 Fargo-Moorhead Metro Bicycle & Pedestrian Plan
- West Fargo 2.0
- Northwest Metro Transportation Plan

The goals, issues, and recommendations of these plans were considered in how they may impact the study area and a potential corridor. The review found the potential project may impact the recommendations of existing plans and studies. Elements of each of the plans are described in the following sections.

2023 FM-Area Interstate Operations Study

The FM IOS study developed an implementation plan for NDDOT and MnDOT following four guidelines:

- Combining System Preservation and Expansion Projects
- Considering Operational and Safety Needs
- Limiting Disruptions to the Traveling Public
- Incorporating Input from Stakeholders

As part of the recommendations, the team developed draft perimeter road alignments and planning level costs in all quadrants of the metro area, shown in Figure 2, the green lines represent the general location of the proposed alignments. Follow-up studies will be needed to help determine the most viable alignment alternative. Green hatched areas represent locations where the perimeter roads may need to purchase right-of-way, utilize existing roadway alignments, or a combination of both.

The study team developed preliminary future year traffic forecasts along the perimeter roads assuming the MTP future land use and full build out land use.

Figure 2. Perimeter Road Alignments

2045 Fargo-Moorhead Metropolitan Transportation Plan

The Fargo-Moorhead MTP is a performance-based plan that identifies existing transportation issues and future system needs. Factors that may affect the highway study includes anticipated population growth in the area, with 42% population growth from 2015 to 2045 and a 44% increase in employment growth. The MTP included a project similar to the West Metro Perimeter highway as an element of the vision (not fiscally-constrained) project list. Additionally, within the MTP is a Congestion Management Plan that outlines strategies to handle future congestion. These strategies include new infrastructure and Transportation System Management Operations (TSMO) strategies.

New Infrastructure:

- Technology and system management approaches in mature urban corridors
- New roadway connections in growth areas
- New trail and on-street bike route connections
- Support for continued transit operations

Transportation System Management and Operations

- System performance monitoring
- Managing recurring issues
- Managing non-recurring issues

Currently, MetroCOG is developing their 2050 MTP which includes existing and future travel demand model updates. These updates will be incorporated into the West Metro Perimeter Highway study.

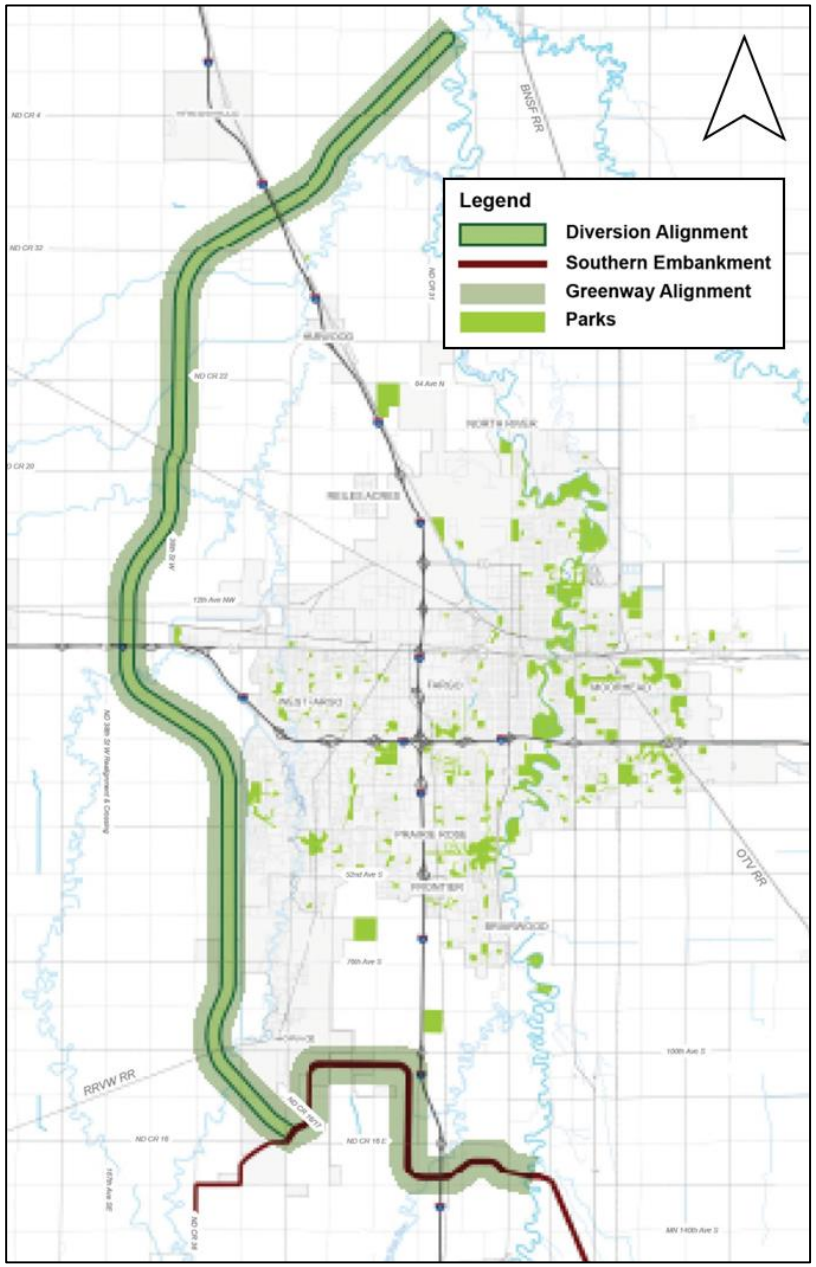
Fargo-Moorhead Greenway Recreation Master Plan

This plan outlines a proposed 30-mile greenway that parallels the Fargo-Moorhead Area flood diversion, as shown in Figure 3. Many additional planned bikeways intersect the proposed greenway. The following assumptions were also included in the planning efforts of the greenway:

- Land use type and density
- Adequate right-of-way for the appropriate facilities was assumed.
- The roadway typology and recommended bicycle facility follow the National Association of City Transportation Officials (NACTO) guidance for all ages and abilities.

This study plans to incorporate findings from the greenway master plan so that perimeter road alternatives do not inhibit future greenway projects.

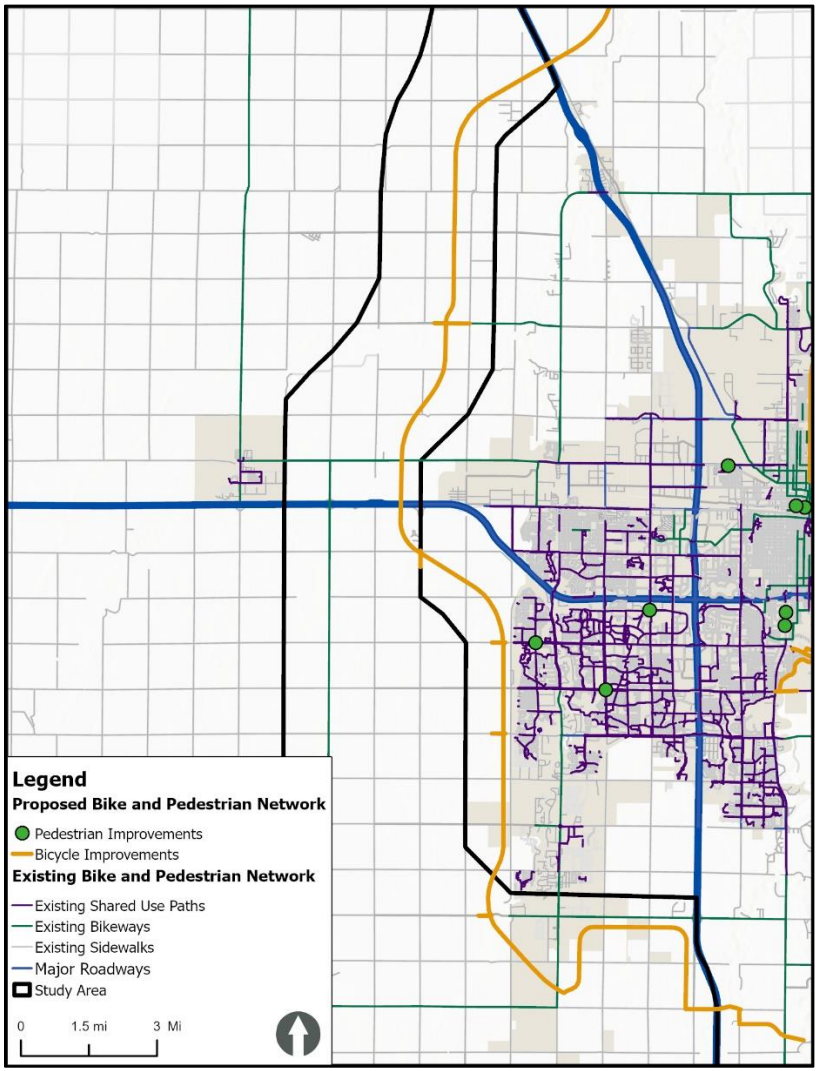
Figure 3. Proposed Greenway



Fargo-Moorhead Bicycle and Pedestrian Plan

As shown in Figure 4, a proposed bikeway (along the FM Diversion) may be within close proximity to the West Metro Perimeter Highway. In addition, some existing bikeways may intersect with the perimeter highway. The study team will work with Metro COG to investigate safe crossings and minimize interference between the potential bikeways and perimeter highway.

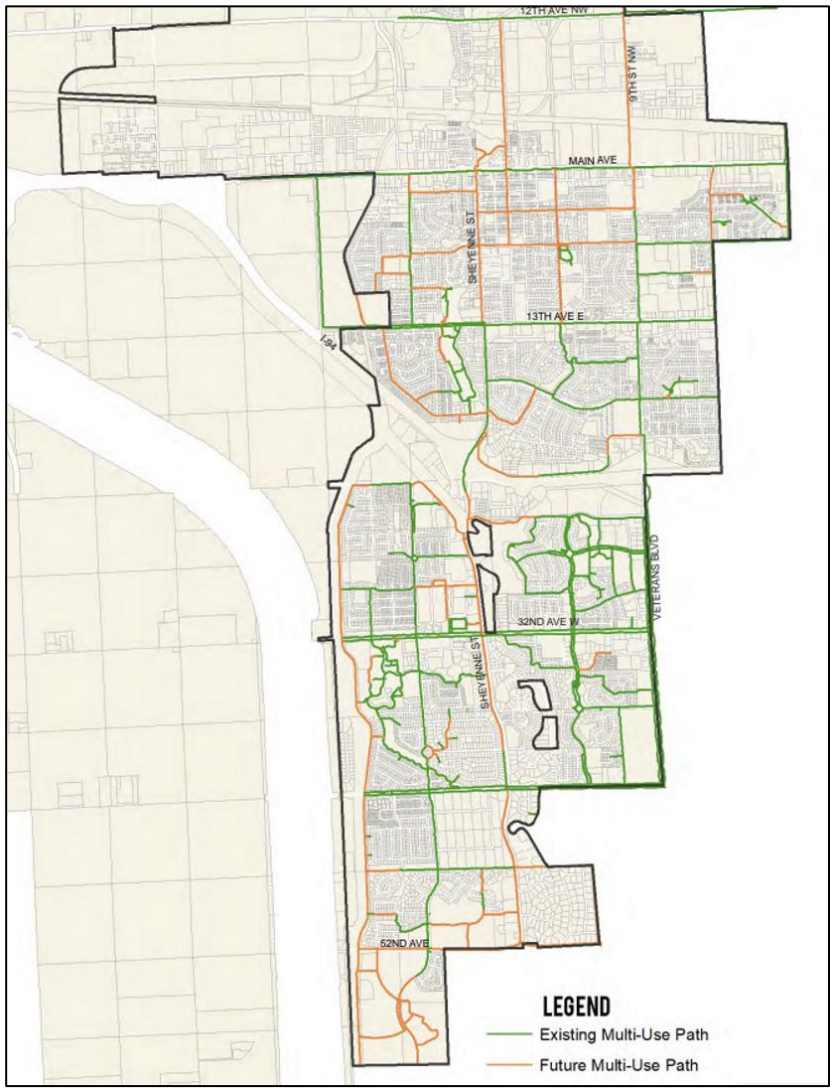
Figure 4. Fargo-Moorhead Bicycle and Pedestrian Plan



West Fargo 2.0

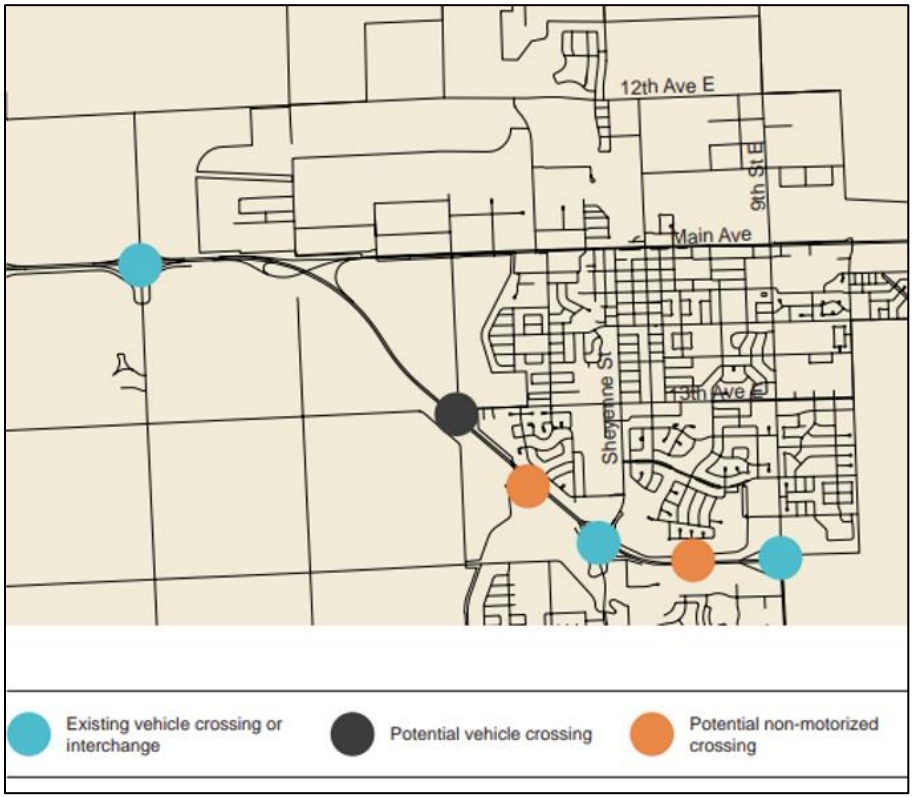
The West Fargo Comprehensive Plan update aims to improve accessibility and mobility of the community to people traveling by all modes. Multi-use paths in addition to the recommended bikeways of the Bicycle and Pedestrian Plan are included and shown in Figure 5.

Figure 5. West Fargo Existing / Future Multi-Use Paths



Additionally, crossing locations for non-motorized and motorized vehicles were identified, and located on the edges of the West Metro Perimeter Study as shown in Figure 6. These locations have since been modified in the NW Metro Transportation Plan.

Figure 6. Existing and Future Potential I-94 Crossings



Northwest Metro Transportation Plan

The NW Metro Transportation Plan outlines a Northwest Connectivity route. This route would connect I-29 to I-94 around the northwest study area and was determined to be a high priority to several key stakeholders. Shown in Figure 7, the NW Metro Transportation plan identified key improvements to the I-94 and Main Avenue Interchange to provide more direct access from I-94 to future growth areas in West Fargo north of I-94.

Figure 7. Improvement Alternative for I-94 and Main Avenue Interchange

Currently, West Fargo is continuing development of interchange concepts at this location. This interchange, along with West Fargo's NW Metro Transportation Plan internal network and growth assumptions, will be considered during future forecast development for the perimeter road alignments.

FM Diversion Considerations

The FM Area Diversion Project consists of a 30-mile diversion channel, 22 miles of earthen embankments, 2 aqueducts and associated infrastructure. The project is scheduled to be completed in 2027. As shown in Figure 9, bridge crossings of the diversion channel are planned to be constructed approximately every 2-miles. Upon the completion of the diversion project, land purchased for the diversion, tentatively shown in Figure 8, may be available for purchase to acquire right-of-way for the West Metro Perimeter Highway. The 100-year flood plain will also be taken into consideration during the development of the alignment alternatives.

Figure 8. FM Diversion Asset Lands

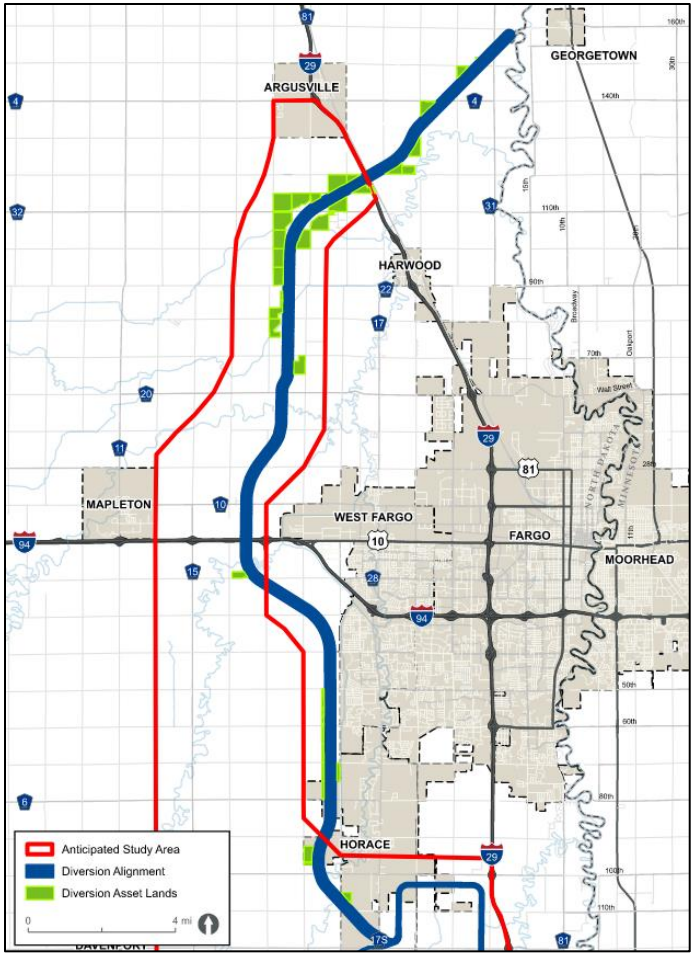
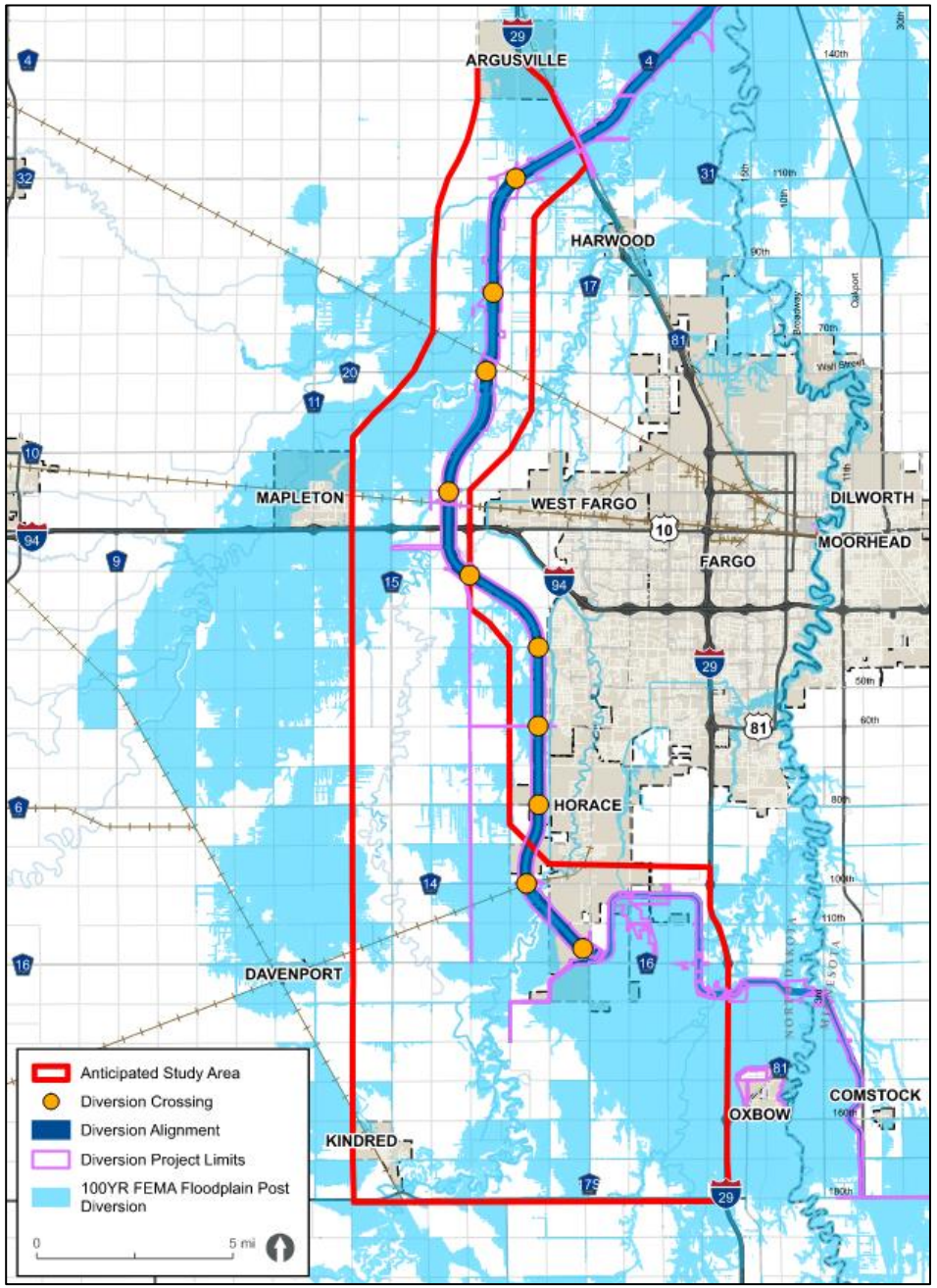


Figure 9. FM Diversion Considerations



Land Use Considerations

A comparison of the Existing, 2050 Metropolitan Transportation Plan Land Use, and the Full Build out Land Use developed during the Interstate Operations Study is shown in Figure 10 and Figure 11.

Existing (2021)

Existing land use within the study area is generally rural with abutting up to communities on the outskirts of the metro area including: Argusville, Harwood, Mapleton, and Horace.

Metropolitan Transportation Plan (2050)

The MTP land use for the 2050 MTP provides future re-allocation of development patterns due to lands previously in the floodplain that will no longer be in the floodplain once the Diversion is complete and operational. The 2050 MTP land use will establish a baseline of future daily volumes on the potential perimeter road alignments.

Full Build Out

During the Interstate Operations Study, MetroCOG developed a socioeconomic dataset that assumed a fully built out metro area in areas that are developable. MetroCOG developed this dataset for the entire metro area, but this project will focus on full build out potential on the North Dakota side (specifically development areas west of I-29)

Figure 10. Total Household Comparison

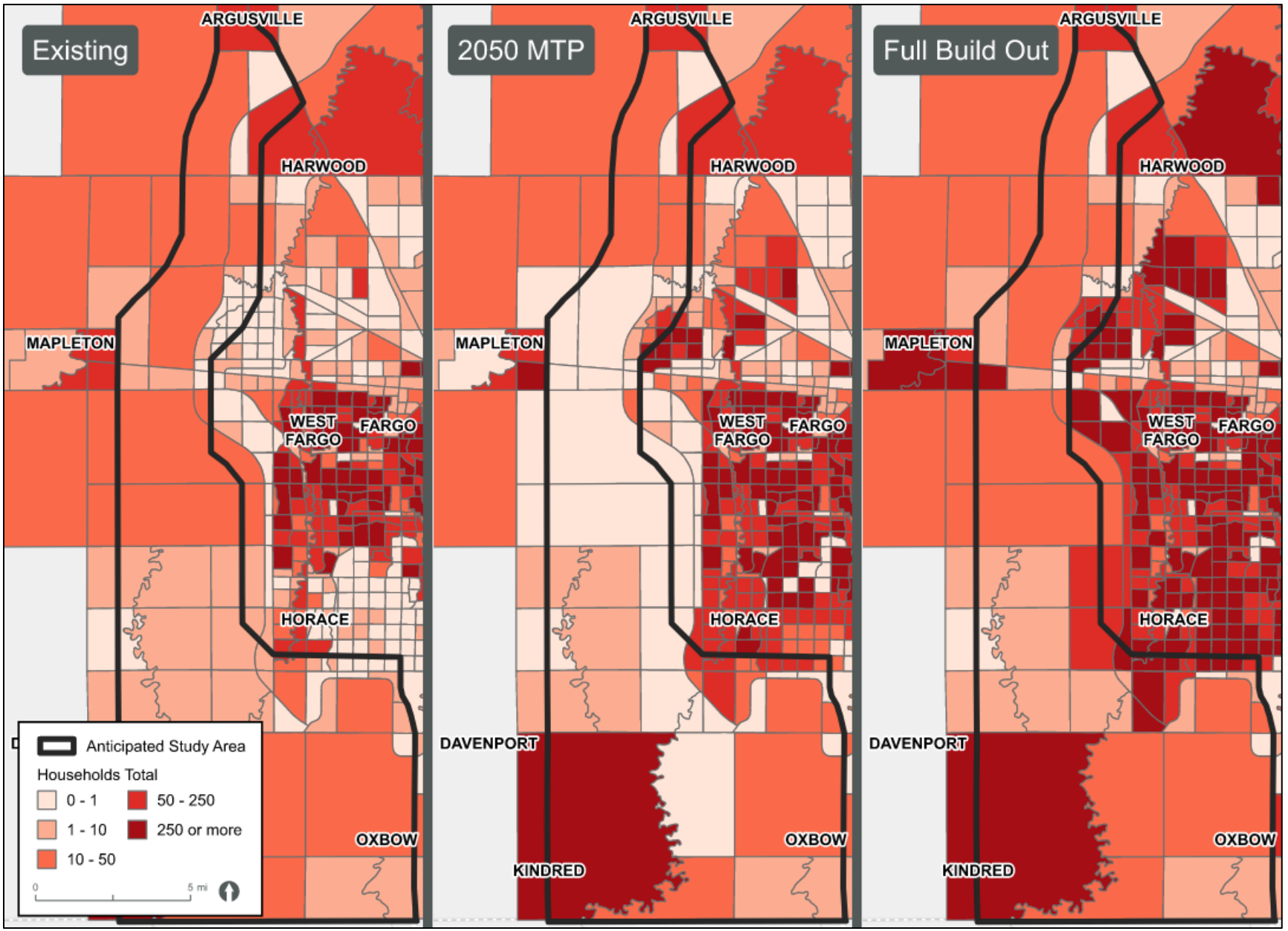
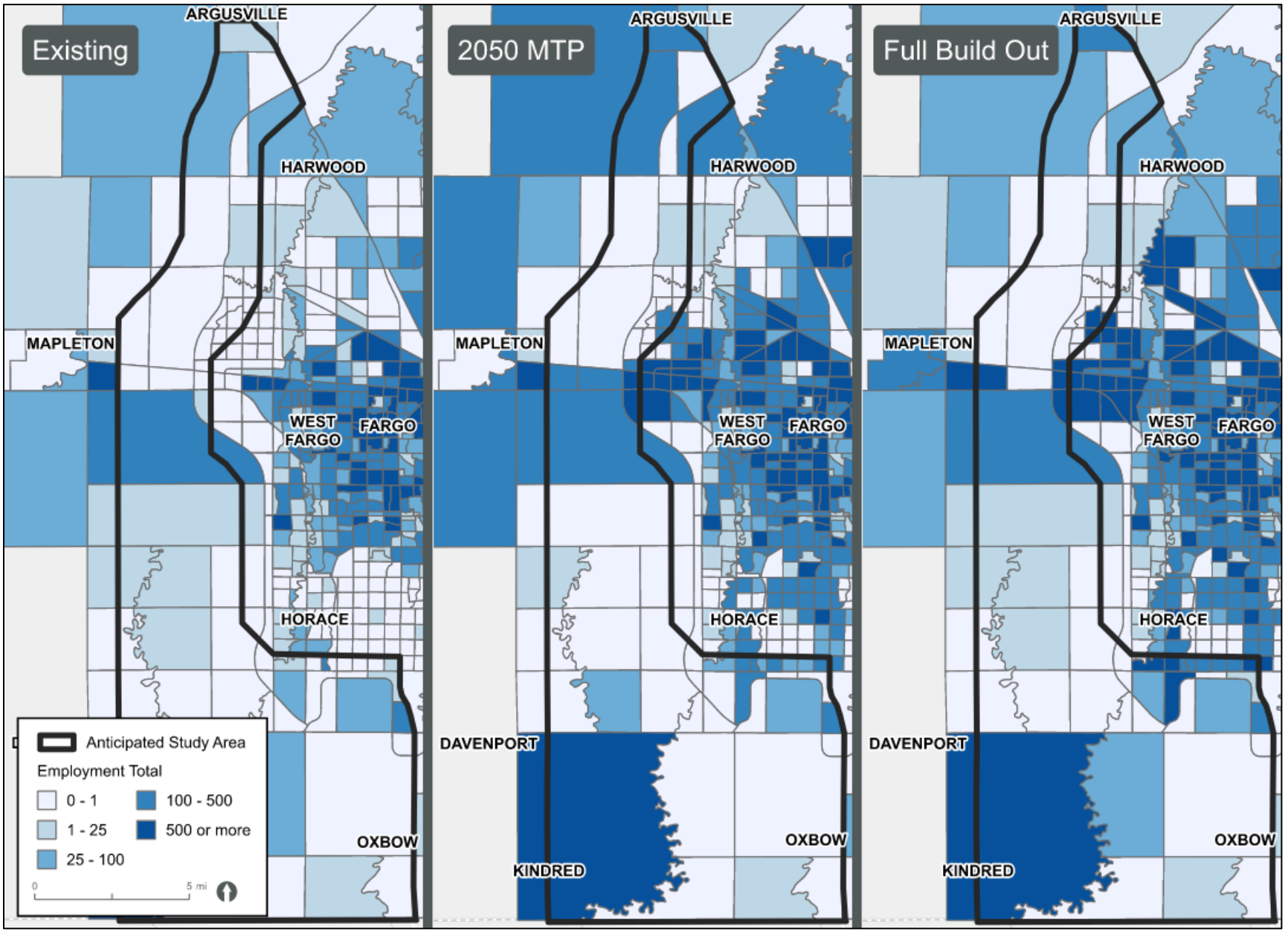


Figure 11. Total Employment Comparison

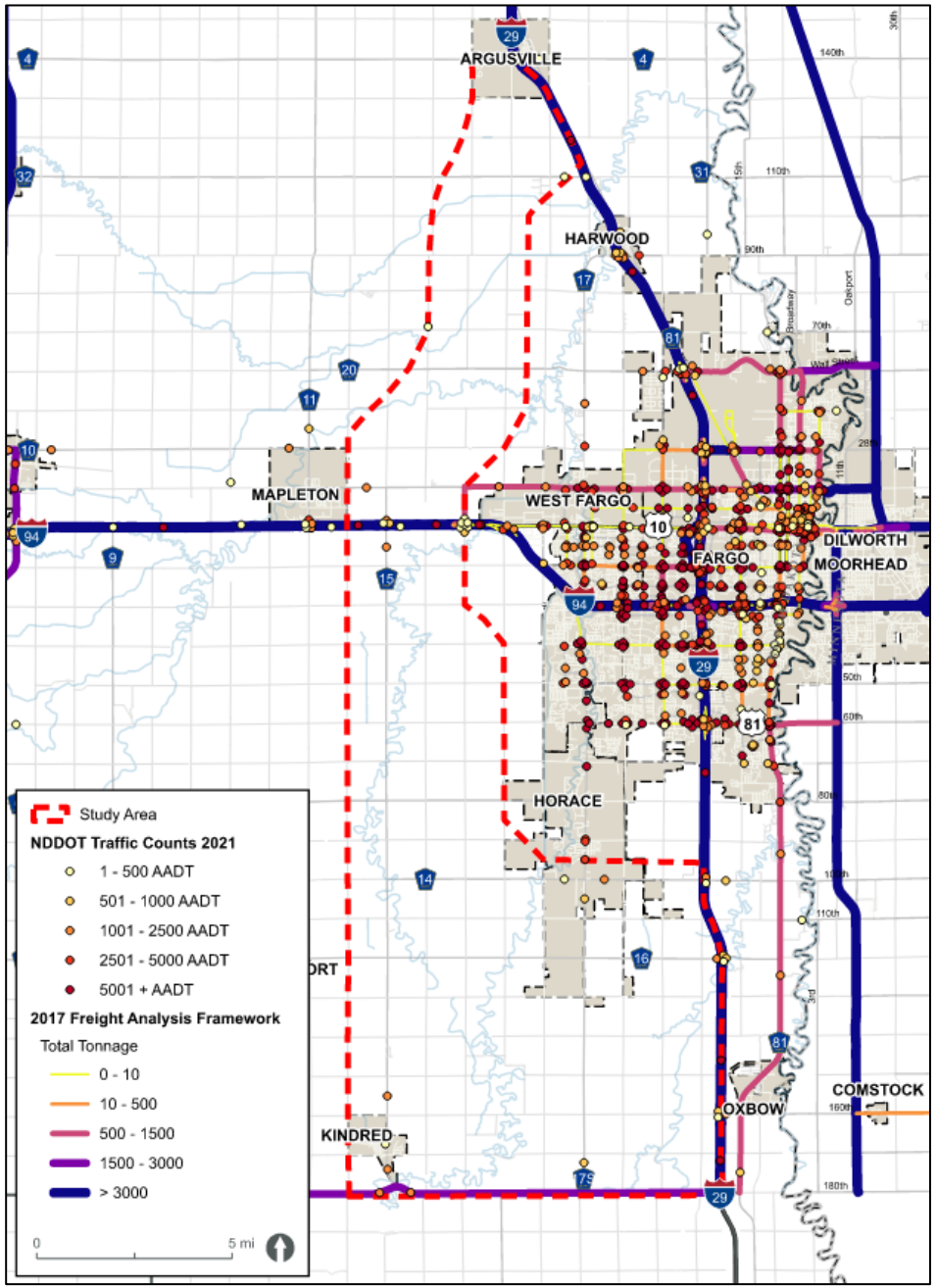


Daily Traffic Volumes

Existing Annual Average Daily Traffic (AADT) and Truck Counts

Due to the existing rural nature of the study area, shown previously in Figure 1, limited traffic volumes exist on the county roads (paved or gravel). Study area daily traffic (2021) and tonnage (2017) are shown in Figure 12. Note that this study will focus on future daily traffic forecasts due to the historical and anticipated growth in the western portion of the metro area.

Figure 12. Existing AADT Data



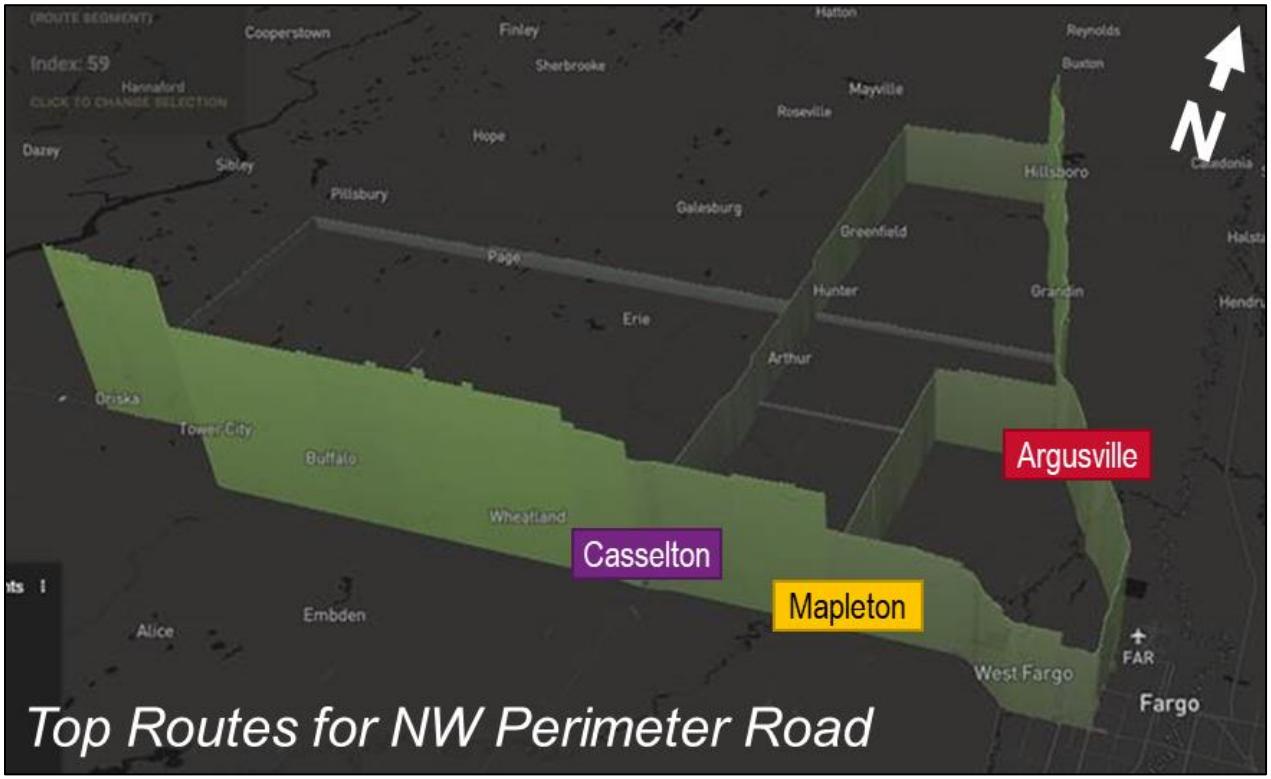
Future Model Forecasts

A separate memo will discuss and depict future model forecasts, which are being developed based on recent travel demand model updates.

Streetlight Data

Daily origin and destination regional volumes were developed during the Interstate Operations Study for all vehicles and trucks utilizing I-94 and I-29. This analysis utilized Streetlight Data that provides estimates of existing travel patterns. Note that some county roads in the northwest quadrant of the metro area currently carry some regional traffic that wishes to "cut the corner" between I-94 and I-29. Routes utilized for trips between Traill County to the north, and Barnes County to the west are shown in Figure 13**.**

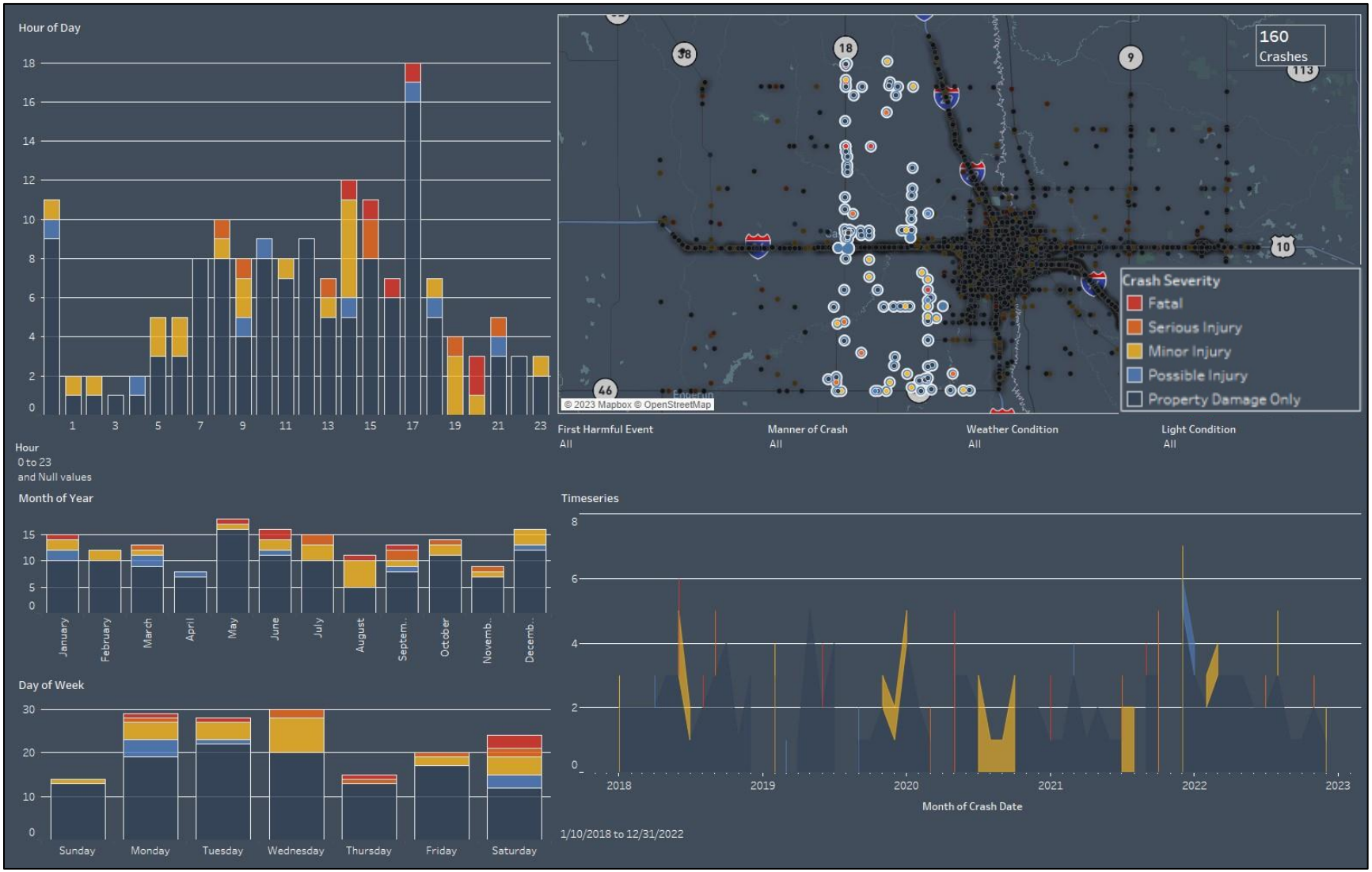
Figure 13. Streetlight Top Routes for NW Quadrant



Safety Considerations

Between January of 2018 and December of 2022, 160 crashes occurred within or near the study area (excluding I-94 and I-29), shown in Figure 14. Although there have been a small number of crashes, a significant proportion of crashes have caused an injury or fatality.

Figure 14. 2018-2022 Study Area Crashes



Relevant Study Area Features

Roadways

The following paved county roads exist in or near the study area shown in Figure 1. As shown previously, some of these routes currently serve some regional trips between I-94 and I-29 thru Mapleton and Casselton. All Cass County roads are two lanes.

- County Road 15
- County Road 11
- County Road 4
- County Road 16
- County Road 17
- County Road 22
- County Road 10
- County Road 20

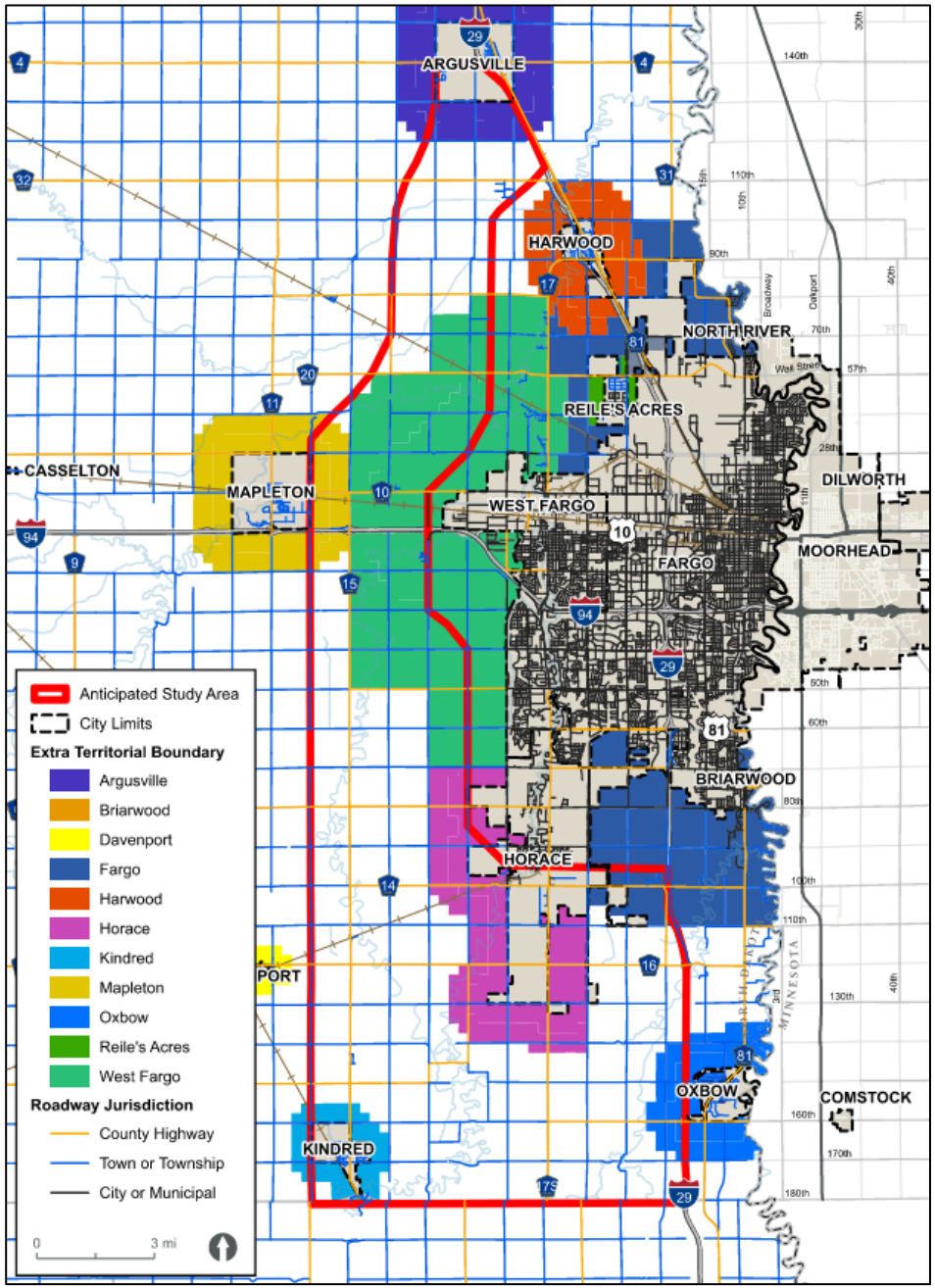
Cass County intends for all County Roads to cross the FM Diversion channel. The County will be taking over 32nd Avenue West and making it the new County Road 8. With this adjustment, the township will take over the current County Road 8 (40th Avenue West).

Right-of-way (ROW) on County Roads can vary from 66 feet to greater than 150 feet. ROW considerations will be documented and analyzed in greater detail through the alternatives analysis process.

Jurisdictional Authority

Understanding the multi-jurisdictional nature of the potential alignment is an important piece of the overall puzzle. Jurisdictional authority of roadways and city limits / ETJ boundaries are shown in Figure 15. Close coordination between all parties will be important to facilitate consistent typical sections, access control, and future preservation of ROW.

Figure 15. Jurisdictional Authority



Bicycle / Pedestrian Infrastructure

A focus for the study team is to accommodate the potential greenway along the FM Diversion, and not to preclude any future active transportation infrastructure. Additionally, any potential bike / ped perimeter road crossings will be discussed early in the design process to accommodate safe and effective crossing treatments to connect to future infrastructure investments. Planned FM Diversion crossing points for bicycles and pedestrians were noted in the Fargo-Moorhead Greenway Recreation Master Plan. These crossing points are shown in Figure 17**.** Crossing points with bicycle and pedestrian facilities on County Roads are as follows:

- County Road 20
- County Road 10
- 32nd Avenue West (New County Road 8)
- County Road 6
- County Road 14
- County Road 17

The typical section for these structures is shown in Figure 16.

Figure 16. County Road FM Diversion Structure with Bicycle Lane

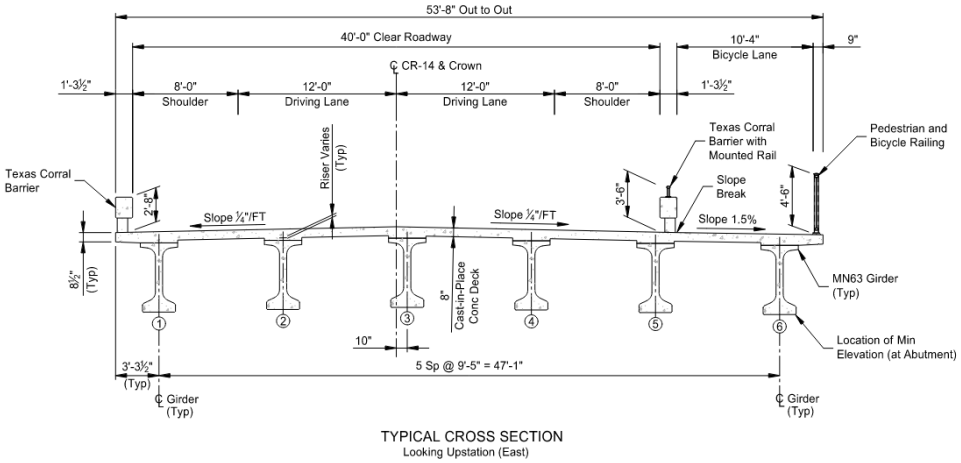
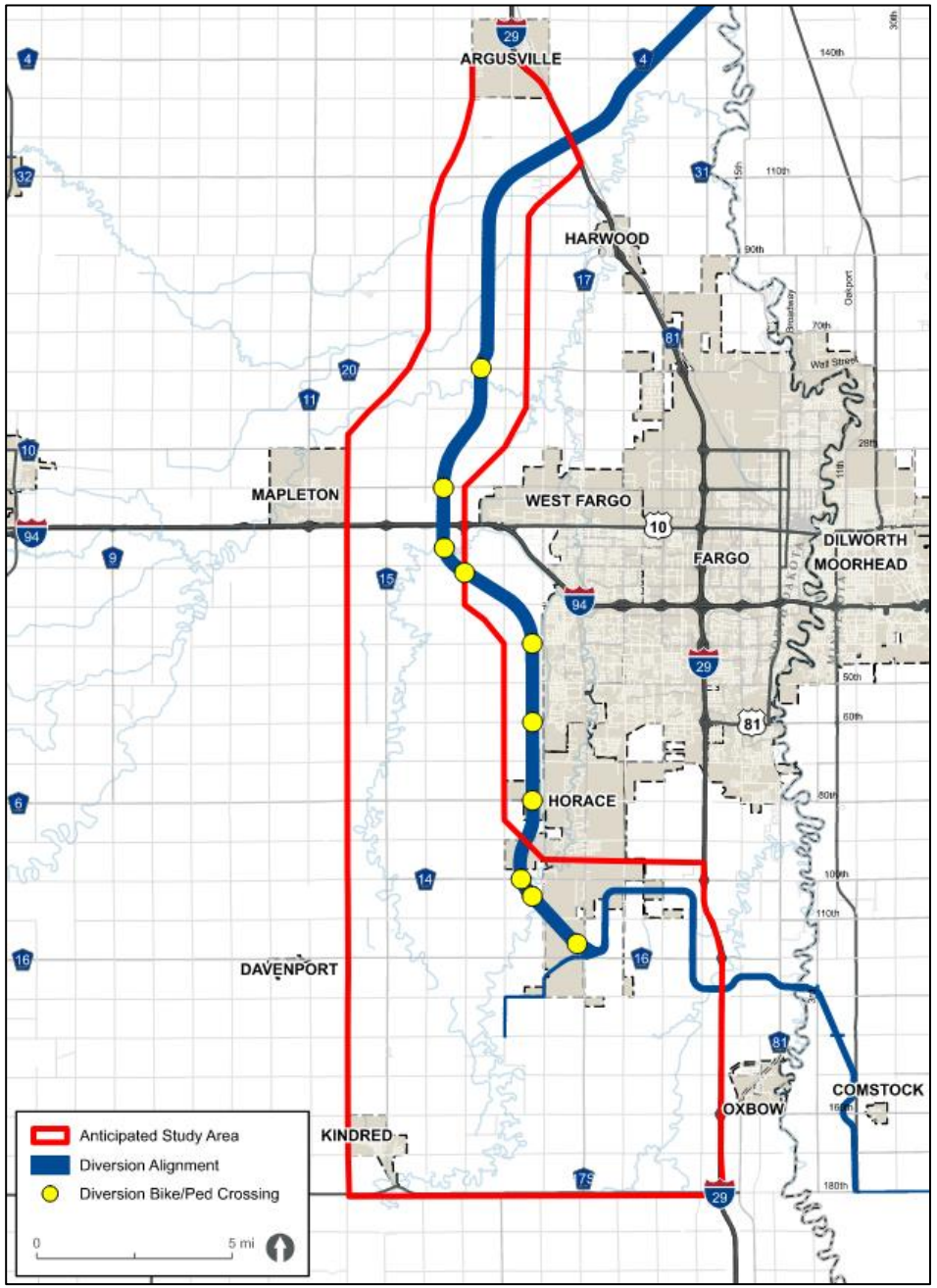


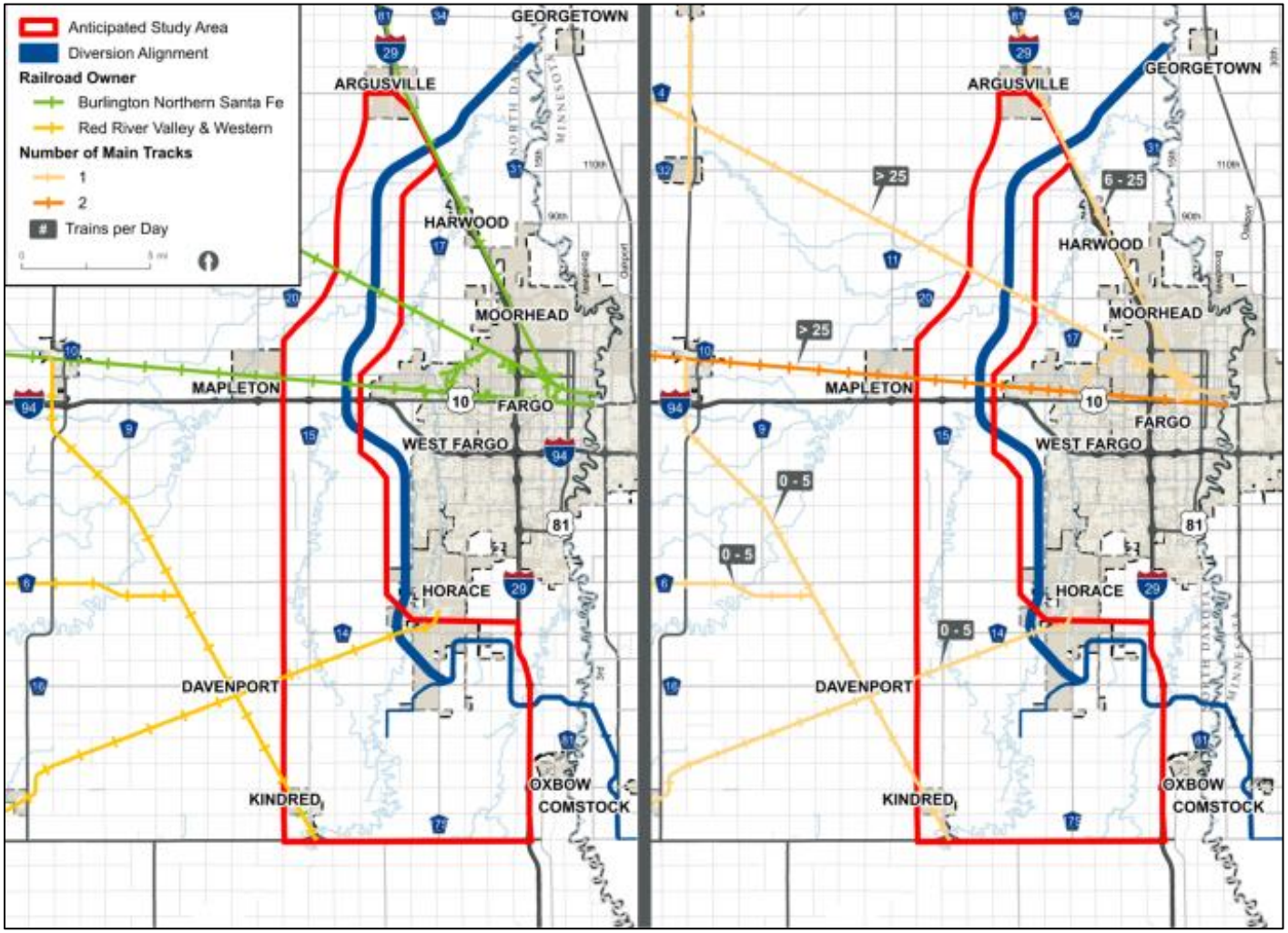
Figure 17. Planned Bicycle / Pedestrian FM Diversion Crossings



Railroad Considerations

It is important to understand railroad crossing locations during the development of preliminary alternatives. Some of the projected volume forecasts may warrant the need of future grade separated railroad crossings, so understanding the location, number of tracks, ownership, and trains per day will help determine the need to grade separate vehicular movements. This railroad information is shown in Figure 18.

Figure 18. Railroad Considerations



Environmental Data

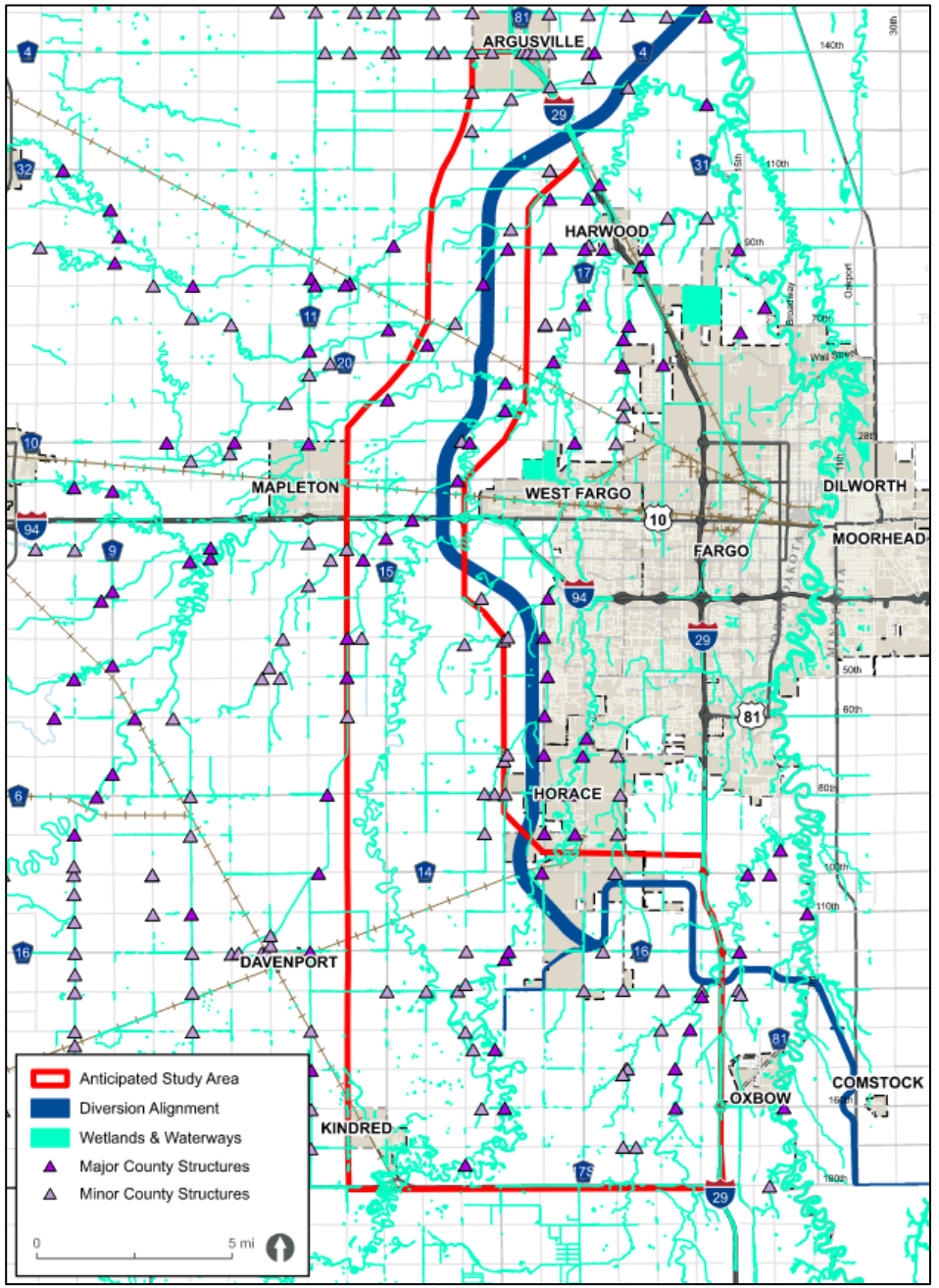
In a desktop level review of environmental considerations, data on wetlands, waterways, potential endangered species, and migratory birds was gathered.

At this stage, the main environmental concern is wetlands and waterways. Existing wetlands and waterways are shown in Figure 19. The study team will consider the findings and data from this desktop level review into preliminary alternative development.

Existing Structures

Figure 19 also presents an opportunity to display existing structures within the study area. Both major and minor structures are displayed and may be taken into consideration when analyzing alternatives. Structures that are sufficiently wide may result in cost savings for the initial build of a perimeter highway.

Figure 19. Existing Wetlands and Waterways



Attachments

- Attachment A: Roadway Data
- Attachment B: Environmental Data
- Attachment C: Jurisdictional Authority