

# **ENVIRONMENTAL ASSESSMENT**

**Project No.**

4-052(109)101

**PCN**

24012

US Highway 52 Four Lane from Approximately 2.3 Miles  
West of Junction 79<sup>th</sup> Avenue SE to Voltaire

Ward & McHenry Counties



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Prepared by

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June 2026

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Submitted Pursuant to 42 U.S.C. 4332(2)(c) and 49 U.S.C. 303



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Lindsey Handel  
Deputy Division Administrator  
Federal Highway Administration

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Date



## Table of Contents

|                                                                    |     |
|--------------------------------------------------------------------|-----|
| TABLE OF CONTENTS.....                                             | I   |
| TABLE OF TABLES .....                                              | II  |
| TABLE OF FIGURES .....                                             | III |
| LIST OF APPENDICES .....                                           | III |
| LIST OF DOCUMENTS APPENDED BY REFERENCE .....                      | IV  |
| LIST OF ACRONYMS AND ABBREVIATIONS.....                            | V   |
| CHAPTER 1: PURPOSE AND NEED .....                                  | 1   |
| 1.1 Introduction.....                                              | 1   |
| 1.2 Proposed Action .....                                          | 1   |
| 1.3 Background.....                                                | 1   |
| 1.4 Purpose and Need for Action .....                              | 4   |
| CHAPTER 2: ALTERNATIVES.....                                       | 8   |
| 2.1 Development of Alternatives .....                              | 8   |
| 2.2 Alternatives Screening.....                                    | 10  |
| 2.3 Alternatives Analyzed in Detail.....                           | 11  |
| 2.4 Alternatives By Segment .....                                  | 12  |
| 2.5 Roadway Design .....                                           | 19  |
| 2.6 Construction .....                                             | 20  |
| 2.7 Right-of-Way Impacts.....                                      | 22  |
| 2.8 Cost Summary .....                                             | 23  |
| 2.9 Preferred Alternative.....                                     | 24  |
| CHAPTER 3: AFFECTED ENVIRONMENT AND IMPACTS.....                   | 24  |
| 3.1 Geology.....                                                   | 24  |
| 3.2 Soils .....                                                    | 30  |
| 3.3 Land Use .....                                                 | 31  |
| 3.4 Farmland .....                                                 | 35  |
| 3.5 Vegetation .....                                               | 37  |
| 3.6 Water Resources .....                                          | 39  |
| 3.7 Wetlands and Other Waters.....                                 | 41  |
| 3.8 Water Quality .....                                            | 43  |
| 3.9 Floodplain.....                                                | 44  |
| 3.10 Wildlife and Fisheries .....                                  | 49  |
| 3.11 Threatened and Endangered Species .....                       | 52  |
| 3.12 Social and Economic .....                                     | 57  |
| 3.13 Cultural Resources.....                                       | 59  |
| 3.14 Section 4(f) Properties.....                                  | 60  |
| 3.15 Infrastructure .....                                          | 63  |
| 3.16 Air Quality.....                                              | 64  |
| 3.17 Noise.....                                                    | 65  |
| 3.18 Visual .....                                                  | 67  |
| 3.19 Hazardous Waste.....                                          | 68  |
| 3.20 Utilities .....                                               | 71  |
| 3.21 Irreversible and Irretrievable Commitments of Resources ..... | 72  |
| 3.22 Impact Categories Not Relevant to Proposed Action .....       | 73  |
| 3.23 Summary .....                                                 | 73  |

|            |                                                                    |     |
|------------|--------------------------------------------------------------------|-----|
| CHAPTER 4: | PERMITS/APPROVALS, ENVIRONMENTAL COMMITMENTS, AND COMPLIANCE ..... | 92  |
| 4.1        | Permits and Approvals .....                                        | 92  |
| 4.2        | Environmental Commitments .....                                    | 92  |
| CHAPTER 5: | CONTRIBUTORS, PUBLIC INVOLVEMENT, AND COORDINATION .....           | 98  |
| 5.1        | Coordination with Agencies and Organizations .....                 | 98  |
| 5.2        | Public Involvement .....                                           | 98  |
| 5.3        | Contributors .....                                                 | 99  |
| CHAPTER 6: | REFERENCES .....                                                   | 101 |

## Table of Tables

|                                                                         |    |
|-------------------------------------------------------------------------|----|
| Table 1, Crash Data within Study Area .....                             | 5  |
| Table 2, Lighting Summary .....                                         | 19 |
| Table 3, Right-of-Way Impacts .....                                     | 23 |
| Table 4, Cost Summary .....                                             | 23 |
| Table 5, PFYC Classes in Study Area .....                               | 26 |
| Table 6, Earthwork Impacts .....                                        | 29 |
| Table 7, Net Additional Impervious Surface Area .....                   | 31 |
| Table 8, Land Use in Study Area .....                                   | 33 |
| Table 9, Land Use Impacts .....                                         | 34 |
| Table 10, Impacts to Prime and Unique Farmland .....                    | 37 |
| Table 11, Wetland and Other Waters Impacts Summary .....                | 43 |
| Table 12, Threatened and Endangered Species Effect Determinations ..... | 54 |
| Table 13, NDDEQ Environmental Incidents .....                           | 69 |
| Table 14, Leaking Underground Storage Tanks .....                       | 70 |
| Table 15, Underground Storage Tanks .....                               | 70 |
| Table 16, Estimated Impacts on Utilities .....                          | 71 |
| Table 17, Segment 1 Impact Summary and Comparison .....                 | 74 |
| Table 18, Segment 2 Impact Summary and Comparison .....                 | 76 |
| Table 19, Segment 3 Impact Summary and Comparison .....                 | 79 |
| Table 20, Segment 4 Impact Summary and Comparison .....                 | 82 |
| Table 21, Segment 5 Impact Summary and Comparison .....                 | 86 |
| Table 22, Segment 6 Impact Summary and Comparison .....                 | 89 |
| Table 23, Summary of Environmental Commitments .....                    | 93 |
| Table 24, Contributors .....                                            | 99 |

## Table of Figures

|                                                                                               |    |
|-----------------------------------------------------------------------------------------------|----|
| Figure 1, Study Area .....                                                                    | 2  |
| Figure 2, Existing Passing Lanes.....                                                         | 3  |
| Figure 3, Current and Projected Traffic Volumes and Truck Percentages in Study Area .....     | 5  |
| Figure 4, Current Traffic Volumes and Truck Percentages on Major Highways in Minot Area ..... | 5  |
| Figure 5, Project Segments.....                                                               | 9  |
| Figure 6, Proposed Depressed Median .....                                                     | 11 |
| Figure 7, Proposed Flush Median .....                                                         | 12 |
| Figure 8, Velva Grade Raise .....                                                             | 13 |
| Figure 9, Alternative B Velva Grade Raise Section .....                                       | 14 |
| Figure 10, Alternative C Velva Grade Raise Section .....                                      | 14 |
| Figure 11, Velva Typical Section .....                                                        | 15 |
| Figure 12, Crosswalk Intersection in Velva.....                                               | 16 |
| Figure 13, Velva Shared Use Path.....                                                         | 17 |
| Figure 14, At-Grade Railroad Spur Crossing .....                                              | 17 |
| Figure 15, Rendering of Depressed Median Construction .....                                   | 21 |
| Figure 16, Rendering of Flush Median Construction - Expansion to Both Sides .....             | 21 |
| Figure 17, Rendering of Flush Median Construction - Expansion to South Only.....              | 22 |
| Figure 18, Mapped Landslides.....                                                             | 25 |
| Figure 19, Inclinator and Geotechnical Boring Locations.....                                  | 26 |
| Figure 20, PFYC Class for Geological Formations (East) .....                                  | 27 |
| Figure 21, PFYC Class for Geological Formations (West).....                                   | 28 |
| Figure 22, Land Use .....                                                                     | 32 |
| Figure 23, Prime and Unique Farmland.....                                                     | 36 |
| Figure 24, Water Resources .....                                                              | 40 |
| Figure 25, Velva Flood Protection Levee .....                                                 | 45 |
| Figure 25, Floodplain and Floodway Map .....                                                  | 46 |
| Figure 27, Velva Flood Protection Levee Boundary.....                                         | 47 |
| Figure 28, Sawyer Flood Control Structure .....                                               | 48 |
| Figure 29, Recreational Section 4(f) Properties.....                                          | 62 |
| Figure 30, US Highway 52 Viewshed .....                                                       | 68 |

## List of Appendices

|            |                                                   |
|------------|---------------------------------------------------|
| Appendix A | FHWA Cooperating and Participating Agency Letters |
| Appendix B | Solicitation of Views Package and Responses       |
| Appendix C | NDSHPO Documentation                              |
| Appendix D | Section 4(f) Documentation                        |
| Appendix E | Prime and Unique Farmland Documentation           |
| Appendix F | USFWS Documentation                               |
| Appendix G | Wetland Documentation                             |
| Appendix H | FIRM Maps                                         |
| Appendix I | Preferred Alternative Recommendation Memo         |

## List of Documents Appended by Reference

Aquatic Resources Delineation Report  
Aquatic Resources Delineation Report Addendum  
Biological Assessment  
Categorical Exclusion by Definition Checklist for Geotechnical Soil Borings (March 2024)  
Categorical Exclusion by Definition Checklist for Geotechnical Soil Borings (December 2024)  
Class III Cultural Resource Inventory - Architectural Sites  
Class III Cultural Resource Inventory - Archaeological Sites  
Cultural Resource Testing and Evaluation Plan  
Cultural Resource Testing and Evaluation Report  
Dakota Skipper Habitat Survey Report  
Dakota Skipper Habitat Survey Memo  
Hydrologic and Hydraulic Technical Memorandums  
Northern Long-Eared Bat Structure Assessment Memos  
Preliminary Engineering Report  
Preliminary Slope Stability Analysis Report  
Public Involvement Report (January 2025)  
Public Involvement Report (November 2025)  
Traffic Noise Analysis Report  
US Highway 52 Traffic Operations Report

## List of Acronyms and Abbreviations

|        |                                                                       |
|--------|-----------------------------------------------------------------------|
| ADM    | Archer Daniels Midland                                                |
| ANS    | Aquatic Nuisance Species                                              |
| APE    | Area of potential effect                                              |
| dB(A)  | A-weighted decibels                                                   |
| BMPs   | Best management practices                                             |
| BA     | Biological Assessment                                                 |
| CPKC   | Canadian Pacific Kansas City                                          |
| CAA    | Clean Air Act                                                         |
| CWA    | Clean Water Act                                                       |
| CFR    | Code of Federal Regulations                                           |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| EAP    | Emergency Action Plan                                                 |
| ESA    | Endangered Species Act                                                |
| EA     | Environmental Assessment                                              |
| EO     | Executive Order                                                       |
| FEMA   | Federal Emergency Management Agency                                   |
| FPPA   | Farmland Protection Policy Act of 1981                                |
| FWHA   | Federal Highway Administration                                        |
| ITS    | Intelligent Transportation System                                     |
| LUST   | Leaking underground storage tank                                      |
| LED    | Light-emitting diode                                                  |
| MUTCD  | Manual on Uniform Traffic Control Devices                             |
| MBTA   | Migratory Bird Treaty Act                                             |
| mph    | Miles per hour                                                        |
| MREFPP | Mouse River Enhanced Flood Protection Project                         |
| NAAQS  | National Ambient Air Quality Standards                                |
| NEPA   | National Environmental Policy Act                                     |
| NHPA   | National Historic Preservation Act                                    |
| NPDES  | National Pollutant Discharge Elimination System                       |
| NRHP   | National Register of Historic Places                                  |
| NRCS   | Natural Resource Conservation Service                                 |
| NAC    | Noise abatement criteria                                              |
| NDAC   | North Dakota Administrative Code                                      |
| NDCC   | North Dakota Century Code                                             |
| NDDEQ  | North Dakota Department of Environmental Quality                      |
| NDDOT  | North Dakota Department of Transportation                             |
| NDDWR  | North Dakota Department of Water Resources                            |
| NDGFD  | North Dakota Game and Fish Department                                 |
| NDGS   | North Dakota Geological Survey                                        |
| NDPRD  | North Dakota Parks and Recreation Department                          |
| NDSHPO | North Dakota State Historic Preservation Office                       |

|       |                                               |
|-------|-----------------------------------------------|
| OWJ   | Official With Jurisdiction                    |
| PCN   | Project Control Number                        |
| PHB   | Pedestrian Hybrid Beacon                      |
| PFYC  | Potential Fossil Yield Classification         |
| RP    | Reference Point                               |
| RCRA  | Resource Conservation and Recovery Act        |
| ROW   | Right-of-way                                  |
| SCORP | State Comprehensive Outdoor Recreation Plan   |
| SUP   | Special Use Permit                            |
| SPCC  | Spill Prevention, Control, and Countermeasure |
| SAAQS | State Ambient Air Quality Standards           |
| SIP   | State Implementation Plan                     |
| SWPPP | Storm Water Pollution Prevention Plan         |
| US    | United States                                 |
| USAF  | United States Air Force                       |
| USACE | United States Army Corps of Engineers         |
| USC   | United States Code                            |
| USEPA | United States Environmental Protection Agency |
| USFWS | United States Fish and Wildlife Service       |
| WAPA  | Western Area Power Administration             |

# Chapter 1: Purpose and Need

## 1.1 Introduction

The Federal Highway Administration (FHWA), in cooperation with the North Dakota Department of Transportation (NDDOT), is preparing an Environmental Assessment (EA) to evaluate the proposed expansion of approximately 22 miles of US Highway 52 from a two-lane to a four-lane highway. The United States Army Corps of Engineers (USACE) North Dakota Regulatory Office is serving as a participating agency during the NEPA process. Please refer to **Appendix A, FHWA Cooperating and Participating Agency Letters**. As the lead federal agency, FHWA is responsible for complying with the National Environmental Policy Act of 1969 (NEPA), as amended, which requires the identification and evaluation of potential impacts of the proposed federal action and reasonable alternatives on the human and natural environment (i.e., environmental impacts).

This EA was prepared in accordance with 23 Code of Federal Regulations (CFR) Part 771, which outlines FHWA's procedures for implementing NEPA. An EA is an informational document used to determine whether a proposed federal action has the potential to cause significant environmental impacts, thereby requiring the preparation of an Environmental Impact Statement (EIS). The EA discloses relevant information about the potential environmental impacts and benefits of the proposed project and its alternatives.

## 1.2 Proposed Action

The proposed action is to expand US Highway 52 from a two-lane to a four-lane highway, to address the purpose and need specified below. The expansion would begin at Reference Point (RP) 101.2 near Minot (approximately 2.3 miles west of Junction 79<sup>th</sup> Ave SE) and would terminate at RP 123.0 just east of Voltaire. The study area for this project begins at RP 100.4 and terminates at RP 123.3. Please refer to **Figure 1, Study Area**.

## 1.3 Background

The proposed project is located along US Highway 52 between Minot and Voltaire. Four communities, including Logan, Sawyer, Velva, and Voltaire, are located along the corridor. This segment of US Highway 52 is currently a two-lane interregional highway connecting various communities in the region, serving local and regional commuters, providing opportunities for freight transportation, and facilitating the movement of agricultural products and equipment. Interregional travel has increased the amount of traffic traveling along this route. This increase, especially the high percentage of truck traffic, has raised concerns from the public about safety along the corridor.

In 2021, the NDDOT undertook the development of passing lanes along US Highway 52 between Minot and Carrington. The overall corridor was divided into three separate projects for construction purposes. The westernmost project ran from Logan to Balfour, overlapping portions of this four-lane project corridor, and was constructed during the 2023 construction season. The project corridor for this four-lane expansion project has eastbound and westbound passing lanes installed between Logan and Sawyer, as well as between Sawyer and Velva. Please refer to **Figure 2, Existing Passing Lanes**.

During the development process for the passing lane projects, a number of public comments were received pushing for four lanes, particularly along this segment of US Highway 52 between Minot and Voltaire. Local leaders and elected officials voiced these concerns during the 2023 North Dakota legislative session. Funding was allocated during the legislative session to initiate the study of four-lanes along this corridor.



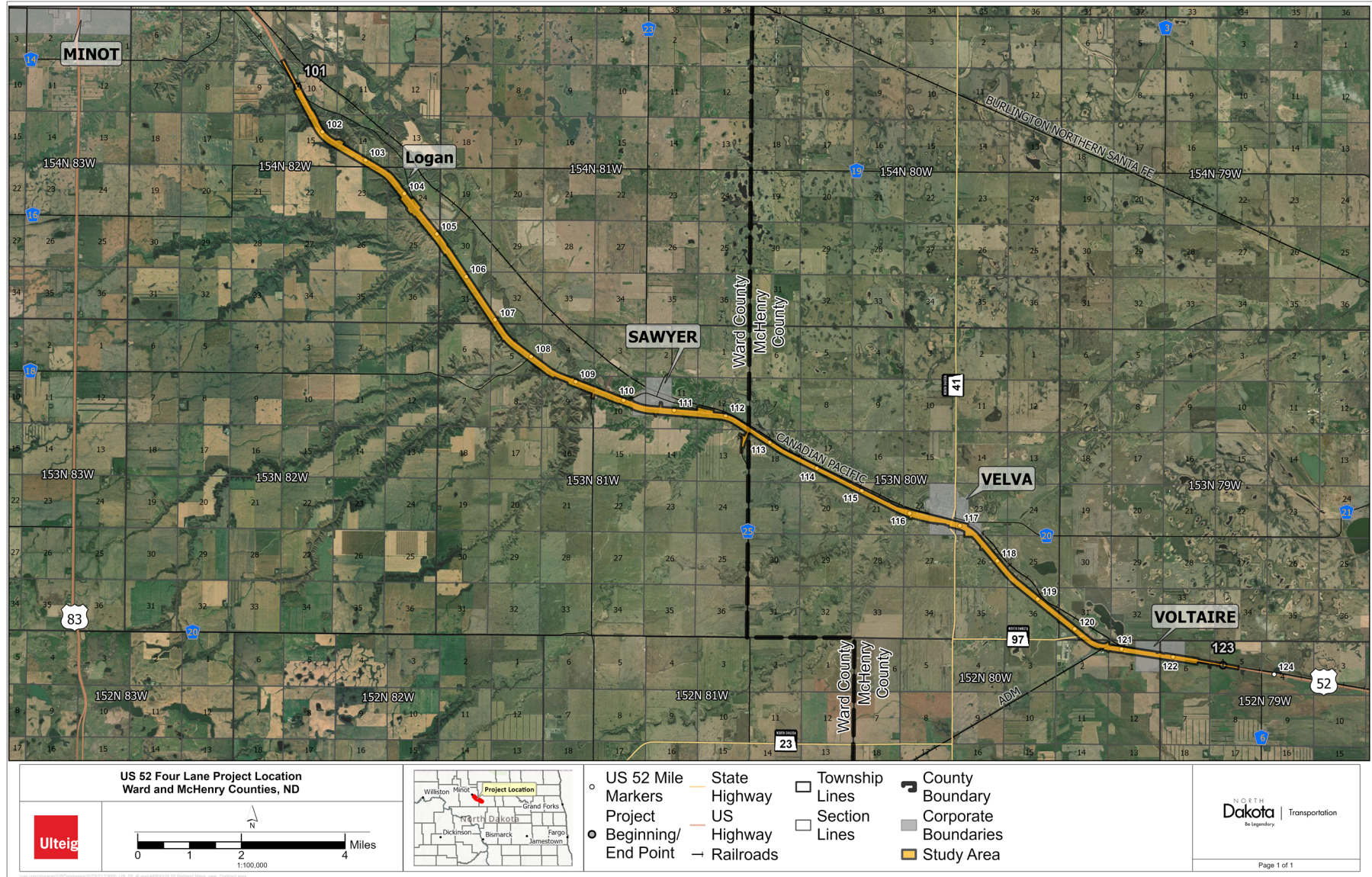


Figure 1, Study Area



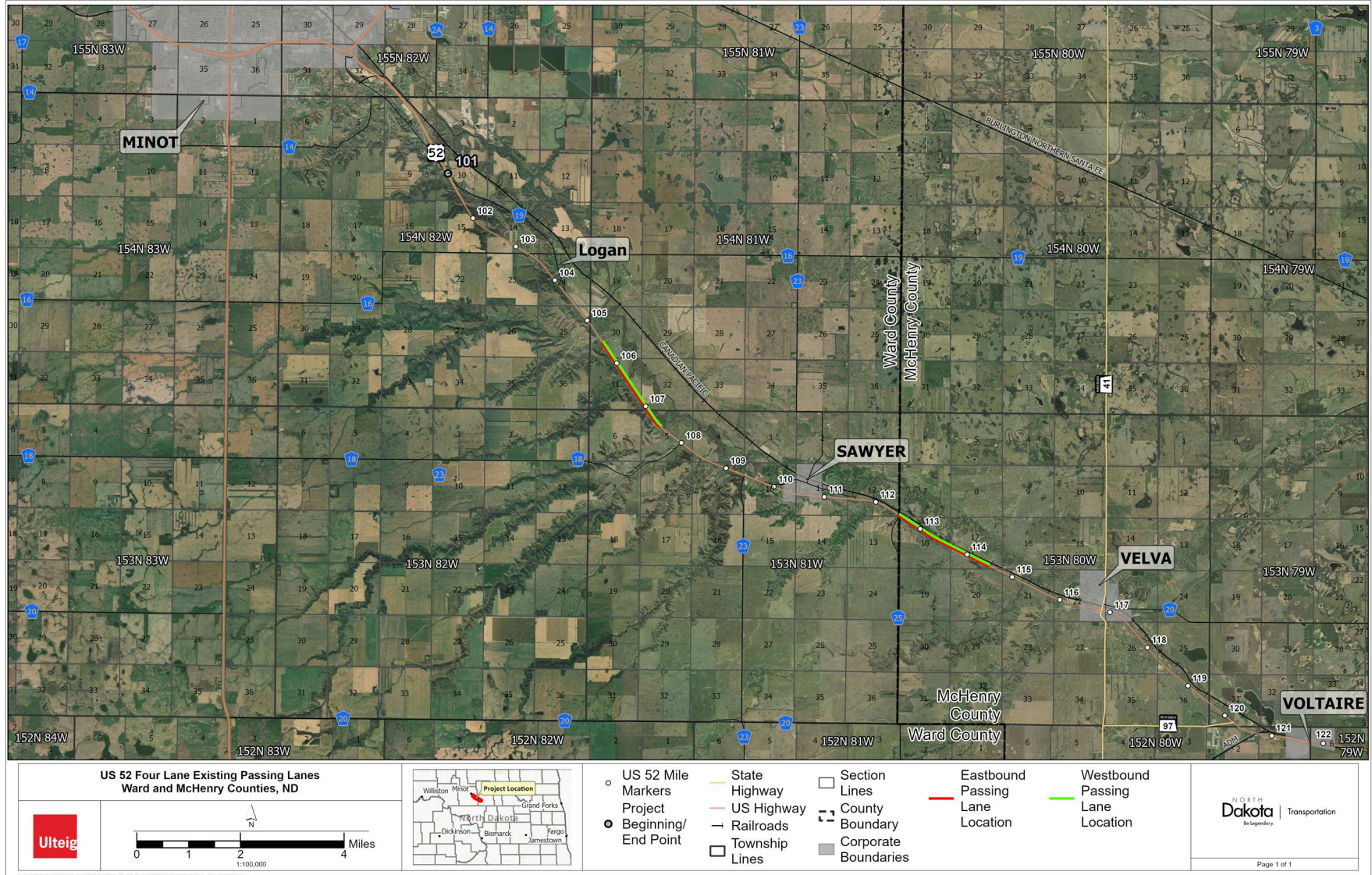


Figure 2, Existing Passing Lanes

## 1.4 Purpose and Need for Action

The purpose and need for the proposed action are based on perceived safety issues, accommodation of existing and future traffic needs, fulfillment of legislature funding obligations, and social economic demands.

### 1.4.1 Perceived Safety Issues

As mentioned above, public and local officials have expressed a desire for a four-lane corridor, citing safety concerns as one of the primary driving needs. As a result, a stakeholder working group was formed, including representatives from applicable cities, counties, and townships, along with local legislative officials. This group met twice in 2024 (on April 29 and October 7) to discuss the project and identify the needs and motivations behind the call for four lanes. Public input meetings were also held on October 21 and 22, 2024, during the early development phase. A consistent theme from both stakeholders and the public was the perception that this corridor is unsafe due to high traffic volumes and a significant share of truck traffic (see **Chapter 5: Contributors, Public Involvement, and Coordination**).

The **US Highway 52 Traffic Operations Report** (appended by reference) examined current and projected traffic volumes and truck traffic. In 2023, traffic volumes within the study area ranged from 2,250 to 4,925 vehicles per day, increasing with proximity to Minot. By 2047, volumes are predicted to increase, ranging from 3,265 to 6,650 vehicles per day. Trucks currently make up between 21 and 32 percent of traffic within the study area. The highest truck volumes occur near Minot (over 1,000 trucks per day), while the highest truck percentage is found between Velva and Voltaire, where trucks account for 32 percent of total traffic. Among major highways in the Minot area, US Highway 52 within the project study area has the highest percentage of truck traffic. Businesses associated with truck traffic also exist along the project corridor including the Dakota Midland grain elevator, the CF Industries fertilizer supplier, and the Archer Daniels Midland (ADM) biodiesel facility. Please refer to **Figure 3, Current and Projected Traffic Volumes and Truck Percentages in Study Area** and **Figure 4, Current Traffic Volumes and Truck Percentages on Major Highways in Minot Area**. The average truck percentage for North Dakota's interregional highways is 21.2 percent (NDDOT, 2021).

The **US Highway 52 Traffic Operations Report** (appended by reference) also analyzed crash data from 2018 to 2022 (excluding 2023 due to ongoing passing lane construction). The findings indicated that crash rates along the corridor fall within typical ranges for similar highways, with the crash rates through Velva observed to be the highest. Velva has the highest access density (i.e., amount of access points such as driveways or entrances) in comparison to the other roadway segments and is the only segment on US Highway 52 where travelers go through a developed part of a community. A total of 82 crashes were reported in the overall study area between 2018 and 2022, with two of the crashes reported as fatal. Seven of these crashes occurred in Velva. Please refer to **Table 1, Crash Data within Study Area**. Approximately 22 percent of total crashes within the overall study area involved trucks.





Figure 3, Current and Projected Traffic Volumes and Truck Percentages in Study Area

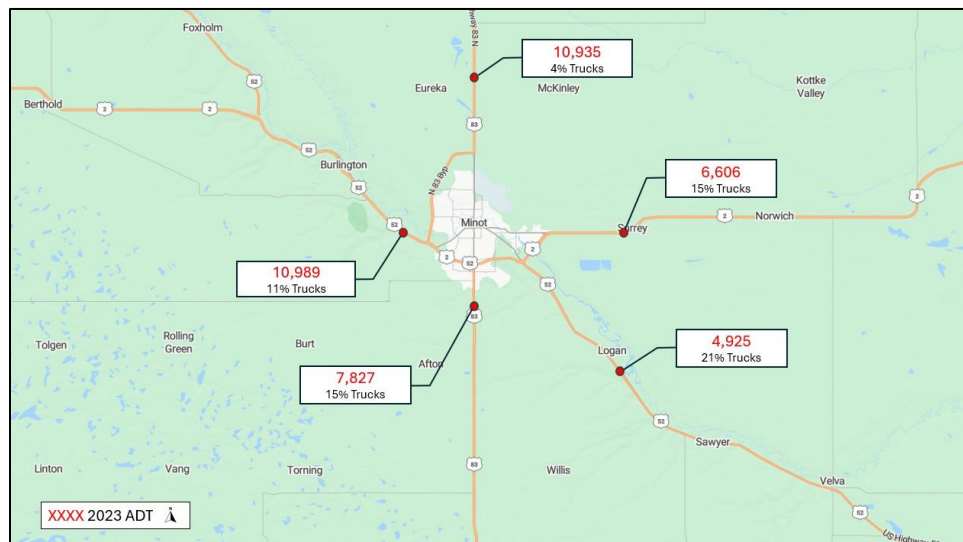


Figure 4, Current Traffic Volumes and Truck Percentages on Major Highways in Minot Area

Table 1, Crash Data within Study Area

| Location                   | Total Crashes<br>(2018-2022) | Crash Rate<br>(Per Million Miles Traveled) |               |
|----------------------------|------------------------------|--------------------------------------------|---------------|
|                            |                              | Observed                                   | Typical Range |
| RP 101 to Sawyer           | 38                           | 0.45                                       | 0.45 to 0.75  |
| Sawyer to Vela City Limits | 27                           | 0.73                                       | 0.45 to 0.75  |
| Through Vela               | 7                            | 1.05                                       | 0.87 to 2.86  |
| Vela City Limits to RP 123 | 10                           | 0.50                                       | 0.45 to 0.75  |
| <b>Total</b>               | <b>82</b>                    |                                            |               |

While the **US Highway 52 Traffic Operations Report** (appended by reference) does not indicate that the project corridor is statistically less safe than comparable highways, there is a consistent perception among drivers that the roadway feels unsafe. This perception is likely influenced by the high percentage of truck traffic, which can limit passing opportunities, reduce visibility, and affect traffic flow due to longer acceleration and deceleration distances. These conditions may lead some drivers to attempt riskier passing maneuvers. In addition, the western portion of the corridor traverses the breaks area of the Souris<sup>1</sup> River valley, where rugged terrain has resulted in roadway features such as cable guardrail, limited shoulders, and steep inslopes, all of which can reduce driver comfort.

Addressing these perceived and systemic risk factors aligns with North Dakota's Vision Zero initiative, which seeks to eliminate traffic fatalities and serious injuries through proactive roadway design and operational improvements. Vision Zero places emphasis not only on crash frequency, but also on reducing the potential for severe and fatal crashes by minimizing high-risk conflict types and improving overall roadway predictability.

Expanding the corridor to four lanes would address these concerns by increasing passing opportunities, accommodating traffic more effectively, separating opposing traffic streams, and upgrading the corridor to current roadway design standards. These improvements support Vision Zero principles by reducing driver frustration, discouraging risky passing behavior, and mitigating the types of crashes most commonly associated with severe outcomes.

Additionally, FHWA's Interactive Highway Safety Design Model was used to evaluate potential safety effects associated with expanding the corridor to four lanes. Based on the results of that predictive analysis, expansion of the existing two-lane highway to a four-lane facility is anticipated to reduce head-on crash potential by approximately 74 percent, angle crash potential by approximately 64 percent, and rear-end crash potential by approximately 42 percent. These reductions are consistent with Vision Zero's emphasis on reducing exposure to high-severity crashes, even on corridors that currently operate within acceptable safety performance ranges.

#### 1.4.2 Existing and Future Traffic Needs

This segment of US Highway 52 is classified as an interregional corridor, which prioritizes truck traffic and typically supports travel speeds between 60 and 70 miles per hour (mph). As mentioned above, the corridor carries a substantial volume of truck traffic, ranging from 21 to 32 percent of the total traffic. The highest truck percentage is between Velva and Voltaire, where trucks make up 32 percent of overall traffic. Overall traffic volumes are highest near Minot and are expected to increase by approximately 35 to 45 percent from 2023 to 2047.

Based on the **US Highway 52 Traffic Operations Report** (appended by reference), traffic operations along the corridor currently function at acceptable levels, with the majority of segments operating at Level of Service (LOS) A under existing conditions and select segments projected to operate at LOS B during peak periods under future (2047) traffic volumes. While LOS B is generally considered acceptable for rural roadway facilities, the analysis indicates increasing traffic demands will continue to place pressure on the existing two-lane configuration over time.

Under both 2023 and 2047 traffic conditions, a four-lane configuration (with either a flush median or a divided median) provides improved operational performance relative to the existing configuration. Results show that the four-lane alternatives consistently operate at LOS A across all analyzed segments during both the AM and PM peak periods, indicating greater operational efficiency and additional capacity to accommodate traffic growth.

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<sup>1</sup> Also referred to as Mouse River.

#### 1.4.3 Legislature Funding Obligations

During the development of the US Highway 52 passing lane projects between Minot and Carrington, local leaders and elected officials elevated public concerns regarding corridor safety. As a result, funding was secured during the 2023 legislative session to initiate a study on expanding the corridor to four lanes. This legislative funding supports a preliminary engineering study and the development of an environmental document for the segment between Minot and Voltaire. Completion of these efforts will fulfill the requirements outlined in the legislative allocation.

#### 1.4.4 Social and Economic Demand

US Highway 52 is a critical transportation route in the region, serving local and regional commuters, freight carriers, and the movement of agricultural products and equipment. Growth in traffic volumes mentioned above, population growth, and increased economic activity has further elevated the highway's importance. Compared to 2010, the population of McHenry County is expected to increase by approximately 58 percent by 2035 and the population of Ward County is expected to increase by 32.5 percent. This growth is above average in comparison to adjacent counties (SRF Consulting Group, Inc., 2015).

Growth in employment and industry are also expected to increase. Between 2010 and 2035, a 12.6 percent increase in employment and 43.9 percent increase in industry is projected for McHenry County (SRF Consulting Group, Inc., 2015). Agriculture and value-added agricultural activities are expected to bring the greatest economic future change for Ward County, due to a newly built agricultural product processing center in Minot (i.e., AGT Foods); however, other industries driving economic growth have been the oil and gas industry and US Government installations and services (i.e., Minot Air Force Base and associated facilities). AGT Foods is anticipated to double or triple the economic impact from value-added agriculture in Ward County. The oil and gas industry has historically represented 15 percent of the total employees and 28 percent of total wages in Ward County. Future growth in oil and gas jobs are expected to see moderate increase by approximately 250 to 350 jobs (Ward County, 2019a). Based on a recent report, the Minot Air Force Base' total economic impact reaches 651 million annually, supplying thousands of jobs and supporting various other industries (Davies, 2025).

This segment of highway links numerous small communities with larger cities across the state, strengthening its role as a key connector. The United States Air Force (USAF) 91<sup>st</sup> Missile Wing has also designated the corridor as a mission-essential route for their operations. Minot serves as the intersection for three US Highways (US Highway 2, US Highway 52, and US Highway 83). US Highway 2 and US Highway 83 are four-laned for a substantial distance, while US Highway 52 is not and it carries the highest percentage of truck traffic relative to overall traffic volumes. As the region continues to grow, the demand for a more efficient and reliable highway system increases. Expanding US Highway 52 to a four-lane facility would help meet these needs, support economic development, and enhance connectivity for both civilian and military purposes.

The Souris River experienced a record-breaking flood in 2011 that significantly affected Minot and communities along the US Highway 52 corridor. During this event, a portion of US Highway 52 west of Velva was overtopped by floodwaters and closed to public travel. The closure resulted in social and economic impacts to the region by limiting first responders' ability to conduct flood-fighting activities requiring regional freight traffic to use less favorable routes, and hindering local mobility and connectivity. In addition to expanding the project corridor to four lanes, the proposed action would raise the roadway grade of US Highway 52 through the area overtopped in 2011 to reduce the potential for future inundation and provide a more reliable transportation facility for local and regional travelers.

## Chapter 2: Alternatives

### 2.1 Development of Alternatives

Due to the legislative mandate to study a four-lane highway expansion, the alternatives development process focused specifically on four-lane scenarios to meet the purpose and need identified in Chapter 1. Additionally, because the existing highway and associated ROW are owned by NDDOT, the evaluation centered on expanding the current corridor rather than focusing on new or off-alignment routes. Off-alignment alternatives were not pursued for detailed analysis, as they would result in significantly greater impacts to both the human and natural environments, as well as substantially higher costs. These factors helped narrow the range and location of feasible alternatives.

The alternatives development process was further informed by the following resources:

- Solicitation of views mailings
- Public input meetings
- Stakeholder input
- Agency coordination
- Purpose and need
- Environmental constraints
- Traffic operations studies
- Roadway design criteria
- Preliminary engineering report

The initial alternatives development process resulted in the development of two primary build alternatives, a divided four-lane highway with a depressed center median and a divided four-lane highway with a flush paved center median. As these two alternatives were applied to the entire corridor, it became apparent that a hybrid combination of these two alternatives may be best suited to address the needs and various constraints along the project corridor. Therefore, the overall corridor was divided into six segments analyzing distinct alternatives for each segment. Please refer to **Figure 5, Project Segments**. In addition to the alternatives described in **2.4, Alternatives By Segment**, the no build alternative is also under consideration for all segments. The six segments were broken down into the following RP ranges:

- Segment 1: RP 101.20 to RP 108.94
- Segment 2: RP 108.94 to RP 112.51
- Segment 3: RP 112.51 to RP 116.22
- Segment 4: RP 116.22 to RP 117.53
- Segment 5: RP 117.53 to RP 120.65
- Segment 6: RP 120.65 to RP 123.00

The project extends from RP 100.4 near Minot to RP 123.3 east of Voltaire. At the west end, the corridor would tie into the existing four-lane section of US Highway 52, which begins south of the US Highway 2 interchange. At the east end near Voltaire, the project would connect to an existing eastbound passing lane.

A **Preliminary Engineering Report** (appended by reference) was developed during the preliminary engineering study phase to document the activities completed, decisions made, and the preliminary alternatives identified for further evaluation in this document. The report focused on developing conceptual alternatives and identifying key constraints along the corridor.



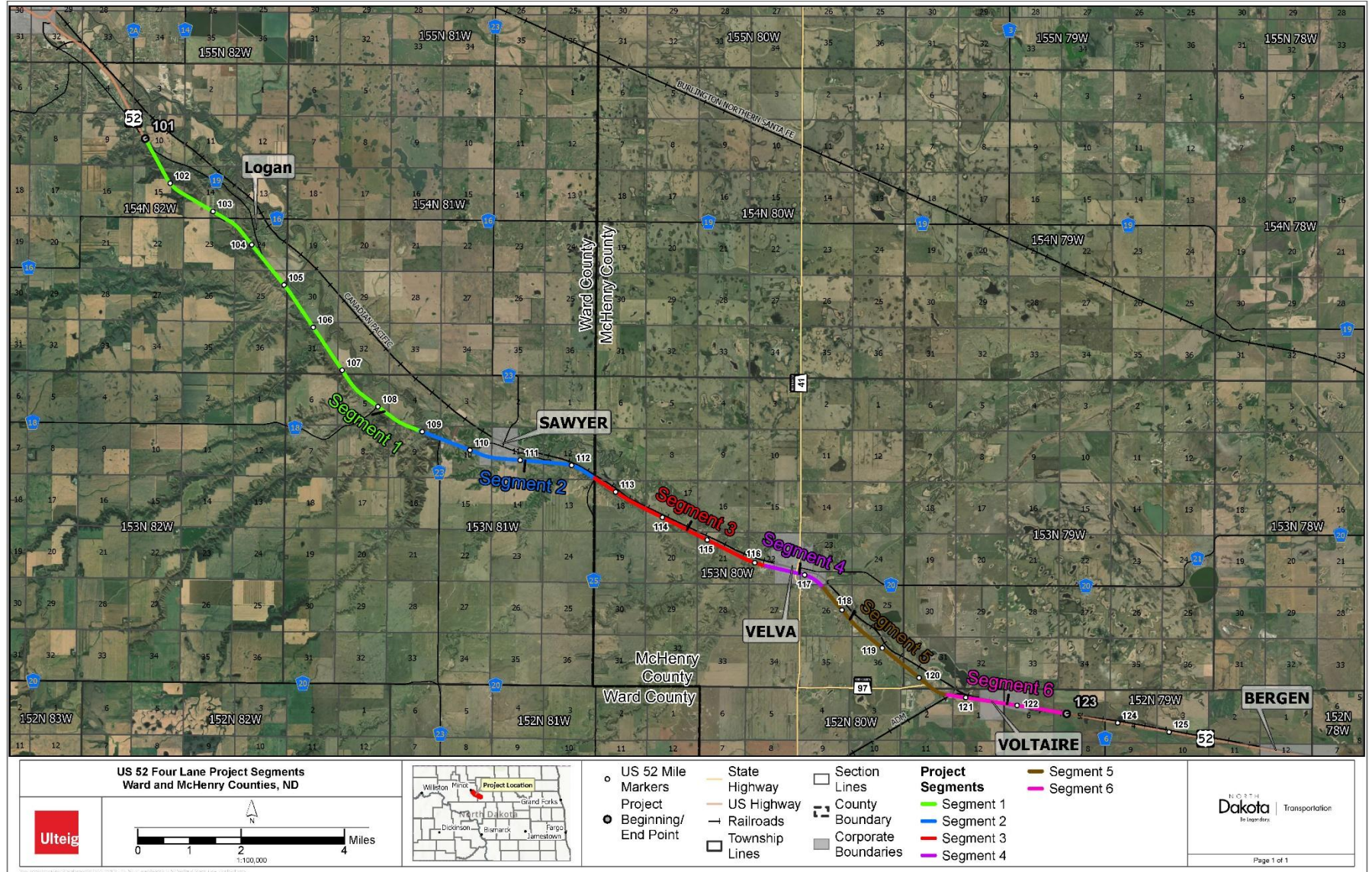


Figure 5, Project Segments

## 2.2 Alternatives Screening

Initial alternatives screening was completed for all six segments of the project corridor to evaluate the feasibility of the two build alternatives for each segment. The following design criteria and guidelines were applied during the screening process:

### **Design Speed:**

- 70 mph for depressed median alternatives
- 65 mph for flush median alternatives (except through Velva)
- 40-50 mph for flush median alternatives through Velva, to accommodate existing development and right-of-way (ROW) constraints

### **Median Widths:**

- 20-foot paved flush median for flush median alternatives
- 12-foot flush median through Velva
- 84 feet centerline to centerline for depressed median alternatives

### **Slopes and Grading:**

- 6:1 inslopes to the clear zone
- Steeper slopes (up to 2:1) in constrained areas where necessary due to topography, existing development, or ROW limitations

### **Additional Improvements:**

- Shoulder and inslope enhancements along the existing roadway,
  - Exceptions for instances where such improvements would result in undesirable conflicts or impacts

In addition to design standards, known constraints were also considered during the screening process, including ROW availability, existing infrastructure, environmental and cultural resources, and geotechnical considerations.

As a result of the initial screening process, certain build alternatives were determined to be infeasible and were removed from further consideration:

#### *Segment 2*

Within Segment 2, an option to close the 2<sup>nd</sup> Avenue East intersection at Sawyer was initially considered but was subsequently eliminated from further consideration. Coordination with the City of Sawyer confirmed that during the 2011 Mouse River flood, 2<sup>nd</sup> Avenue East served as the sole access route into and out of the city due to flood-related closures of other access points. The roadway is a city-maintained farm-to-market route extending north and south of US Highway 52 and lies within the Sawyer city limits. Given its critical role in providing emergency access during past flooding events and the potential need for similar functionality during future flood events, closure of 2<sup>nd</sup> Avenue was determined to be imprudent. Additionally, the City of Sawyer expressed a preference to keep the roadway open, and limited public input was received in support of closure during project outreach activities. Accordingly, closure of 2<sup>nd</sup> Avenue East was removed from further consideration.

#### *Segment 4*

Segment 4 passes through the city of Velva and represents the only urban portion of the project corridor. This segment is bordered closely by businesses and residences on both sides of the highway. Implementing a depressed median alternative in this area would require substantial additional ROW acquisition and would likely necessitate the relocation of adjacent properties.



Due to these constraints, the depressed median alternative was determined to be infeasible for Segment 4 and was eliminated from further analysis.

### 2.3 Alternatives Analyzed in Detail

The no build alternative and two build alternatives will be carried forward for detailed analysis in Chapter 3 of this EA. Due to segmentation of the overall project corridor, each segment includes both a four-lane divided depressed median alternative and a four-lane divided flush median alternative, except for Segment 4, where the depressed median alternative was deemed not feasible and has been eliminated from further consideration.

In addition to the no build and build alternatives, a design option has been developed in Velva (Segment 4) where an additional design consideration and decision is required.

#### 2.3.1 Alternative A – No Build

Alternative A, the no build alternative, would not address the identified needs related to perceived safety concerns, existing and future traffic demands, fulfillment of legislative funding obligations, or regional social and economic development. Under this alternative, US Highway 52 would remain in its current configuration, with only routine maintenance activities taking place. Although Alternative A does not meet the project's purpose and need, it is included in the EA to serve as a baseline for comparison with the build alternatives carried forward for detailed analysis.

#### 2.3.2 B Alternatives – Divided Four-lane Highway with a Depressed Center Median

The depressed center median alternatives would consist of two 12-foot driving lanes in each direction, with 8-foot outside shoulders and 4-foot inside shoulders. A 52-foot-wide grassed depressed median would separate the two roadways. This median width could be reduced during final design to minimize impacts at select locations. To the extent practicable, the existing highway would be used to carry two lanes of traffic in one direction, while two new lanes would be constructed adjacent to the existing roadway to carry traffic in the opposite direction. The posted speed limit for this alternative would be 70 mph. Turn lanes would be installed throughout the corridor where warranted, as identified in the **US Highway 52 Traffic Operations Report** (appended by reference). Please refer to **Figure 6, Proposed Depressed Median** for the proposed typical section.

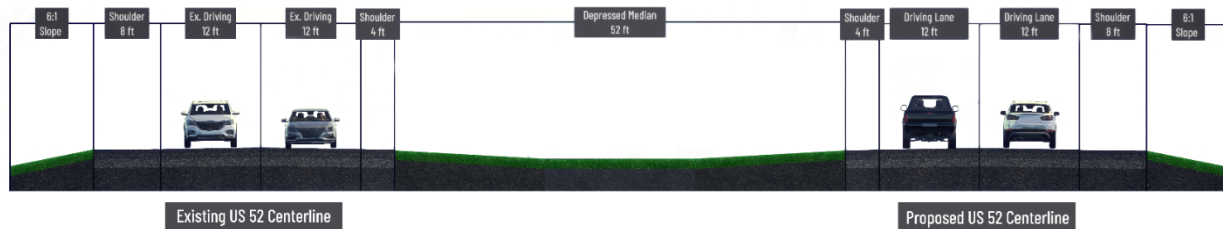


Figure 6, Proposed Depressed Median

#### 2.3.3 C Alternatives – Divided Four-lane Highway with a Flush Center Median

The flush center median alternatives would consist of two 12-foot driving lanes in each direction, with 8-foot outside shoulders. A 20-foot-wide paved flush median would separate the opposing lanes of traffic. Where feasible, the median centerline would follow the existing roadway centerline, shifting off the crown only where necessary to avoid impacts. The posted speed limit for this alternative would be 65 mph outside Velva, reduced to 50 mph and 40 mph within city limits. Turn lanes would be installed throughout the corridor where warranted, as identified in the **US Highway 52 Traffic Operations Report** (appended by reference). Please refer to **Figure 7, Proposed Flush Median** for the proposed typical section.

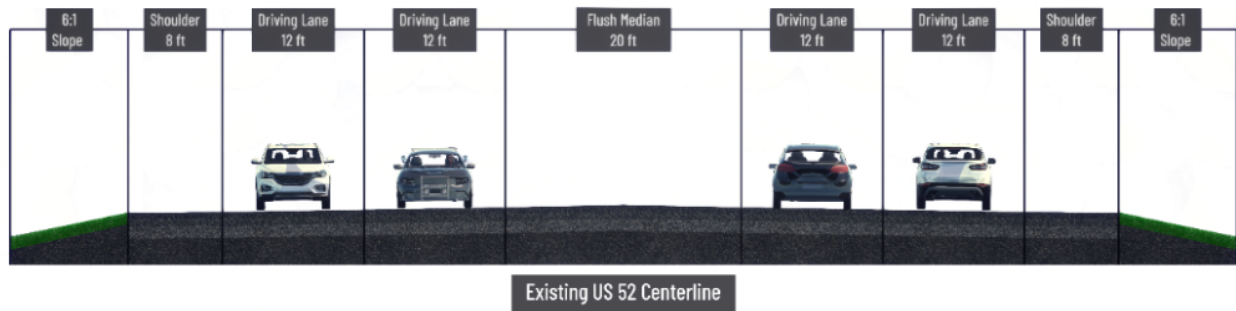


Figure 7, Proposed Flush Median

## 2.4 Alternatives By Segment

### 2.4.1 Segment 1 RP 101.20 to RP 108.94

Segment 1 extends from the west end of the project at RP 101.20 to RP 108.94, a total distance of 7.74 miles. At its western terminus, the corridor connects to the existing four-lane section of US Highway 52, which begins south of the US Highway 2 interchange. Segment 1 is characterized by steep river break terrain as it parallels the Souris River. Throughout this segment, NDDOT owns excess ROW along the south side of the highway. Two build alternatives have been developed for this segment and are described in detail below.

#### 2.4.1.1 Alternative B1

Alternative B1 consists of a four-lane roadway with a depressed center median. Under this alternative, the existing roadway would be used to carry two lanes of westbound traffic, while a new two-lane facility would be constructed to the south to accommodate eastbound traffic. Shoulders and inslopes along the existing roadway would be improved to meet current design standards. This alternative would follow the previously described design criteria and have a posted speed limit of 70 mph.

#### 2.4.1.2 Alternative C1

Alternative C1 consists of a four-lane roadway with a flush paved center median. Under this alternative, the existing roadway would be widened evenly to both sides to accommodate the additional lanes and center median. As part of the expansion, shoulders and inslopes would be improved to meet current design standards. This alternative would follow the previously described design criteria and include a posted speed limit of 65 mph.

### 2.4.2 Segment 2 RP 108.94 to RP 112.51

Segment 2 extends from RP 108.94 to RP 112.51, a total distance of 3.57 miles. This segment runs along the south side of the city of Sawyer. Throughout Segment 2, NDDOT owns excess ROW along the south side of the highway. Two build alternatives have been developed for this segment and are described in detail below.

#### 2.4.2.1 Alternative B2

Alternative B2 consists of a four-lane roadway with a depressed center median. Under this alternative, the existing roadway would be used to carry two lanes of westbound traffic, while a new two-lane facility would be constructed to the south to accommodate eastbound traffic. Shoulders and inslopes along the existing roadway would be improved to meet current design standards. This alternative would follow the previously described design criteria and have a posted speed limit of 70 mph.

#### 2.4.2.2 Alternative C2

Alternative C2 consists of a four-lane roadway with a flush paved center median. Under this alternative, the existing roadway would be widened to the south, shifting the current centerline an average of 27 feet

(18 feet to 34 feet) to minimize impacts to existing constraints. Key benefits of shifting the centerline to the south include:

- Significantly reducing impacts to 1st Street W, just west of Sawyer.
- Avoiding impacts to the Sawyer water tower.
- Preventing grading impacts to residences and driveways through Sawyer.
- Maintaining and improving access at 2nd Avenue E in Sawyer by providing a larger storage platform rather than steepening the grade.
- Avoiding impacts on the railroad ROW near the Ward County line.

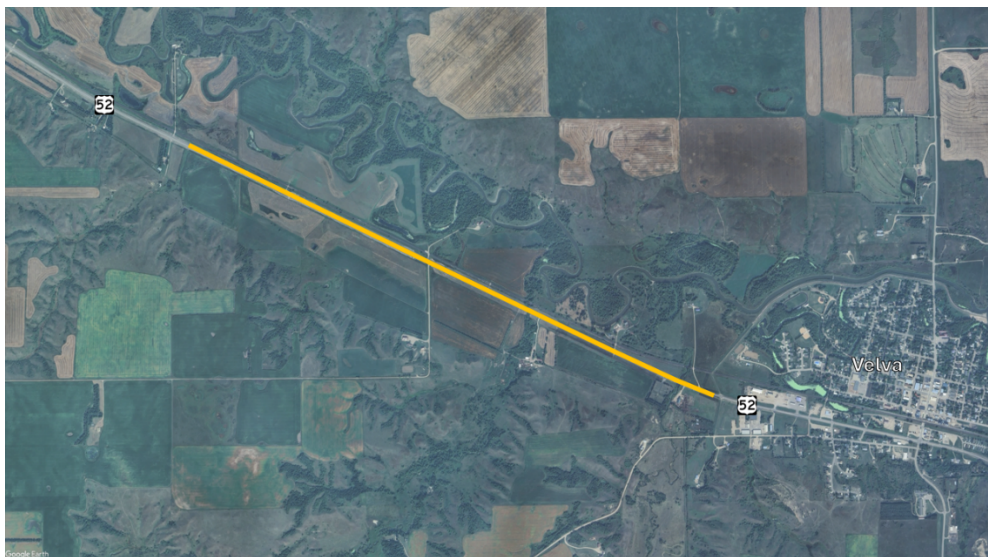
This alternative would follow the previously described design criteria and have a posted speed limit of 65 mph.

#### 2.4.3 Segment 3 RP 112.51 to RP 116.22

Segment 3 extends from RP 112.51 to RP 116.22, covering 3.71 miles. For most of its length, this segment directly parallels a Canadian Pacific Kansas City (CPKC) rail line located north of the highway, which represents a primary ROW constraint.

In addition, this segment would require raising the grade of US Highway 52 up to 6 feet to address potential flooding concerns. During the 2011 Souris River flood, a portion of US Highway 52 within this segment was overtopped by floodwaters. In response to that historic event, the Souris River Joint Water Resources Board initiated the Mouse River Enhanced Flood Protection Project (MREFPP), a comprehensive, multidecade initiative aimed at protecting communities in the Souris River Basin from future flood events. One of the MREFPP's recommended actions was to raise the grade of US Highway 52 through this segment, a measure that NDDOT has incorporated into the proposed four-lane expansion. Please refer to **Figure 8, Velva Grade Raise**; **Figure 9, Alternative B Velva Grade Raise Section**; and **Figure 10, Alternative C Velva Grade Raise Section** for the grade raise extents and typical section.

Two build alternatives have been developed for this segment and are described in detail below.



*Figure 8, Velva Grade Raise*



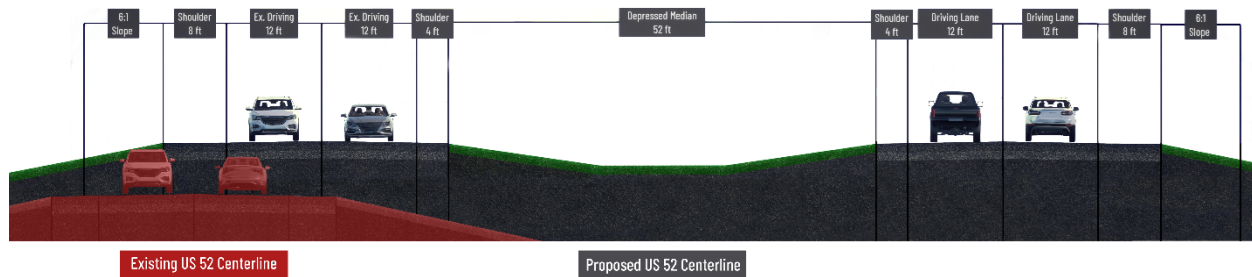


Figure 9, Alternative B Velva Grade Raise Section

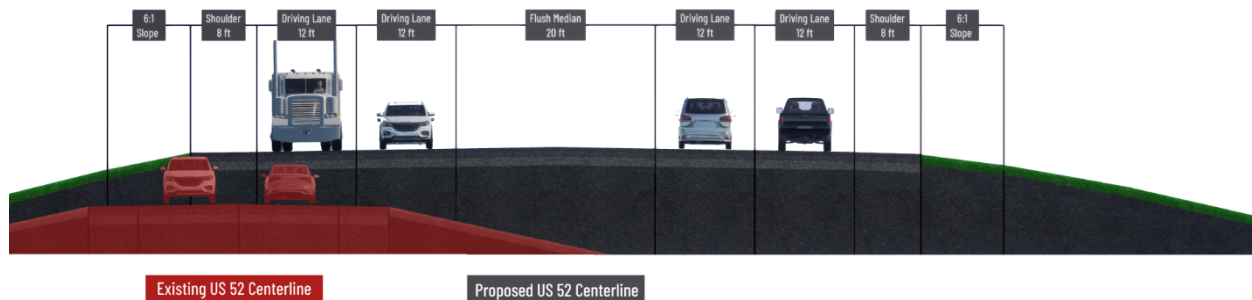


Figure 10, Alternative C Velva Grade Raise Section

#### 2.4.3.1 Alternative B3

Between RP 112.51 and RP 115.00, Alternative B3 would consist of a four-lane roadway with a depressed center median, with expansion occurring to the south of US Highway 52. At RP 115.00, the roadway would start transitioning to a flush center median section to avoid impacts to the Holy Cross Cemetery. The CPKC rail line parallels much of this segment on the north side, limiting expansion in that direction; however, near the Holy Cross Cemetery the rail line shifts away from the highway. In this location, the roadway centerline would be shifted slightly to the north to minimize encroachment on the cemetery before returning to the existing centerline prior to entering Velva.

Under this alternative, the existing roadway alignment would be used to carry two lanes of westbound traffic, while a new two-lane facility would be constructed to the south to accommodate eastbound traffic. As previously noted, this alternative includes raising the roadway grade by up to 6 feet to reduce the risk of overtopping during extreme flood events. Shoulders and inslopes along the existing roadway would be upgraded to meet current design standards. This alternative would follow the previously described design criteria and have a posted speed limit of 70 mph for the depressed median until RP 115 where the speed limit would reduce to 50 mph and then reduce to 40 mph as the segment enters Velva.

#### 2.4.3.2 Alternative C3

Alternative C3 consists of a four-lane roadway with a flush paved center median, with expansion occurring to the south of US Highway 52. Similar to Alternative B3, this alternative includes raising the roadway grade by up to 6 feet to reduce the risk of overtopping during extreme flood events. Two new eastbound lanes and the flush median would be constructed south of the existing roadway, requiring a centerline shift of approximately 16 feet prior to the grade raise and 36 feet throughout the portions of the grade raise that parallel the CPKC rail line. The CPKC rail line parallels much of this segment on the north side, limiting expansion in that direction; however, near the Holy Cross Cemetery the rail line shifts away from the highway. In this location, the roadway centerline would be shifted slightly to the north to minimize encroachment on the cemetery before returning to the existing centerline prior to entering Velva.

The existing roadway would continue to carry westbound traffic. Shoulders and inslopes along the existing roadway would be upgraded to meet current design standards. This alternative would follow the previously described design criteria and have a posted speed limit of 65 mph for the flush median until RP 115 where the speed limit would reduce to 50 mph and then reduce to 40 mph as the segment enters Velva.

#### 2.4.4 Segment 4 RP 116.22 to RP 117.53

Segment 4 extends from RP 116.22 to RP 117.53, a total length of 1.31 miles. This segment passes through the city of Velva and is the only urban portion of the project corridor, as well as the only segment with reduced speed limits. The current roadway configuration for this segment includes curb and gutter with two 12-foot-wide driving lanes separated by a 14-foot-wide paved center median that functions as a shared two-way left-turn lane, and 8-foot outside shoulders. The corridor is closely bordered by businesses and residences on both sides of the highway. Implementing a depressed median alternative in this area would require additional ROW acquisition and likely result in the relocation of adjacent properties. Due to these constraints, the depressed median alternative was determined not to be feasible for Segment 4 and was eliminated from further consideration. As a result, only one build alternative is being carried forward for this segment, along with one optional work item.

##### 2.4.4.1 Alternative C4

Alternative C4 consists of a four-lane roadway with a flush paved center median. As shown in **Figure 11, Velva Typical Section**, the typical section would include two 12-foot driving lanes in each direction, separated by a 12-foot paved median functioning as a two-way left-turn lane. The corridor would be designed as an urban section with curb and gutter and stormwater drainage improvements. Under this alternative, the posted speed limit would be 40 mph within the city of Velva. At RP 117.00, the speed limit would increase to 50 mph before transitioning to match the Segment 5 design speed at the east end of Segment 4.

The existing roadway includes an eastbound right-turn lane at Verendrye Electric, an eastbound right-turn lane at ND Highway 41, and a westbound right-turn lane at ND Highway 41. Under Alternative C4, these turn lanes would be removed due to the addition of a continuous travel lane in each direction.

The intersection of US Highway 52 and ND Highway 41 currently does not have a dedicated right-turn lane along the southbound leg of ND Highway 41; however, the existing approach is wide enough to function as a right-turn lane onto US Highway 52. This movement has the highest right-turn volume at the intersection. Although a dedicated right-turn lane was not evaluated in the traffic operations report, it will be added based on engineering judgement to clarify lane assignments and improve intersection operations.

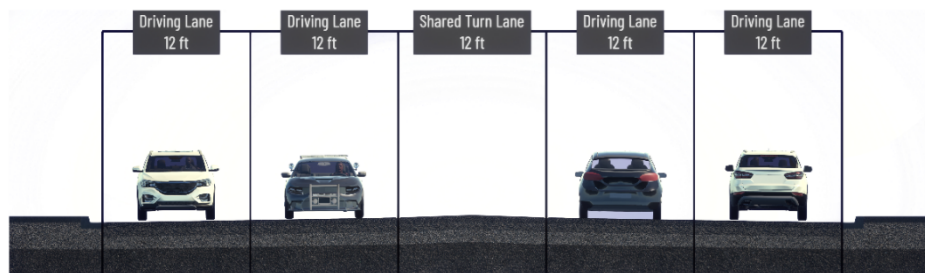
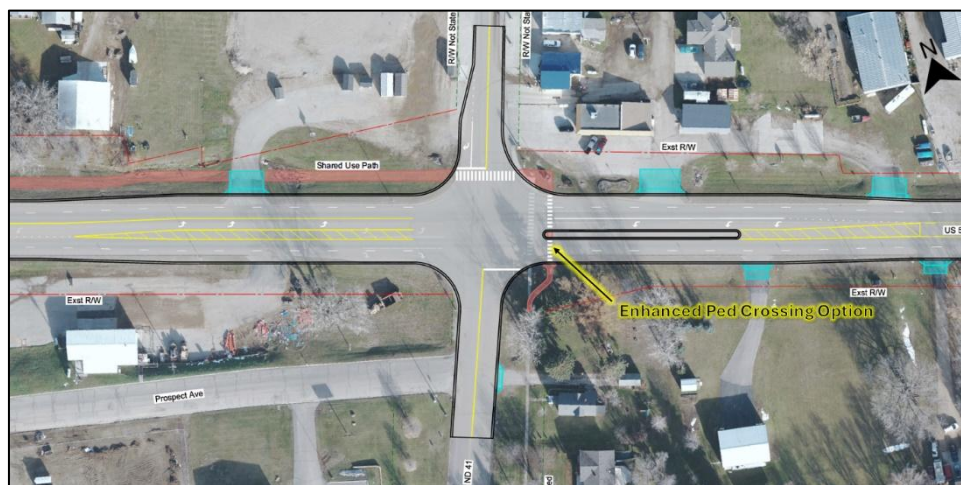


Figure 11, Velva Typical Section

The current pedestrian crossing consists of a marked pedestrian crossing at the intersection. Alternative C4 would improve pedestrian safety at the US Highway 52 and ND Highway 41 intersection by installing an enhanced crosswalk with a rectangular rapid-flashing beacon and advanced signing. Please refer to **Figure 12, Crosswalk Intersection in Velva**. Due to haul route height restrictions along US Highway 52, a high-intensity activated crosswalk signal or pedestrian hybrid beacon cannot be used. To further enhance safety, a 6-foot pedestrian refuge median would be added on the east side of the intersection, paired with a 6-foot gore area on the opposite side to accommodate additional post-mounted flashing beacons. Although current pedestrian and traffic volumes do not warrant such a crossing improvement, this treatment is recommended based on engineering judgement to improve safety and visibility of pedestrians.



*Figure 12, Crosswalk Intersection in Velva*

#### 2.4.5 Segment 4 Design Option

Segment 4 is the only urban roadway segment along the project corridor and the only segment with existing pedestrian facilities. Currently, pedestrian accommodations are limited to a sidewalk along the east side of ND Highway 41, located both north and south of the US Highway 52 intersection, with a marked pedestrian crossing at the intersection. To enhance pedestrian connectivity and safety, one design option is under consideration for this segment. The option could be selected in combination with or separate from Alternative C4.

##### 2.4.5.1 Option V-1: 10-foot Shared-Use Path

Option V-1 in Segment 4 would provide a continuous 10-foot-wide shared-use path along the north side of US Highway 52 through Velva, extending from approximately RP 116.15 to ND Highway 41. Please refer to **Figure 13, Velva Shared Use Path**. The path would be constructed along the outside edge of the highway ROW, creating separation from the roadway and allowing space for snow storage within the median. Snow removal and ongoing maintenance responsibilities would reside with the City of Velva. This option would establish a dedicated facility for both pedestrians and bicyclists, improving multimodal access within the community.





Figure 13, Velve Shared Use Path

#### 2.4.6 Segment 5 RP 117.53 to RP 120.65

Segment 5 extends from RP 117.53 to RP 120.65, a total length of 3.12 miles. Multiple constraints are present along the south side of the corridor, including a farm equipment dealership, identified cultural resource sites, and an electrical substation. These constraints significantly limit opportunities for roadway expansion to the south.

The eastern end of Segment 5 terminates at an existing at-grade railroad spur crossing. Please refer to **Figure 14, At-Grade Railroad Spur Crossing**. The at-grade railroad spur crossing is used to transport a low volume of trains to CF Industries and ADM. Future improvements, including the installation of acceleration and deceleration lanes, are planned at this crossing location as part of a separate NDDOT project (Project Control Number [PCN] 23404). It is anticipated that these improvements will be completed prior to construction of this four-lane project. Section 130 Rail Safety Funds are being used for the at-grade crossing. Railroad flagging and Railroad Protective Liability Insurance would be required for any work done within 25 feet of the crossing.

Two build alternatives have been developed for this segment and are described in detail below.

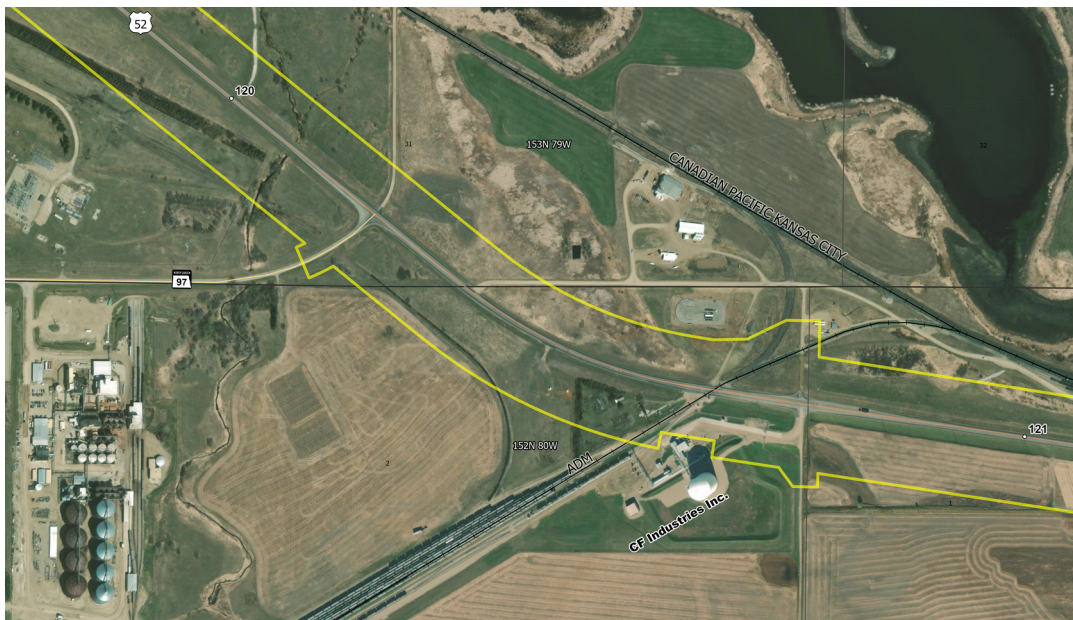


Figure 14, At-Grade Railroad Spur Crossing



#### *2.4.6.1 Alternative B5*

Alternative B5 consists of a four-lane roadway with a depressed center median, with expansion occurring to the north of US Highway 52 for the majority of the segment. As noted previously, the presence of a farm equipment dealership, cultural resource sites, and an electrical substation along the south side of the corridor precludes expansion in that direction for a depressed median alternative. The depressed center median will transition from expansion to the north to a full reconstruct centered on the roadway to allow the depressed center median to fit between the railroad switches at the railroad crossing. Where the segment expands to the north, two new westbound lanes would be constructed north of the existing roadway, which would continue to carry eastbound traffic. Shoulders and inslopes along the existing roadway would be upgraded to meet current design standards. This alternative would follow the previously described design criteria and include a posted speed limit of 70 mph.

#### *2.4.6.2 Alternative C5*

Alternative C5 consists of a four-lane roadway with a flush paved center median. Under this alternative, the existing roadway would be widened equally to both the north and south to accommodate the additional lanes and center median. Shoulders and inslopes would be upgraded to meet current design standards, and the roadway would follow the previously described design criteria with a posted speed limit of 65 mph. This alternative would also tie into the planned improvements at the railroad crossing near RP 120.65, which are planned to be installed under a separate NDDOT project (PCN 23404).

#### *2.4.7 Segment 6 RP 120.65 to RP 123.00*

Segment 6 extends from RP 120.65 to RP 123.00 and is 2.35 miles long. Key constraints along this segment include reduced ROW near the community of Voltaire due to the presence of a grain elevator on the north side of the highway and multiple residential properties to the south.

Two build alternatives have been developed for this segment and are described in detail below.

#### *2.4.7.1 Alternative B6*

Alternative B6 consists of a four-lane roadway with a depressed center median with a full reconstruct centered on the existing roadway through the railroad crossing transitioning to a flush center median. The transition from depressed center median to flush center median would start approximately 3,000 feet west of the intersection of US Highway 52 and Main Street in Voltaire. The transition from depressed to flush is due to constraints with the grain elevator to the north of US Highway 52 and residential properties to the south of US Highway 52. At the east end of Segment 6, an existing eastbound passing lane begins at RP 123.0. To ensure a proper transition between roadway sections, the proposed four-lane typical section would end at approximately RP 122.0, and the existing eastbound passing lane would be extended approximately 1 mile to the west to tie into the four-lane section. Roadway shoulders and inslopes would be improved to meet current design standards. This alternative would follow the previously described design criteria and include a posted speed limit of 70 mph for the depressed center median and 65 mph for the flush center median.

#### *2.4.7.2 Alternative C6*

Alternative C6 consists of a four-lane roadway with a flush paved center median. Under this alternative, the existing roadway would be widened evenly to both sides to accommodate the additional lanes and center median. At the east end of Segment 6, an existing eastbound passing lane begins at RP 123.0. To ensure a proper transition between roadway sections, the proposed four-lane typical section would end at approximately RP 122.0, and the existing eastbound passing lane would be extended approximately 1 mile to the west to tie into the four-lane section.

As part of a separate NDDOT project (PCN 23404), acceleration and deceleration lanes are proposed at the railroad crossing at RP 120.65. These improvements are anticipated to be completed prior to

construction of this four-lane expansion. The flush median section for Alternative C6 would tie into the existing widened pavement at this location.

As part of the expansion, shoulders and inslopes would be upgraded to meet current design standards. This alternative would follow the previously described design criteria and have a posted speed limit of 65 mph.

## 2.5 Roadway Design

The build alternatives would ensure all vertical curves, horizontal curves, and superelevation would meet the minimum requirements established by the American Association of State Highway and Transportation Officials and the NDDOT for the applicable design speed. New signs and pavement markings would be designed and installed in accordance with the current Manual on Uniform Traffic Control Devices (MUTCD) and NDDOT standards. Installation would occur at the appropriate locations within the roadway ROW. Access points along the corridor would be modified or installed where necessary to meet design and operational needs.

Inslopes would be constructed at a 6:1 slope until reaching the clear zone, transitioning to 4:1 or steeper in areas where site conditions present constraints. Shoulders and inslopes of the existing roadway would be improved except in locations where such improvements would result in undesirable impacts.

As required by the NDDOT Design Guidelines, safety hardware would be upgraded to comply with the Manual for Assessing Safety Hardware performance criteria. Guardrail is currently present at several locations along the project corridor. The need for guardrail would be eliminated in most areas; however, guardrail may be replaced at select locations to minimize project-related impacts.

### 2.5.1 Lighting and Intelligent Transportation System (ITS) Technology

Destination lighting and illumination lighting are currently located along the project corridor and would be impacted by the proposed alternatives. Impacted destination and illumination lighting would be removed and replaced with permanent light-emitting diode (LED) fixtures. Replacement lighting would be designed to provide approximately the same intensity as the existing lighting and would be updated from one light to two at the same location, one on either side of US Highway 52. **Table 2, Lighting Summary**, provides a breakdown of lighting location, lighting type, and the proposed impact solution.

*Table 2, Lighting Summary*

| Location                                        | Segment   | Lighting Type | Impact Solution    |
|-------------------------------------------------|-----------|---------------|--------------------|
| US Highway 52 and CR 19                         | Segment 1 | Destination   | No Impact          |
| US Highway 52 and CR 16/79 <sup>th</sup> Ave SE | Segment 1 | Destination   | Remove and Replace |
| US Highway 52 and CR 23/Central Ave             | Segment 2 | Destination   | Remove and Replace |
| US Highway 52 and 2 <sup>nd</sup> Ave E         | Segment 2 | Destination   | Remove and Replace |
| US Highway 52 in Velva                          | Segment 4 | Illumination  | Remove and Replace |
| US Highway 52 and 14 <sup>th</sup> St NE        | Segment 5 | Destination   | Remove and Replace |
| US Highway 52 and 12 <sup>th</sup> Ave N        | Segment 6 | Destination   | Remove and Replace |

One piece of ITS technology, a camera and infrared illuminator mounted on a steel pole, is located in Segment 1 at RP 102.7 and would be impacted by the proposed alternatives. The technology was installed in 2024 as part of the NDDOT Automatic Traffic Recorder and Weigh-In-Motion Maintenance project (PCN 23887). The camera and infrared illuminator would be removed and relocated.

### 2.5.2 Hydraulics and Hydrology

Existing drainage structures would be extended, repaired, or replaced as necessary, while new drainage structures would be installed to preserve existing drainage patterns throughout the corridor. In Ward County, the project would impact 31 centerline pipes and eight structures, while in McHenry County, 47

centerline pipes and three structures would be affected. In addition, the majority of approach pipes along the corridor would be replaced as part of the project. A preliminary hydraulics and hydrology analysis was completed, analyzing the structures and roadway centerline culverts. Details of the analysis can be found in the ***Hydrologic and Hydraulic Technical Memorandums*** (appended by reference).

## 2.6 Construction

Roadway construction would include grading, subgrade work, reconstruction, shoulder improvements, paving, vegetation removal, soil excavation, structures, and lighting. Heavy equipment used during construction may include, but is not limited to, front-end loaders, bulldozers, scrapers, motor graders, backhoes, trucks, pavers, rollers, and ready-mix trucks. Construction is anticipated to occur primarily during daylight hours; however, additional hours may be required to meet the project schedule. Temporary light plants may be used for early morning or evening construction lighting.

Traffic control during construction would follow the requirements of the currently adopted MUTCD and Traffic Control Requirements for NDDOT Operations on Highways and Streets. Two-way traffic would be maintained for the majority of construction, with temporary single-lane closures and flaggers used during milling and paving operations. During non-construction hours, the roadway would remain open to two-way traffic unless construction operations do not permit, in which case pilot cars and flaggers would be used to guide vehicles as needed.

Existing roadway segments would be milled and paved in halves using temporary lane closures with flaggers and pilot cars. Access to all residential dwellings and business establishments would be maintained at all times. Temporary mailboxes may be used as necessary during construction. Temporary bypasses or shoring with concrete barriers may be used as needed to accommodate large hydraulic structure improvements.

Temporary and permanent erosion and sediment control measures would be installed in accordance with a Storm Water Pollution Prevention Plan (SWPPP). These measures may include silt fence, fiber rolls, berms, inlet protection, mulch, vegetation, erosion control blankets, and other best management practices (BMPs). Staging areas would, to the extent practicable, be located within the study area footprint. Any additional areas outside the study area would require additional environmental review.

The two alternatives, depressed center median and flush center median, would be constructed as detailed below.

### 2.6.1 Construction of Depressed Center Median Alternatives

During construction of the depressed median alternatives, traffic would remain on the existing US Highway 52 roadway, resulting in minimal disruption to the traveling public. Once the new two-lane facility is completed, traffic would be temporarily shifted from the existing roadway to the newly constructed lanes. This shift would allow the contractor to complete necessary improvements to the existing roadway without operating under live traffic conditions. Please refer to ***Figure 15, Rendering of Depressed Median Construction***.



*Figure 15, Rendering of Depressed Median Construction*

#### 2.6.2 Construction of Flush Center Median Alternatives

Under the flush center median alternative with expansion equally to both sides, shoulder closures would be necessary to complete pipe extensions and roadway widening. Temporary lane closures with flaggers and pilot car operations would be implemented during milling and paving activities. Construction would begin on one half of the roadway, which would be widened to accommodate two-way traffic. Once construction on that half is complete, traffic would be shifted, and work would proceed on the remaining portion of the roadway. Please refer to **Figure 16, Rendering of Flush Median Construction - Expansion to Both Sides**.



*Figure 16, Rendering of Flush Median Construction - Expansion to Both Sides*

Under the flush center median alternative with a shifted centerline and expansion only to the south, shoulder closures would also be required for pipe extensions, roadway widening, and paving. In this case, traffic would be temporarily shifted onto the newly constructed southern portion of the roadway while the existing roadway is reconstructed, effectively shifting the roadway crown to the south. Please refer to **Figure 17, Rendering of Flush Median Construction - Expansion to South Only**.





*Figure 17, Rendering of Flush Median Construction - Expansion to South Only*

### 2.6.3 Construction of Four Lanes Through Velva

Construction through Velva would utilize shoulder closures and lane shifts, including the use of channelization devices, to remove the existing curb and gutter and to place aggregate base on half of the roadway. Once the aggregate base is placed on half of the roadway, traffic would be temporarily shifted to the newly placed aggregate surface while the other remaining half is constructed. Paving operations would require additional lane closures and the use of flaggers and a pilot car. New curb inlets and storm sewer would be installed between removals and placement of the new aggregate base. Temporary storm sewer connections would be made to maintain drainage during construction.

## 2.7 Right-of-Way Impacts

The amount of existing ROW along the corridor is variable. When US Highway 52 was originally constructed in the 1960s, the NDDOT acquired approximately 120 to 926 feet of ROW, with the widest ROW primarily located within Ward County. This wider ROW is present south of the existing roadway centerline, generally ranging from approximately 125 to 350 feet from centerline, with an average width of approximately 250 feet within the Ward County portion of the project. The widest ROW is associated with a historic US Highway 52 alignment near 1st Street East in Sawyer. By contrast, through McHenry County the existing roadway is generally centered within the ROW. The ROW widths are reduced through the City of Velva, and no comparable excess ROW exists on the south side.

To minimize the amount of new ROW acquisition required for the project, the design team conducted an extensive geotechnical investigation along the corridor to evaluate soil stability. Based on these findings, project limits were refined by steepening inslopes and backslopes while still maintaining an acceptable factor of safety for slope stability. In areas with deep fill sections, the use of guardrail was incorporated into the design to reduce the extent of grading otherwise needed. This approach further limits ROW impacts by confining construction activities within narrower limits.

Based on the preliminary design of the alternatives, it is anticipated that approximately 92.58 acres to 182.10 acres of additional permanent ROW would be required, depending on the alternative selected. Where construction limits approach or extend beyond the existing ROW, additional ROW would be purchased. A detailed summary of ROW needs for each alternative is provided in **Table 3, Right-of-Way Impacts**.

Table 3, Right-of-Way Impacts

| Segment      | Alternative/Option                | Temporary Easement<br>(acres) | Permanent ROW<br>(acres) |
|--------------|-----------------------------------|-------------------------------|--------------------------|
| Segments 1-6 | Alternative A                     | 0.0                           | 0.0                      |
| Segment 1    | Alternative B1                    | 20.5                          | 65.0                     |
|              | Alternative C1                    | 19.4                          | 33.3                     |
| Segment 2    | Alternative B2                    | 7.8                           | 26.4                     |
|              | Alternative C2                    | 1.5                           | 9.9                      |
| Segment 3    | Alternative B3                    | 6.0                           | 49.1                     |
|              | Alternative C3                    | 7.7                           | 28.4                     |
| Segment 4    | Alternative C4 without Option V-1 | 1.9                           | 1.9                      |
|              | Alternative C4 with Option V-1    | 2.0                           | 2.3                      |
|              | Option V-1 without Alternative C4 | 0.7                           | 0.4                      |
| Segment 5    | Alternative B5                    | 4.8                           | 31.0                     |
|              | Alternative C5                    | 4.0                           | 14.1                     |
| Segment 6    | Alternative B6                    | 2.4                           | 8.3                      |
|              | Alternative C6                    | 1.1                           | 6.5                      |

## 2.8 Cost Summary

A preliminary cost summary was prepared for each alternative under consideration. Please refer to **Table 4, Cost Summary**.

Table 4, Cost Summary

| Segment      | Alternative                       | Preliminary Cost | Cost Per Mile   |
|--------------|-----------------------------------|------------------|-----------------|
| Segments 1-6 | Alternative A                     | \$0              | \$0             |
| Segment 1    | Alternative B1                    | \$94.55 million  | \$12.17 million |
|              | Alternative C1                    | \$61.20 million  | \$7.88 million  |
| Segment 2    | Alternative B2                    | \$49.85 million  | \$14.08 million |
|              | Alternative C2                    | \$47.90 million  | \$13.53 million |
| Segment 3    | Alternative B3                    | \$36.48 million  | \$9.83 million  |
|              | Alternative C3                    | \$33.87 million  | \$7.63 million  |
| Segment 4    | Alternative C4 without Option V-1 | \$10.93 million  | \$8.34 million  |
|              | Alternative C4 with Option V-1    | \$11.83 million  | \$9.03 million  |
|              | Option V-1 without Alternative C4 | \$1.04 million   | \$1.48 million  |
| Segment 5    | Alternative B5                    | \$26.68 million  | \$8.55 million  |
|              | Alternative C5                    | \$21.52 million  | \$6.90 million  |
| Segment 6    | Alternative B6                    | \$12.34 million  | \$5.25 million  |
|              | Alternative C6                    | \$12.08 million  | \$5.14 million  |

## 2.9 Preferred Alternative

The following alternatives have been identified by the NDDOT as preferred for each segment. Please refer to **Appendix I, Preferred Alternative Recommendation Memo**.

- Segment 1 – Alternative B1: Divided Four-Lane Highway with a Depressed Center Median
- Segment 2 – Alternative B2: Divided Four-Lane Highway with a Depressed Center Median
- Segment 3 – Alternative B3: Divided Four-Lane Highway with a Depressed Center Median
- Segment 4 – Alternative C4: Divided Four-Lane Highway with a Flush Paved Center Median with Option V-1: Shared Use Path
- Segment 5 – Alternative B5: Divided Four-Lane Highway with a Depressed Center Median
- Segment 6 – Alternative B6: Divided Four-Lane Highway with a Depressed Center Median

## Chapter 3: Affected Environment and Impacts

This chapter describes the existing conditions within the study area pertaining to the human and natural environment. The existing conditions, also called the affected environment, are the starting point for understanding how the proposed action and no build alternative could cause changes. The study area used for this review is shown in **Figure 1, Study Area**. Resource agencies and stakeholders were contacted to help determine the baseline conditions. Please refer to **Chapter 5: Contributors, Public Involvement, and Coordination** and **Appendix B, Solicitation of Views Package and Responses**. This chapter explains what the existing environment is like, how the proposed alternatives could affect it, and what steps could be taken to avoid, minimize, or compensate for negative impacts.

### 3.1 Geology

The north half of the study area parallels the Souris River and is characterized by rolling hills and river breaks topography while the south half of the study area is flatter with less overall relief. Wetlands and waterways are present throughout. The geology of the area was shaped by the last glacial period. The primary feature includes channels carved by glacial meltwater, now occupied by the Souris River, where river, lake, and swamp sediments consisting of clay, sand, silt, gravel and till have been deposited. The project crosses portions of the Bullion Creek, Coleharbor, Oahe, and Cannonball formations.

According to North Dakota Geological Survey (NDGS) maps, there are two historic mapped landslides located within the study area, both along the Souris River breaks area. Please refer to **Figure 18, Mapped Landslides**. Landslides are a mass movement of rock, earth, or debris down a slope. Due to the presence of these mapped landslides, a geotechnical investigation was undertaken to assess potential risks and implications relative to the proposed project.

To monitor ground movement, two inclinometers (SW-1 and SW-2) were installed in March 2024 near the historic mapped landslide located in Segment 1 (Section 5, T153N, R81W). In September 2025, an additional inclinometer (SW-03) was installed and a soil boring was completed (SW-04). This work was covered under two **Categorical Exclusion by Definition Checklists for Geotechnical Soil Borings (March 2024 and December 2024)** (both appended by reference). As of May 2026, readings collected from the three inclinometers show no significant soil movement. Please refer to **Figure 19, Inclinometer and Geotechnical Boring Locations** for the inclinometer locations.



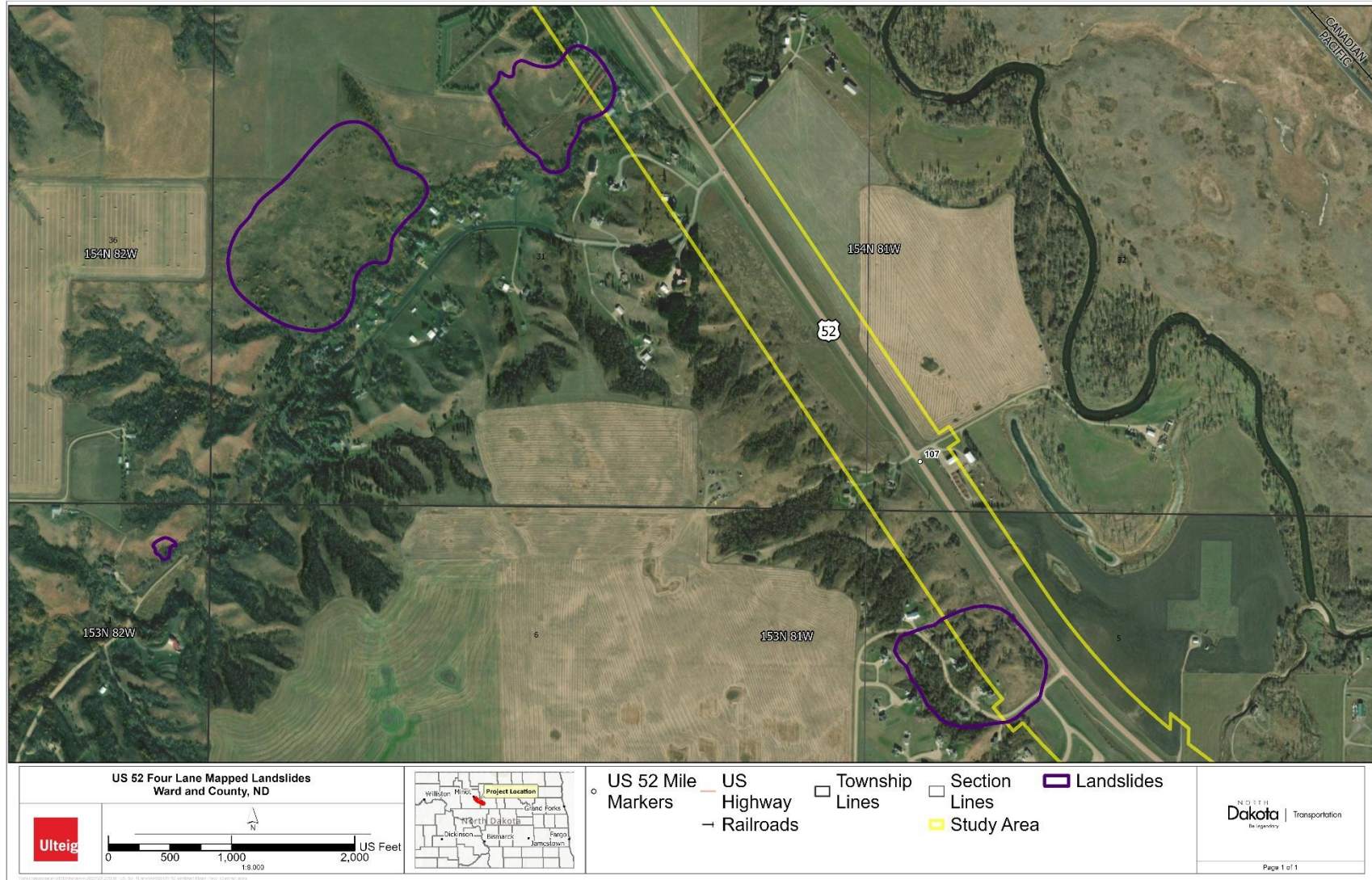


Figure 18, Mapped Landslides





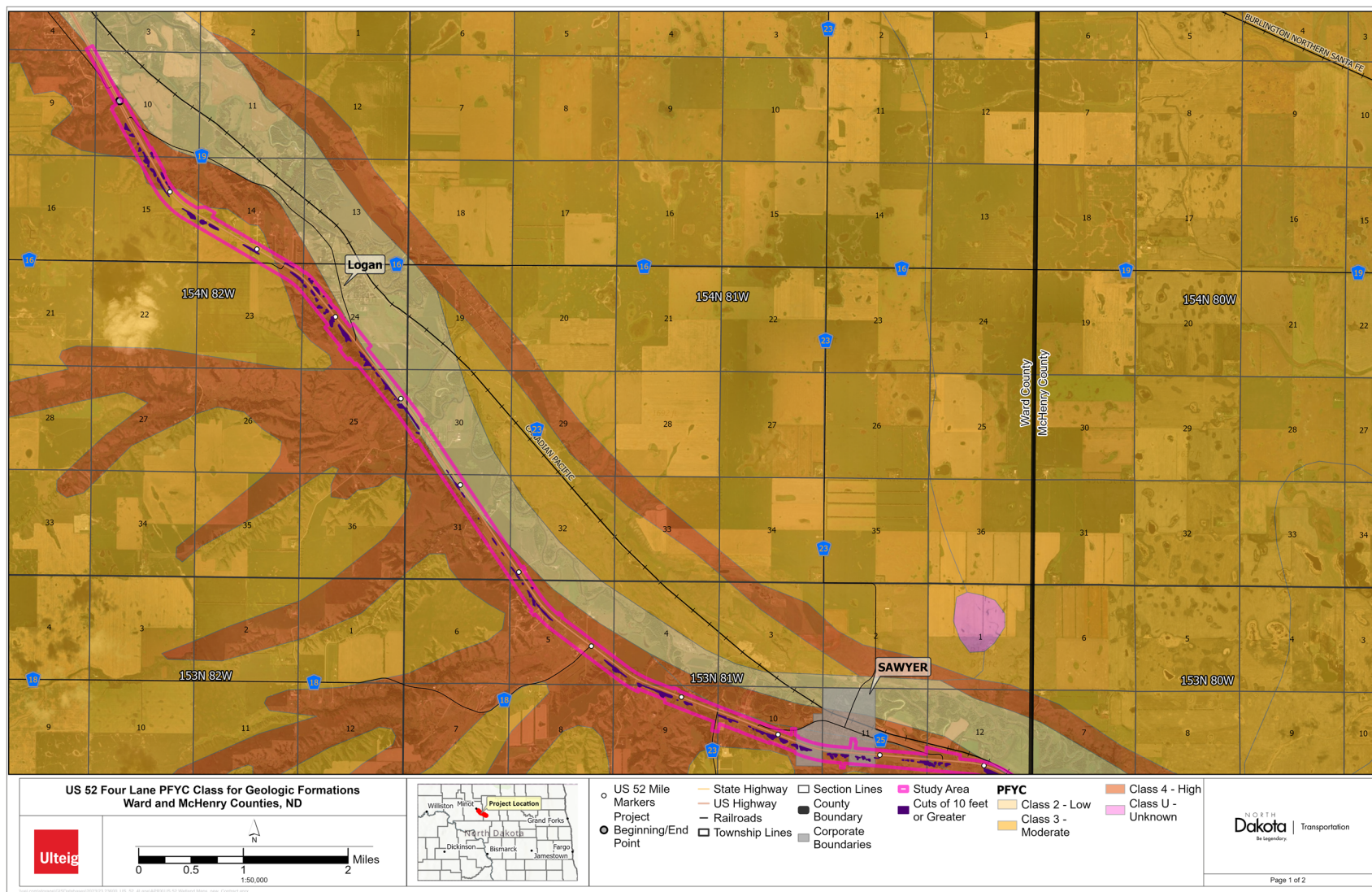
*Figure 19, Inclinometer and Geotechnical Boring Locations*

The Federal Land Policy and Management Act safeguards scientifically valuable resources on federal lands, including paleontological resources (i.e., fossils). Under the Paleontological Resources Preservation Act, collecting, damaging, and removal of fossils on federal lands is prohibited without an authorized permit. There are no federally owned lands within the study area. Similarly, the North Dakota Century Code (NDCC) 54-17.3 and North Dakota Administrative Code (NDAC) 43-04 prohibit the collection of paleontological resources on state-owned lands unless a permit is obtained. State owned lands within the study area consist of NDDOT roadway ROW.

The occurrence of paleontological resources is typically associated with mapped geologic units (i.e., formations). The Potential Fossil Yield Classification (PFYC) system is derived from these maps and assigns a class value ranging from 1 to 5 to each geologic unit. The higher the value reflects the higher expected abundance and significance of any paleontological resources present within that unit (Smith & Liggett, 2021; BLM, 2016). The NDGS is currently in the process of remapping the PFYC for a large portion of the study area. For the purposes of this document, PFYC classifications for the study area are based on the 1980 Geologic Map of North Dakota (Clayton, 1980). Most of the study area is classified as PFYC 4, with the remainder as PFYC 2 and 3; a small portion is mapped as unknown. Please refer to **Table 5, PFYC Classes in Study Area**; **Figure 20, PFYC Class for Geological Formations (East)**; and **Figure 21, PFYC Class for Geological Formations (West)**.

*Table 5, PFYC Classes in Study Area*

| PFYC Class 1<br>(acres) | PFYC Class 2<br>(acres) | PFYC Class 3<br>(acres) | PFYC Class 4<br>(acres) | PFYC Class 5<br>(acres) | Unknown<br>(acres) |
|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|--------------------|
| 0                       | 225.99                  | 630.25                  | 1162.74                 | 0.00                    | 43.04              |





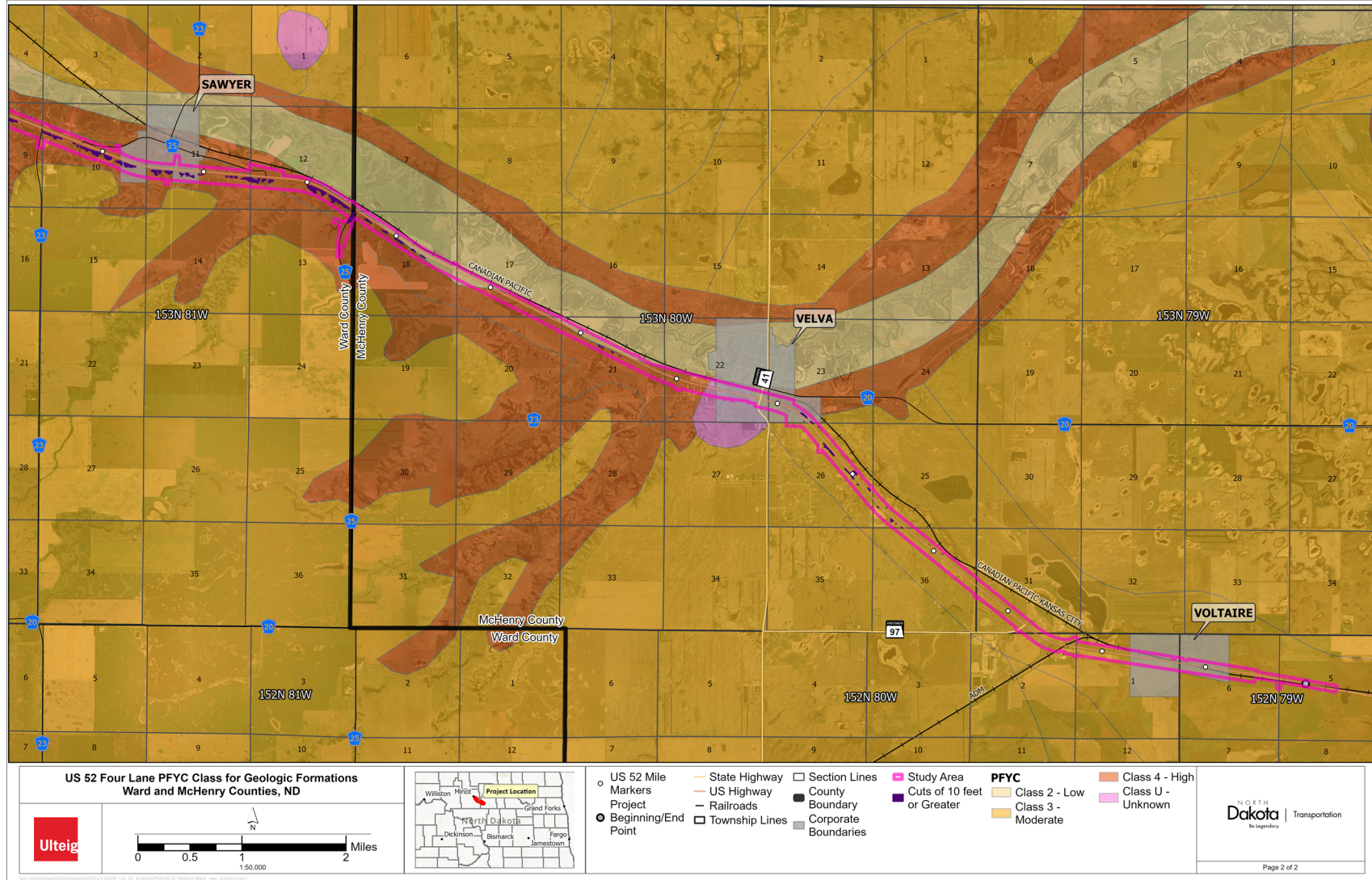


Figure 21, PFYC Class for Geological Formations (West)

### 3.1.1 Alternative A

Alternative A would not result in impacts to geologic resources as there would be no construction along the project corridor.

### 3.1.2 Action Alternatives

The proposed action would result in permanent and temporary impacts to the surrounding landscape and terrain due to roadway construction. Apart from Segment 4, where Alternative C is the only action alternative, Alternative B would have greater permanent earthwork impacts than Alternative C. Option V-1 would result in additional earthwork impacts. Please refer to **Table 6, Earthwork Impacts**.

Table 6, Earthwork Impacts

| Segment     | Alternative                       | Earthwork (acres)      |                        |        |
|-------------|-----------------------------------|------------------------|------------------------|--------|
|             |                                   | Permanent <sup>2</sup> | Temporary <sup>3</sup> | Total  |
| Segment 1-6 | Alternative A                     | 0.00                   | 0.00                   | 0.00   |
| Segment 1   | Alternative B1                    | 308.18                 | 42.99                  | 351.17 |
|             | Alternative C1                    | 262.38                 | 29.89                  | 292.26 |
| Segment 2   | Alternative B2                    | 146.18                 | 20.62                  | 166.80 |
|             | Alternative C2                    | 109.02                 | 15.34                  | 124.36 |
| Segment 3   | Alternative B3                    | 121.62                 | 13.58                  | 135.20 |
|             | Alternative C3                    | 103.21                 | 14.10                  | 117.31 |
| Segment 4   | Alternative C4 without Option V-1 | 26.05                  | 2.23                   | 28.28  |
|             | Alternative C4 with Option V-1    | 26.74                  | 4.49                   | 31.23  |
|             | Option V-1 without Alternative C4 | 0.69                   | 2.25                   | 2.94   |
| Segment 5   | Alternative B5                    | 107.99                 | 12.36                  | 120.35 |
|             | Alternative C5                    | 94.31                  | 12.26                  | 106.57 |
| Segment 6   | Alternative B6                    | 41.93                  | 8.07                   | 50.00  |
|             | Alternative C6                    | 39.36                  | 8.04                   | 47.40  |

Preliminary design of the action alternatives identified numerous locations along the project corridor that were subject to deep cut or fills. To reduce the amount of disturbance, steepening inslopes and backslopes were evaluated. A total of 38 locations were identified where slope stability investigations were warranted. However, during environmental review, concerns were raised about access to some sites due to their proximity to cultural resources and Dakota skipper (*Hesperia dacotae*) habitat. Because of these limitations, four sites were eliminated, and 34 sites were approved for investigation through two **Categorical Exclusion by Definition Checklists for Geotechnical Soil Borings** (both appended by reference) on March 15, 2024, and December 4, 2024.

The resulting geotechnical borings and a preliminary slope stability analysis were completed in spring 2025. Based on the **Preliminary Slope Stability Analysis Report** (appended by reference), inslopes and backslopes were steepened to ratios of up to 2:1 to minimize grading limits and reduce potential impacts along the corridor. Additionally, to reduce creating moisture laden sediments that could increase landslides and erosion, culverts would be installed as necessary in order to maintain existing drainage patterns. During final design, soil conditions near the historically mapped landslide in Segment 1 will be

<sup>2</sup> Permanent earthwork impacts were calculated based on grading limits.

<sup>3</sup> Temporary earthwork impacts were calculated based on a 15-foot buffer around permanent impacts (i.e., grading limits).



reassessed. The design will incorporate appropriate measures to ensure long-term performance of the highway and associated access points.

Due to the mid- to high- probability of paleontological resources occurring within portions of the study area, the action alternatives have the potential to impact fossils during construction activities. Apart from Segment 4, where Alternative C is the only action alternative, Alternative B would have slightly more potential to impact paleontological resources during construction than Alternative C due to a larger construction footprint. Option V-1 would result in additional potential to impact paleontological resources during construction due to additional construction footprint (see **Table 6, Earthwork Impacts**).

Paleontological monitoring would occur during construction in high potential areas (i.e., PFYC Class 4 and 5) where cuts are greater than 10 feet deep. These monitoring areas would span approximately 56.58 acres; the areas to be monitored would be reassessed during final design using the most current PFYC dataset available from NDGS. A collection permit from NDGS is not required for inadvertent discovery.

***The proposed action would not result in significant impacts on geological resources due to adherence to roadway design standards, slope stability analysis, the installation of monitoring instruments and culverts, and paleontological monitoring during construction (as required).***

### 3.2 Soils

Ward and McHenry Counties are both predominantly cropland and rangeland/pasture, making soils an important natural resource in the region. Soils support a mix of crop production, providing an important growing medium, and provide valuable grazing land for livestock. Variations in soil types, such as the differences in structure, strength, elasticity, erosion potential, and shrink-swell potential, directly influence their suitability to support certain applications or uses. The majority of soils identified within the study area are categorized as well drained and moderately well drained with moderate permeability (USDA & NRCS, 2024).

#### 3.2.1 Alternative A

Alternative A would not result in impacts to soils as there would be no construction along the project corridor.

#### 3.2.2 Action Alternatives

The proposed action would involve expanding an existing paved roadway, increasing the extent of impervious surfaces, which are areas where water cannot infiltrate the soil. Option V-1 would involve creating a paved shared use path and would also increase the extent of impervious surfaces. These surfaces can lead to greater volumes and faster movement of stormwater runoff, potentially contributing to soil erosion and sediment deposition in surrounding areas. Apart from Segment 4, where Alternative C is the only action alternative, Alternative C would have a greater net additional impervious surface area than Alternative B. In Segment 4, Alternative C4 and/or Option V-1 would result in additional area of impervious surface. Please refer to **Table 7, Net Additional Impervious Surface Area**.

The potential impacts of increased stormwater runoff would be offset by the presence of well-drained to moderately well-drained, moderately permeable soils throughout the study area. Additionally, areas not occupied by the roadway would remain vegetated, helping to absorb water and reduce runoff.

Table 7, Net Additional Impervious Surface Area

| Segment     | Alternative                       | New Impervious Surface Area (acres) |
|-------------|-----------------------------------|-------------------------------------|
| Segment 1-6 | Alternative A                     | 0.00                                |
| Segment 1   | Alternative B1                    | 34.18                               |
|             | Alternative C1                    | 36.51                               |
| Segment 2   | Alternative B2                    | 21.17                               |
|             | Alternative C2                    | 22.06                               |
| Segment 3   | Alternative B3                    | 14.10                               |
|             | Alternative C3                    | 15.54                               |
| Segment 4   | Alternative C4 without Option V-1 | 3.62                                |
|             | Alternative C4 with Option V-1    | 4.38                                |
|             | Option V-1 without Alternative C4 | 0.76                                |
| Segment 5   | Alternative B5                    | 15.43                               |
|             | Alternative C5                    | 18.25                               |
| Segment 6   | Alternative B6                    | 6.12                                |
|             | Alternative C6                    | 6.58                                |

Construction activities would cause disturbances to soils. Vegetation removal may expose soils to erosion and increase sediment transport during stormwater events. The operation of heavy machinery could compact soils, reducing their permeability and infiltration capacity, which may lead to elevated runoff and sediment movement. Construction contractors would be required to obtain coverage under the National Pollution Discharge Elimination System (NPDES) permit and prepare a Stormwater Pollution Prevention Plan (SWPPP). As part of the NPDES permit requirements, the contractor would develop and implement erosion and sediment control measures during construction. To minimize potential impacts to soil and water resources, BMPs, such as sediment dams or berms, diversion dikes, fiber roll erosion checks, riprap, and erosion control blankets, would be installed and maintained in accordance with the SWPPP.

Additionally, there is a potential risk of soil contamination from spills or leaks of fuel, oil, or other fluids. To mitigate this risk, a Spill Prevention, Control, and Countermeasure (SPCC) plan would be developed to minimize the likelihood of spills and provide clear procedures for containment and cleanup in the event of an incident.

***The proposed action would not have a significant impact on soils due to the implementation of a SWPPP, BMPs, SPCC plan and NPDES permit, and would not have a significant impact on soil permeability due to the amount of well-drained and moderately well drained, and moderately permeable soils adjacent to the new roadway, and vegetated non-roadway surfaces.***

### 3.3 Land Use

Land use within the study area consists largely of grasslands, followed by developed lands, pasture/hayland, and cropland. Developed lands within the study area consist of rural residences, roadways, small businesses, the City of Sawyer, City of Velva, City of Logan, and City of Voltaire. Please refer to **Table 8, Land Use in Study Area** and **Figure 22, Land Use**.

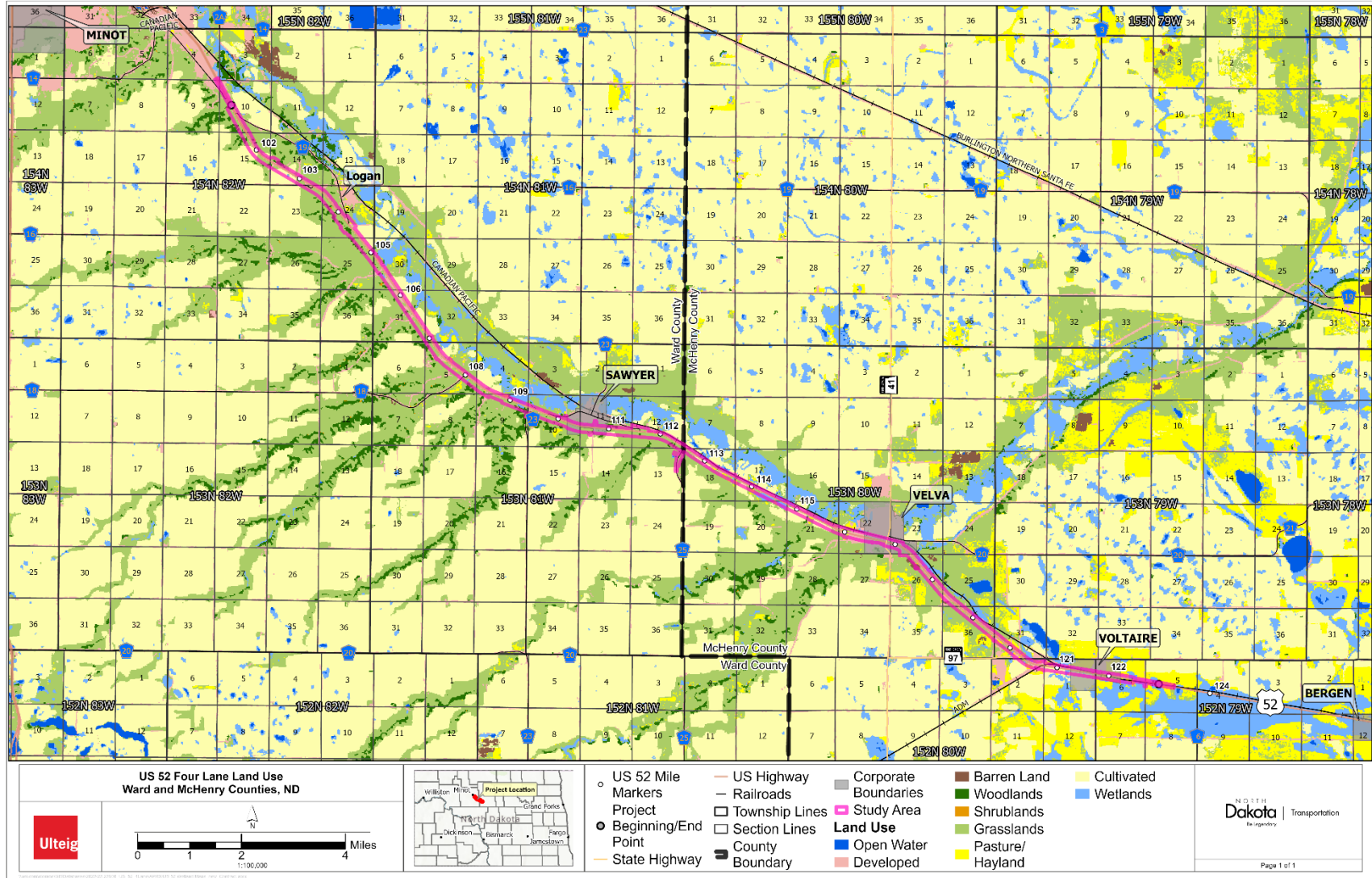


Figure 22, Land Use



Table 8, Land Use in Study Area

| Land Use        | Acres           |
|-----------------|-----------------|
| Barren          | 8.79            |
| Cultivated      | 161.95          |
| Developed       | 861.83          |
| Grasslands      | 827.85          |
| Wetlands        | 77.22           |
| Open Water      | 0.00            |
| Shrublands      | 0.56            |
| Woodlands       | 50.25           |
| Pasture/Hayland | 73.6            |
| <b>Total</b>    | <b>2,062.05</b> |

Source: (USDA/NASS, 2024)

Federal agencies that manage land within the study area include USACE and United States Fish and Wildlife Service (USFWS). A USACE-managed flood protection levee surrounds the community of Velva (see **3.9, Floodplain**). There are four USFWS wetland conservation easements that occur within Segments 5 and 6 on both the north and south sides of US Highway 52. USFWS wetland conservation easements are permanent legal agreements that protect wetlands on private land by prohibiting activities such as draining, filling, leveling, or burning. These easements remain in effect regardless of land ownership changes and are intended to preserve wetland habitat (see **3.7, Wetlands and Other Waters**). There are no state managed lands within the study area other than NDDOT roadway ROW.

Several land use planning, transportation improvement, and local, regional, and state planning documents apply to the study area that provide land use direction:

- **2025-2028 North Dakota Statewide Transportation Improvement Program (STIP):** Identifies numerous preventative maintenance projects within the study area (NDDOT, 2025).
- **Ward County Comprehensive Plan 2019:** Addresses county demographics, economy, housing, natural resources, infrastructure, and land use (Ward County, 2019a).
- **Ward County Transportation Plan:** Evaluates transportation needs and opportunities. Two focus areas are adjacent or within the study area: the Ward County Connector Corridor, a large project that would extend around the city of Minot and terminate northwest of Logan, and County Road 23 that extends through Sawyer (Ward County, 2019b).
- **Ward County Zoning Ordinances:** Applies within county boundaries, with the City of Sawyer maintaining its own zoning authority. Zoning districts in the study area include Agricultural Production, Highway Commercial, Rural Residential, and Residential Transition (Ward County, 2025; City of Sawyer, n.d.).
- **Ward County Floodplain Zoning Ordinance:** Applies within county boundaries, with the City of Sawyer maintaining authority within city boundaries and its extraterritorial area. Portions of the study area occur within regulated floodplains (Ward County, 2013; City of Sawyer, n.d.).
- **McHenry County Comprehensive Plan 2015-2035:** Identifies growth areas, including an existing community growth node around the City of Velva and a rural growth node west of Voltaire near US Highway 52 and ND Highway 97 (SRF Consulting Group, Inc., 2015).
- **McHenry County North Dakota Zoning Regulations:** Applies countywide. The City of Voltaire relies on county zoning regulations, while the City of Velva administers its own zoning authority (McHenry County, 2016; City of Velva, n.d.-b).

- **McHenry County Floodplain Ordinance:** Applies countywide. The City of Velva maintains authority within city boundaries and its extraterritorial area. The study area includes portions of regulated floodplains (McHenry County, 2016; City of Velva, n.d.-a).
- **2023-2027 North Dakota State Comprehensive Outdoor Recreation Plan (SCORP):** Identifies the study area as part of Region Two, where recreation needs focus on campgrounds, non-motorized trails, and parks/natural areas (NDPRD & Clearwater Communications, n.d.).

### 3.3.1 Alternative A

Alternative A would not result in ROW acquisition or impacts on land use as there would be no construction along the project corridor. Local, state, and regional transportation and land use plans would continue as planned.

### 3.3.2 Action Alternatives

The proposed action would result in permanent land use changes due to roadway construction and acquisition of new transportation ROW. Apart from Segment 4, where Alternative C is the only action alternative, Alternative B would have greater ROW acquisition and overall impacts on land use than Alternative C. Option V-1 would result in additional ROW acquisition and impacts on land use (see **Table 3, Right-of-Way Impacts**). Acquisition of ROW would primarily occur in linear strips parallel to the existing roadway corridor, in addition to block areas where necessary. Construction activities would require acquisition of temporary construction easements for land grading, stockpiling, access, and/or staging activities. These areas would be reclaimed following construction. Please refer to **Table 9, Land Use Impacts**.

*Table 9, Land Use Impacts*

| Land Use            | Land Use Impacts (acres) |        |        |        |        |        |        |                           |                        |                           |        |        |        |        |  |
|---------------------|--------------------------|--------|--------|--------|--------|--------|--------|---------------------------|------------------------|---------------------------|--------|--------|--------|--------|--|
|                     | Seg 1-6                  |        | Seg 1  |        | Seg 2  |        | Seg 3  |                           | Seg 4                  |                           |        | Seg 5  |        | Seg 6  |  |
|                     | Alt A                    | Alt B1 | Alt C1 | Alt B2 | Alt C2 | Alt B3 | Alt C3 | Alt C4 without Option V-1 | Alt C4 with Option V-1 | Option V-1 without Alt C4 | Alt B5 | Alt C5 | Alt B6 | Alt C6 |  |
| Barren              | 0.00                     | 0.00   | 0.00   | 1.03   | 0.38   | 0.00   | 0.00   | 0.00                      | 0.00                   | 0.00                      | 0.81   | 1.08   | 0.00   | 0.00   |  |
| Cultivated          | 0.00                     | 12.42  | 12.93  | 0.58   | 0.59   | 17.56  | 12.55  | 0.00                      | 0.00                   | 0.00                      | 0.00   | 0.00   | 8.69   | 7.20   |  |
| Developed           | 0.00                     | 245.02 | 248.74 | 87.43  | 80.60  | 100.32 | 99.86  | 32.26                     | 32.94                  | 0.69                      | 98.55  | 93.24  | 48.68  | 47.72  |  |
| Grasslands          | 0.00                     | 182.55 | 148.39 | 125.59 | 108.08 | 18.85  | 14.55  | 4.02                      | 4.02                   | 0.00                      | 38.51  | 24.36  | 0.00   | 0.00   |  |
| Wetlands            | 0.00                     | 0.33   | 0.25   | 4.50   | 4.06   | 11.55  | 8.36   | 0.00                      | 0.00                   | 0.00                      | 4.49   | 2.43   | 4.39   | 4.06   |  |
| Open Water          | 0.00                     | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00                      | 0.00                   | 0.00                      | 0.00   | 0.00   | 0.00   | 0.00   |  |
| Shrublands          | 0.00                     | 0.32   | 0.32   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00                      | 0.00                   | 0.00                      | 0.00   | 0.00   | 0.00   | 0.00   |  |
| Woodlands           | 0.00                     | 13.08  | 9.00   | 4.72   | 3.96   | 0.36   | 0.25   | 0.20                      | 0.20                   | 0.00                      | 0.00   | 0.00   | 0.00   | 0.00   |  |
| Pasture/<br>Hayland | 0.00                     | 2.18   | 2.42   | 0.71   | 0.71   | 6.97   | 5.26   | 0.00                      | 0.00                   | 0.00                      | 4.13   | 3.11   | 4.88   | 4.69   |  |

All land acquisitions would follow the requirements of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (the Uniform Act), as amended. Under the Uniform Act, public agencies must provide fair compensation, follow due process, and ensure that property owners are treated equitably. Landowners would be compensated for acquired property in accordance with federal standards.

The proposed action would be consistent with local, regional and state transportation plans. The project would coordinate design limits, schedules, and traffic control sequencing with NDDOT programming to

ensure compatibility with planned preventative maintenance activities. The proposed action would support Ward and McHenry Counties' comprehensive plan's infrastructure goals, such as Connector Corridor, CR 23 corridor through Sawyer, existing growth node in Velva, and rural growth node near US Highway 52 and ND Highway 97. The proposed action would create a more efficient roadway, maintain reliable rural connections to larger communities, and support economic activity and growth in alignment with Ward and McHenry Counties' future land use plans and goals. Option V-1 would positively contribute to the ND SCORP by creating a non-motorized trail for bicyclists and pedestrians.

***The proposed action would not have a significant impact on land use due to reclamation of temporarily impacted areas, adherence with the transportation and land use planning documents, adherence to the Uniform Act, and maintaining access to developed areas during construction.***

### 3.4 Farmland

The Farmland Protection Policy Act of 1981 (FPPA) provides protection to prime farmland, unique farmland, and farmland of statewide importance that may be converted as a result of federal actions. Prime farmland is land with the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops. It may include cultivated land, pastureland, forestland, or other land but does not include land already in or committed to urban development. Unique farmland is land other than prime farmland that is used for production of specific high-value food and fiber crops. Farmland of statewide importance is identified by state or local agencies as important for producing food, feed, fiber, forage, or oilseed crops but does not qualify as prime or unique.

There are approximately 837.42 acres of prime farmland and 13.38 acres of farmland of statewide importance within the study area. No unique farmland is present within the study area. Please refer to **Figure 23, Prime and Unique Farmland**.

The Natural Resource Conservation Service (NRCS) oversees compliance with the FPPA. For projects that have a linear- or corridor- type configuration connecting two distant points and crossing several different tracts of land, a *Farmland Conversion Impact Rating for Corridor Type Projects* (i.e., NRCS-CPA-106 form) is required to determine impacts on farmland in coordination with NRCS. The form assigns a ranked score based on a variety of factors, including the total number of acres of prime or unique farmland, the percentage of the corridor currently in agricultural use, and the amount of on-farm investments and corridor compatibility with ongoing agricultural operations. A score of up to 260 can be received, where the higher the score indicates the greater the impact on farmland. Scores below 160 indicate the project need not be given further consideration, while scores greater than 160 should be evaluated further to reduce conversion of farmland.

#### 3.4.1 Alternative A

Alternative A would not result in impacts to farmland as there would be no construction along the project corridor.

#### 3.4.2 Action Alternatives

The proposed action would convert farmland subject to protection under FPPA into a transportation use. Apart from Segment 4, where Alternative C is the only action alternative, and Segment 1, Alternative B would have greater impacts on prime and/or unique farmland than Alternative C. Option V-1 would result in additional impacts on prime farmland. Please refer to **Table 10, Impacts to Prime and Unique Farmland**.



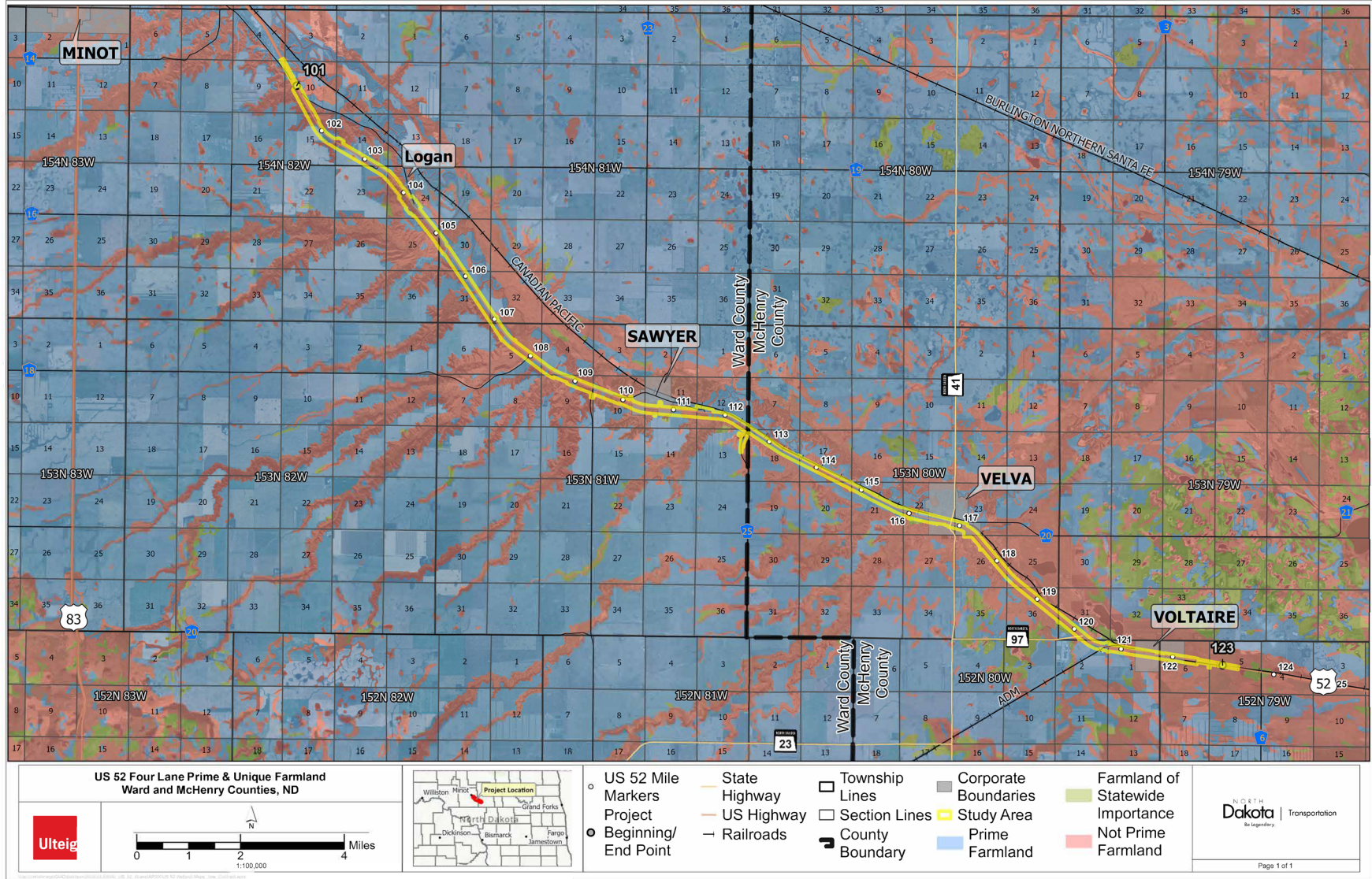


Figure 23, Prime and Unique Farmland

Table 10, Impacts to Prime and Unique Farmland

| Segment     | Alternative                       | Impacts (acres)                  |                |
|-------------|-----------------------------------|----------------------------------|----------------|
|             |                                   | Farmland of Statewide Importance | Prime Farmland |
| Segment 1-6 | Alternative A                     | 0.00                             | 0.00           |
| Segment 1   | Alternative B1                    | 0.00                             | 6.77           |
|             | Alternative C1                    | 0.00                             | 11.13          |
| Segment 2   | Alternative B2                    | 0.00                             | 3.75           |
|             | Alternative C2                    | 0.00                             | 1.30           |
| Segment 3   | Alternative B3                    | 0.00                             | 33.53          |
|             | Alternative C3                    | 0.00                             | 19.24          |
| Segment 4   | Alternative C4 without Option V-1 | 0.00                             | 0.33           |
|             | Alternative C4 with Option V-1    | 0.00                             | 0.71           |
|             | Option V-1 without Alternative C4 | 0.00                             | 0.38           |
| Segment 5   | Alternative B5                    | 0.00                             | 3.19           |
|             | Alternative C5                    | 0.00                             | 0.52           |
| Segment 6   | Alternative B6                    | 0.26                             | 0.00           |
|             | Alternative C6                    | 0.15                             | 0.00           |

Coordination with the NRCS has occurred and NRCS-CPA-106 forms were completed. All forms resulted in farmland conversion impact rating scores lower than 160 and therefore do not warrant further consideration of minimization or avoidance measures. Please refer to **Appendix E, Prime and Unique Farmland Documentation**.

**The proposed action would not have a significant impact on farmlands due to impacts not exceeding the allowable level according to the NRCS-CPA-106 form.**

### 3.5 Vegetation

Overall, the study area is dominated by mixed grass and native prairie communities, with naturally occurring shrubs and trees. Portions of the vegetation within the study area have been previously disturbed by hayland, pastureland, agricultural fields, residential areas, businesses, and industrial uses.

Various plant species were identified in the field and documented in the **Dakota Skipper Habitat Survey Report, Dakota Skipper Habitat Survey Memo, Aquatic Resources Delineation Report, and Aquatic Resources Delineation Report Addendum** (all appended by reference). Dominant species found during the wetland survey include: freshwater cordgrass (*Spartina pectinata*), woolly sedge (*Carex pellita*), three-square sedge (*Schoenoplectus pungens*), saltmarsh club-rush (*Bolboschoenus maritimus*), cattails (*Typha spp.*), Canada anemone (*Anemone canadensis*), fowl bluegrass (*Poa palustris*), common spikerush (*Eleocharis palustris*), Baltic rush (*Juncus balticus*), scouringrush horsetail (*Equisetum hyemale*), green ash (*Fraxinus pennsylvanica*), and creeping meadow foxtail (*Alopecurus pratensis*). Dominant species found during the Dakota skipper habitat survey include: little bluestem (*Schizachyrium scoparium*), purple coneflower (*Echinacea purpurea*), prairie sagewort (*Artemisia frigida*), prairie smoke (*Geum triflorum*), groundplum milkvetch (*Astragalus crassicaupus*), green needlegrass (*Nassella viridula*), field pussytoes (*Antennaria neglecta*), candle anemone (*Anemone cylindrica*), common yarrow (*Achillea millefolium*), western wall flower (*Erysimum capitatum*), wild bergamot (*Monarda fistulosa*), Kentucky bluegrass (*Poa pratensis*), and smooth brome (*Bromus inermis*).



A woody vegetation inventory was conducted in accordance with the NDDOT Design Manual and documented in the ***Aquatic Resources Delineation Report*** and ***Aquatic Resources Delineation Report Addendum*** (appended by reference). Species found within the study area include: American elm (*Ulmus americana*), Arnold hawthorn (*Crataegus mollis*), box elder (*Acer negundo*), bur oak (*Quercus macrocarpa*), chokecherry (*Prunus virginiana*), eastern cottonwood (*Populus deltoides*), green ash (*Fraxinus pennsylvanica*), mountain ash (*Sorbus americana*), peachleaf willow (*Salix amygdaloides*), nannyberry (*Viburnum lentago*), ponderosa pine (*Pinus ponderosa*), quaking aspen (*Populus tremuloides*), red osier dogwood (*Cornus alba*), rocky mountain juniper (*Juniperus scopulorum*), sandbar willow (*Salix interior*), silver buffaloberry (*Shepherdia argentea*), and spruce sp. (*Picea sp.*).

The North Dakota Parks and Recreation Department (NDRPD) maintains the North Dakota Natural Heritage biological conservation database, which contains current or historical records of plant species of concern or other significant ecological communities known to occur throughout the state. One ecological community was identified by NDRPD to be within 1-mile of the study area: a green ash-elm-boxelder (*Fraxinus pennsylvanica* - *Ulmus americana*) floodplain forest. Please refer to **Appendix B, Solicitation of Views Package and Responses**.

Under North Dakota Century Code (NDCC) 4.1-47-02, all individuals are required to take necessary and appropriate actions to control the spread of noxious weeds. The State of North Dakota has designated 13 species as noxious weeds (NDDA, n.d.):

- Absinth wormwood (*Artemisia absinthium* L.)
- Canada thistle (*Cirsium arvense* (L.) Scop.)
- Dalmatian toadflax (*Linaria genistifolia* spp. *dalmatica*)
- Diffuse knapweed (*Centaurea diffusa* Lam.)
- Houndstongue (*Cynoglossum officinale* L.)
- Leafy spurge (*Euphorbia esula* L.)
- Musk thistle (*Carduus nutans* L.)
- Palmer amaranth (*Amaranthus palmeri*)
- Purple loosestrife (*Lythrum salicari* L., *Lythrum virgatum* L., and all cultivars)
- Russian knapweed (*Centaurea repens* L.)
- Saltcedar (*Tamarisk* spp.)
- Spotted knapweed (*Centaurea maculosa* Lam.)
- Yellow toadflax (*Linaria vulgaris*)

In addition to the state-listed noxious weeds, counties and cities can list additional noxious weeds for control within their jurisdictions. Ward County has designated two additional species of noxious weeds for enforcement: scentless chamomile (*Anthemis arvensis* L.) and houndstongue (Ward County, n.d.). Noxious weeds known to occur within and adjacent to the study area include Canada thistle, absinth wormwood, and leafy spurge (James Hansen, personal communication, January 27, 2026).

### 3.5.1 Alternative A

Alternative A would not result in impacts on vegetation as there would be no construction along the project corridor. NDDOT would continue to control noxious weeds within ROW in accordance with NDCC 4.1-47-02.

### 3.5.2 Action Alternatives

The proposed action would convert existing vegetated areas into a transportation corridor (i.e., NDDOT ROW, roadway), with areas of both permanent (i.e., converted to impervious surface) and temporary impacts (i.e., areas that would be re-vegetated). Apart from Segment 4, where Alternative C is the only

action alternative, Alternative C would have a greater area of permanent vegetation conversion into new impervious surface than Alternative B. In Segment 4, Alternative C4 and/or Option V-1 would result in additional area of vegetation conversion into impervious surface (see **Table 7, Net Additional Impervious Surface Area**).

Beyond paved surfaces, the remaining area inside grading limits would be temporarily disturbed; these impacts are approximated in **Table 6, Earthwork Impacts**; however, impacts shown include impervious areas previously discussed. Apart from Segment 4, where Alternative C is the only action alternative, Alternative B would have greater temporary vegetation impacts than Alternative C. Option V-1 would result in additional temporary vegetation impacts. The proposed action would have varying impacts across different vegetation types such as cultivated, grasslands, wetlands, shrublands, woodlands, and pasture/hayland (see **Table 9, Land Use Impacts**).

The proposed action is not anticipated to impact any significant ecological communities as none were observed within the study area.

Construction activities have the potential to contribute to the spread of noxious weeds, as soil disturbance may redistribute seeds. The spread of noxious weeds can have a detrimental effect on local wildlife, aquatic species, land use, livestock, and recreation activities by invading plant communities and altering the existing ecological conditions.

Disturbed areas would be promptly revegetated with a grass seed mixture and/or cover crop in accordance with the NDDOT Standards and Specifications for Road and Bridge Construction (NDDOT, 2025) and NPDES permit requirements. Reseeding in some areas would be done in coordination with USFWS for Dakota skipper habitat mitigation purposes, with vegetation establishment monitored by NDDOT (see **3.11, Threatened and Endangered Species**). During construction, the contractor would be responsible for implementing noxious weed control measures. Following construction, NDDOT would assume responsibility for ongoing noxious weed control within its ROW.

Impacts to natural forests are not anticipated. Temporary impacts to native woody vegetation in riparian areas and woody draws would be reclaimed onsite at 1:1 ratio, while permanent impacts to native woody vegetation (i.e., trees and shrubs in natural settings) would be added to the NDDOT Tree Mitigation Ledger. Impacts to urban trees would be mitigated in coordination with the local public agency. Prior to impacts, woody vegetation to be removed in these areas would be recorded by a biologist and reviewed by NDDOT and added to the NDDOT Tree Mitigation Ledger.

***The proposed action would not have a significant impact on vegetation due to post-construction revegetation using NDDOT and USFWS approved seed mixtures, woody vegetation impacts added to the NDDOT Tree Mitigation Ledger, adherence to NDDOT standards and specifications to prevent the spread of noxious weeds, and the implementation of control measures during construction by the contractor and after construction by the NDDOT.***

### 3.6 Water Resources

The study area overlies the Voltaire, Souris River, and Sondre aquifers. The Souris River parallels much of the northern edge of study area. Surface water resources located within the study area include wetlands, drainages, creeks, tributaries of the Souris River (i.e., Spring Creek, Oak Creek, and several unnamed tributaries), and Erickson Lake. Please refer to **Figure 24, Water Resources**. Surface water resources are discussed further within **3.7, Wetlands and Other Waters** and water quality is discussed in **3.8, Water Quality**.



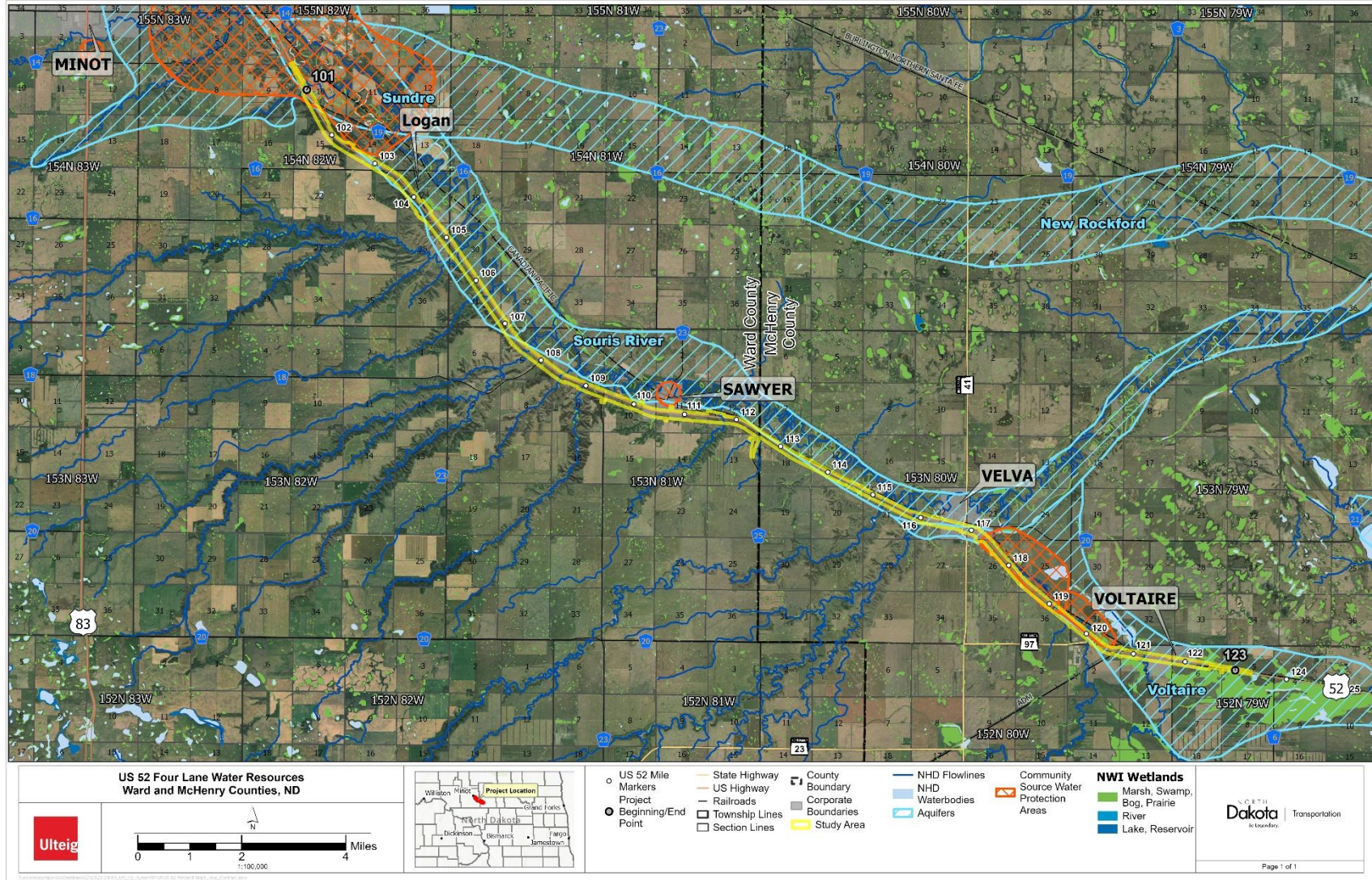


Figure 24, Water Resources

Sole-source aquifers are designated groundwater sources that serve as the exclusive or primary drinking water supply for a specific region and are protected under the Safe Drinking Water Act of 1974 (Public Law 93-523, 42 U.S.C. §300 et seq.). No sole-source aquifers have been identified or designated in North Dakota.

There are 14 drinking water suppliers in Ward County and seven in McHenry County, all of which rely on groundwater. The City of Sawyer receives its drinking water supply from North Prairie Rural Water District System III with supplemental water during high-demand periods from the City of Minot Water Treatment Plant. The City of Velva draws its drinking water directly from the Voltaire Aquifer via one municipal well and a gravity-flow spring well. The City of Logan and the City of Voltaire receive drinking water from the North Prairie Rural Water District System III (USEPA, 2025).

Community source water protection areas are designated to protect public water supplies from contamination. Three community source water protection areas occur within the study area, one located northwest of Logan, which is associated with the Minot-Sundre Aquifer, and two between Velva and Voltaire which is associated with the City of Velva and North Prairie Rural Water District (NDDEQ, 2025a).

#### 3.6.1 Alternative A

Alternative A would not result in impacts to water resources as there would be no construction along the project corridor.

#### 3.6.2 Action Alternatives

The proposed action would not impact sole source aquifers, as none have been designated in North Dakota. Additionally, no impacts to groundwater resources, drinking water quality, or source water protection areas are expected due to relatively shallow nature of earthwork occurring well above confining layers that separates the aquifer. An SPCC would be implemented, and care would be taken to avoid spills of materials that could adversely affect groundwater quality. If a spill does occur, it would be immediately reported to the North Dakota Department of Environmental Quality (NDDEQ) and remedial actions would be taken accordingly.

If previously unidentified observation wells are encountered during construction activities that may be impacted by the project, the Water Appropriation Division of the North Dakota Department of Water Resources (NDDWR) would be contacted.

***The proposed action would not have a significant impact on water resources due to the lack of sole source aquifers in North Dakota, the lack of anticipated groundwater, drinking water, and source water protection area disturbances, and implementation of an SPCC.***

### 3.7 Wetlands and Other Waters

Wetlands are areas that are inundated or saturated by surface or groundwater with a frequency and duration sufficient to support, and that under normal circumstances do support, vegetation or aquatic life requiring saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands are defined by three parameters: hydric soils, hydrophytic vegetation, and hydrology. Wetlands generally include swamps, marshes, bogs, prairie potholes, sloughs, and wetland fringes adjacent to streams. Wetlands are an important natural resource serving many functions, such as providing habitat for wildlife, storing floodwater, recharging groundwater, and improving water quality through natural infiltration. Other waters, such as streams, rivers, and lakes, are defined by an ordinary high water mark, which is a physical line on the shore established by water fluctuations characterized by changes in vegetation, erosion, debris, or other indicators.

Pursuant to 23 CFR 777.3, which implements Executive Order (EO) 11990, Federal agencies must take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the



beneficial functions of wetlands. Section 404 of the Clean Water Act (CWA) regulates the discharge of dredged or fill material into waters of the United States, including wetlands and other waters, that the USACE has jurisdiction over; permits may be nationwide or individual. For individual permits, USACE must determine the least environmentally damaging practicable alternative in accordance with US Environmental Protection Agency's (USEPA) Section 404(b)(1) Guidelines (40 CFR Part 230). Section 10 of the Rivers and Harbors Act regulates work in, over, or under navigable waters of the United States. The NDDWR's Sovereign Lands Management Regulatory Program applies to work occurring within the designated navigable lakes and streams.

A field aquatic resources delineation was completed for the proposed project on October 23-24, 2023, November 13-15, 2023, and June 3, 2025. There were 142 wetland segments identified within the study area, totaling 74.16 acres. Additionally, 37 other water segments were identified within the study area, totaling 6.92 acres/15,785 linear feet (for linear features). Findings were documented in an ***Aquatic Resources Delineation Report*** and ***Aquatic Resources Delineation Report Addendum*** (both appended by reference).

The USACE issued a jurisdictional determination for delineated wetlands and other waters on September 5, 2025 (NWO-2022-00132-BIS). There were 91 wetland segments and 29 other water segments determined to be jurisdictional under Section 404. In addition, all of the naturally occurring wetlands delineated are protected by EO 11990 and several wetlands are protected by USFWS wetland conservation easements. Please refer to ***Appendix B, Solicitation of Views Package and Responses*** and ***Appendix G, Wetland Documentation***.

There are no Section 10 waterbodies within the study area. The nearest navigable water is the Mouse (Souris) River, located approximately 230 feet north of the study area at its nearest point. There are no sovereign lands within the study area. The nearest sovereign land is the Souris River, located approximately 230 feet north of the study area at its nearest point.

### 3.7.1 Alternative A

Alternative A would not result in impacts to wetlands, other waters, or USFWS wetland conservation easements, as there would be no construction along the project corridor.

### 3.7.2 Action Alternatives

The proposed action would result in permanent impacts to wetlands and other waters via placement and removal of fill material as well as temporary construction disturbance. Apart from Segment 4, where Alternative C is the only action alternative, Alternative B would have greater permanent impacts on wetlands and other waters than Alternative C. Option V-1 would result in additional impacts on wetlands. Apart from Segment 4, where Alternative C is the only action alternative, and Segment 2, Alternative B would have greater permanent impacts on other waters than Alternative C. Through preliminary design, attempts were made to avoid and minimize impacts to wetlands to the extent practicable, such as steepening inslopes in deep fill sections. Please refer to ***Table 11, Wetland and Other Waters Impacts Summary*** and ***Appendix G, Wetland Documentation***.

Based on the jurisdictional determination issued on September 5, 2025, a Section 404 permit must be obtained from USACE prior to construction for impacts to jurisdictional waters. Depending on construction sequencing and total impacts to be permitted, USACE may determine that an individual permit is warranted. In that event, USACE would complete a Section 404(b)(1) analysis. Permanent impacts greater than 0.10 acres to USACE jurisdictional wetlands and any permanent impacts to natural wetlands pursuant to EO 11990 would be mitigated. Compensatory mitigation for USACE jurisdictional wetlands would occur via use of credits from a USACE approved wetland mitigation bank, ditch shifts, and/or offset by design. Mitigation for permanent impacts on all other natural wetlands would occur via

US Highway 52 Four Lane  
Project No. 4-052(109)101  
June 2026

Page 42  
PCN 24012  
Environmental Assessment

use of credits from a FHWA-approved wetland mitigation bank, ditch shifts, and/or offset by design. Permanent impacts greater than 0.030 acres of Other Waters would be mitigated by utilizing credits from a wetland mitigation bank at a 2:1 ratio. All mitigation options (banks, ditch shifts, and offset by design) would be reviewed in further detail during final design. Temporarily impacted wetlands or other waters would be restored to preconstruction contours and reseeded following construction. Please refer to **Appendix G, Wetland Documentation**.

Alternatives B and C would result in impacts to USFWS wetland conservation easements within Segments 5 and 6. A Special Use Permit would be obtained from USFWS and an easement exchange for the permanent impacts would occur. Please refer to **Appendix G, Wetland Documentation**.

***The proposed action would not have significant impacts on wetlands or other waters due to restoration of temporarily impacted wetlands, mitigation for permanently impacted wetlands, acquisition of a Special Use Permit and easement exchange, and acquisition of a Section 404 permit.***

*Table 11, Wetland and Other Waters Impacts Summary*

| Segments/Alternatives |                                   | Wetlands  |           | Other Waters |           |
|-----------------------|-----------------------------------|-----------|-----------|--------------|-----------|
|                       |                                   | Permanent | Temporary | Permanent    | Temporary |
| Segment 1-6           | Alternative A                     | 0.000     | 0.000     | 0.000        | 0.000     |
| Segment 1             | Alternative B1                    | 1.048     | 0.505     | 1.232        | 0.445     |
|                       | Alternative C1                    | 0.699     | 0.438     | 1.012        | 0.319     |
| Segment 2             | Alternative B2                    | 1.074     | 0.313     | 0.053        | 0.011     |
|                       | Alternative C2                    | 0.702     | 0.208     | 0.060        | 0.007     |
| Segment 3             | Alternative B3                    | 4.262     | 0.681     | 0.248        | 0.041     |
|                       | Alternative C3                    | 3.602     | 0.693     | 0.236        | 0.046     |
| Segment 4             | Alternative C4 without Option V-1 | 0.770     | 0.210     | 0.006        | 0.003     |
|                       | Alternative C4 with Option V-1    | 1.020     | 0.244     | 0.006        | 0.003     |
|                       | Option V-1 without Alternative C4 | 0.320     | 0.120     | 0.000        | 0.000     |
| Segment 5             | Alternative B5                    | 4.619     | 1.157     | 0.442        | 0.052     |
|                       | Alternative C5                    | 1.666     | 0.736     | 0.072        | 0.051     |
| Segment 6             | Alternative B6                    | 2.030     | 0.489     | 0.000        | 0.000     |
|                       | Alternative C6                    | 1.641     | 0.360     | 0.000        | 0.000     |

### 3.8 Water Quality

Standards for water quality in North Dakota are defined in NDAC 33.1-16-02.1 (formerly NDCC 33-16-02.1) in accordance with the CWA. Several waterbodies occur within the study area, including Oak Creek, Spring Creek, and other small tributaries. These waterbodies are not individually listed in NDAC 33.1-16-02.1 and are therefore classified as Class III streams, which are generally suitable for agricultural and industrial uses. No impaired waters occur within the study area. An impaired section of the Souris River occurs near Velva and is approximately 128 feet north of the study area (NDDEQ, n.d.).

Section 402 of the CWA establishes the NPDES permit program, which regulates the discharge of pollutants from point sources, such as construction stormwater runoff. Water Quality Certification under



Section 401 of the CWA is required in situations where a federal permit or license (e.g., CWA Section 404/10) is needed for an activity that may result in a discharge into waters of the US. Section 311 (33 U.S.C. § 1321) of the CWA prohibits the discharge of oil or hazardous substances in harmful quantities to navigable waters, adjoining shorelines, or the contiguous zone, and establishes the federal framework for spill prevention, preparedness, response, and liability. For construction activities, compliance is implemented primarily through USEPA's SPCC regulations (40 CFR Part 112).

### 3.8.1 Alternative A

Alternative A would not result in impacts to water quality as there would be no construction along the project corridor.

### 3.8.2 Action Alternatives

The proposed action has the potential to impact water quality in the study area due to roadway construction activities as a result of spills, erosion and sedimentation. Apart from Segment 4, where Alternative C is the only action alternative, Alternative B would have slightly more potential to impact water quality during construction than Alternative C due to a larger construction footprint. Option V-1 would result in additional potential to impact water quality during construction due to additional construction footprint (see **Table 6, Earthwork Impacts**).

The proposed action also has the potential to impact water quality in the study area due to operation of the roadway as a result of runoff. Apart from Segment 4, where Alternative C is the only action alternative, Alternative B would have less potential to impact water quality during operation than Alternative C due to vegetated center median slowing runoff and providing greater infiltration potential. Option V-1 would result in additional potential to impact water quality during operation due to the additional impervious surface. Section 401 Water Quality Certification would be obtained from NDDEQ, as necessary.

Spill risk would be minimized by implementing an SPCC plan pertaining to routine inspection/maintenance, trained crews, staged spill kits/absorbents, and controlled fueling and equipment maintenance away from surface waters and wetlands. Spills would be handled by immediately stopping the source, containing and cleaning up the release, and making required notifications.

The contractor would obtain an NPDES construction stormwater permit from NDDEQ and implement a SWPPP for proper stormwater management. Disturbed areas would be promptly revegetated with a grass seed mixture and/or cover crop in accordance with the NDDOT Standards and Specifications for Road and Bridge Construction and NPDES permit requirements, with final stabilization occurring when a uniform perennial vegetative cover with a density of 70 percent of the native cover for unpaved areas and areas not covered by permanent structure, or equivalent permanent stabilization. Reseeding in some areas would be done in coordination with USFWS for Dakota skipper habitat mitigation purposes. BMPs would be incorporated prior to, during, and after construction in accordance with the SWPPP to minimize potential water quality impacts. Typical BMPs that may be used on the project include, but are not limited to, fiber rolls, erosion control blankets, riprap, rock checks, stabilized construction accesses, silt fence, and seeding and mulching.

***The proposed action would not result in a significant impact on water quality due to the implementation of SWPPP, BMPs, and SPCC plan, as well as obtaining Section 401 Water Quality Certification.***

## 3.9 Floodplain

Federally funded activities in or affecting floodplains are regulated by EO 11988, Floodplain Management. EO 11988 address concerns over the potential loss of natural and beneficial functions of the nation's floodplains as well as the increased cost to Federal, state and local governments from flooding disasters caused or worsened by unwise development of the floodplain.

The project study area crosses multiple mapped floodplain areas within Ward and McHenry Counties, as documented by the Federal Emergency Management Agency (FEMA) on Flood Insurance Rate Maps (FIRM). Floodplains within the study area include Zone A (base flood elevation not published) and AE (base flood elevation is published), both of which are classified as Special Flood Hazard Areas with at least 1 percent annual chance of flooding (i.e., the 100-year floodplain). Zone B also occurs within the study area, which are classified as a moderate flood hazard with at least 0.2 percent annual chance of flooding (i.e., 500-year floodplain). In addition, an area with reduced flood risk occurs within the study area associated with a levee encompassing the City of Velva. A mapped floodway associated with the Souris River parallels much of the project corridor between Minot and Velva but does not occur within the study area. Please refer to **Figure 26, Floodplain and Floodway Map** and **Appendix H, FIRM Maps**. A Floodplain Non-Building Development permit is required from the applicable city or county for roadway projects within Special Flood Hazard Areas to ensure flooding is not exacerbated or obstructed by the project.

The historic Souris River flood in 2011 impacted communities throughout the Souris River basin, causing extensive damage to residences, businesses, farmland, and infrastructure. As a result, the Souris River Joint Water Resources Board's MREFPP recommended a grade raise along US Highway 52 within Segment 3 as a flood protection measure (see **2.4.3, Segment 3 RP 112.51 to RP 116.22**).

A USACE-managed flood protection levee surrounds the community of Velva. The levee crosses US Highway 52 on the west side of Velva and abuts the highway on the east side. This system was constructed to reduce flood risk for the community following major historic flood events in the 1970s and again in 2011. As a USACE civil works project, the levee is protected by Section 408 of the Rivers and Harbors Act (33 U.S.C. 408). Alterations to a civil works project must undergo USACE review to determine whether a proposed alteration will impair the usefulness of the project or be injurious to the public interest. Please refer to **Figure 25, Velva Flood Protection Levee**~~Error! Reference source not found.~~ and **Figure 27, Velva Flood Protection Levee Boundary**.



*Figure 25, Velva Flood Protection Levee*



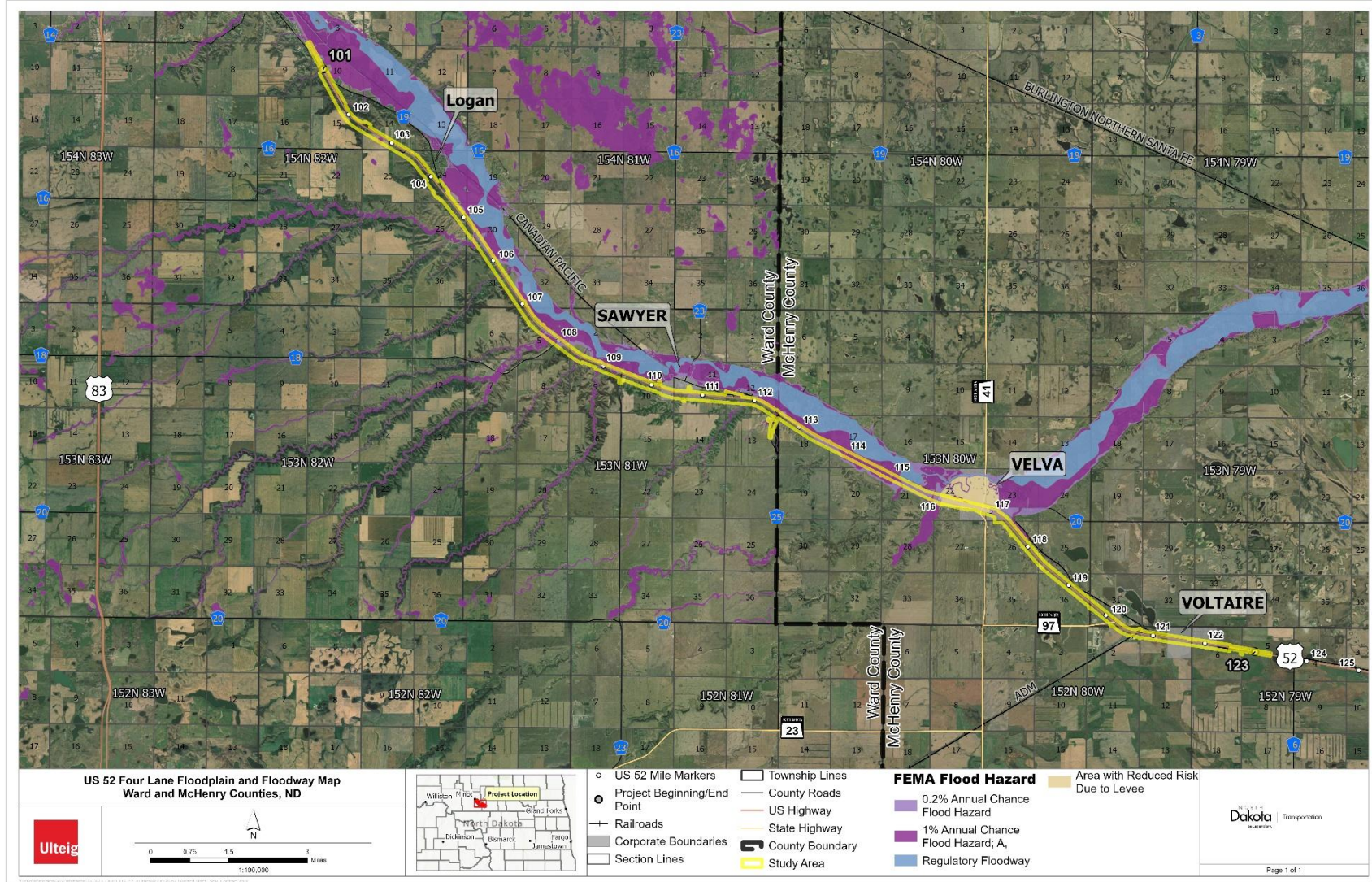


Figure 26, Floodplain and Floodway Map



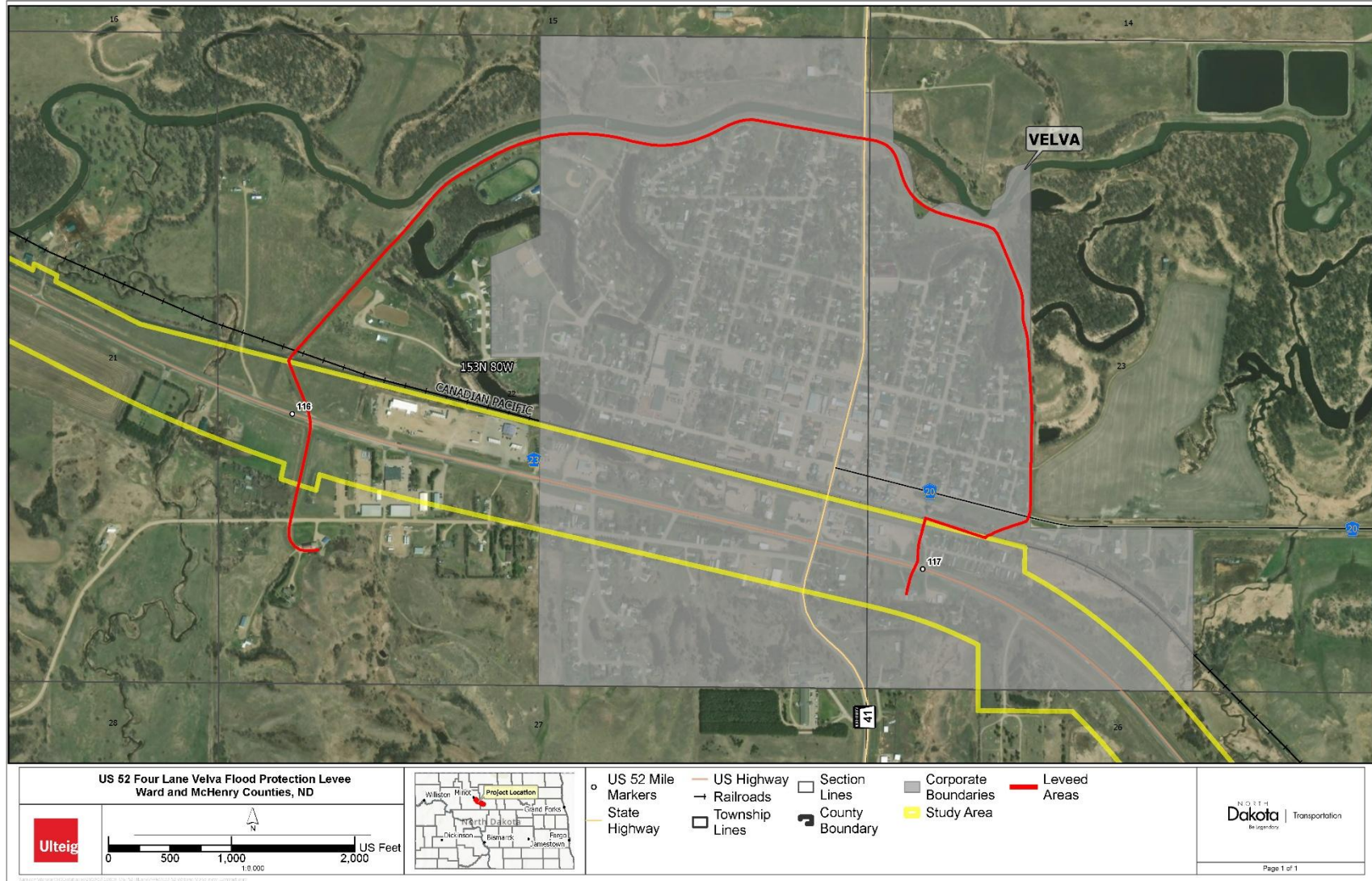


Figure 27, Velva Flood Protection Levee Boundary

An existing flood control structure is located near the community of Sawyer at RP 110.429 in Segment 2. The structure consists of an 84-inch by 188-foot reinforced concrete pipe constructed in 1959, with a flood control modification added in 1998. This 1998 modification includes a 24-inch by 52-foot reinforced concrete pipe inlet and a concrete riser, creating a “dry” dam using the highway embankment as an impoundment. The structure helps manage runoff from a steep, narrow watershed, reducing flood risk for Sawyer. Please refer to **Figure 28, Sawyer Flood Control Structure**.

The flood control structure is currently classified as a low-hazard dam and is regulated by the NDDWR. Impacts to low-hazard dams capable of handling more than 50-acre-feet require a construction permit from NDDWR according to NDCC 61-16.1-38. During permit review, NDDWR may re-evaluate the hazard classification of the structure, considering factors such as US Highway 52 (over 2,000 average daily traffic) and the presence of the town of Sawyer downstream. High- or significant-hazard dams require an Emergency Action Plan (EAP) under NDCC 61-03-25, which identifies potential emergency situations that could occur at a dam and specifies the course of action to be taken when an emergency situation arises.



*Figure 28, Sawyer Flood Control Structure*

### 3.9.1 Alternative A

Alternative A would not result in impacts to floodplains, the Velva flood protection levee, or the Sawyer flood control structure as there would be no construction along the project corridor. The MREFPP's recommended grade raise along US Highway 52 would not be implemented to minimize flood risk as part of the proposed action.

### 3.9.2 Action Alternatives

The proposed action would result in roadway construction within Special Flood Hazard Areas in Segments 1, 2, 3, and 5; therefore, floodplain non-building development permits would be required from both Ward and McHenry Counties as well as the cities of Velva and Sawyer under both Alternatives B and C. Option



V-1 does not occur within a Special Flood Hazard Area. During preliminary design, efforts were made to minimize impacts to floodplains. This included designing all centerline culverts to meet 25-year flood event design standards, structures (i.e., box culverts) to meet 50-year flood event design standards, and all hydraulic crossings designed so that the roadway does not overtop during a 100-year flood event.

Alternatives B and C in Segments 3 and 4 would impact the flood protection levee around Velva. Project design would maintain elevations so there is no impact to the integrity or functioning of the levee. Section 408 review and approval would be obtained from USACE for this alternative. Option V-1 would not impact the levee.

Alternatives B and C in Segment 3 would also result in the implementation of MREFPP's recommendation to raise the grade of US Highway 52 to improve flood protection.

Alternatives B and C in Segment 2 would impact the Sawyer flood control structure. Roadway widening would require lengthening the existing 84-inch pipe and replacing the drop structure to retain functionality. A construction permit would be obtained from the NDDWR and, in the event the dam is reclassified as a medium- or high-hazard dam, an EAP would be required and prepared.

Coordination with the Souris River Joint Board, who initiated the MREFPP, would occur during final design to ensure final design does not adversely impact the Velva flood protection levee or the Sawyer flood control structure.

***The proposed action would not have a significant impact on floodplains due to the acquisition of floodplain permits, maintenance of flood protection levee around Velva, implementation of MREFPP's recommended grade raise, coordination with Souris River Joint Board, acquisition of construction permit and EAP (if necessary) for flood control structure, and USACE Section 408 review for work at the Velva levee.***

### 3.10 Wildlife and Fisheries

Wildlife habitat within the study area includes wetlands, drainages, creeks, streams, planted and native grasslands, woodlands, and croplands. To determine baseline wildlife and habitat conditions within the study area, field surveys for the project were conducted in 2023, 2024, and 2025. Conditions found within the study area include: grasslands that could support pollinator species, grassland birds, insects, and small and large mammal movements throughout the corridor; aquatic and riparian corridors that could provide protection and forage for bat species, amphibians and reptiles, migratory birds; wetlands that could support fish, insects, and small mammals, as well as provide forage and rest for migrating birds and waterfowl; and cropland that could provide forage and rest for mammals and birds.

Habitats within the study area support various species of birds, mammals, reptiles, amphibians, fish, bats, mussels, and insects (NDGF, n.d.-c). Common species that have potential to be present include: American robin (*Turdus migratorius*), killdeer (*Charadrius vociferus*), western meadowlark (*Sturnella neglecta*), ring-necked pheasant (*Phasianus colchicus*), red-tailed hawk (*Buteo jamaicensis*), northern harrier (*Circus hudsonius*), bald eagle (*Haliaeetus leucocephalus*), groundhog (*Marmota monax*), American red squirrel (*Tamiasciurus hudsonicus*), thirteen-lined ground squirrel (*Ictidomys tridecemlineatus*), moose (*Alces alces*), white-tailed deer (*Odocoileus virginianus*), coyote (*Canis latrans*), red fox (*Vulpes vulpes*), badger (*Taxidea taxus*), racoon (*Procyon lotor*), muskrat (*Ondatra zibethicus*), mink (*Mustela vison*), beaver (*Castor canadensis*), plains gartersnake (*Thamnophis radix*), racer (*Coluber constrictor*), red-bellied snake (*Storeria occipitomaculata*), smooth greensnake (*Opheodrys vernalis*), plains hog-nosed snake (*Heterodon nasicus*), northern leopard frog (*Lithobates pipiens*), plains spadefoot (*Spea bombifrons*), Cope's gray treefrog (*Hyla chrysoscelis*), wood frog (*Lithobates sylvaticus*), western painted turtle (*Chrysemys picta bellii*), snapping turtle (*Chelydra serpentina*), northern pike (*Esox lucius*), walleye (*Sander vitreus*), yellow perch (*Perca flavescens*), smallmouth bass (*Micropterus dolomieu*), fathead minnows (*Pimephales pro*



*melas*), white suckers (*Catostomus commersonii*), redbelly dace (*Phoxinus eos*), creek chubs (*Semotilus atromaculatus*), big brown bat (*Eptesicus fuscus*), little brown bat (*Myotis lucifugus*), silver-haired bat (*Lasionycteris noctivagans*), hoary bat (*Lasiurus cinereus*), red bat (*Lasiurus borealis*), plains bumblebee (*Bombus terricola*), painted lady (*Vanessa cardui*), and monarch (*Danaus plexippus*) (Gillam et al., n.d.; iNaturalist, n.d.; NDGF, n.d.-b; NDSU et al., 2024; USFWS, 2012).

Aquatic nuisance species are organisms that disrupt the ecological stability of infested inland (e.g., rivers and lakes), estuarine or marine waters. Infestations may impair the recreational, commercial and agricultural uses of the water body, along with doing ecological damage (USEPA, 2026). There are currently eight invasive species present in North Dakota. These species include curly leaf pondweed (*Potamogeton crispus*), Eurasian watermilfoil (*Myriophyllum spicatum*), flowering rush (*Butomus umbellatus*), common carp (*Cyprinus carpio*), silver carp (*Hypophthalmichthys molitrix*), bighead carp (*Hypophthalmichthys nobilis*), grass carp (*Ctenopharyngodon idella*), and zebra mussels (*Dreissena polymorpha*). Common carp are common throughout the state and could occur within the study area; the remaining species are not currently found in Ward or McHenry counties (NDGF, n.d.-a).

The NDPRD maintains the North Dakota Natural Heritage biological conservation database, which contains current or historical records of animal species of concern known to occur throughout the state. Four wildlife species were identified by NDPRD to be within 1-mile of the study area: Arogos skipper (*Atrytone arogos iowa*), Dakota skipper, tawny crescent (*Phyciodes batesii*), yellow-breasted chat (*Icteria virens*). Only the yellow-breasted chat, a migratory bird, was observed in the study area, which was recorded between 1981 and 1991. Please refer to **Appendix B, Solicitation of Views Package and Responses**. These species are also recognized in the North Dakota State Wildlife Action Plan due to their conservation or need for information status (NDGFD, 2025).

The Migratory Bird Treaty Act (MBTA), 916 United States Code (USC) 703-712, provides protection for over 1,100 migratory bird species. Under the MBTA it is illegal to “take” protected species without a permit from the USFWS. “Take” is defined as any means or matter to hunt, pursue, wound, kill, possess, or transport any migratory bird, nest, egg, or part thereof. The study area lies within the Central Flyway of North America (USFWS, n.d.-b). As such, the area may be used as resting grounds for birds on their spring and fall migrations, as well as nesting and breeding grounds.

Protection for bald and golden eagles is provided through the Bald and Golden Eagle Protection Act of 1940 (16 USC 668-668d). The act, as amended, prohibits the “take” of bald or golden eagles, including their parts, nests, or eggs, without a permit issued by the Secretary of the Interior. “Take” includes pursuing, shooting, wounding, killing, capturing, trapping, collecting, molesting, or disturbing eagles. Disturbance is defined as actions that agitate or bother eagles to a degree likely to cause injury, reduce productivity by substantially interfering with breeding, feeding, or sheltering, or result in nest abandonment (USFWS, n.d.-a). According to the NDGFD, a bald eagle nest was present near the Velva Wildlife Club that was likely within 0.5 miles of the study area; however, the exact location was not known (Sandra Johnson, personal communication, October 21, 2025). During a field survey conducted on October 28, 2025, this nest was unable to be located and is assumed destroyed (Travis Leier, personal communication, October 29, 2025).

### 3.10.1 Alternative A

Alternative A would not result in impacts on general wildlife species, raptors, migratory birds, or animal species of concern as there would be no construction along the project corridor. Habitat fragmentation due to the existing roadway and wildlife mortality and injuries would continue to occur from vehicle collisions.

### 3.10.2 Action Alternatives

The proposed action would result in habitat loss by converting non-developed areas into a transportation corridor (see **Table 9, Land Use Impacts**). Apart from Segment 4, where Alternative C is the only action alternative, Alternative B would have greater habitat conversion than Alternative C. Option V-1 would not result in additional habitat conversion as existing land use is developed. The affected wildlife habitat is considered marginal due to the proposed action's proximity to urbanized and other developed areas (i.e., roadways, rural residences, businesses).

Construction activities and associated habitat loss may cause wildlife to avoid the area temporarily or permanently. Similar habitat types exist within the broader study area, which are expected to support permanently displaced wildlife. Most species are expected to either return after construction or adapt to ongoing disturbances. Some species may alter activity patterns, such as avoiding areas during periods of relatively high traffic volumes (Brett et al., 2025; Shamoan et al., 2018; Long et al., 2017).

Construction activities may result in mortality for species with limited mobility that are unable to avoid ground-disturbing operations; however, these impacts are anticipated to be minimal and would not affect overall species viability or contribute to population declines that would warrant consideration for federal listing.

Highway expansion would increase the distance for wildlife to travel across the roadway, potentially causing increased mortality from wildlife-vehicle collisions. The addition of two additional lanes also has potential to increase habitat fragmentation, disrupting landscape connectivity and restricting dispersal movements that risks biodiversity loss and limit access to resources.

Measures designed to minimize habitat degradation and/or offset habitat loss include: using NDDOT and USFWS approved seed mixtures, woody vegetation impacts added to the NDDOT Tree Mitigation Ledger, measures to prevent and control the spread of noxious weeds, erosion and sedimentation BMPs, and aquatic resources restoration and mitigation (see **3.5, Vegetation**; **3.7, Wetlands and Other Waters**; **3.8, Water Quality**; and **3.11, Threatened and Endangered Species**).

Activities that occur within aquatic resources have the potential to introduce aquatic nuisance species (ANS) to the waterbody. Impacts would be minimized by utilizing NDDOT's ANS commitment, which stipulated that equipment that was last used outside of North Dakota or within a Class I infested waterbody (identified on the NDGF website) must be inspected by NDGF. NDGF would be notified at least 10 business days prior to pumps, watercraft, or any equipment entering a public water to allow the NDGF sufficient time to inspect any and all such equipment for ANS. One of the following would be supplied to the Project Engineer as proof of compliance prior to work taking place in the water: (1) the NDGF inspection report, (2) documented NDGF correspondence (email or signed letter).

The proposed action is not anticipated to impact any species of concern. Only one of these, the yellow-breasted chat, was observed within the study area and the most recent documented observation was from more than 30 years ago. Mitigation and minimization measures would occur for migratory birds, as discussed below.

The proposed action is not anticipated to impact bald or golden eagles, as no known nests are present within 0.5 miles of the study area. If new nests are identified during construction, work within 0.5 miles would immediately stop, and NDDOT would coordinate with USFWS to determine protective measures.

The proposed action would result in relocation of overhead power lines (see **3.20, Utilities**). While collision hazards can degrade habitat quality for birds, these hazards are already present in the corridor, and no new power lines would be installed. To reduce the risk of flight collisions, NDDOT would request that utility companies install bird diverters at a 1:1 ratio (per linear foot) on any raised, lowered, and/or moved over

erhead utility lines that occur within 1 mile of whooping crane stopover habitat; however, utility companies may conclude that the placement of line markers is not feasible in certain conditions (see **3.11, Threatened and Endangered Species**).

Roadway construction would occur during the migratory bird nesting season (February 1 – July 15) (USFWS, 2025), which is typically when the birds are most vulnerable. If construction activities are to occur during the migratory bird nesting season, work areas would be mowed and/or grubbed prior to the start of the nesting season if possible. If mowing and/or grubbing is not completed prior to the nesting season, a qualified biologist would conduct preconstruction nest surveys within the work areas. If active nests are identified, NDDOT would coordinate with USFWS prior to commencement of work to determine any measures necessary to minimize harm. In addition, a modified Special Provision for the MBTA would be included with the Construction Specifications, with stipulations pertaining to nests during construction activities involving bridges, box culverts, and structural plate culverts and clearing and grubbing.

Fish and other aquatic species that may inhabit aquatic habitats throughout the study area are not anticipated to be indirectly impacted by the proposed action due to the implementation of BMPs and the SWPPP.

***The proposed action would not have a significant impact on wildlife and fisheries due to wetland and vegetation habitat mitigation; presence of ample comparable habitat including wetlands, grasslands, cropland, and aquatic and riparian corridors; implementation of BMPs and the SWPPP; potential implementation of bird diverters on overhead lines; migratory bird protections; and lack of golden and bald eagle nests near construction areas.***

### 3.11 Threatened and Endangered Species

Under Section 7 of the ESA of 1973, as amended, any action sponsored, funded or authorized by a federal agency must be evaluated for potential effects on species federally listed or proposed for listing as threatened or endangered. Under the ESA, endangered species are those in danger of extinction throughout all or a significant portion of their range, while threatened species are those likely to become endangered within the foreseeable future throughout all or a significant portion of its range (USFWS & Department of Interior, 1973). Candidate species are species for which the USFWS has sufficient information on biological status and threats to propose them as endangered or threatened, but for which development of a proposed listing regulation is precluded by higher-priority listing activities. Candidates receive no statutory protections under the ESA but are tracked for conservation (USFWS, 2017a). Proposed species are those candidate species that were found to warrant listing as either threatened or endangered, after completion of a status review and consideration of other protective conservation measures (NOAA, 2025). Critical habitat refers to specific geographic areas, occupied by the species at the time it was listed, that contain the physical or biological features essential to the conservation of endangered and threatened species and that may require special management or protection (USFWS, 2017b).

A **Biological Assessment (BA)** (appended by reference) was developed to analyze impacts to resources protected by the ESA in coordination with USFWS. A 1-mile buffer around the action alternatives was used as the “action area” for the BA. An action area, as defined in 50 CFR part 402.02, encompasses “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.”

For the BA, an official species list was generated via the USFWS Environmental Conservation Online System – Information, Planning, and Conservation that identified that the following resources may occur at the location of the proposed action:

- Northern long-eared bat (*Myotis septentrionalis*) – Endangered



- Whooping crane (*Grus americana*)– Endangered
- Piping plover (*Charadrius melodus*)– Threatened
  - Piping plover critical habitat
- Rufa red knot (*Calidris canutus rufa*)– Threatened
- Dakota skipper (*Hesperia dacotae*) – Threatened
  - Dakota skipper critical habitat
- Suckley’s cuckoo bumble bee (*Bombus suckleyi*)– Proposed endangered
- Monarch butterfly (*Danaus plexippus*)– Proposed threatened
- Western regal fritillary (*Argynnis idalia occidentalis*) – Proposed threatened

Species proposed for listing were not analyzed in the BA as they do not currently have protections under the ESA; further coordination with USFWS would occur in the event they become listed. Habitat characteristics for the remaining resources analyzed in the BA are summarized below.

#### Northern Long-eared Bat

Suitable summer habitat for the northern long-eared bat is present within the action area in the form of forested, interspersed non-forested areas, and man-made structures such as buildings, bridges, culverts, and cattle passes. Two **Northern Long-eared Bat Structure Assessment Memos** (both appended by reference) were prepared for assessments conducted on October 23-24, 2023; November 17-19, 2023; April 24, 2024; and June 4, 2025. None of the culverts/drainages and cattle passes assessed displayed evidence of bat use.

#### Whooping Crane

Potential migratory stopover habitat for the whooping crane is present within the action area in the form of cropland and wetlands. Generally, the species tends to prefer isolated stopover sites with minimal human presence or disturbances such as residences, roads, and other human activity (CWS and USFWS, 2007).

#### Piping Plover

Suitable habitat for the piping plover in the form of sparsely vegetated sandbars and gravel beaches adjacent to alkali lakes, wetlands, rivers and lakes is not present within the action area. Additionally, the project is not located within 0.5 miles of designated critical habitat.

#### Piping Plover Critical Habitat

Critical habitat for the northern Great Plains population of piping plovers has been designated on alkali lakes and wetlands, as well as along rivers and inland lakes (i.e., the Missouri River and Lake Sakakawea). While critical habitat for the piping plover occurs within both Ward and McHenry Counties, no designated critical habitat occurs within the action area for this species. The closest critical habitat is approximately 12.5 miles southeast of the action area.

#### Rufa Red Knot

In North Dakota the Rufa red knot has been known to use non-vegetated large permanent freshwater and alkali lakes and wetlands and have been observed along the Missouri River system and in sewage lagoons. Suitable habitat for the Rufa red knot in the form of sparsely vegetated sandbars and gravel beaches adjacent to alkali lakes, wetlands, rivers and lakes is not present within the action area. The sewage lagoons within the action area are located between approximately 0.25 and 0.7 miles from the study area and will not be impacted by the project.

#### Dakota Skipper

Suitable habitat for the Dakota skipper is present within the action area in the form of native prairie patches. Dakota skipper habitat surveys were conducted along the project corridor on June 5-6, 2024, and

June 3, 2025. A total of 39 patches of suitable Dakota skipper habitat were identified within the study area, totaling approximately 34.03 acres. Findings were documented in ***Dakota Skipper Habitat Survey Report*** and ***Dakota Skipper Habitat Survey Memo*** (both appended by reference).

#### Dakota Skipper Critical Habitat

Critical habitat for the Dakota skipper has been designated in six counties in North Dakota, including five units within McHenry County. No designated critical habitat occurs within the action area for this species. The closest critical habitat is approximately 17.5 miles northeast of the action area.

#### 3.11.1 Alternative A

Alternative A would not result in impacts on threatened or endangered species as there would be no construction along the project corridor.

#### 3.11.2 Action Alternatives

A **BA** (appended by reference) was prepared to analyze the effects of the proposed action on federally protected resources. For the BA, a single conservative worst-case scenario was used to evaluate potential impacts of the action alternatives and option, consistent with USFWS consultation practices that emphasize assessment of maximum reasonably foreseeable effects rather than comparison of alternatives and/or segments. The effect determination for each species evaluated are summarized in **Table 12, Threatened and Endangered Species Effect Determinations**.

*Table 12, Threatened and Endangered Species Effect Determinations*

| Determination                                        | Definition of Determination                                                                                                                                                                                                                                                                      | Protected Resource                                                                                                                                                              |
|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>No Effect</b>                                     | This determination is appropriate when the proposed project would not directly or indirectly affect (neither negatively nor beneficially) individuals of listed, proposed, candidate species or designated/proposed critical habitat of such species. <b>No concurrence from USFWS required.</b> | <ul style="list-style-type: none"> <li>• Piping plover</li> <li>• Rufa red knot</li> <li>• Piping plover critical habitat</li> <li>• Dakota skipper critical habitat</li> </ul> |
| <b>May Affect but Not likely to Adversely Affect</b> | This determination is appropriate when the proposed project is likely to cause insignificant, discountable, or wholly beneficial effects to individuals of listed species and/or designated critical habitat. <b>Concurrence from USFWS required.</b>                                            | <ul style="list-style-type: none"> <li>• Northern long-eared bat</li> <li>• Whooping crane</li> </ul>                                                                           |
| <b>May Affect and Likely to Adversely Affect</b>     | This determination is appropriate when the proposed project is likely to adversely impact individuals of listed species and/or designated critical habitat. <b>Formal consultation with USFWS required.</b>                                                                                      | <ul style="list-style-type: none"> <li>• Dakota skipper</li> </ul>                                                                                                              |

The proposed action is anticipated to have no effect on the piping plover as suitable nesting habitat is not present within the action area. The proposed action is anticipated to have no effect on the Rufa red knot as suitable habitat is limited within the action area and would not be impacted. The proposed action would have no effect on piping plover and Dakota skipper critical habitat as neither are present within the action area.

The proposed action may affect but is not likely to adversely affect the northern long-eared bat due to conversion of potential habitat, temporary lighting during construction, expansion of existing destination lighting footprint, and work on structures. The proposed action may affect but is not likely to adversely affect the whooping crane due to conversion of potential habitat and modification of overhead utilities that present collision hazards. The proposed action may affect and is likely to adversely affect the Dakota skipper due to conversion of suitable habitat.

The BA included several environmental commitments and conservation measures that would be implemented:

- Ensure all project operators, employees, and contractors are aware of pertinent environmental commitments and conservation measures.
- Conduct tree removal activities outside of the active season for the northern long-eared bat (April 15 – October 31). In the event any tree removal needs to occur during the active season, tree removal outside of pup season (June 1 – August 15) may be allowable in coordination with USFWS.
- Ensure tree removal is limited to that specified in the project's final plans. Install bright colored flagging/fencing prior to any tree removal to ensure contractors stay within clearing limits.
- North Dakota does not currently have documented northern long-eared bat roosts or foraging habitat. Evidence of a maternity colony was detected in 2024; however, this colony is not within the action area (USFWS, 2025; Hanna Edens, personal communication, May 20, 2025). In the event they are identified in the future, do not cut down documented roosts, trees within 0.25 miles of roosts, or documented foraging habitat during any time of year. If such trees or habitat would be impacted, further ESA consultation would be required.
- For temporary lighting that is utilized during construction, direct it away from trees during the active season for the northern long-eared bat (April 15 - October 31).
- For permanent lighting that is replaced, use downward-facing, full cut-off lens lights that are designed to be approximately the same intensity as previous lighting.
- Conduct bat structure assessments prior to structure or culvert work (within 2 years prior to commencement). If bats are not observed, no further action is required. If bats are observed, further ESA consultation would be required.
- To reduce the risk of flight collisions during the spring and fall whooping crane migration periods, NDDOT would request that utility companies install bird diverters at a 1:1 ratio (per linear foot) on any raised, lowered, and/or moved overhead utilities lines that occur within 1 mile of whooping crane stopover habitat. Each utility company would determine the type, number and placement/spacing of the line markers and may conclude that the placement of line markers is not feasible in certain areas.
- Mitigate impacted wetlands at a NDDOT approved mitigation bank, on site, and/or adjacent to the proposed action.
- Conduct one year of pre-construction Dakota skipper occupancy surveys of suitable habitat patches previously identified in accordance with current USFWS protocol.
  - If the pre-construction occupancy surveys indicate absence of the Dakota skipper, no further mitigation would occur.
  - If pre-construction occupancy surveys indicate occupancy of the Dakota skipper, an onsite/offsite Dakota skipper conservation bank would be established in accordance with the USFWS North Dakota Field Office Guidance for Dakota Skipper Conservation Site Establishment document. The exact mitigation ratio would be determined at a later date in coordination with USFWS and NDDOT. In addition, at least one year of post-construction occupancy survey(s) would occur after vegetation establishment in disturbed areas and within five years following construction.
- Fence and avoid previously identified suitable Dakota skipper habitat that is not planned to be directly impacted during construction activities.
- Implement standard dust control measures required under the general construction permit.
- Reseed disturbed areas within 250 meters of previously identified suitable Dakota skipper habitat with a seed mix high in native grasses and forbs.



- During operation of the highway, NDDOT maintenance staff would control noxious weeds within their ROW via spot spraying and other eradication methods, not including broadcast spraying.
- Handle waste materials in compliance with state and federal regulations and dispose of in a way that prevents harm to water channels and riparian zones.
- Implement BMPs and a SWPPP. Various techniques may be used such as mulching, matting, and netting; installing filter fabric fencing; utilizing sediment traps and ponds; creating surface water interceptor swales and ditches; limiting the quantity of stockpiled materials; and ensuring stockpiles are stored away from surface water sources.
- Notify the project engineer immediately in the event any threatened or endangered species is identified within 1 mile of the proposed action. Cease all construction activities, establish at least a 0.5-mile avoidance area, and immediately coordinate with the USFWS, FHWA, and NDDOT Environmental and Transportation Services. Do not resume work within the avoidance area until the project engineer has confirmed with the agencies that work may proceed (either species have left the area or approved minimization measures have been implemented).

On January 21, 2026, USFWS concurred via informal consultation with “may affect, but is not likely to adversely affect” determinations for the northern long-eared bat and the whooping crane. In addition, USFWS concurred via formal consultation with a “may affect, is likely to adversely affect” determination for the Dakota skipper and provided a Biological Opinion indicating the proposed action is not likely to jeopardize the continued existence of the species. There is no requirement to obtain concurrence for “no effect” determinations and USFWS did not provide such concurrence for piping plover, Rufa red knot, piping plover critical habitat, and Dakota skipper critical habitat. Please refer to **Appendix F, USFWS Documentation**.

The Biological Opinion included reasonable and prudent measures that would be implemented according to specific terms and conditions (further guidance is provided in the document):

- Ensure all project personnel understand where clearly marked delineated suitable habitat is located and prior to the start of soil/vegetation disturbance activities.
- Preemptively lay out spoil pile locations, fueling, and/or staging areas to avoid, to the maximum extent practicable, the destruction of occupied, assumed occupied or potential Dakota skipper habitat identified in the project area.
- Contract a USFWS-permitted Dakota skipper surveyor to conduct occupancy surveys, using the most recent USFWS protocol, within the suitable habitat identified during botanical surveys. Provide USFWS with an annual report following any year Dakota skipper occupancy surveys are completed that details the survey findings.
- Design and implement a monitoring plan to ensure that the anticipated amount or extent of incidental take is not exceeded. Provide an annual report and shapefile to USFWS showing the actual disturbance of the proposed project, in relation to those activities that are expected to result in incidental take of the Dakota skipper. Ensure all conservation measures addressed in the description of the proposed action are formally adopted and implemented.
- Offset impacts to suitable habitat by either purchasing credits from a USFWS approved Dakota skipper bank, establishing offsite or onsite mitigation site in accordance with the most recent USFWS guidance for Dakota skipper conservation bank establishment, or an alternative plan that is approved by the USFWS.
- Terms and conditions of the Biological Opinion require notifying USFWS within three working days upon locating any dead, injured, or sick endangered or threatened species specimen.

The Biological Opinion also included discretionary recommended conservation measures that would be implemented if practicable (further guidance is provided in the document):

- Maintain a 250-meter buffer between project activities and suitable habitat and a 500-meter buffer between project activities and known occupied suitable habitat and/or designated critical habitat during the flight period (June 10 – July 25).
- Off-set adverse effects to the Dakota skipper from the project through preservation, restoration, or mitigation for impacts to grassland habitat in coordination with USFWS.
- Work proactively with the USFWS and others on Dakota skipper recovery actions. This includes identifying and remedying potential threats to Dakota skipper recovery.
- Seek technical assistance from USFWS throughout the entirety of the project.
- Consult experts and utilize the most up to date peer-reviewed research to make informed decisions when amending adaptive management into any mitigation plans.
- Promote restoration and enhancement projects for Dakota skippers and other pollinator species.

***The proposed action is not anticipated to have a significant impact on threatened and endangered species due to compliance with Section 7 of the Endangered Species Act, implementation of environmental commitments and conservation measures, reasonable and prudent measures, and recommended conservation measures as practicable. The proposed action would have no effect, would not likely result in adverse effects, or would not likely jeopardize the continued existence of the species considered.***

### 3.12 Social and Economic

The study area occurs within Ward and McHenry Counties. Three incorporated communities (i.e., Sawyer, Velva, and Voltaire) and one unincorporated community (i.e., Logan) are located within the study area. Each serve as key nodes for local transportation, commerce, and community life. The study area includes a variety of residences, businesses, schools, churches, cemeteries, recreational facilities (see **3.14, Section 4(f) Properties**), lodging, emergency services, and agricultural resources.

Between 2010 and 2035, the population in Ward and McHenry Counties is expected to increase by approximately 32 to 58 percent, respectively, which is above average in comparison to adjacent counties (SRF Consulting Group, Inc., 2015). Growth in employment and industry are also expected to increase in both counties driven by agriculture, oil and gas, and US Government installations and services (i.e., Minot Air Force Base and associated facilities) (see **1.4.4, Social and Economic Demand**).

The US Highway 52 corridor plays a crucial role in the regional economy, serving local and regional commuters, freight transportation, and the movement of agricultural products and equipment. This segment of road connects many smaller communities to larger cities, providing access to not only urban centers but also to homes, neighborhoods, and businesses along the corridor. This segment of US Highway 52 is classified as an interregional corridor, which prioritizes truck traffic and typically supports travel speeds between 60 and 70 mph. The USAF 91<sup>st</sup> Missile Wing has also designated the corridor as a mission-essential route for their operations. Overall traffic volumes are highest near Minot and are expected to increase by approximately 35 to 45 percent from 2023 to 2047. The corridor carries a substantial volume of truck traffic, with the highest truck percentage between Velva and Voltaire (see **1.4.2, Existing and Future Traffic Needs**).

Public and local officials have expressed a desire for a four-lane corridor, citing safety concerns as one of the primary driving needs. Traffic volumes are expected to increase along US Highway 52 within the study area. Trucks currently make up between 21 and 32 percent of traffic within the study area. Crash rates along the corridor fall within typical ranges for similar highways, with the crash rates through Velva observed to be the highest. Approximately 22 percent of total crashes within the overall study area involved trucks. While the **US Highway 52 Traffic Operations Report** (appended by reference) does not indicate that the project corridor is statistically less safe than comparable highways, there is a consistent

perception among drivers that the roadway feels unsafe which is likely influenced by the high percentage of truck traffic that may lead some drivers to attempt riskier passing maneuvers as well as the rugged terrain of the Souris River valley and associated roadway features that can reduce driver comfort (see **1.4.1, Perceived Safety Issues**).

Segment 4 is the only segment with existing pedestrian facilities. Currently, pedestrian accommodations are limited to a sidewalk along the east side of ND Highway 41, located both north and south of the US Highway 52 intersection, with a marked pedestrian crossing at the intersection. The crossing is marked with signs and pavement markings. No additional pedestrian facilities are located within the study area. There are no bicycle facilities within the study area.

### 3.12.1 Alternative A

Alternative A would not result in beneficial impacts on the social and economic environment as there would be no construction along the project corridor. This alternative would not address perceived safety issues, existing and future traffic needs, or social and economic demands; therefore, Alternative A would not meet the purpose and need for the proposed action.

### 3.12.2 Action Alternatives

The proposed action would result in beneficial impacts on the social and economic environment. These beneficial impacts would address perceived safety issues, existing and future traffic needs, and social and economic demands; therefore, the proposed action would meet the purpose and need for the proposed action. Alternative B would provide additional safety benefits compared to Alternative C as a depressed center median would provide greater protection from head-on collisions. Alternative C4 would improve pedestrian safety at the US Highway 52 and ND Highway 41 intersection by upgrading the crosswalk. Option V-1 would provide a dedicated path for both pedestrians and bicyclists, enhancing pedestrian connectivity and safety.

Expanding US Highway 52 to four lanes would better accommodate both current and projected traffic demands, while also supporting future growth along the route. As the region continues to grow, the demand for a more efficient and reliable highway system increases. The expansion would help meet these needs, support economic development, and enhance connectivity for both civilian and military purposes. In addition, expanding the corridor to four lanes would address safety concerns by increasing passing opportunities, improving sight distances, accommodating traffic more effectively, and upgrading the corridor to current roadway design standards. These improvements are predicted to reduce head-on, angle, and rear-end collisions by approximately 42 to 74 percent.

For both alternatives, expanding the roadway would bring the highway physically closer to some residences, businesses, and community services that are located along the project corridor. This physical alteration would also have traffic noise and visual resource implications (see **3.17, Noise** and **3.18, Visual**).

Under Alternative B, two buildings on the south side of US Highway 52 would be removed to accommodate the roadway footprint. These consist of shed/outbuildings in Segment 2 at RP 109.85 and in Segment 3 at RP 112.60. Removals would be coordinated with affected landowners during ROW negotiations. No buildings would be impacted or relocated due to Alternative C or Option V-1. Construction limits were adjusted throughout the corridor to avoid impacts to the extent practicable, with small retaining walls as an option during landowner ROW negotiations where appropriate.

Construction activities would result in short-term impacts on the travel patterns of drivers along the corridor. Traffic would continue to utilize US Highway 52 during construction with the use of temporary bypasses and median crossovers, as necessary; a detour route is not anticipated. Traffic control would be utilized as needed, including signage, shoulder closures, temporary lane closures, signage, flaggers, and/or pilot cars. Frequent and open two-way communication between the USAF, the contractor, NDDOT,



and the project engineer would occur to minimize disruption to US Highway 52 as a mission essential route for the USAF 91<sup>st</sup> Missile Wing. Access to homes and businesses would be maintained during construction. Temporary mailboxes may be used as necessary during construction. Any negative impacts from construction would be temporary in nature and would be restored following construction.

Construction of the proposed action would result in a temporary increased need for construction workers, increasing construction employment opportunities, and the demand for local services associated with these personnel.

***The proposed action would have an overall beneficial impact on the social and economic environment due to accommodating existing and future traffic volumes, improving safety, addressing social and economic demands, maintaining access to homes and businesses during construction, incorporating safety mechanisms during construction, temporary construction employment opportunities, and temporary increased demand for services and supplies during construction.***

### 3.13 Cultural Resources

Section 106 of the National Historic Preservation Act (NHPA) of 1966 (16 USC 470), as amended, requires that federally funded projects be evaluated for their effects on historic properties *listed*, or *eligible* for listing, on the National Register of Historic Places (NRHP). The Archaeological Resources Protection Act of 1979, as amended (16 USC 470aa – 470mm; Public Law 96-95) provides protection to archaeological resources and sites located on public lands and Native American lands, and provides Federal officials increased authority to better manage and protect public archaeological sites. Certain information is not included in this EA, as information concerning the nature and location of archaeological resources and traditional cultural resources is confidential.

A Class I Literature Review of the State Historical Society of North Dakota site and manuscript files was conducted on October 19, 2023. The purpose of the literature review was to determine if any cultural resources have been previously recorded or if any cultural resource inventories have been previously conducted within the area of potential effect (APE) and a surrounding 1-mile buffer.

A Class III Cultural Resource Field Inventory and Architectural Inventory were conducted within the APE in October 2023, November 2023, April 2024, June 2024, and May 2025. Traditional Cultural Specialists from the Standing Rock Sioux Tribe were present in the field for the archaeology survey. The purpose of the Class III inventory was to identify and document all cultural resources within the APE. Findings were documented in a ***Class III Cultural Resource Inventory - Architectural Sites*** and a ***Class III Cultural Resource Inventory - Archaeological Sites*** (both appended by reference).

Several sites within the APE required testing and evaluation to determine if the sites were *eligible* for inclusion in the NRHP. Testing took place May 7-14, May 20-28, and June 3-10, 2025, in accordance with a ***Cultural Resource Testing and Evaluation Plan*** (appended by reference). Findings were documented in ***Cultural Resource Testing and Evaluation Report*** (appended by reference).

A total of 32 extant non-architectural resources were identified within the APE plus one resource that had been previously destroyed and mitigated as a result of a separate project. Of the extant non-architectural resources, 15 are recommended not eligible, 12 are unevaluated, and five are recommended eligible for listing on the NRHP. A total of 48 architectural resources were identified within the APE. Of these, 43 are recommended not eligible, one is unevaluated, and four are recommended eligible for inclusion in the NRHP.

Section 106 of the NHPA requires federal agencies to consult with federally recognized Indian tribes when a project may affect properties of traditional religious and cultural significance. The Tribal Consultation committee was consulted on this project on September 4, 2024; April 8, 2025; and September 9, 2025.

### 3.13.1 Alternative A

Alternative A would not result in impacts on cultural resources as there would be no construction along the project corridor.

### 3.13.2 Action Alternatives

Cultural resources that are not eligible for listing on the NRHP generally do not warrant avoidance or further measures. However, two architectural sites consisting of cemeteries that are not eligible would be avoided by the proposed action as they are protected by State burial laws; these sites would also be monitored by an archaeologist during construction. In addition, two non-architectural sites that are not eligible for listing on the NRHP would be monitored during construction as they may have been part of a larger site, along with a third site that has been recommended eligible for listing on the NRHP.

Cultural resources that are unevaluated for listing on the NRHP generally warrant avoidance unless further work is done to assess eligibility for listing. Four unevaluated cultural resources would be avoided by the proposed action. The remainder of the unevaluated resources are associated with site leads or isolated finds, whereby no evidence of sites were identified within the APE; therefore, these resources do not warrant avoidance.

Cultural resources that are eligible for listing on the NRHP generally warrant avoidance and/or additional measures. Alternatives B and C would result in the placement of fill within one eligible resource; no excavation would occur within the resource. This site, along with the aforementioned two sites that are not eligible for listing on the NRHP, would be monitored by an archaeologist during construction. In addition, an architectural feature, a shed, would be removed under Alternative B; the shed is part of a larger site that includes an eligible architectural feature, a barn, which would not be impacted. The remaining eligible sites would be avoided by the proposed action, with non-architectural sites fenced during construction to minimize the risk of inadvertent disturbance.

The North Dakota State Historic Preservation Office (NDSHPO) has concurred with a determination that the proposed action would have “No Adverse Effect” on cultural resources that are on or eligible for listing on the NRHP, provided that the aforementioned fencing, monitoring, and avoidance stipulations are adhered to. Please refer to **Appendix C, NDSHPO Documentation**. In addition, NDSHPO concurred with determinations for geotechnical soil borings of “No Historic Properties Affected” on March 14, 2024, and “No Adverse Effect” on cultural resources on October 23, 2024, provided the borings take place in the location and in the manner described in the documentation and provided all borrow comes from an approved source. These concurrence letters were included in two **Categorical Exclusion by Definition Checklists for Geotechnical Soil Borings (March 2024 and December 2024)** (both appended by reference).

Prior to construction, an unanticipated discovery plan would be developed, identifying the procedures and requirements to follow if cultural resources are discovered during construction.

***The proposed action would not have a significant impact on cultural resources due to fencing, monitoring, and avoidance stipulations, and development of an unanticipated discovery plan.***

### 3.14 Section 4(f) Properties

Section 4(f) of the Department of Transportation Act of 1966, as codified in 49 USC 303 and 23 USC 138, specifies that the Secretary shall not approve any program or project that requires the use of publicly owned land from a public park, recreation area, wildlife or waterfowl refuge, or any publicly or privately owned historic site *listed* or *eligible* for listing on the NRHP, unless (1) there is no feasible or prudent avoidance alternative to the use of the land, and (2) the action includes all possible planning to minimize harm to the property resulting from such use. A use of Section 4(f) property occurs when (1) land is

permanently incorporated into a transportation project; (2) there is temporary occupancy of land that is adverse in terms of the statute's preservation purpose; or (3) there is a construct use.

In the event there is use of a Section 4(f) property, approval pathways may consist of applying a nationwide programmatic evaluation, preparing an individual evaluation, or making a de minimis impact determination (i.e., a determination that the proposed action results in no adverse effects). Alternately, an exception to approval may be applied in accordance with 23 CFR 774.13.

Two recreational Section 4(f) properties were identified within the study area: Sno-Trails Snowmobile Trails, managed by Snowmobile North Dakota and occurs within NDDOT roadway ROW, and the Sawyer Baseball Diamond, managed by the Sawyer School District. Please refer to **Figure 29, Recreational Section 4(f) Properties**.

In addition, Section 4(f) also applies to cultural resources that are listed on or eligible for listing on the NRHP. These sites are discussed in **3.13, Cultural Resources**.

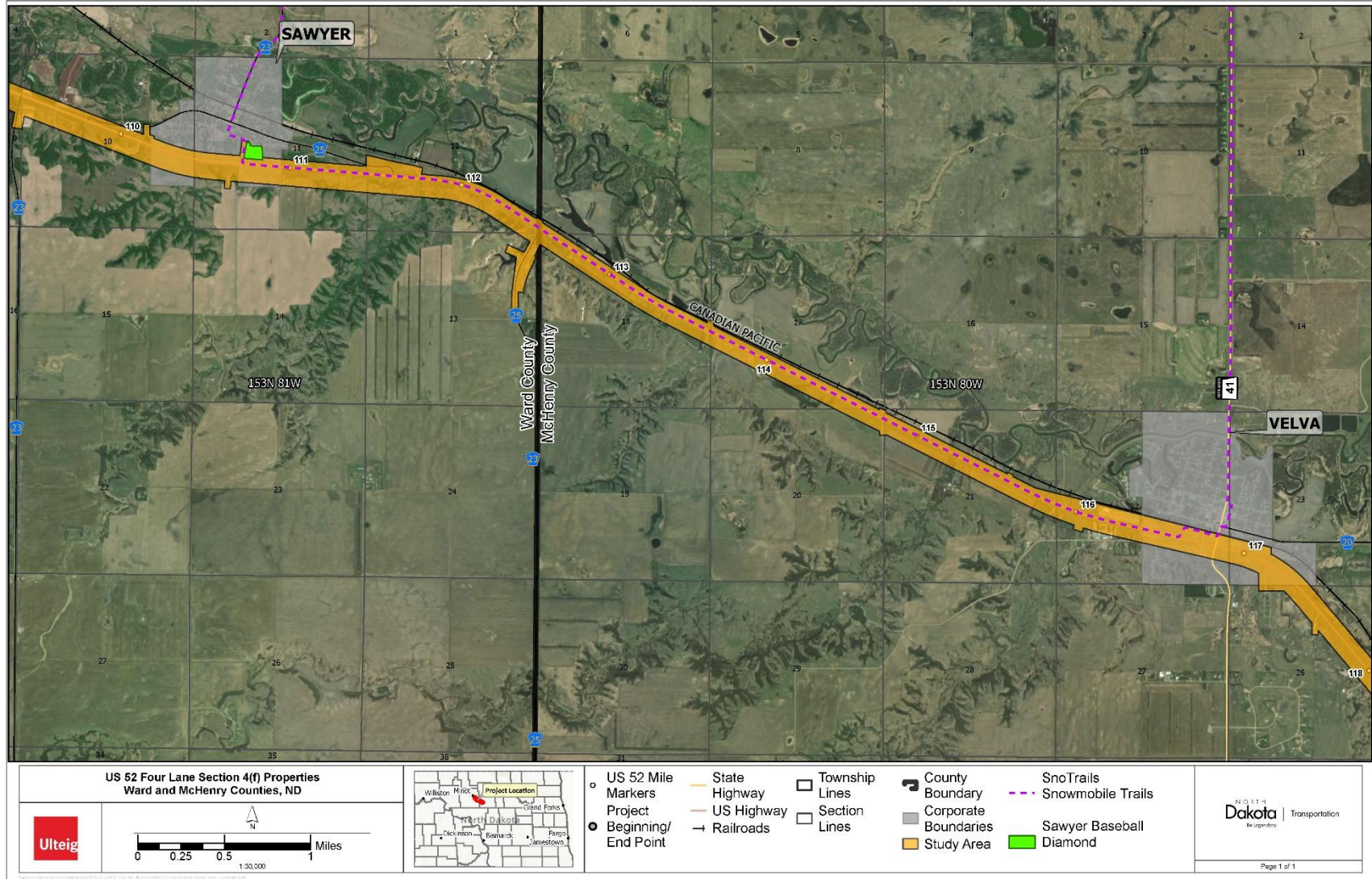


Figure 29, Recreational Section 4(f) Properties



### 3.14.1 Alternative A

Alternative A would not result in impacts to Section 4(f) properties as there would be no construction along the project corridor.

### 3.14.2 Action Alternatives

The Sawyer Baseball Diamond, located in Segment 2, would be temporarily impacted during construction under Alternative B. Approximately 0.27 acres of temporary easement would be acquired along the south side of the baseball diamond property to aid in the constructability of the project, whereby the area may be subject to stockpiling of topsoil, placement of erosion control devices, and movement of construction equipment. Temporary impacts to the property within the construction easement would not interfere with any activities, features, or attributes of the property. Access to Sawyer Baseball Diamond would be maintained during construction. Following construction, the area would be restored to pre-construction conditions including regrading and reseeding of any disturbed areas. No permanent impacts to the Sawyer Baseball Diamond would occur. On January 26, 2026, the Sawyer Public School District concurred with the conditions of the exception to Section 4(f) approval under 23 CFR 774.13(d), which pertains to temporary occupancies of land that are so minimal as to not constitute a use. Please refer to **Appendix D, Section 4(f) Documentation**.

The Sno-Trails Snowmobile Trails would be temporarily impacted during construction by Alternatives B and C in Segments 2, 3, and 4 and Option V-1 in Segment 4. The action alternatives and optional work item would result in flat ditch bottoms, where applicable, which would follow a route similar to the existing snowmobile trail. While the use of riprap in the ditch is necessary in various locations for the proposed roadway improvements, riprap would not block or prevent use of the route by trail users such that the trail would remain functional with connectivity maintained. On January 23, 2026, Snowmobile North Dakota concurred with the conditions of the exception to Section 4(f) approval under 23 CFR 774.13(f)(3), which pertains to trails within transportation facility ROW. Please refer to **Appendix D, Section 4(f) Documentation**.

As discussed in **3.13, Cultural Resources**, Alternatives B and C would result in placement of fill within an archaeological cultural resource that is eligible for listing on the NRHP. The NDSHPO has concurred with a no adverse effect determination for Section 106 NHPA and has been consulted regarding Section 4(f). As such, the exception to Section 4(f) approval under 23 CFR 774.13(b) has been applied, which pertains to archaeological resources that have minimal value for preservation in place.

***The proposed action would not have a significant impact on Section 4(f) properties due to minimal temporary occupancy of the Sawyer Baseball Diamond that does not constitute a use, maintenance of trail connectivity for the Sno-Trails Snowmobile Trails, and consultation with the NDSHPO regarding the archaeological site whereby a no adverse effect Section 106 NHPA determination was made.***

## 3.15 Infrastructure

Infrastructure within the study area includes roadways, drainage structures, flood control structures (see **3.9, Floodplain**), railroads, utilities (see **3.20, Utilities**), lighting, ITS technology, and fences. The CPKC rail line parallels portions of the study area on the north side of US Highway 52. An at-grade railroad crossing is located in Segment 5 at RP 120.65. Infrastructure also includes the Sawyer Water Tower, an electrical substation in Velva and another between Velva and Voltaire, and ITS technology in the form of a camera and infrared illuminator mounted on a steel pole in Segment 1 at RP 102.7.

### 3.15.1 Alternative A

Alternative A would not result in beneficial or adverse impacts to infrastructure as there would be no construction along the project corridor. Improvements to the existing transportation infrastructure network would not be made. Routine maintenance would occur along the existing roadways.

### 3.15.2 Action Alternatives

The proposed action would result in beneficial impacts to the transportation roadway network. Improvements to the existing roadway and associated infrastructure (e.g., lighting, ITS, drainage structures) would vary by segment, as described in **Chapter 2: Alternatives**. Option V-1 would establish a dedicated shared-use path for both pedestrians and bicyclists, improving multimodal access within the community.

The CPKC rail line parallel to US Highway 52 would not be impacted by the proposed action and construction limits would remain outside of the railroad ROW. Improvements would be made to the roadway around the at-grade railroad spur crossing, while the crossing itself would remain. The proposed action would not impact the electrical substations or water tower. The proposed action would impact existing fences, which would be shifted and replaced in coordination with affected landowners.

***The proposed action would have an overall benefit on transportation infrastructure and minor modifications to other existing infrastructure.***

### 3.16 Air Quality

Pursuant to the Clean Air Act (CAA), air quality in a given region is evaluated based on the concentration of specific criteria pollutants. The USEPA, under 40 CFR Part 50, has established National Ambient Air Quality Standards (NAAQS) that define allowable concentration limits for six primary criteria pollutants:

- Ozone (O<sub>3</sub>),
- Carbon monoxide (CO),
- Nitrogen dioxide (NO<sub>2</sub>),
- Sulfur dioxide (SO<sub>2</sub>),
- Particulate matter (i.e., tiny particles of solid or semi-solid material) that is equal to or less than 10 microns in diameter (PM<sub>10</sub>) and particulate matter with a diameter of 2.5 microns or less (PM<sub>2.5</sub>) and,
- Lead (Pb).

Although volatile organic compounds (VOCs) are regulated under the NAAQS program due to their role in ozone formation, specific ambient air quality standards have not been established for these pollutants.

The State of North Dakota has adopted the NAAQS and established its own State Ambient Air Quality Standards (SAAQS) for criteria pollutants, as outlined in NDAC Chapter 33-15-02-04. The NDDEQ has developed a State Implementation Plan (SIP) that outlines how the state will maintain the NAAQS and address air quality concerns. North Dakota is below all SAAQS standards for criteria pollutants, according to the North Dakota Ambient Air Quality Monitoring Program 2025 Annual Report (NDDEQ, 2025b).

The NDDEQ prepared a SIP revision in 2022 to address regional haze, in accordance with Section 308 of the federal visibility protection regulations (NDDEQ, 2022). This plan includes strategies to reduce visibility impairment caused by air pollutants, particularly in federally designated Class I areas, such as national parks, monuments, or wilderness areas. There are no federal Class I areas within the study area. The nearest Class I area is the Lostwood National Wildlife Refuge, which is located approximately 65 miles northwest of the study area.

Fugitive dust from paved roads arises from vehicle emissions, including exhaust, brake wear, and tire wear, as well as the resuspension of loose material on the roadway surface due to traffic and wind. The environmental impact of fugitive dust depends on the volume and dispersion potential of particles released into the atmosphere. Larger particles typically settle near the source, creating localized nuisance issues, while finer particles can be transported over greater distances and contribute to regional air pollution. The principal pollutant of concern associated with fugitive dust is particulate matter less than

10 microns in diameter (PM<sub>10</sub>). According to the NDDEQ 2025 Annual Air Quality Report, both the state and the nearest ambient air quality monitoring site to the study area are in attainment for PM<sub>10</sub> under the NAAQS. Guidance from the USEPA emphasizes the importance of implementing BMPs to control fugitive dust from roads, construction, agriculture, and industrial activities (USEPA, 2022).

#### 3.16.1 Alternative A

Alternative A may result in impacts to air quality due to increased emissions (i.e., fugitive dust, criterial pollutants) associated with projected traffic volume increases.

#### 3.16.2 Action Alternatives

The proposed action has the potential to affect local air quality conditions, primarily through construction-related emissions and changes in traffic patterns. During construction, temporary increases in airborne pollutants such as particulate matter (PM), nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), and volatile organic compounds (VOCs) may occur due to equipment operation, material handling, and vehicle activity. These emissions are expected to be localized and short-term, with impacts diminishing once construction is complete. Apart from Segment 4, where Alternative C is the only action alternative, Alternative B would have slightly more potential to impact air quality during construction than Alternative C due to a larger construction footprint. Option V-1 would result in additional potential to impact air quality during construction due to additional construction footprint (see **Table 6, Earthwork Impacts**). During construction, impacts on air quality would be minimized by implementing dust control and properly maintaining equipment.

During operation of the roadway, changes in traffic volume and flow may influence long-term air quality. Since the expansion of the current two-lane highway into a four-lane highway would improve traffic efficiency and reduce congestion, it could lead to lower emissions per vehicle mile traveled. However, increased capacity may also induce additional traffic that currently uses other routes, potentially offsetting these benefits within the study area. The study area is currently in attainment for SAAQS and the proposed action is not expected to cause exceedances.

***The proposed action would not have a significant impact on air quality due to dust control and equipment maintenance during construction, lack of impairment to any Class I areas, lack of contribution to violation of SAAQS, lack of substantial increase in particulate matter concentrations, and temporary nature of construction emissions.***

### 3.17 Noise

Traffic noise is regulated under 23 CFR Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise. A traffic noise analysis is required by law for federally funded projects and by NDDOT policy for projects requiring federal authorization that meet the definition of a Type I project. The proposed action meets the definition of a Type I project due to the construction of a highway at a new location and the physical alteration of an existing highway involving substantial changes in horizontal alignment. Accordingly, a **Traffic Noise Analysis Report** (appended by reference) was prepared in accordance with 23 CFR Part 772, the FHWA Highway Traffic Noise Analysis and Abatement Policy Guidance (2011), and the NDDOT Noise Policy and Guidance. The purpose of the noise analysis was to determine the existing and projected future traffic noise levels for the no action alternative and action alternatives.

As part of the noise analysis, a buffer (500 feet from the proposed roadway alternatives) was established as a noise study area. Activity categories, land use classifications used by the FHWA, were applied to the properties within the noise study area. Receptors were then placed in the model at various locations within the noise study area to represent areas of frequent human use where traffic noise is studied.

To determine the noise levels along the corridor, FHWA Traffic Noise Model 2.5 was used to develop existing conditions (2023) noise model, future (2047) no-build conditions model, and future (2047) build conditions model for each alternative in each segment. According to the NDDOT Noise Policy and Guidance, a traffic noise impact occurs when one of the following two conditions are met:

- Traffic-generated noise levels are within 1 A-weighted decibels (dB(A)) of the FHWA Noise Abatement Criteria (NAC).
- An increase of 15 dB(A) is projected to occur regardless of the absolute noise level, either upon project completion or projected 20 years hence.

If a receptor is found to be impacted, noise abatement, such as a noise wall, must be considered.

#### 3.17.1 Alternative A

Under Alternative A, the new roadway would not be constructed; therefore, noise levels along the corridor would increase gradually in the future as traffic levels are projected to increase along the corridor.

For the Alternative A existing conditions (2023) scenario, traffic noise levels within the noise study area ranged from 49.2 to 67.1 dB(A). No receptors under the existing conditions meet or exceed the FHWA NAC.

For the Alternative A future (2047) scenario, traffic noise levels ranged from 51.0 to 68.2 dB(A). Six receptors along the corridor would result in impacts as the noise levels meet or exceed the FHWA NAC. None of the receptors under the future no-build scenario would have an increase of 15 dB(A) from the existing to future conditions.

The traffic noise study identified impacts for receptors in the future no-build (Alternative A) condition. Though there are modeled impacted receptors with the future (2047) no-build alternative, the NDDOT does not have a program for, or consider noise abatement for Type II projects (i.e., noise abatement on an existing highway); therefore, noise abatement was not analyzed for Alternative A.

#### 3.17.2 Action Alternatives

The proposed action would result in changes to the vertical and horizontal location of traffic along the corridor, altering the noise environment. In addition, noise levels along the corridor would increase gradually in the future as traffic levels are projected to increase along the corridor.

For the Alternative B future (2047) scenario, traffic noise levels ranged from 51.1 to 67.3 dB(A). Three receptors along the corridor would result in impacts as the noise levels meet or exceed the FHWA NAC. None of the receptors under the Alternative B future build scenario would have an increase of 15 dB(A) from the existing to future conditions.

For the Alternative C future (2047) scenario, traffic noise levels ranged from 49.1 to 68.0 dB(A). Four receptors along the corridor would result in impacts as the noise levels meet or exceed the FHWA NAC. None of the receptors under the Alternative C future build scenario would have an increase of 15 dB(A) from the existing to future conditions.

Seven noise abatement walls (i.e., walls 1 – 7) were analyzed for impacts to receptors in the future build conditions (Alternatives B and C). Noise abatement walls 1 and 2 were evaluated in Segment 3, noise abatement wall 3 was evaluated in Segment 4, and noise abatement walls 4 - 7 were evaluated in Segment 6. For noise abatement walls 1, 2, and 3, the modeled barriers were unable to reduce the traffic noise levels by at least 5 dB(A) for 80 percent of the first-row receptors; therefore, the walls in these locations were not considered feasible and reasonableness was not evaluated.



Noise abatement walls 4, 5, 6, and 7, would reduce traffic noise levels by at least 5 dB(A) for 100% of first row receptors located in the noise study area and were considered feasible; however, traffic noise abatement is not recommended for impacts in these locations under Alternative B and Alternative C because the noise abatement walls were not deemed to be reasonable. They were not considered reasonable as the cost per benefited receptor exceeds NDDOT's cost effectiveness and the noise reduction design goal was not met, which requires at least a 10 dB(A) reduction in noise for 80 percent of benefited first-row receptors.

The proposed action would result in temporary impacts on the noise environment during construction. The temporary construction noise would vary based on the type of equipment used, the area the equipment is used in, and the distance from the noise source to the receptors. Construction noise would be localized, short-term, and intermittent during operation. Construction noise impacts would be reduced by implementing BMPs (limiting construction hours, installing mufflers on engines, etc.)

***The proposed action would not have a significant impact on highway traffic noise due to compliance with 23 CFR 772; localized, short term, intermittent nature of construction noise; and BMPs implemented during construction. While traffic noise impacts were identified during the analysis and abatement was considered; the proposed abatement was considered feasible, but not reasonable, in accordance with the NDDOT Noise Policy and Guidance. Therefore, abatement is not recommended for the proposed action.***

### 3.18 Visual

The FHWA's Guidelines for the Visual Impact Assessment of Highway Projects (FHWA, 2015) provides guidance on how to evaluate impacts on visual quality for roadway projects, which is based on visual resources, visual character, and viewer perception of viewsheds. Viewsheds are the whole of what a viewer can see from a given vantage point. Viewsheds are considered 'static' when seen from a particular point (e.g., from a scenic overlook) and 'dynamic' when seen in sequence while moving (e.g., from a moving vehicle). Visual resources are the natural and cultural (i.e., developed) features of the environment that can be seen in a viewshed. When taken together, visual resources make up the visual character of a viewshed and contribute to the overall impression that a viewer has of the area.

Viewers associated with roadways consist of neighbors and travelers. The perception viewers have of visual resources in a viewshed determines the visual quality of the area. In a natural environment, visual quality is based on whether visual resources contribute to, or detract from, a sense of natural harmony. In a cultural environment, visual quality is based on whether visual resources contribute to, or detract from, a sense of orderliness.

Visual resources in the study area include topography, vegetation, aquatic resources, developed areas, infrastructure, and buildings. The viewsheds within the study area range from the urban areas of Logan, Sawyer, Velva, and Voltaire, to rural residences and businesses, to undeveloped areas including pasture/hayland, cropland, grassland, waterbodies, and woodlands. Visual quality is subjective to the viewer; for example, residential or recreational viewers may place higher value on natural harmony while commercial or industrial viewers may place higher value on cultural order. Please refer to **Figure 30, US Highway 52 Viewshed** for a visual of US Highway 52 as an example of the landscape.

Protected visual resources are those that are afforded protection by local, state, or federal plans or policies, or where overwhelming community interest warrants protection. No protected visual resources were identified within or adjacent to the study area.



Figure 30, US Highway 52 Viewshed

### 3.18.1 Alternative A

Alternative A would not result in impacts on visual resources as there would be no construction along the project corridor.

### 3.18.2 Action Alternatives

The proposed action would permanently and temporarily impact existing visual resources within the study area by reshaping terrain, modifying vegetation and infrastructure, and under Alternative B, removing two buildings. These changes would impact the viewshed for neighbors and travelers. Apart from Segment 4, where Alternative C is the only action alternative, Alternative B would have a slightly greater impact on visual resources and viewsheds than Alternative C due to a larger construction footprint. Option V-1 would result in additional impact on visual resources and viewsheds (see **Table 6, Earthwork Impacts**). The new and modified visual resources would be consistent with existing transportation facilities in the area. As such, impacts on visual resources are generally anticipated to be compatible with the existing visual character for neighbors and travelers, and adverse impacts on visual quality are not anticipated.

Construction activities, primarily site preparation, are anticipated to produce short-term visible emissions of particulate matter in the form of fugitive dust. These emissions are expected to be most pronounced during initial site preparation and will fluctuate based on the phase of construction, intensity of activity, and prevailing weather and wind conditions. To minimize these impacts, appropriate dust control measures, such as watering and restricting vehicle access, would be implemented as needed.

***The proposed action would not have a significant impact on visual resources due to consistency with existing transportation facilities in the area, as well as the temporary and localized nature of construction activities and dust control measures.***

## 3.19 Hazardous Waste

Under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) [42 U.S.C. § 9601(14)], a hazardous substance is defined as any material listed under several federal environmental statutes, including the CWA, CAA, Solid Waste Disposal Act, and Toxic Substances Control Act. These substances may include elements, compounds, mixtures, or wastes that pose a risk to human health or the environment. However, the definition excludes petroleum products, such as crude oil and its fractions, unless they are specifically listed as hazardous. It also excludes natural gas, natural gas liquids, liquefied natural gas, and synthetic gas used as fuel.

The Resource Conservation and Recovery Act (RCRA) governs the generation, handling, storage, treatment, and disposal of solid and hazardous wastes to prevent releases to the environment and protect human health. Facilities or properties that manage or store substantial quantities of hazardous substances or wastes and have the potential to release these materials, or have documented releases, are subject to reporting and regulatory oversight under CERCLA, RCRA, and related state programs. The NDDEQ and USEPA maintain databases to monitor and track such facilities.

A review of NDDEQ environmental incident records identified several historical spill and release incidents in the vicinity of the study area (i.e., intersecting sections), primarily involving petroleum products, hydraulic oil, saltwater, or agricultural materials. Most incidents were small in volume and have been documented as cleaned up, closed, or requiring no further action; one incident has an unknown status and one site has completed a Phase II Environmental Site Assessment with no additional information available. In addition, two leaking underground storage tank (LUST) sites have been identified within the study area, each of which have received either cleanup completion or a closure letter. Multiple underground storage tanks (USTs), both active and inactive, are also present in the study area, primarily associated with commercial or utility facilities. Available records indicate no known hazardous materials sites requiring active remediation within the study area. Please refer to **Table 13, NDDEQ Environmental Incidents**, **Table 14, Leaking Underground Storage Tanks**, and **Table 15, Underground Storage Tanks**.

*Table 13, NDDEQ Environmental Incidents*

| Responsible Party                  | Location                                      | Date of Incident  | Material Spilled                                  | Medium Affected | Current Status                                                                                  |
|------------------------------------|-----------------------------------------------|-------------------|---------------------------------------------------|-----------------|-------------------------------------------------------------------------------------------------|
| Unknown                            | Section 5, Township 153 North, Range 81 West  | August 14, 1985   | 4,000 Gallons Crude Oil, 10,000 Gallons Saltwater | N/A             | Unknown                                                                                         |
| Cenex C-Store                      | Section 22, Township 153 North, Range 80 West | February 6, 2001  | 13.5 Gallons Super No-lead Gasoline               | N/A             | Spill contained; clean up completed                                                             |
| Canadian Pacific Railway           | Section 25, Township 153 North, Range 80 West | June 26, 2001     | 20 Gallons Hydraulic Oil                          | N/A             | Reviewed - No Action Required                                                                   |
| Goose Neck Implement               | Section 22, Township 153 North, Range 80 West | January 1, 2009   | 1,650 Gallons Hydraulic Oil                       | Soil            | Spill contained; clean up completed; residual material withing boundary of concrete containment |
| Ratzlaff Motor Express, Inc.       | Section 26, Township 153 North, Range 80 West | November 20, 2014 | 15 Gallons Engine Oil                             | Water and Soil  | Clean up concluded: December 12, 2014                                                           |
| Dakota Midland Grain               | Section 6, Township 152 North, Range 79 West  | March 10, 2015    | 10 Gallons Diesel Fuel                            | Soil            | Spill contained; clean up completed                                                             |
| Farmers Union Oil Company of Velva | Section 22, Township 153 North, Range 80 West | September 1, 2017 | 15 Gallons Roadmaster Diesel Fuel                 | Asphalt         | Spill contained; clean up completed                                                             |
| Enerbase                           | Section 23, Township 153 North, Range 80 West | March 3, 2023     | Dry Fertilizer                                    | Soil            | Phase II Environmental Site Assessment completed                                                |

Table 14, Leaking Underground Storage Tanks

| Facility         | Location  | County  | LUST Status            | LUST Status Date |
|------------------|-----------|---------|------------------------|------------------|
| Erv's Service    | Velva, ND | McHenry | Site Cleanup Completed | 11/9/1994        |
| Cenex 52 C Store | Velva, ND | McHenry | Closure Letter         | 6/28/2018        |

Table 15, Underground Storage Tanks

| Facility                 | Location   | County  | Facility Status |
|--------------------------|------------|---------|-----------------|
| Erv's Service            | Velva, ND  | McHenry | Inactive        |
| Cenex 52 C Store         | Velva, ND  | McHenry | Inactive        |
| Parkland USA Corporation | Velva, ND  | McHenry | Inactive        |
| KS Launder-it            | Velva, ND  | McHenry | Inactive        |
| Flowers Too              | Velva, ND  | McHenry | Inactive        |
| Enerbase Velva           | Velva, ND  | McHenry | Active          |
| Verendrye Electric       | Velva, ND  | McHenry | Active          |
| E and D Auto Sales       | Sawyer, ND | Ward    | Inactive        |

### 3.19.1 Alternative A

Alternative A would not result in impacts related to hazardous waste as there would be no construction along the project corridor.

### 3.19.2 Action Alternatives

There are no known hazardous materials sites requiring active mitigation within the study area. However, given that NDDEQ incidents and underground storage tanks are within and/or adjacent to the study area, the proposed action has the potential to encounter hazardous materials during construction activities. Apart from Segment 4, where Alternative C is the only action alternative, Alternative B would have a slightly greater potential to encounter hazardous materials during construction activities than Alternative C due to a larger construction footprint. Alternative C in Segment 4 would include earthwork immediately adjacent to a parcel known to contain an inactive UST, which was a former gas station on the south side of US Highway 52 near RP 116.75 in Velva; work in this area would occur within existing NDDOT ROW and impacts to the UST are not anticipated. Option V-1 would result in additional potential to encounter hazardous materials due to additional construction footprint (see **Table 6, Earthwork Impacts**). If hazardous material is inadvertently discovered during construction activities, they would be handled and disposed of properly in accordance with the NDDOT Standard Specifications for Road and Bridge Construction for hazardous material.

Construction activities may involve the use of small quantities of hazardous materials. These materials are expected to be used in limited amounts and for brief periods during the construction phase. To avoid and prevent the release of these materials, proper handling, storage, and disposal would occur. While minor incidents such as accidental spills or equipment leaks could occur, any such releases would be minimized to the extent practicable and promptly contained and managed in accordance with the SPCC plan.

***The proposed action would not have a significant impact on hazardous waste due to the lack of known hazardous substances or wastes affecting the proposed action, lack of facilities that could potentially release hazardous substances or wastes that would affect the proposed action, proper hazardous waste handling and disposal, and implementation of an SPCC plan.***



### 3.20 Utilities

Utilities within the study area include fiber/telecommunications, gas, rural water, sanitary sewer, overhead and underground electricity, and USAF missile cable lines. Known utility companies/entities within the study area include:

- ADM
- Basin Electric Cooperative
- CENEX Pipeline
- Central Power Electric Cooperative
- City of Velva
- Midcontinent Communications
- Montana-Dakota Utilities
- NDDOT
- Northern Prairie Rural Water Association
- Otter Tail Power Company
- Souris River Telecommunications
- USAF Cable Affairs
- Verendrye Electric Cooperative
- Western Area Power Administration (WAPA)

#### 3.20.1 Alternative A

Alternative A would not result in impacts to utilities as there would be no construction along the project corridor.

#### 3.20.2 Action Alternatives

The proposed action would impact existing overhead and underground utilities due to horizontal and vertical changes to the roadway corridor. In Segments 2, 3 and 5, Alternative B would have a greater total impact on utilities than Alternative C. In Segments 1 and 6, Alternative C would have a greater total impact on utilities than Alternative B. In Segment 4, Alternative C4 and/or Option V-1 would result in additional impacts to utilities. Please refer to **Table 16, Estimated Impacts on Utilities**.

*Table 16, Estimated Impacts on Utilities*

| Segment     | Alternative                       | Electric Underground (linear feet) | Electric Overhead (linear feet) | Gas Underground (linear feet) | Fiber Optic Underground (linear feet) | Water Underground (linear feet) | Sanitary Sewer Underground (linear feet) | Total Linear Feet | Utility Poles (each) |
|-------------|-----------------------------------|------------------------------------|---------------------------------|-------------------------------|---------------------------------------|---------------------------------|------------------------------------------|-------------------|----------------------|
| Segment 1-6 | Alternative A                     | 0                                  | 0                               | 0                             | 0                                     | 0                               | 0                                        | 0                 | 0                    |
| Segment 1   | Alternative B1                    | 10,400                             | 1,500                           | 420                           | 88,700                                | 31,100                          | 0                                        | 132,120           | 9                    |
|             | Alternative C1                    | 11,600                             | 1,300                           | 1,090                         | 77,900                                | 42,200                          | 0                                        | 134,090           | 3                    |
| Segment 2   | Alternative B2                    | 14,900                             | 7,900                           | 0                             | 69,700                                | 24,300                          | 0                                        | 116,800           | 36                   |
|             | Alternative C2                    | 9,800                              | 4,400                           | 0                             | 59,700                                | 20,600                          | 0                                        | 94,500            | 16                   |
| Segment 3   | Alternative B3                    | 4,400                              | 36,100                          | 0                             | 37,500                                | 14,500                          | 0                                        | 92,500            | 116                  |
|             | Alternative C3                    | 4,400                              | 28,300                          | 0                             | 34,400                                | 20,100                          | 0                                        | 87,200            | 63                   |
| Segment 4   | Alternative C4 without Option V-1 | 6,039                              | 623                             | 0                             | 2,058                                 | 85                              | 200                                      | 9,005             | 2                    |
|             | Alternative C4 with Option V-1    | 6,039                              | 1,241                           | 0                             | 2,676                                 | 85                              | 200                                      | 10,241            | 3                    |
|             | Option V-1 without Alternative C4 | 0                                  | 618                             | 0                             | 618                                   | 0                               | 0                                        | 1,236             | 1                    |
| Segment 5   | Alternative B5                    | 4,300                              | 10,600                          | 0                             | 48,900                                | 1,000                           | 11,400                                   | 76,200            | 14                   |
|             | Alternative C5                    | 5,500                              | 14,300                          | 0                             | 35,700                                | 2,700                           | 11,400                                   | 69,600            | 22                   |
| Segment 6   | Alternative B6                    | 0                                  | 9,400                           | 0                             | 12,000                                | 0                               | 0                                        | 21,400            | 17                   |
|             | Alternative C6                    | 400                                | 9,600                           | 0                             | 12,100                                | 0                               | 0                                        | 22,100            | 17                   |

Segment 1 alternatives would impact the following companies/entities: Basin Electric Cooperative, Cenex Pipeline, Midcontinent Communications, NDDOT, Northern Prairie Rural Water Association, Souris River Telecommunications, Verendrye Electric, and WAPA.

Segment 2 alternatives would impact the following companies/entities: Central Power Electric Cooperative, Midcontinent Communications, Northern Prairie Rural Water Association, Otter Tail Power Company, Souris River Telecommunications, and Verendrye Electric Cooperative.

Segment 3 alternatives would impact the following companies/entities: Midcontinent Communications, Northern Prairie Rural Water Association, Souris River Telecommunications, USAF Cable Affairs, and Verendrye Electric Cooperative.

Segment 4 alternative/option would impact the following companies/entities: ADM, City of Velva, Midcontinent Communications, Montana-Dakota Utilities, Northern Prairie Rural Water Association, Otter Tail Power Company, Souris River Telecommunications, and Verendrye Electric.

Segment 5 alternatives would impact the following companies/entities: ADM, Midcontinent Communications, Northern Prairie Rural Water Association, Souris River Telecommunications, and Verendrye Electric.

Segment 6 alternatives would impact the following companies/entities: Midcontinent Communications, Souris River Telecommunications, USAF Cable Affairs, and Verendrye Electric.

Impacts to existing utilities have been avoided and minimized to the extent practicable. Utility coordination regarding impacts and relocations has started and will continue to occur throughout final design. Short-term service interruptions of utilities may occur during construction activities. Any interruptions would be temporary in nature and coordinated with the applicable utility company/entity. Utility relocation plans, schedule, and applicable environmental commitments will be determined during utility coordination meetings. All information will be summarized in the final utility coordination plans and special provision included in the final plans. Formal agreements will be established between the NDDOT and affected utility companies.

To reduce the risk of flight collisions during the spring and fall whooping crane migration, NDDOT would request that utility companies install bird diverters placed at a 1:1 ratio per linear foot on relocated overhead utility lines to reduce the risk of flight collisions on any raised, lowered, and/or moved overhead utilities lines that occur within 1 mile of whooping crane stopover habitat. Each utility company would determine the type, number and placement/spacing of the line markers and may conclude that the placement of line markers is not feasible in certain areas.

The intent of this EA is to analyze and clear utility impacts and relocations that would occur within the project study area. If a utility decides to relocate outside of the existing study area, the utility company would be responsible for environmentally clearing and permitting their new corridor.

***The proposed action would not have a significant impact on utilities due to utility relocations, utility agreements, and environmental commitments.***

### 3.21 Irreversible and Irretrievable Commitments of Resources

NEPA requires an evaluation of irreversible and irretrievable commitments of resources that may result from implementing a proposed action. An irreversible or irretrievable commitment of resources refers to the use or loss of natural, cultural, or economic resources that cannot be recovered or restored once they have been expended or altered, even after the activity has concluded. These commitments typically involve the permanent use of nonrenewable resources, long-term environmental changes, or the dedication of land to a specific use that precludes other options. However, short-term uses of resources that cannot be reclaimed such as fuel, paper, and other consumables are also considered irretrievable.

Human labor and financial investments are likewise treated as irretrievable, as they are dedicated to the project and unavailable for other purposes. Additionally, the destruction or alteration of natural resources that limits future use options may be considered an irreversible impact.

#### 3.21.1 Alternative A

Alternative A would not result in commitments of irreversible or irretrievable resources due to construction activities, though routine maintenance activities would continue. There would not be more efficient flow of traffic and associated reduced energy consumption.

#### 3.21.2 Action Alternatives

The proposed action would result in irreversible and irretrievable commitment of resources due to construction activities. Construction activities would result in irreversible commitments of human labor, vehicles, equipment, and other resources. Apart from Segment 4, where Alternative C is the only action alternative, Alternative B would have a slightly greater commitment of resources during construction than Alternative C due to a larger construction footprint. Option V-1 would result in additional commitment of resources due to additional construction footprint (see **Table 6, Earthwork Impacts**).

A significant demand on energy resources and their availability would not occur in the region due to construction activities. The commitment of these resources is undertaken in a regular and authorized manner. After the transition from a two-lane to a four-lane highway, the proposed action would result in more efficient flow of traffic and reduced energy consumption as a result.

***The proposed action would not have a significant impact on irreversible and irretrievable resources due to the commitment of resources undertaken in a regular and authorized manner, overall reduction in resources consumed, and more efficient energy use.***

### 3.22 Impact Categories Not Relevant to Proposed Action

#### 3.22.1 Wild and Scenic Rivers

No wild and scenic rivers occur within the study area.

#### 3.22.2 Coastal Barriers

No coastal barriers occur within the study area.

#### 3.22.3 Coastal Zone

No coastal zones occur within the study area.

#### 3.22.4 Section 6(f) Properties

No Section 6(f) properties occur within the study area.

### 3.23 Summary

Please refer to **Table 17, Segment 1 Impact Summary and Comparison; Table 18, Segment 2 Impact Summary and Comparison; Table 19, Segment 3 Impact Summary and Comparison; Table 20, Segment 4 Impact Summary and Comparison; Table 21, Segment 5 Impact Summary and Comparison; and Table 22, Segment 6 Impact Summary and Comparison** for a summary of the impacts associated with each alternative and optional work item per segment.

Table 17, Segment 1 Impact Summary and Comparison

| Resource Area             | Alternative A | Alternative B1 - Depressed Median                                                                                                                                                                                                                                                                              | Alternative C1 - Flush Median                                                                                                                                                                                                                                                           |
|---------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Geology                   | ➤ No impacts. | ➤ Permanent earthwork impacting 308.18 acres.<br>➤ Temporary earthwork impacting 42.99 acres.<br>➤ Potential to impact paleontological resources during construction.                                                                                                                                          | ➤ Permanent earthwork impacting 262.38 acres.<br>➤ Temporary earthwork impacting 28.89 acres.<br>➤ Slightly lower potential to impact paleontological resources during construction than Alternative C.                                                                                 |
| Soils                     | ➤ No impacts. | ➤ Net addition of 34.18 acres of impervious surface area.<br>➤ Potential for stormwater runoff, erosion, and sedimentation.<br>➤ Temporary impacts on soil from construction activities: soil compaction, reduced permeability and infiltration capacity, potential for erosion, sedimentation, and/or spills. | ➤ Net addition of 36.51 acres of impervious surface area.<br>➤ Slightly higher potential for stormwater runoff, erosion, and sedimentation than Alternative B.<br>➤ Similar temporary impacts on soil from construction activities as Alternative B.                                    |
| Land Use                  | ➤ No impacts. | ➤ Permanent ROW acquisition of 65.0 acres converted into transportation corridor.<br>➤ Temporary easement acquisition of 20.5 acres for construction.<br>➤ Consistent with goals identified in local, state, and regional plans for transportation and land use.                                               | ➤ Permanent ROW acquisition of 33.3 acres converted into transportation corridor.<br>➤ Temporary easement acquisition of 19.4 acres for construction.<br>➤ Same consistency with goals identified in local, state, and regional plans for transportation and land use as Alternative B. |
| Farmland                  | ➤ No impacts. | ➤ Permanent conversion of 6.77 acres of prime farmland.<br>➤ NRCS CPA-106 form score less than FPPA recommended allowable level.                                                                                                                                                                               | ➤ Permanent conversion of 11.13 acres of prime farmland.<br>➤ Same NRCS CPA-106 form score less than FPPA recommended allowable level as Alternative B.                                                                                                                                 |
| Vegetation                | ➤ No impacts. | ➤ Permanent conversion of 34.18 acres of various vegetation types into impervious surface.<br>➤ Temporary impact on approximately 351.17 acres of various vegetation types.<br>➤ Potential to spread noxious weeds during construction.                                                                        | ➤ Permanent conversion of 36.51 acres of various vegetation types into impervious surface.<br>➤ Temporary impact on approximately 292.26 acres of various vegetation types.<br>➤ Slightly lower potential to spread noxious weeds during construction than Alternative B.               |
| Water Resources           | ➤ No impacts. | ➤ No impacts to sole source aquifers, groundwater resources, drinking water, or source water protection areas.                                                                                                                                                                                                 | ➤ Same no impacts to sole source aquifers, groundwater resources, drinking water, or source water protection areas as Alternative B.                                                                                                                                                    |
| Wetlands and Other Waters | ➤ No impacts. | ➤ Permanent impacts on 1.048 acres of wetlands.<br>➤ Temporary impacts on 0.505 acres of wetlands.<br>➤ Permanent impacts on 1.232 acres of other waters.<br>➤ Temporary impacts on 0.445 acres of other waters.                                                                                               | ➤ Permanent impacts on 0.699 acres of wetlands.<br>➤ Temporary impacts on 0.438 acres of wetlands.<br>➤ Permanent impacts on 1.012 acres of other waters.<br>➤ Temporary impacts on 0.319 acres of other waters.                                                                        |
| Water Quality             | ➤ No impacts. | ➤ Potential to impact water quality from spills, erosion, and sedimentation during construction.<br>➤ Potential to impact water quality from runoff during operation.                                                                                                                                          | ➤ Slightly lower potential to impact water quality from spills, erosion, and sedimentation during construction than Alternative B.<br>➤ Slightly higher potential to impact water quality from runoff during operation than Alternative B.                                              |
| Floodplain                | ➤ No impacts. | ➤ Work in Special Flood Hazard Areas.                                                                                                                                                                                                                                                                          | ➤ Work in Special Flood Hazard Areas.                                                                                                                                                                                                                                                   |



| Resource Area                     | Alternative A                                                                                                                                                                                                                                                                                                | Alternative B1 - Depressed Median                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Alternative C1 - Flush Median                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wildlife and Fisheries            | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>➤ Direct conversion of 210.88 acres of potential habitat into a transportation corridor.</li> <li>➤ Potential habitat degradation and fragmentation, avoidance of habitat, barriers to wildlife movement, and wildlife-vehicle collisions due to expansion of the transportation corridor.</li> <li>➤ Potential for mortality to species with limited mobility due to construction activities.</li> <li>➤ No impacts anticipated for species of concern or significant ecological communities.</li> <li>➤ No impacts anticipated for bald or golden eagles.</li> </ul>                       | <ul style="list-style-type: none"> <li>➤ Direct conversion of 173.30 acres of potential habitat into a transportation corridor.</li> <li>➤ Same potential habitat degradation and fragmentation, avoidance of habitat, barriers to wildlife movement, and wildlife-vehicle collisions due to expansion of the transportation corridor.</li> <li>➤ Same potential for mortality to species with limited mobility due to construction activities as Alternative B</li> <li>➤ Same no impacts anticipated for species of concern or significant ecological communities as Alternative B.</li> <li>➤ Same no impacts anticipated for bald or golden eagles as Alternative B.</li> </ul>                |
| Threatened and Endangered Species | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>➤ No effect on piping plover, piping plover critical habitat, Rufa red knot, and Dakota skipper critical habitat.</li> <li>➤ May affect, but not likely to adversely affect northern long-eared bat and whooping crane.</li> <li>➤ May affect, and likely to adversely affect Dakota skipper.</li> </ul>                                                                                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>➤ Same effect determinations as Alternative B</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Social and Economic               | <ul style="list-style-type: none"> <li>➤ No improvement on transportation network.</li> <li>➤ Continuation of traffic congestion; no improvement to safety or business productivity.</li> <li>➤ No increased temporary demand for construction contractors or local services during construction.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Beneficial impact by addressing perceived safety issues, existing and future traffic needs, or social and economic demands, with greater protection from head-on collisions than Alternative C.</li> <li>➤ No removal of buildings</li> <li>➤ Roadway would be closer to homes, businesses, and community services, impacting noise and visual environments.</li> <li>➤ Increased temporary demand for construction contractors and local services during construction.</li> <li>➤ Temporary construction impact on travel patterns, noise environment, and visual environment.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Beneficial impact by addressing perceived safety issues, existing and future traffic needs, or social and economic demands, with less protection from head-on collisions than Alternative B.</li> <li>➤ Same no removal of buildings as Alternative B.</li> <li>➤ Similar impact from roadway becoming closer to homes, businesses, and community services as Alternative B.</li> <li>➤ Same increased temporary demand for construction contractors and local services during construction as Alternative B.</li> <li>➤ Similar temporary construction impact on travel patterns, noise environment, and visual environment as Alternative B.</li> </ul> |
| Cultural Resources                | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>➤ Proposed action would have no adverse effect on cultural resources.</li> <li>➤ Potential for unanticipated discovery of cultural resources.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>➤ Same affect determination as Alternative B.</li> <li>➤ Slightly lower potential for unanticipated discovery of cultural resources as Alternative B.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Section 4(f) Properties           | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>➤ No impact to recreational Section 4(f) properties.</li> <li>➤ Proposed action would have no adverse effect on cultural resources with archaeological resources Section 4(f) exception applied.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                  | <ul style="list-style-type: none"> <li>➤ Same no impact to recreational Section 4(f) properties as Alternative B.</li> <li>➤ Same proposed action would have no adverse effect on cultural resources with archaeological resources Section 4(f) exception applied as Alternative B.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                     |
| Infrastructure                    | <ul style="list-style-type: none"> <li>➤ No adverse or beneficial impacts on infrastructure.</li> <li>➤ Continuation of wear and ongoing maintenance on existing roadways.</li> </ul>                                                                                                                        | <ul style="list-style-type: none"> <li>➤ Beneficial impact on transportation infrastructure.</li> <li>➤ Impacted fences would be shifted.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li>➤ Same beneficial impact on transportation infrastructure as Alternative B.</li> <li>➤ Same impacted fences would be shifted as Alternative B.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Air Quality                       | <ul style="list-style-type: none"> <li>➤ Emissions (i.e., fugitive dust, criteria pollutants) would increase as traffic volume increases.</li> </ul>                                                                                                                                                         | <ul style="list-style-type: none"> <li>➤ Potential to impact air quality during construction activities.</li> <li>➤ Potential reduction in emissions due to increased efficiency of roadway network but may be offset as traffic volumes increase.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>➤ Slightly lower potential to impact air quality during construction activities than Alternative C.</li> <li>➤ Same potential reduction in emissions due to increased efficiency of roadway network but may be offset as traffic volumes increase as Alternative B.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                              |

| Resource Area                                           | Alternative A                                                                                                                                                                                                                                                                                          | Alternative B1 - Depressed Median                                                                                                                                                                                                                                                                                                                                                                                                                                         | Alternative C1 - Flush Median                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Noise                                                   | <ul style="list-style-type: none"> <li>➤ Traffic noise would increase as traffic volumes increase.</li> <li>➤ Alternative A future (2047) scenario traffic noise levels ranged from 51.0 to 68.2 dB(A) with six impacted receptors.</li> <li>➤ No noise walls considered for Alternative A.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Traffic noise would increase as traffic volumes increase and location of source would be shifted horizontally and vertically.</li> <li>➤ Alternative B future (2047) scenario traffic noise levels ranged from 51.1 to 67.3 dB(A) with three impacted receptors across all segments.</li> <li>➤ No impacted receptors or noise walls considered in Segment 1.</li> <li>➤ Temporary noise impacts during construction.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Similar traffic noise would increase as traffic volumes increase and location of source would be shifted horizontally and vertically as Alternative B.</li> <li>➤ Alternative C future (2047) scenario traffic noise levels ranged from 49.1 to 68.0 dB(A) with four impacted receptors across all segments.</li> <li>➤ Similar no impacted receptors or noise walls considered in Segment 1 as Alternative B.</li> <li>➤ Same temporary noise impacts during construction as Alternative B.</li> </ul> |
| Visual                                                  | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>➤ Temporary and permanent impact on visual resources and viewshed, but generally compatible with existing visual character and no impact on visual quality is expected.</li> </ul>                                                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>➤ Slightly lower temporary and permanent impact on visual resources and viewshed than Alternative B, but same generally compatible with existing visual character and no impact on visual quality is expected as Alternative B.</li> </ul>                                                                                                                                                                                                                                                                |
| Hazardous Waste                                         | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>➤ No known hazardous materials sites requiring active mitigation.</li> <li>➤ Potential to encounter hazardous materials during construction.</li> <li>➤ Potential for minor accidental spills or leaks of hazardous materials used during construction.</li> </ul>                                                                                                                                                                 | <ul style="list-style-type: none"> <li>➤ Same no known hazardous materials sites requiring active mitigation as Alternative B.</li> <li>➤ Slightly lower potential to encounter hazardous materials during construction than Alternative B.</li> <li>➤ Same potential for minor accidental spills or leaks of hazardous materials used during construction as Alternative B.</li> </ul>                                                                                                                                                          |
| Utilities                                               | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>➤ Removal/relocation of nine utility poles.</li> <li>➤ Impacts to 132,120 linear feet of utilities.</li> <li>➤ Potential temporary short term service interruptions during relocations.</li> </ul>                                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>➤ Removal/relocation of three utility poles.</li> <li>➤ Impacts to 134,093 linear feet of utilities.</li> <li>➤ Same potential temporary short term service interruptions during relocations as Alternative B.</li> </ul>                                                                                                                                                                                                                                                                                 |
| Irreversible and Irretrievable Commitments of Resources | <ul style="list-style-type: none"> <li>➤ No commitment of resources for construction.</li> <li>➤ Commitment of resources for routine maintenance.</li> <li>➤ No increased efficiency to flow of traffic during operation with resulting reduced energy consumption.</li> </ul>                         | <ul style="list-style-type: none"> <li>➤ Commitment of resources during construction.</li> <li>➤ No significant demand on energy resources or their availability.</li> <li>➤ More efficient flow of traffic during operation with resulting reduced energy consumption.</li> </ul>                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>➤ Slightly lower commitment of resources during construction than Alternative B.</li> <li>➤ Same no significant demand on energy resources or their availability as Alternative B.</li> <li>➤ Same more efficient flow of traffic during operation with resulting reduced energy consumption as Alternative B.</li> </ul>                                                                                                                                                                                 |

*Table 18, Segment 2 Impact Summary and Comparison*

| Resource Area | Alternative A                                                   | Alternative B2 - Depressed Median                                                                                                                                                                                                                                                                                                                                            | Alternative C2 - Flush Median                                                                                                                                                                                                                                                                                       |
|---------------|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Geology       | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Permanent earthwork impacting 146.18 acres.</li> <li>➤ Temporary earthwork impacting 20.62 acres.</li> <li>➤ Potential to impact paleontological resources during construction.</li> </ul>                                                                                                                                          | <ul style="list-style-type: none"> <li>➤ Permanent earthwork impacting 109.02 acres.</li> <li>➤ Temporary earthwork impacting 15.34 acres.</li> <li>➤ Slightly lower potential to impact paleontological resources during construction than Alternative B.</li> </ul>                                               |
| Soils         | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Net addition of 21.17 acres of impervious surface area.</li> <li>➤ Potential for stormwater runoff, erosion, and sedimentation.</li> <li>➤ Temporary impacts on soil from construction activities: soil compaction, reduced permeability and infiltration capacity, potential for erosion, sedimentation, and/or spills.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Net addition of 22.06 acres of impervious surface area.</li> <li>➤ Slightly greater potential for stormwater runoff, erosion, and sedimentation than Alternative B.</li> <li>➤ Similar temporary impacts on soil from construction activities as Alternative B.</li> </ul> |

| Resource Area                     | Alternative A | Alternative B2 - Depressed Median                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Alternative C2 - Flush Median                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Land Use                          | ➤ No impacts. | ➤ Permanent ROW acquisition of 26.4 acres converted into transportation corridor.<br>➤ Temporary easement acquisition of 7.8 acres for construction.<br>➤ Consistent with goals identified in local, state, and regional plans for transportation and land use.                                                                                                                                                                                                                                                                     | ➤ Permanent ROW acquisition of 9.9 acres converted into transportation corridor.<br>➤ Temporary easement acquisition of 1.5 acres for construction.<br>➤ Same consistency with goals identified in local, state, and regional plans for transportation and land use as Alternative B.                                                                                                                                                                                                                                                                                                                     |
| Farmland                          | ➤ No impacts. | ➤ Permanent conversion of 3.75 acres of prime farmland.<br>➤ NRCS CPA-106 form score less than FPPA recommended allowable level.                                                                                                                                                                                                                                                                                                                                                                                                    | ➤ Permanent conversion of 1.3 acres of prime farmland.<br>➤ Same NRCS CPA-106 form score less than FPPA recommended allowable level as Alternative B.                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Vegetation                        | ➤ No impacts. | ➤ Permanent conversion of 21.17 acres of various vegetation types into impervious surface.<br>➤ Temporary impact on approximately 166.80 acres of various vegetation types.<br>➤ Potential to spread noxious weeds during construction.                                                                                                                                                                                                                                                                                             | ➤ Permanent conversion of 22.06 acres of various vegetation types into impervious surface.<br>➤ Temporary impact on approximately 124.36 acres of various vegetation types.<br>➤ Slightly lower potential to spread noxious weeds during construction than Alternative B.                                                                                                                                                                                                                                                                                                                                 |
| Water Resources                   | ➤ No impacts. | ➤ No impacts to sole source aquifers, groundwater resources, drinking water, or source water protection areas.                                                                                                                                                                                                                                                                                                                                                                                                                      | ➤ Same no impacts to sole source aquifers, groundwater resources, drinking water, or source water protection areas as Alternative B.                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Wetlands and Other Waters         | ➤ No impacts. | ➤ Permanent impacts on 1.074 acres of wetlands.<br>➤ Temporary impacts on 0.313 acres of wetlands.<br>➤ Permanent impacts on 0.053 acres of other waters.<br>➤ Temporary impacts on 0.011 acres of other waters.                                                                                                                                                                                                                                                                                                                    | ➤ Permanent impacts on 0.702 acres of wetlands.<br>➤ Temporary impacts on 0.208 acres of wetlands.<br>➤ Permanent impacts on 0.060 acres of other waters.<br>➤ Temporary impacts on 0.007 acres of other waters.                                                                                                                                                                                                                                                                                                                                                                                          |
| Water Quality                     | ➤ No impacts. | ➤ Potential to impact water quality from spills, erosion, and sedimentation during construction.<br>➤ Potential to impact water quality from runoff during operation.                                                                                                                                                                                                                                                                                                                                                               | ➤ Slightly lower potential to impact water quality from spills, erosion, and sedimentation during construction than Alternative B<br>➤ Slightly higher potential to impact water quality from runoff during operation than Alternative B.                                                                                                                                                                                                                                                                                                                                                                 |
| Floodplain                        | ➤ No impacts. | ➤ Work in Special Flood Hazard Areas.<br>➤ Impacts to Sawyer flood control structure.                                                                                                                                                                                                                                                                                                                                                                                                                                               | ➤ Work in Special Flood Hazard Areas.<br>➤ Same impacts to Sawyer flood control structure as Alternative B.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Wildlife and Fisheries            | ➤ No impacts. | ➤ Direct conversion of 137.12 acres of potential habitat into a transportation corridor.<br>➤ Potential habitat degradation and fragmentation, avoidance of habitat, barriers to wildlife movement, and wildlife-vehicle collisions due to expansion of the transportation corridor.<br>➤ Potential for mortality to species with limited mobility due to construction activities.<br>➤ No impacts anticipated for species of concern or significant ecological communities.<br>➤ No impacts anticipated for bald or golden eagles. | ➤ Direct conversion of 117.78 acres of potential habitat into a transportation corridor.<br>➤ Same potential habitat degradation and fragmentation, avoidance of habitat, barriers to wildlife movement, and wildlife-vehicle collisions due to expansion of the transportation corridor.<br>➤ Same potential for mortality to species with limited mobility due to construction activities as Alternative B<br>➤ Same no impacts anticipated for species of concern or significant ecological communities as Alternative B.<br>➤ Same no impacts anticipated for bald or golden eagles as Alternative B. |
| Threatened and Endangered Species | ➤ No impacts. | ➤ No effect on piping plover, piping plover critical habitat, Rufa red knot, and Dakota skipper critical habitat.<br>➤ May affect, but not likely to adversely affect northern long-eared bat and whooping crane.<br>➤ May affect, and likely to adversely affect Dakota skipper.                                                                                                                                                                                                                                                   | ➤ Same effect determinations as Alternative B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

| Resource Area           | Alternative A                                                                                                                                                                                                                                                                                                | Alternative B2 - Depressed Median                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Alternative C2 - Flush Median                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Social and Economic     | <ul style="list-style-type: none"> <li>➤ No improvement on transportation network.</li> <li>➤ Continuation of traffic congestion; no improvement to safety or business productivity.</li> <li>➤ No increased temporary demand for construction contractors or local services during construction.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Beneficial impact by addressing perceived safety issues, existing and future traffic needs, or social and economic demands, with greater protection from head-on collisions than Alternative C.</li> <li>➤ Removal of one shed/outbuilding.</li> <li>➤ Roadway would be closer to homes, businesses, and community services, impacting noise and visual environments.</li> <li>➤ Increased temporary demand for construction contractors and local services during construction.</li> <li>➤ Temporary construction impact on travel patterns, noise environment, and visual environment.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Beneficial impact by addressing perceived safety issues, existing and future traffic needs, or social and economic demands, with less protection from head-on collisions than Alternative B.</li> <li>➤ No removal of buildings.</li> <li>➤ Similar impact from roadway becoming closer to homes, businesses, and community services as Alternative B.</li> <li>➤ Same increased temporary demand for construction contractors and local services during construction as Alternative B.</li> <li>➤ Similar temporary construction impact on travel patterns, noise environment, and visual environment as Alternative B.</li> </ul> |
| Cultural Resources      | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>➤ Proposed action would have no adverse effect on cultural resources.</li> <li>➤ Potential for unanticipated discovery of cultural resources.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>➤ Same affect determination as Alternative B.</li> <li>➤ Slightly lower potential for unanticipated discovery of cultural resources as Alternative B.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Section 4(f) Properties | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>➤ Proposed action would have no adverse effect on cultural resources with archaeological resources Section 4(f) exception applied.</li> <li>➤ Temporary impact on Sno-Trails Snowmobile Trail with trails in ROW Section 4(f) exception applied.</li> <li>➤ Temporary impact on Sawyer Baseball Diamond with temporary occupancy Section 4(f) exception applied.</li> </ul>                                                                                                                                                                                                                           | <ul style="list-style-type: none"> <li>➤ Same proposed action would have no adverse effect on cultural resources with archaeological resources Section 4(f) exception applied as Alternative B.</li> <li>➤ Same temporary impact on Sno-Trails Snowmobile Trail with trails in ROW Section 4(f) exception applied as Alternative B.</li> <li>➤ No impact on Sawyer Baseball Diamond.</li> </ul>                                                                                                                                                                                                                                                                              |
| Infrastructure          | <ul style="list-style-type: none"> <li>➤ No adverse or beneficial impacts on infrastructure.</li> <li>➤ Continuation of wear and ongoing maintenance on existing roadways.</li> </ul>                                                                                                                        | <ul style="list-style-type: none"> <li>➤ Beneficial impact on transportation infrastructure.</li> <li>➤ Impacted fences would be shifted.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>➤ Same beneficial impact on transportation infrastructure as Alternative B.</li> <li>➤ Same impacted fences would be shifted as Alternative B.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Air Quality             | <ul style="list-style-type: none"> <li>➤ Emissions (i.e., fugitive dust, criteria pollutants) would increase as traffic volume increases.</li> </ul>                                                                                                                                                         | <ul style="list-style-type: none"> <li>➤ Potential to impact air quality during construction activities.</li> <li>➤ Potential reduction in emissions due to increased efficiency of roadway network but may be offset as traffic volumes increase.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li>➤ Slightly lower potential to impact air quality during construction activities than Alternative B.</li> <li>➤ Same potential reduction in emissions due to increased efficiency of roadway network but may be offset as traffic volumes increase as Alternative B.</li> </ul>                                                                                                                                                                                                                                                                                                                                                        |
| Noise                   | <ul style="list-style-type: none"> <li>➤ Traffic noise would increase as traffic volumes increase.</li> <li>➤ Alternative A future (2047) scenario traffic noise levels ranged from 51.0 to 68.2 dB(A) with six impacted receptors.</li> <li>➤ No noise walls considered for Alternative A.</li> </ul>       | <ul style="list-style-type: none"> <li>➤ Traffic noise would increase as traffic volumes increase and location of source would be shifted horizontally and vertically.</li> <li>➤ Alternative B future (2047) scenario traffic noise levels ranged from 51.1 to 67.3 dB(A) with three impacted receptors across all segments.</li> <li>➤ No impacted receptors or noise walls considered in Segment 2.</li> <li>➤ Temporary noise impacts during construction.</li> </ul>                                                                                                                                                                    | <ul style="list-style-type: none"> <li>➤ Similar traffic noise would increase as traffic volumes increase and location of source would be shifted horizontally and vertically as Alternative B.</li> <li>➤ Alternative C future (2047) scenario traffic noise levels ranged from 49.1 to 68.0 dB(A) with four impacted receptors across all segments.</li> <li>➤ Similar no impacted receptors or noise walls considered in Segment 2 as Alternative B.</li> <li>➤ Same temporary noise impacts during construction as Alternative B.</li> </ul>                                                                                                                             |
| Visual                  | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>➤ Temporary and permanent impact on visual resources and viewshed, but generally compatible with existing visual character and no impact on visual quality is expected.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>➤ Slightly lower temporary and permanent impact on visual resources and viewshed than Alternative B, but same generally compatible with existing visual character and no impact on visual quality expected as Alternative B.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                               |



| Resource Area                                           | Alternative A                                                                                                                                                                                                                                                                  | Alternative B2 - Depressed Median                                                                                                                                                                                                                                                                         | Alternative C2 - Flush Median                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hazardous Waste                                         | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li>➤ No known hazardous materials sites requiring active mitigation.</li> <li>➤ Potential to encounter hazardous materials during construction.</li> <li>➤ Potential for minor accidental spills or leaks of hazardous materials used during construction.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Same no known hazardous materials sites requiring active mitigation as Alternative B.</li> <li>➤ Slightly lower potential to encounter hazardous materials during construction than Alternative B.</li> <li>➤ Same potential for minor accidental spills or leaks of hazardous materials used during construction as Alternative B.</li> </ul> |
| Utilities                                               | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li>➤ Removal/relocation of 36 utility poles.</li> <li>➤ Impacts to 116,836 linear feet of utilities.</li> <li>➤ Potential temporary short term service interruptions during relocations.</li> </ul>                                                                   | <ul style="list-style-type: none"> <li>➤ Removal/relocation of 16 utility poles.</li> <li>➤ Impacts to 94,516 linear feet of utilities.</li> <li>➤ Same potential temporary short term service interruptions during relocations as Alternative B.</li> </ul>                                                                                                                            |
| Irreversible and Irretrievable Commitments of Resources | <ul style="list-style-type: none"> <li>➤ No commitment of resources for construction.</li> <li>➤ Commitment of resources for routine maintenance.</li> <li>➤ No increased efficiency to flow of traffic during operation with resulting reduced energy consumption.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Commitment of resources during construction.</li> <li>➤ No significant demand on energy resources or their availability.</li> <li>➤ More efficient flow of traffic during operation with resulting reduced energy consumption.</li> </ul>                        | <ul style="list-style-type: none"> <li>➤ Slightly lower commitment of resources during construction than Alternative B.</li> <li>➤ Same no significant demand on energy resources or their availability as Alternative B.</li> <li>➤ Same more efficient flow of traffic during operation with resulting reduced energy consumption as Alternative B.</li> </ul>                        |

*Table 19, Segment 3 Impact Summary and Comparison*

| Resource Area | Alternative A                                                   | Alternative B3 - Depressed Median                                                                                                                                                                                                                                                                                                                                            | Alternative C3 - Flush Median                                                                                                                                                                                                                                                                                                                        |
|---------------|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Geology       | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Permanent earthwork impacting 121.62 acres.</li> <li>➤ Temporary earthwork impacting 13.58 acres.</li> <li>➤ Potential to impact paleontological resources during construction.</li> </ul>                                                                                                                                          | <ul style="list-style-type: none"> <li>➤ Permanent earthwork impacting 103.21 acres.</li> <li>➤ Temporary earthwork impacting 14.10 acres.</li> <li>➤ Slightly lower potential to impact paleontological resources during construction than Alternative B.</li> </ul>                                                                                |
| Soils         | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Net addition of 14.10 acres of impervious surface area.</li> <li>➤ Potential for stormwater runoff, erosion, and sedimentation.</li> <li>➤ Temporary impacts on soil from construction activities: soil compaction, reduced permeability and infiltration capacity, potential for erosion, sedimentation, and/or spills.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Net addition of 15.54 acres of impervious surface area.</li> <li>➤ Slightly more potential for stormwater runoff, erosion, and sedimentation than Alternative B.</li> <li>➤ Similar temporary impacts on soil from construction activities as Alternative B.</li> </ul>                                     |
| Land Use      | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Permanent ROW acquisition of 49.1 acres converted into transportation corridor.</li> <li>➤ Temporary easement acquisition of 6.0 acres for construction.</li> <li>➤ Consistent with goals identified in local, state, and regional plans for transportation and land use.</li> </ul>                                                | <ul style="list-style-type: none"> <li>➤ Permanent ROW acquisition of 28.4 acres converted into transportation corridor.</li> <li>➤ Temporary easement acquisition of 7.7 acres for construction.</li> <li>➤ Same consistency with goals identified in local, state, and regional plans for transportation and land use as Alternative B.</li> </ul> |
| Farmland      | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Permanent conversion of 33.53 acres of prime farmland.</li> <li>➤ NRCS CPA-106 form score less than FPPA recommended allowable level.</li> </ul>                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>➤ Permanent conversion of 19.24 acres of prime farmland.</li> <li>➤ Same NRCS CPA-106 form score less than FPPA recommended allowable level as Alternative B.</li> </ul>                                                                                                                                      |
| Vegetation    | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Permanent conversion of 14.10 acres of various vegetation types into impervious surface.</li> <li>➤ Temporary impact on approximately 135.20 acres of various vegetation types.</li> <li>➤ Potential to spread noxious weeds during construction.</li> </ul>                                                                        | <ul style="list-style-type: none"> <li>➤ Permanent conversion of 15.54 acres of various vegetation types into impervious surface.</li> <li>➤ Temporary impact on approximately 117.31 acres of various vegetation types.</li> <li>➤ Slightly lower potential to spread noxious weeds during construction than Alternative B.</li> </ul>              |

| Resource Area                     | Alternative A                                                                                                                                                                                                                                  | Alternative B3 - Depressed Median                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Alternative C3 - Flush Median                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Water Resources                   | ➤ No impacts.                                                                                                                                                                                                                                  | ➤ No impacts to sole source aquifers, groundwater resources, drinking water, or source water protection areas.                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ➤ Same no impacts to sole source aquifers, groundwater resources, drinking water, or source water protection areas as Alternative B.                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Wetlands and Other Waters         | ➤ No impacts.                                                                                                                                                                                                                                  | ➤ Permanent impacts on 4.262 acres of wetlands.<br>➤ Temporary impacts on 0.681 acres of wetlands.<br>➤ Permanent impacts on 0.248 acres of other waters.<br>➤ Temporary impacts on 0.041 acres of other waters.                                                                                                                                                                                                                                                                                                                                                   | ➤ Permanent impacts on 3.602 acres of wetlands.<br>➤ Temporary impacts on 0.693 acres of wetlands.<br>➤ Permanent impacts on 0.236 acres of other waters.<br>➤ Temporary impacts on 0.046 acres of other waters.                                                                                                                                                                                                                                                                                                                                                                                         |
| Water Quality                     | ➤ No impacts.                                                                                                                                                                                                                                  | ➤ Potential to impact water quality from spills, erosion, and sedimentation during construction.<br>➤ Potential to impact water quality from runoff during operation.                                                                                                                                                                                                                                                                                                                                                                                              | ➤ Slightly lower potential to impact water quality from spills, erosion, and sedimentation during construction than Alternative B<br>➤ Slightly higher potential to impact water quality from runoff during operation than Alternative B.                                                                                                                                                                                                                                                                                                                                                                |
| Floodplain                        | ➤ No grade raise to flood increase resiliency                                                                                                                                                                                                  | ➤ Work in Special Flood Hazard Areas.<br>➤ Impact to Velva flood protection levee.<br>➤ Grade raise for flood protection.<br>➤ Increased flood resiliency due to grade raise.                                                                                                                                                                                                                                                                                                                                                                                      | ➤ Work in Special Flood Hazard Areas.<br>➤ Similar impact to Velva flood protection levee as Alternative B.<br>➤ Same grade raise for flood protection as Alternative B.<br>➤ Same flood increased resiliency as Alternative B.                                                                                                                                                                                                                                                                                                                                                                          |
| Wildlife and Fisheries            | ➤ No impacts.                                                                                                                                                                                                                                  | ➤ Direct conversion of 55.28 acres of potential habitat into a transportation corridor.<br>➤ Potential habitat degradation and fragmentation, avoidance of habitat, barriers to wildlife movement, and wildlife-vehicle collisions due to expansion of the transportation corridor.<br>➤ Potential for mortality to species with limited mobility due to construction activities.<br>➤ No impacts anticipated for species of concern or significant ecological communities.<br>➤ No impacts anticipated for bald or golden eagles.                                 | ➤ Direct conversion of 40.98 acres of potential habitat into a transportation corridor.<br>➤ Same potential habitat degradation and fragmentation, avoidance of habitat, barriers to wildlife movement, and wildlife-vehicle collisions due to expansion of the transportation corridor.<br>➤ Same potential for mortality to species with limited mobility due to construction activities as Alternative B<br>➤ Same no impacts anticipated for species of concern or significant ecological communities as Alternative B.<br>➤ Same no impacts anticipated for bald or golden eagles as Alternative B. |
| Threatened and Endangered Species | ➤ No impacts.                                                                                                                                                                                                                                  | ➤ No effect on piping plover, piping plover critical habitat, Rufa red knot, and Dakota skipper critical habitat.<br>➤ May affect, but not likely to adversely affect northern long-eared bat and whooping crane.<br>➤ May affect, and likely to adversely affect Dakota skipper.                                                                                                                                                                                                                                                                                  | ➤ Same effect determinations as Alternative B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Social and Economic               | ➤ No improvement on transportation network.<br>➤ Continuation of traffic congestion; no improvement to safety or business productivity.<br>➤ No increased temporary demand for construction contractors or local services during construction. | ➤ Beneficial impact by addressing perceived safety issues, existing and future traffic needs, or social and economic demands, with greater protection from head-on collisions than Alternative C.<br>➤ Removal of one shed/outbuilding.<br>➤ Roadway would be closer to homes, businesses, and community services, impacting noise and visual environments.<br>➤ Increased temporary demand for construction contractors and local services during construction.<br>➤ Temporary construction impact on travel patterns, noise environment, and visual environment. | ➤ Beneficial impact by addressing perceived safety issues, existing and future traffic needs, or social and economic demands, with less protection from head-on collisions than Alternative B.<br>➤ No removal of buildings.<br>➤ Similar impact from roadway becoming closer to homes, businesses, and community services as Alternative B.<br>➤ Same increased temporary demand for construction contractors and local services during construction as Alternative B.<br>➤ Similar temporary construction impact on travel patterns, noise environment, and visual environment as Alternative B.       |
| Cultural Resources                | ➤ No impacts.                                                                                                                                                                                                                                  | ➤ Proposed action would have no adverse effect on cultural resources.<br>➤ Potential for unanticipated discovery of cultural resources.                                                                                                                                                                                                                                                                                                                                                                                                                            | ➤ Same affect determination as Alternative B.<br>➤ Slightly lower potential for unanticipated discovery of cultural resources than Alternative B.                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

| Resource Area                                           | Alternative A                                                                                                                                                                                                                                                                                          | Alternative B3 - Depressed Median                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Alternative C3 - Flush Median                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Section 4(f) Properties                                 | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>➤ Proposed action would have no adverse effect on cultural resources with archaeological resources Section 4(f) exception applied.</li> <li>➤ Temporary impact on Sno-Trails Snowmobile Trail with trails in ROW Section 4(f) exception applied.</li> </ul>                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li>➤ Same proposed action would have no adverse effect on cultural resources with archaeological resources Section 4(f) exception applied as Alternative B.</li> <li>➤ Same temporary impact on Sno-Trails Snowmobile Trail with trails in ROW Section 4(f) exception applied as Alternative B.</li> </ul>                                                                                                                                                                                                                                           |
| Infrastructure                                          | <ul style="list-style-type: none"> <li>➤ No adverse or beneficial impacts on infrastructure.</li> <li>➤ Continuation of wear and ongoing maintenance on existing roadways.</li> </ul>                                                                                                                  | <ul style="list-style-type: none"> <li>➤ Beneficial impact on transportation infrastructure.</li> <li>➤ Impacted fences would be shifted.</li> </ul>                                                                                                                                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>➤ Same beneficial impact on transportation infrastructure as Alternative B.</li> <li>➤ Same impacted fences would be shifted as Alternative B.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                         |
| Air Quality                                             | <ul style="list-style-type: none"> <li>➤ Emissions (i.e., fugitive dust, criteria pollutants) would increase as traffic volume increases.</li> </ul>                                                                                                                                                   | <ul style="list-style-type: none"> <li>➤ Potential to impact air quality during construction activities.</li> <li>➤ Potential reduction in emissions due to increased efficiency of roadway network but may be offset as traffic volumes increase.</li> </ul>                                                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>➤ Slightly lower potential to impact air quality during construction activities than Alternative B.</li> <li>➤ Same potential reduction in emissions due to increased efficiency of roadway network but may be offset as traffic volumes increase as Alternative B.</li> </ul>                                                                                                                                                                                                                                                                    |
| Noise                                                   | <ul style="list-style-type: none"> <li>➤ Traffic noise would increase as traffic volumes increase.</li> <li>➤ Alternative A future (2047) scenario traffic noise levels ranged from 51.0 to 68.2 dB(A) with six impacted receptors.</li> <li>➤ No noise walls considered for Alternative A.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Traffic noise would increase as traffic volumes increase and location of source would be shifted horizontally and vertically.</li> <li>➤ Alternative B future (2047) scenario traffic noise levels ranged from 51.1 to 67.3 dB(A) with three impacted receptors across all segments.</li> <li>➤ Impacts to receptors with noise walls considered in Segment 3. Abatement was determined not feasible.</li> <li>➤ Temporary noise impacts during construction.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Similar traffic noise would increase as traffic volumes increase and location of source would be shifted horizontally and vertically as Alternative B.</li> <li>➤ Alternative C future (2047) scenario traffic noise levels ranged from 49.1 to 68.0 dB(A) with four impacted receptors across all segments.</li> <li>➤ Similar impacts to receptors with noise walls considered in Segment 3 as Alternative B. Abatement was determined not feasible.</li> <li>➤ Same temporary noise impacts during construction as Alternative B.</li> </ul> |
| Visual                                                  | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>➤ Temporary and permanent impact on visual resources and viewshed, but generally compatible with existing visual character and no impact on visual quality is expected.</li> </ul>                                                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>➤ Slightly lower temporary and permanent impact on visual resources and viewshed than Alternative B, but same generally compatible with existing visual character and no impact on visual quality expected as Alternative B.</li> </ul>                                                                                                                                                                                                                                                                                                           |
| Hazardous Waste                                         | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>➤ No known hazardous materials sites requiring active mitigation.</li> <li>➤ Potential to encounter hazardous materials during construction.</li> <li>➤ Potential for minor accidental spills or leaks of hazardous materials used during construction.</li> </ul>                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>➤ Same no known hazardous materials sites requiring active mitigation as Alternative B.</li> <li>➤ Slightly lower potential to encounter hazardous materials during construction than Alternative B.</li> <li>➤ Same potential for minor accidental spills or leaks of hazardous materials used during construction as Alternative B.</li> </ul>                                                                                                                                                                                                  |
| Utilities                                               | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>➤ Removal/relocation of 116 utility poles.</li> <li>➤ Impacts to 92,616 linear feet of utilities.</li> <li>➤ Potential temporary short term service interruptions during relocations.</li> </ul>                                                                                                                                                                                                                                                                           | <ul style="list-style-type: none"> <li>➤ Removal/relocation of 63 utility poles.</li> <li>➤ Impacts to 87,263 linear feet of utilities.</li> <li>➤ Same potential temporary short term service interruptions during relocations as Alternative B.</li> </ul>                                                                                                                                                                                                                                                                                                                             |
| Irreversible and Irretrievable Commitments of Resources | <ul style="list-style-type: none"> <li>➤ No commitment of resources for construction.</li> <li>➤ Commitment of resources for routine maintenance.</li> <li>➤ No increased efficiency to flow of traffic during operation with resulting reduced energy consumption.</li> </ul>                         | <ul style="list-style-type: none"> <li>➤ Commitment of resources during construction.</li> <li>➤ No significant demand on energy resources or their availability.</li> <li>➤ More efficient flow of traffic during operation with resulting reduced energy consumption.</li> </ul>                                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li>➤ Slightly lower commitment of resources during construction than Alternative B.</li> <li>➤ Same no significant demand on energy resources or their availability as Alternative B.</li> <li>➤ Same more efficient flow of traffic during operation with resulting reduced energy consumption as Alternative B.</li> </ul>                                                                                                                                                                                                                         |

*Table 20, Segment 4 Impact Summary and Comparison*

| Resource Area   | Alternative A | Alternative C4 - Flush Median<br>without Option V-1 - Shared Use Path                                                                                                                                                                                                                                         | Alternative C4 - Flush Median<br>with Option V-1 - Shared Use Path                                                                                                                                                                                                                                                  | Option V-1 - Shared Use Path<br>without Alternative C4 - Flush Median                                                                                                                                                                                                                                                                           |
|-----------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Geology         | ➤ No impacts. | ➤ Permanent earthwork impacting 26.05 acres.<br>➤ Temporary earthwork impacting 2.23 acres.<br>➤ Potential to impact paleontological resources during construction.                                                                                                                                           | ➤ Permanent earthwork impacting 26.74 acres.<br>➤ Temporary earthwork impacting 4.49 acres.<br>➤ Slightly higher potential to impact paleontological resources during construction than Alternative C without Option V-1.                                                                                           | ➤ Permanent earthwork impacting 0.69 acres.<br>➤ Temporary earthwork impacting 2.25 acres.<br>➤ Lower potential to impact paleontological resources during construction than Alternative C without Option V-1 and Alternative C with Option V-1.                                                                                                |
| Soils           | ➤ No impacts. | ➤ Net addition of 3.62 acres of impervious surface area.<br>➤ Potential for stormwater runoff, erosion, and sedimentation.<br>➤ Temporary impacts on soil from construction activities: soil compaction, reduced permeability and infiltration capacity, potential for erosion, sedimentation, and/or spills. | ➤ Net addition of 4.38 acres of impervious surface area.<br>➤ Slightly more potential for stormwater runoff, erosion, and sedimentation than Alternative C without Option V-1.<br>➤ Similar temporary impacts on soil from construction activities as Alternative C without Option V-1.                             | ➤ Net addition of 0.76 acres of impervious surface area.<br>➤ Less potential for stormwater runoff, erosion, and sedimentation than Alternative C with Option V-1 and Alternative C without Option V-1.<br>➤ Less temporary impacts on soil from construction activities as Alternative C with Option V-1 and Option V-1 without Alternative C. |
| Land Use        | ➤ No impacts. | ➤ Permanent ROW acquisition of 1.9 acres converted into transportation corridor.<br>➤ Temporary easement acquisition of 1.9 acres for construction.<br>➤ Consistent with goals identified in local, state, and regional plans for transportation and land use.                                                | ➤ Permanent ROW acquisition of 2.3 acres converted into transportation corridor.<br>➤ Temporary easement acquisition of 2.0 acres for construction.<br>➤ Slightly less consistency with goals identified in local, state, and regional plans for transportation and land use than Alternative C without Option V-1. | ➤ Permanent ROW acquisition of 0.4 acres converted into transportation corridor.<br>➤ Temporary easement acquisition of 0.7 acres for construction.<br>➤ Less consistency with goals identified in local, state, and regional plans for transportation and land use than Alternative C without Option V-1 and Alternative C with Option V-1.    |
| Farmland        | ➤ No impacts. | ➤ Permanent conversion of 0.33 acres of prime farmland.<br>➤ NRCS CPA-106 form score less than FPPA recommended allowable level.                                                                                                                                                                              | ➤ Permanent conversion of 0.71 acres of prime farmland.<br>➤ Same NRCS CPA-106 form score less than FPPA recommended allowable level as Alternative C without Option V-1.                                                                                                                                           | ➤ Permanent conversion of 0.38 acres of prime farmland.<br>➤ Same NRCS CPA-106 form score less than FPPA recommended allowable level as Alternative C without Option V-1 and Alternative C with Option V-1.                                                                                                                                     |
| Vegetation      | ➤ No impacts. | ➤ Permanent conversion of 3.62 acres of various vegetation types into impervious surface.<br>➤ Temporary impact on approximately 28.28 acres of various vegetation types.<br>➤ Potential to spread noxious weeds during construction.                                                                         | ➤ Permanent conversion of 4.38 acres of various vegetation types into impervious surface.<br>➤ Temporary impact on approximately 31.23 acres of various vegetation types.<br>➤ Slightly greater potential to spread noxious weeds during construction than Alternative C without Option V-1.                        | ➤ Permanent conversion of 0.76 acres of various vegetation types into impervious surface.<br>➤ Temporary impact on approximately 2.94 acres of various vegetation types.<br>➤ Less potential to spread noxious weeds during construction than Alternative C without Option V-1 and Alternative C with Option V-1.                               |
| Water Resources | ➤ No impacts. | ➤ No impacts to sole source aquifers, groundwater resources, drinking water, or source water protection areas.                                                                                                                                                                                                | ➤ Same no impacts to sole source aquifers, groundwater resources, drinking water, or source water protection areas as Alternative C without Option V-1.                                                                                                                                                             | ➤ Same no impacts to sole source aquifers, groundwater resources, drinking water, or source water protection areas as Alternative C without Option V-1 and Alternative C with Option V-1.                                                                                                                                                       |



| Resource Area                              | Alternative A | Alternative C4 - Flush Median<br>without Option V-1 - Shared Use Path                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Alternative C4 - Flush Median<br>with Option V-1 - Shared Use Path                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Option V-1 - Shared Use Path<br>without Alternative C4 - Flush Median                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wetlands and<br>Other Waters               | ➤ No impacts. | <ul style="list-style-type: none"> <li>➤ Permanent impacts on 0.770 acres of wetlands.</li> <li>➤ Temporary impacts on 0.210 acres of wetlands.</li> <li>➤ Permanent impacts on 0.006 acres of other waters.</li> <li>➤ Temporary impacts on 0.003 acres of other waters.</li> </ul>                                                                                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>➤ Permanent impacts on 1.020 acres of wetlands.</li> <li>➤ Temporary impacts on 0.244 acres of wetlands.</li> <li>➤ Permanent impacts on 0.006 acres of other waters.</li> <li>➤ Temporary impacts on 0.003 acres of other waters.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>➤ Permanent impacts on 0.320 acres of wetlands.</li> <li>➤ Temporary impacts on 0.120 acres of wetlands.</li> <li>➤ No permanent impacts to other waters.</li> <li>➤ No temporary impacts to other waters.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                               |
| Water Quality                              | ➤ No impacts. | <ul style="list-style-type: none"> <li>➤ Potential to impact water quality from spills, erosion, and sedimentation during construction.</li> <li>➤ Potential to impact water quality from runoff during operation.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                               | <ul style="list-style-type: none"> <li>➤ Slightly higher potential to impact water quality from spills, erosion, and sedimentation during construction than Alternative C without Option V-1.</li> <li>➤ Slightly higher potential to impact water quality from runoff during operation than Alternative C without Option V-1.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>➤ Lower potential to impact water quality from spills, erosion, and sedimentation during construction than Alternative C without Option V-1 and Alternative C with Option V-1.</li> <li>➤ Lower potential to impact water quality from runoff during operation than Alternative C without Option V-1 and Alternative C with Option V-1.</li> </ul>                                                                                                                                                                                                                                                                                  |
| Floodplain                                 | ➤ No impacts. | ➤ Impact to Velva flood protection levee.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ➤ Same impact to Velva flood protection levee as Alternative C without Option V-1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ➤ No impact to Velva flood protection levee.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Wildlife and<br>Fisheries                  | ➤ No impacts. | <ul style="list-style-type: none"> <li>➤ Direct conversion of 4.22 acres of potential habitat into a transportation corridor.</li> <li>➤ Potential habitat degradation and fragmentation, avoidance of habitat, barriers to wildlife movement, and wildlife-vehicle collisions due to expansion of the transportation corridor.</li> <li>➤ Potential for mortality to species with limited mobility due to construction activities.</li> <li>➤ No impacts anticipated for species of concern or significant ecological communities.</li> <li>➤ No impacts anticipated for bald or golden eagles.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Direct conversion of 4.22 acres of potential habitat into a transportation corridor.</li> <li>➤ Same potential habitat degradation and fragmentation, avoidance of habitat, barriers to wildlife movement, and wildlife-vehicle collisions due to expansion of the transportation corridor as Alternative C without Option V-1.</li> <li>➤ Same potential for mortality to species with limited mobility due to construction activities as Alternative C without Option V-1.</li> <li>➤ Same no impacts anticipated for species of concern or significant ecological communities as Alternative C without Option V-1.</li> <li>➤ Same no impacts anticipated for bald or golden eagles as Alternative C without Option V-1.</li> </ul> | <ul style="list-style-type: none"> <li>➤ No conversion of potential habitat.</li> <li>➤ No potential for habitat degradation and fragmentation, avoidance of habitat, barriers to wildlife movement, and wildlife-vehicle collisions.</li> <li>➤ No potential for mortality to species with limited mobility due to construction activities.</li> <li>➤ Same no impacts anticipated for species of concern or significant ecological communities as Alternative C without Option V-1 and Alternative C with Option V-1.</li> <li>➤ Same no impacts anticipated for bald or golden eagles as Alternative C without Option V-1 and Alternative C with Option V-1.</li> </ul> |
| Threatened<br>and<br>Endangered<br>Species | ➤ No impacts. | <ul style="list-style-type: none"> <li>➤ No effect on piping plover, piping plover critical habitat, Rufa red knot, and Dakota skipper critical habitat.</li> <li>➤ May affect, but not likely to adversely affect northern long-eared bat and whooping crane.</li> <li>➤ May affect, and likely to adversely affect Dakota skipper.</li> </ul>                                                                                                                                                                                                                                                             | ➤ Same effect determinations as Alternative C without Option V-1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ➤ Same effect determinations as Alternative C with Option V-1. And Alternative C without Option V-1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

| Resource Area           | Alternative A                                                                                                                                                                                                                                                                                                | Alternative C4 - Flush Median<br>without Option V-1 - Shared Use Path                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Alternative C4 - Flush Median<br>with Option V-1 - Shared Use Path                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Option V-1 - Shared Use Path<br>without Alternative C4 - Flush Median                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Social and Economic     | <ul style="list-style-type: none"> <li>➤ No improvement on transportation network.</li> <li>➤ Continuation of traffic congestion; no improvement to safety or business productivity.</li> <li>➤ No increased temporary demand for construction contractors or local services during construction.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Beneficial impact by addressing perceived safety issues, existing and future traffic needs, or social and economic demands.</li> <li>➤ No addition of pedestrian/bicycle facility.</li> <li>➤ No removal of buildings.</li> <li>➤ Roadway would be closer to homes, businesses, and community services, impacting noise and visual environments.</li> <li>➤ Increased temporary demand for construction contractors and local services during construction.</li> <li>➤ Temporary construction impact on travel patterns, noise environment, and visual environment.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Same beneficial impact by addressing perceived safety issues, existing and future traffic needs, or social and economic demands as Alternative C without Option V-1.</li> <li>➤ Addition of pedestrian/bicycle facility.</li> <li>➤ Same no removal of buildings as Alternative C without Option V-1.</li> <li>➤ Same impact from roadway becoming closer to homes, businesses, and community services as Alternative C without Option V-1.</li> <li>➤ Same increased temporary demand for construction contractors and local services during construction as Alternative C without Option V-1.</li> <li>➤ Similar temporary construction impact on travel patterns, noise environment, and visual environment as Alternative C without Option V-1.</li> </ul> | <ul style="list-style-type: none"> <li>➤ No beneficial impact by addressing perceived safety issues, existing and future traffic needs, or social and economic demands.</li> <li>➤ Same addition of pedestrian/bicycle facility as Alternative C with Option V-1.</li> <li>➤ Same no removal of buildings as Alternative C without Option V-1 and Alternative C with Option V-1.</li> <li>➤ No roadway becoming closer to homes, businesses, and community services.</li> <li>➤ Less temporary demand for construction contractors and local services during construction than Alternative C without Option V-1 and Alternative C with Option V-1.</li> <li>➤ Less temporary construction impact on travel patterns, noise environment, and visual environment than Alternative C without Option V-1 and Alternative C with Option V-1.</li> </ul> |
| Cultural Resources      | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>➤ Proposed action would have no adverse effect on cultural resources.</li> <li>➤ Potential for unanticipated discovery of cultural resources.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>➤ Same affect determination as Alternative C without Option V-1.</li> <li>➤ Slightly higher potential for unanticipated discovery of cultural resources than Alternative C without Option V-1.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>➤ Same affect determination as Alternative C without Option V-1 and Alternative C with Option V-1.</li> <li>➤ Lower potential for unanticipated discovery of cultural resources as Alternative C without Option V-1 and Alternative C with Option V-1.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Section 4(f) Properties | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>➤ Proposed action would have no adverse effect on cultural resources with archaeological resources Section 4(f) exception applied.</li> <li>➤ Temporary impact on Sno-Trails Snowmobile Trail with trails in ROW Section 4(f) exception applied.</li> </ul>                                                                                                                                                                                                                                                                                                                      | <ul style="list-style-type: none"> <li>➤ Same proposed action would have no adverse effect on cultural resources with archaeological resources Section 4(f) exception applied as Alternative C without Option V-1.</li> <li>➤ Same temporary impact on Sno-Trails Snowmobile Trail with trails in ROW Section 4(f) exception applied as Alternative C without Option V-1.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>➤ Same proposed action would have no adverse effect on cultural resources with archaeological resources Section 4(f) exception applied as Alternative C with Option V-1 and Alternative C without Option V-1.</li> <li>➤ Same temporary impact on Sno-Trails Snowmobile Trail with trails in ROW Section 4(f) exception applied as Alternative C without Option V-1 and Alternative C with Option V-1.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                           |
| Infrastructure          | <ul style="list-style-type: none"> <li>➤ No adverse or beneficial impacts on infrastructure.</li> <li>➤ Continuation of wear and ongoing maintenance on existing roadways.</li> </ul>                                                                                                                        | <ul style="list-style-type: none"> <li>➤ Beneficial impact on transportation infrastructure.</li> <li>➤ Impacted fences would be shifted.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>➤ Slightly less beneficial impact on transportation infrastructure as Alternative C without Option V-1.</li> <li>➤ Same impacted fences would be shifted as Alternative C without Option V-1.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>➤ Less beneficial impact on transportation infrastructure than Alternative C without Option V-1 and Alternative C with Option V-1.</li> <li>➤ Same impacted fences would be shifted as Alternative C without Option V-1 and Alternative C with Option V-1.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

| Resource Area   | Alternative A                                                                                                                                                                                                                                                                                          | Alternative C4 - Flush Median<br>without Option V-1 - Shared Use Path                                                                                                                                                                                                                                                                                                                                                                                                                                           | Alternative C4 - Flush Median<br>with Option V-1 - Shared Use Path                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Option V-1 - Shared Use Path<br>without Alternative C4 - Flush Median                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Air Quality     | <ul style="list-style-type: none"> <li>➤ Emissions (i.e., fugitive dust, criteria pollutants) would increase as traffic volume increases.</li> </ul>                                                                                                                                                   | <ul style="list-style-type: none"> <li>➤ Potential to impact air quality during construction activities.</li> <li>➤ Potential reduction in emissions due to increased efficiency of roadway network but may be offset as traffic volumes increase.</li> </ul>                                                                                                                                                                                                                                                   | <ul style="list-style-type: none"> <li>➤ Slightly higher potential to impact air quality during construction activities than Alternative C without Option V-1.</li> <li>➤ Same potential reduction in emissions due to increased efficiency of roadway network but may be offset as traffic volumes increase as Alternative C without Option V-1.</li> </ul>                                                                                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>➤ Less potential to impact air quality during construction activities than Alternative C without Option V-1 and Alternative C with Option V-1.</li> <li>➤ No potential reduction in emissions due to a shared use path being built and no construction of four lane roadway.</li> </ul>                                                                                                                                                                                                                 |
| Noise           | <ul style="list-style-type: none"> <li>➤ Traffic noise would increase as traffic volumes increase.</li> <li>➤ Alternative A future (2047) scenario traffic noise levels ranged from 51.0 to 68.2 dB(A) with six impacted receptors.</li> <li>➤ No noise walls considered for Alternative A.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Traffic noise would increase as traffic volumes increase and location of source would be shifted horizontally and vertically.</li> <li>➤ Alternative C future (2047) scenario traffic noise levels ranged from 49.1 to 68.0 dB(A) with four impacted receptors across all segments.</li> <li>➤ Impacts to receptors with noise wall considered in Segment 4. Abatement was determined not feasible.</li> <li>➤ Temporary noise impacts during construction.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Similar traffic noise would increase as traffic volumes increase and location of source would be shifted horizontally and vertically as Alternative C without Option V-1.</li> <li>➤ Alternative C future (2047) scenario traffic noise levels ranged from 49.1 to 68.0 dB(A) with four impacted receptors across all segments.</li> <li>➤ Similar impacts to receptors with noise wall considered in Segment 4 as Alternative C without Option V-1. Abatement was determined not feasible.</li> <li>➤ Same temporary noise impacts during construction as Alternative C without Option V-1.</li> </ul> | <ul style="list-style-type: none"> <li>➤ No traffic noise impact.</li> <li>➤ Less temporary noise impacts during construction than Alternative C without Option V-1 and Alternative C with Option V-1.</li> </ul>                                                                                                                                                                                                                                                                                                                              |
| Visual          | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>➤ Temporary and permanent impact on visual resources and viewshed, but generally compatible with existing visual character and no impact on visual quality is expected.</li> </ul>                                                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>➤ Slightly greater temporary and permanent impact on visual resources and viewshed than Alternative C without Option V-1, but same generally compatible with existing visual character and no impact on visual quality expected as Alternative C without Option V-1.</li> </ul>                                                                                                                                                                                                                                                                                                                           | <ul style="list-style-type: none"> <li>➤ Less temporary and permanent impact on visual resources and viewshed than Alternative C without Option V-1 and Alternative C with Option V-1, but same generally compatible with existing visual character and no impact on visual quality expected as Alternative C without Option V-1 and Alternative C with Option V-1.</li> </ul>                                                                                                                                                                 |
| Hazardous Waste | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>➤ No known hazardous materials sites requiring active mitigation.</li> <li>➤ Potential to encounter hazardous materials during construction.</li> <li>➤ Potential for minor accidental spills or leaks of hazardous materials used during construction.</li> </ul>                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>➤ Same no known hazardous materials sites requiring active mitigation as Alternative C without Option V-1.</li> <li>➤ Slightly greater potential to encounter hazardous materials during construction Alternative C without Option V-1.</li> <li>➤ Same potential for minor accidental spills or leaks of hazardous materials used during construction as Alternative C without Option V-1.</li> </ul>                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>➤ Same no known hazardous materials sites requiring active mitigation as Alternative C without Option V-1 and Alternative C with Option V-1.</li> <li>➤ Lower potential to encounter hazardous materials during construction than Alternative C without Option V-1 and Alternative C with Option V-1.</li> <li>➤ Lower potential for minor accidental spills or leaks of hazardous materials used during construction as Alternative C without Option V-1 and Alternative C with Option V-1.</li> </ul> |

| Resource Area                                           | Alternative A                                                                                                                                                                                                                                                                  | Alternative C4 - Flush Median<br>without Option V-1 - Shared Use Path                                                                                                                                                                                                              | Alternative C4 - Flush Median<br>with Option V-1 - Shared Use Path                                                                                                                                                                                                                                                                                                                                                         | Option V-1 - Shared Use Path<br>without Alternative C4 - Flush Median                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Utilities                                               | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li>➤ Removal/relocation of two utility poles.</li> <li>➤ Impacts to 9,005 linear feet of utilities.</li> <li>➤ Potential temporary short term service interruptions during relocations.</li> </ul>                                             | <ul style="list-style-type: none"> <li>➤ Removal/relocation of three utility poles.</li> <li>➤ Impacts to 10,241 linear feet of utilities.</li> <li>➤ Similar potential temporary short term service interruptions during relocations as Alternative C without Option V-1.</li> </ul>                                                                                                                                      | <ul style="list-style-type: none"> <li>➤ Removal/relocation of one utility pole.</li> <li>➤ Impacts to 1,236 linear feet of utilities.</li> <li>➤ Lower potential temporary short term service interruptions during relocations as Alternative C without Option V-1 and Alternative C with Option V-1.</li> </ul>                                                                                                                              |
| Irreversible and Irretrievable Commitments of Resources | <ul style="list-style-type: none"> <li>➤ No commitment of resources for construction.</li> <li>➤ Commitment of resources for routine maintenance.</li> <li>➤ No increased efficiency to flow of traffic during operation with resulting reduced energy consumption.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Commitment of resources during construction.</li> <li>➤ No significant demand on energy resources or their availability.</li> <li>➤ More efficient flow of traffic during operation with resulting reduced energy consumption.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Slightly higher commitment of resources during construction than Alternative C without Option V-1.</li> <li>➤ Same no significant demand on energy resources or their availability as Alternative C without Option V-1.</li> <li>➤ Same more efficient flow of traffic during operation with resulting reduced energy consumption as Alternative C without Option V-1.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Lower commitment of resources during construction than Alternative C without Option V-1 and Alternative C with Option V-1.</li> <li>➤ Same no significant demand on energy resources or their availability as Alternative C without Option V-1 and Alternative C with Option V-1.</li> <li>➤ No more efficient flow of traffic during operation with resulting reduced energy consumption.</li> </ul> |

*Table 21, Segment 5 Impact Summary and Comparison*

| Resource Area | Alternative A                                                   | Alternative B5 - Depressed Median                                                                                                                                                                                                                                                                                                                                            | Alternative C5 - Flush Median                                                                                                                                                                                                                                                                                                                        |
|---------------|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Geology       | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Permanent earthwork impacting 107.99 acres.</li> <li>➤ Temporary earthwork impacting 12.36 acres.</li> <li>➤ Potential to impact paleontological resources during construction.</li> </ul>                                                                                                                                          | <ul style="list-style-type: none"> <li>➤ Permanent earthwork impacting 94.31 acres.</li> <li>➤ Temporary earthwork impacting 12.26 acres.</li> <li>➤ Slightly lower potential to impact paleontological resources during construction than Alternative B.</li> </ul>                                                                                 |
| Soils         | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Net addition of 15.43 acres of impervious surface area.</li> <li>➤ Potential for stormwater runoff, erosion, and sedimentation.</li> <li>➤ Temporary impacts on soil from construction activities: soil compaction, reduced permeability and infiltration capacity, potential for erosion, sedimentation, and/or spills.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Net addition of 18.25 acres of impervious surface area.</li> <li>➤ Slightly more potential for stormwater runoff, erosion, and sedimentation than Alternative B.</li> <li>➤ Similar temporary impacts on soil from construction activities as Alternative B.</li> </ul>                                     |
| Land Use      | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Permanent ROW acquisition of 31.0 acres converted into transportation corridor.</li> <li>➤ Temporary easement acquisition of 4.8 acres for construction.</li> <li>➤ Consistent with goals identified in local, state, and regional plans for transportation and land use.</li> </ul>                                                | <ul style="list-style-type: none"> <li>➤ Permanent ROW acquisition of 14.1 acres converted into transportation corridor.</li> <li>➤ Temporary easement acquisition of 4.0 acres for construction.</li> <li>➤ Same consistency with goals identified in local, state, and regional plans for transportation and land use as Alternative B.</li> </ul> |
| Farmland      | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Permanent conversion of 3.19 acres of prime farmland.</li> <li>➤ NRCS CPA-106 form score less than FPPA recommended allowable level.</li> </ul>                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>➤ Permanent conversion of 0.52 acres of prime farmland.</li> <li>➤ Same NRCS CPA-106 form score less than FPPA recommended allowable level as Alternative B.</li> </ul>                                                                                                                                       |
| Vegetation    | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Permanent conversion of 16.93 acres of various vegetation types into impervious surface.</li> <li>➤ Temporary impact on approximately 120.35 acres of various vegetation types.</li> <li>➤ Potential to spread noxious weeds during construction.</li> </ul>                                                                        | <ul style="list-style-type: none"> <li>➤ Permanent conversion of 18.25 acres of various vegetation types into impervious surface.</li> <li>➤ Temporary impact on approximately 106.57 acres of various vegetation types.</li> <li>➤ Slightly lower potential to spread noxious weeds during construction than Alternative B.</li> </ul>              |



| Resource Area                     | Alternative A                                                                                                                                                                                                                                  | Alternative B5 - Depressed Median                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Alternative C5 - Flush Median                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Water Resources                   | ➤ No impacts.                                                                                                                                                                                                                                  | ➤ No impacts to sole source aquifers, groundwater resources, drinking water, or source water protection areas.                                                                                                                                                                                                                                                                                                                                                                                                                                             | ➤ Same no impacts to sole source aquifers, groundwater resources, drinking water, or source water protection areas as Alternative B.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Wetlands and Other Waters         | ➤ No impacts.                                                                                                                                                                                                                                  | ➤ Permanent impacts on 4.619 acres of wetlands.<br>➤ Temporary impacts on 1.157 acres of wetlands.<br>➤ Permanent impacts on 0.442 acres of other waters.<br>➤ Temporary impacts on 0.052 acres of other waters.<br>➤ Permanent and temporary impacts to USFWS wetland conservation easements.                                                                                                                                                                                                                                                             | ➤ Permanent impacts on 1.666 acres of wetlands.<br>➤ Temporary impacts on 0.736 acres of wetlands.<br>➤ Permanent impacts on 0.072 acres of other waters.<br>➤ Temporary impacts on 0.051 acres of other waters.<br>➤ Similar permanent and temporary impacts to USFWS wetland conservation easements as Alternative B.                                                                                                                                                                                                                                                                                                  |
| Water Quality                     | ➤ No impacts.                                                                                                                                                                                                                                  | ➤ Potential to impact water quality from spills, erosion, and sedimentation during construction.<br>➤ Potential to impact water quality from runoff during operation.                                                                                                                                                                                                                                                                                                                                                                                      | ➤ Slightly lower potential to impact water quality from spills, erosion, and sedimentation during construction than Alternative B.<br>➤ Slightly higher potential to impact water quality from runoff during operation than Alternative B.                                                                                                                                                                                                                                                                                                                                                                               |
| Floodplain                        | ➤ No impacts.                                                                                                                                                                                                                                  | ➤ Work in Special Flood Hazard Areas.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ➤ Work in Special Flood Hazard Areas.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Wildlife and Fisheries            | ➤ No impacts.                                                                                                                                                                                                                                  | ➤ Direct conversion of 153.09 acres of potential habitat into a transportation corridor.<br>➤ Potential habitat degradation and fragmentation, avoidance of habitat, barriers to wildlife movement, and wildlife-vehicle collisions due to expansion of the transportation corridor.<br>➤ Potential for mortality to species with limited mobility due to construction activities.<br>➤ No impacts anticipated for species of concern or significant ecological communities.<br>➤ No impacts anticipated for bald or golden eagles.                        | ➤ Direct conversion of 189.89 acres of potential habitat into a transportation corridor.<br>➤ Same potential habitat degradation and fragmentation, avoidance of habitat, barriers to wildlife movement, and wildlife-vehicle collisions due to expansion of the transportation corridor.<br>➤ Same potential for mortality to species with limited mobility due to construction activities as Alternative B.<br>➤ Same no impacts anticipated for species of concern or significant ecological communities as Alternative B.<br>➤ Same no impacts anticipated for bald or golden eagles as Alternative B.               |
| Threatened and Endangered Species | ➤ No impacts.                                                                                                                                                                                                                                  | ➤ No effect on piping plover, piping plover critical habitat, Rufa red knot, and Dakota skipper critical habitat.<br>➤ May affect, but not likely to adversely affect northern long-eared bat and whooping crane.<br>➤ May affect, and likely to adversely affect Dakota skipper.                                                                                                                                                                                                                                                                          | ➤ Same effect determinations as Alternative B.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Social and Economic               | ➤ No improvement on transportation network.<br>➤ Continuation of traffic congestion; no improvement to safety or business productivity.<br>➤ No increased temporary demand for construction contractors or local services during construction. | ➤ Beneficial impact by addressing perceived safety issues, existing and future traffic needs, or social and economic demands, with greater protection from head-on collisions than Alternative C.<br>➤ No removal of buildings.<br>➤ Roadway would be closer to homes, businesses, and community services, impacting noise and visual environments.<br>➤ Increased temporary demand for construction contractors and local services during construction.<br>➤ Temporary construction impact on travel patterns, noise environment, and visual environment. | ➤ Beneficial impact by addressing perceived safety issues, existing and future traffic needs, or social and economic demands, with less protection from head-on collisions than Alternative B.<br>➤ Same no removal of buildings as Alternative B.<br>➤ Similar impact from roadway becoming closer to homes, businesses, and community services as Alternative B.<br>➤ Same increased temporary demand for construction contractors and local services during construction as Alternative B.<br>➤ Similar temporary construction impact on travel patterns, noise environment, and visual environment as Alternative B. |
| Cultural Resources                | ➤ No impacts.                                                                                                                                                                                                                                  | ➤ Proposed action would have no adverse effect on cultural resources.<br>➤ Potential for unanticipated discovery of cultural resources.                                                                                                                                                                                                                                                                                                                                                                                                                    | ➤ Same affect determination as Alternative B.<br>➤ Slightly lower potential for unanticipated discovery of cultural resources as Alternative B.                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

| Resource Area                                           | Alternative A                                                                                                                                                                                                                                                                                          | Alternative B5 - Depressed Median                                                                                                                                                                                                                                                                                                                                                                                                                                         | Alternative C5 - Flush Median                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Section 4(f) Properties                                 | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>➤ No impact to recreational Section 4(f) properties.</li> <li>➤ Proposed action would have no adverse effect on cultural resources with archaeological resources Section 4(f) exception applied.</li> </ul>                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>➤ Same no impact to recreational Section 4(f) properties as Alternative B.</li> <li>➤ Same proposed action would have no adverse effect on cultural resources with archaeological resources Section 4(f) exception applied as Alternative B.</li> </ul>                                                                                                                                                                                                                                                   |
| Infrastructure                                          | <ul style="list-style-type: none"> <li>➤ No adverse or beneficial impacts on infrastructure.</li> <li>➤ Continuation of wear and ongoing maintenance on existing roadways.</li> </ul>                                                                                                                  | <ul style="list-style-type: none"> <li>➤ Beneficial impact on transportation infrastructure.</li> <li>➤ Impacted fences would be shifted.</li> </ul>                                                                                                                                                                                                                                                                                                                      | <ul style="list-style-type: none"> <li>➤ Same beneficial impact on transportation infrastructure as Alternative B.</li> <li>➤ Same impacted fences would be shifted as Alternative B.</li> </ul>                                                                                                                                                                                                                                                                                                                                                 |
| Air Quality                                             | <ul style="list-style-type: none"> <li>➤ Emissions (i.e., fugitive dust, criteria pollutants) would increase as traffic volume increases.</li> </ul>                                                                                                                                                   | <ul style="list-style-type: none"> <li>➤ Potential to impact air quality during construction activities.</li> <li>➤ Potential reduction in emissions due to increased efficiency of roadway network but may be offset as traffic volumes increase.</li> </ul>                                                                                                                                                                                                             | <ul style="list-style-type: none"> <li>➤ Slightly lower potential to impact air quality during construction activities than Alternative C.</li> <li>➤ Same potential reduction in emissions due to increased efficiency of roadway network but may be offset as traffic volumes increase as Alternative B.</li> </ul>                                                                                                                                                                                                                            |
| Noise                                                   | <ul style="list-style-type: none"> <li>➤ Traffic noise would increase as traffic volumes increase.</li> <li>➤ Alternative A future (2047) scenario traffic noise levels ranged from 51.0 to 68.2 dB(A) with six impacted receptors.</li> <li>➤ No noise walls considered for Alternative A.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Traffic noise would increase as traffic volumes increase and location of source would be shifted horizontally and vertically.</li> <li>➤ Alternative B future (2047) scenario traffic noise levels ranged from 51.1 to 67.3 dB(A) with three impacted receptors across all segments.</li> <li>➤ No impacted receptors or noise walls considered in Segment 5.</li> <li>➤ Temporary noise impacts during construction.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Similar traffic noise would increase as traffic volumes increase and location of source would be shifted horizontally and vertically as Alternative B.</li> <li>➤ Alternative C future (2047) scenario traffic noise levels ranged from 49.1 to 68.0 dB(A) with four impacted receptors across all segments.</li> <li>➤ Similar no impacted receptors or noise walls considered in Segment 5 as Alternative B.</li> <li>➤ Same temporary noise impacts during construction as Alternative B.</li> </ul> |
| Visual                                                  | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>➤ Temporary and permanent impact on visual resources and viewshed, but generally compatible with existing visual character and no impact on visual quality is expected.</li> </ul>                                                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>➤ Slightly lower temporary and permanent impact on visual resources and viewshed than Alternative B, but same generally compatible with existing visual character and no impact on visual quality expected as Alternative B.</li> </ul>                                                                                                                                                                                                                                                                   |
| Hazardous Waste                                         | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>➤ No known hazardous materials sites requiring active mitigation.</li> <li>➤ Potential to encounter hazardous materials during construction.</li> <li>➤ Potential for minor accidental spills or leaks of hazardous materials used during construction.</li> </ul>                                                                                                                                                                 | <ul style="list-style-type: none"> <li>➤ Same no known hazardous materials sites requiring active mitigation as Alternative B.</li> <li>➤ Slightly lower potential to encounter hazardous materials during construction than Alternative B.</li> <li>➤ Same potential for minor accidental spills or leaks of hazardous materials used during construction as Alternative B.</li> </ul>                                                                                                                                                          |
| Utilities                                               | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>➤ Removal/relocation of 14 utility poles.</li> <li>➤ Impacts to 76,214 linear feet of utilities.</li> <li>➤ Potential temporary short term service interruptions during relocations.</li> </ul>                                                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>➤ Removal/relocation of 22 utility poles.</li> <li>➤ Impacts to 69,622 linear feet of utilities.</li> <li>➤ Same potential temporary short term service interruptions during relocations as Alternative B.</li> </ul>                                                                                                                                                                                                                                                                                     |
| Irreversible and Irretrievable Commitments of Resources | <ul style="list-style-type: none"> <li>➤ No commitment of resources for construction.</li> <li>➤ Commitment of resources for routine maintenance.</li> <li>➤ No increased efficiency to flow of traffic during operation with resulting reduced energy consumption.</li> </ul>                         | <ul style="list-style-type: none"> <li>➤ Commitment of resources during construction.</li> <li>➤ No significant demand on energy resources or their availability.</li> <li>➤ More efficient flow of traffic during operation with resulting reduced energy consumption.</li> </ul>                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>➤ Slightly lower commitment of resources during construction than Alternative B.</li> <li>➤ Same no significant demand on energy resources or their availability as Alternative B.</li> <li>➤ Same more efficient flow of traffic during operation with resulting reduced energy consumption as Alternative B.</li> </ul>                                                                                                                                                                                 |

*Table 22, Segment 6 Impact Summary and Comparison*

| Resource Area             | Alternative A | Alternative B6 - Depressed Median                                                                                                                                                                                                                                                                                                                                           | Alternative C6 - Flush Median                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Geology                   | ➤ No impacts. | <ul style="list-style-type: none"> <li>➤ Permanent earthwork impacting 41.93 acres.</li> <li>➤ Temporary earthwork impacting 8.07 acres.</li> <li>➤ Potential to impact paleontological resources during construction.</li> </ul>                                                                                                                                           | <ul style="list-style-type: none"> <li>➤ Permanent earthwork impacting 39.96 acres.</li> <li>➤ Temporary earthwork impacting 8.04 acres.</li> <li>➤ Slightly lower potential to impact paleontological resources during construction than Alternative B.</li> </ul>                                                                                                                                                   |
| Soils                     | ➤ No impacts. | <ul style="list-style-type: none"> <li>➤ Net addition of 6.12 acres of impervious surface area.</li> <li>➤ Potential for stormwater runoff, erosion, and sedimentation.</li> <li>➤ Temporary impacts on soil from construction activities: soil compaction, reduced permeability and infiltration capacity, potential for erosion, sedimentation, and/or spills.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Net addition of 6.58 acres of impervious surface area.</li> <li>➤ Slightly less potential for stormwater runoff, erosion, and sedimentation than Alternative C.</li> <li>➤ Similar temporary impacts on soil from construction activities as Alternative B.</li> </ul>                                                                                                       |
| Land Use                  | ➤ No impacts. | <ul style="list-style-type: none"> <li>➤ Permanent ROW acquisition of 8.3 acres converted into transportation corridor.</li> <li>➤ Temporary easement acquisition of 2.4 acres for construction.</li> <li>➤ Consistent with goals identified in local, state, and regional plans for transportation and land use.</li> </ul>                                                | <ul style="list-style-type: none"> <li>➤ Permanent ROW acquisition of 6.5 acres converted into transportation corridor.</li> <li>➤ Temporary easement acquisition of 1.1 acres for construction.</li> <li>➤ Same consistency with goals identified in local, state, and regional plans for transportation and land use as Alternative B.</li> </ul>                                                                   |
| Farmland                  | ➤ No impacts. | <ul style="list-style-type: none"> <li>➤ Permanent conversion of 0.26 acres of farmland of statewide importance.</li> <li>➤ NRCS CPA-106 form score less than FPPA recommended allowable level.</li> </ul>                                                                                                                                                                  | <ul style="list-style-type: none"> <li>➤ Permanent conversion of 0.15 acres of farmland of statewide importance.</li> <li>➤ Same NRCS CPA-106 form score less than FPPA recommended allowable level as Alternative B.</li> </ul>                                                                                                                                                                                      |
| Vegetation                | ➤ No impacts. | <ul style="list-style-type: none"> <li>➤ Permanent conversion of 8.93 acres of various vegetation types into impervious surface.</li> <li>➤ Temporary impact on approximately 50.00 acres of various vegetation types.</li> <li>➤ Potential to spread noxious weeds during construction.</li> </ul>                                                                         | <ul style="list-style-type: none"> <li>➤ Permanent conversion of 6.58 acres of various vegetation types into impervious surface.</li> <li>➤ Temporary impact on approximately 47.40 acres of various vegetation types.</li> <li>➤ Slightly lower potential to spread noxious weeds during construction than Alternative B.</li> </ul>                                                                                 |
| Water Resources           | ➤ No impacts. | ➤ No impacts to sole source aquifers, groundwater resources, drinking water, or source water protection areas.                                                                                                                                                                                                                                                              | ➤ Same no impacts to sole source aquifers, groundwater resources, drinking water, or source water protection areas as Alternative B.                                                                                                                                                                                                                                                                                  |
| Wetlands and Other Waters | ➤ No impacts. | <ul style="list-style-type: none"> <li>➤ Permanent impacts on 2.030 acres of wetlands.</li> <li>➤ Temporary impacts on 0.489 acres of wetlands.</li> <li>➤ No permanent impacts on other waters.</li> <li>➤ No temporary impacts on other waters.</li> <li>➤ Permanent and temporary impacts to USFWS wetland conservation easements.</li> </ul>                            | <ul style="list-style-type: none"> <li>➤ Permanent impacts on 1.641 acres of wetlands.</li> <li>➤ Temporary impacts on 0.360 acres of wetlands.</li> <li>➤ Same no permanent impacts on other waters as Alternative B.</li> <li>➤ Same no temporary impacts on other waters as Alternative B.</li> <li>➤ Similar permanent and temporary impacts to USFWS wetland conservation easements as Alternative B.</li> </ul> |
| Water Quality             | ➤ No impacts. | <ul style="list-style-type: none"> <li>➤ Potential to impact water quality from spills, erosion, and sedimentation during construction.</li> <li>➤ Potential to impact water quality from runoff during operation.</li> </ul>                                                                                                                                               | <ul style="list-style-type: none"> <li>➤ Slightly lower potential to impact water quality from spills, erosion, and sedimentation during construction than Alternative B</li> <li>➤ Slightly higher potential to impact water quality from runoff during operation than Alternative B.</li> </ul>                                                                                                                     |
| Floodplain                | ➤ No impacts. | ➤ No impacts.                                                                                                                                                                                                                                                                                                                                                               | ➤ No impacts.                                                                                                                                                                                                                                                                                                                                                                                                         |

| Resource Area                     | Alternative A                                                                                                                                                                                                                                                                                                | Alternative B6 - Depressed Median                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Alternative C6 - Flush Median                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wildlife and Fisheries            | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>➤ Direct conversion of 153.09 acres of potential habitat into a transportation corridor.</li> <li>➤ Potential habitat degradation and fragmentation, avoidance of habitat, barriers to wildlife movement, and wildlife-vehicle collisions due to expansion of the transportation corridor.</li> <li>➤ Potential for mortality to species with limited mobility due to construction activities.</li> <li>➤ No impacts anticipated for species of concern or significant ecological communities.</li> <li>➤ No impacts anticipated for bald or golden eagles.</li> </ul>                        | <ul style="list-style-type: none"> <li>➤ Direct conversion of 189.89 acres of potential habitat into a transportation corridor.</li> <li>➤ Same potential habitat degradation and fragmentation, avoidance of habitat, barriers to wildlife movement, and wildlife-vehicle collisions due to expansion of the transportation corridor.</li> <li>➤ Same potential for mortality to species with limited mobility due to construction activities as Alternative B</li> <li>➤ Same no impacts anticipated for species of concern or significant ecological communities as Alternative B.</li> <li>➤ Same no impacts anticipated for bald or golden eagles as Alternative B.</li> </ul>                |
| Threatened and Endangered Species | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>➤ No effect on piping plover, piping plover critical habitat, Rufa red knot, and Dakota skipper critical habitat.</li> <li>➤ May affect, but not likely to adversely affect northern long-eared bat and whooping crane.</li> <li>➤ May affect, and likely to adversely affect Dakota skipper.</li> </ul>                                                                                                                                                                                                                                                                                      | <ul style="list-style-type: none"> <li>➤ Same effect determinations as Alternative B</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Social and Economic               | <ul style="list-style-type: none"> <li>➤ No improvement on transportation network.</li> <li>➤ Continuation of traffic congestion; no improvement to safety or business productivity.</li> <li>➤ No increased temporary demand for construction contractors or local services during construction.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Beneficial impact by addressing perceived safety issues, existing and future traffic needs, or social and economic demands, with greater protection from head-on collisions than Alternative C.</li> <li>➤ No removal of buildings.</li> <li>➤ Roadway would be closer to homes, businesses, and community services, impacting noise and visual environments.</li> <li>➤ Increased temporary demand for construction contractors and local services during construction.</li> <li>➤ Temporary construction impact on travel patterns, noise environment, and visual environment.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Beneficial impact by addressing perceived safety issues, existing and future traffic needs, or social and economic demands, with less protection from head-on collisions than Alternative B.</li> <li>➤ Same no removal of buildings as Alternative B.</li> <li>➤ Similar impact from roadway becoming closer to homes, businesses, and community services as Alternative B.</li> <li>➤ Same increased temporary demand for construction contractors and local services during construction as Alternative B.</li> <li>➤ Similar temporary construction impact on travel patterns, noise environment, and visual environment as Alternative B.</li> </ul> |
| Cultural Resources                | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>➤ Proposed action would have no adverse effect on cultural resources.</li> <li>➤ Potential for unanticipated discovery of cultural resources.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                      | <ul style="list-style-type: none"> <li>➤ Same affect determination as Alternative B.</li> <li>➤ Slightly lower potential for unanticipated discovery of cultural resources as Alternative B.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Section 4(f) Properties           | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>➤ No impact to recreational Section 4(f) properties.</li> <li>➤ Proposed action would have no adverse effect on cultural resources with archaeological resources Section 4(f) exception applied.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                   | <ul style="list-style-type: none"> <li>➤ Same no impact to recreational Section 4(f) properties as Alternative B.</li> <li>➤ Same proposed action would have no adverse effect on cultural resources with archaeological resources Section 4(f) exception applied as Alternative B.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                     |
| Infrastructure                    | <ul style="list-style-type: none"> <li>➤ No adverse or beneficial impacts on infrastructure.</li> <li>➤ Continuation of wear and ongoing maintenance on existing roadways.</li> </ul>                                                                                                                        | <ul style="list-style-type: none"> <li>➤ Beneficial impact on transportation infrastructure.</li> <li>➤ Impacted fences would be shifted.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>➤ Same beneficial impact on transportation infrastructure as Alternative B.</li> <li>➤ Same impacted fences would be shifted as Alternative B.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Air Quality                       | <ul style="list-style-type: none"> <li>➤ Emissions (i.e., fugitive dust, criteria pollutants) would increase as traffic volume increases.</li> </ul>                                                                                                                                                         | <ul style="list-style-type: none"> <li>➤ Potential to impact air quality during construction activities.</li> <li>➤ Potential reduction in emissions due to increased efficiency of roadway network but may be offset as traffic volumes increase.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>➤ Slightly lower potential to impact air quality during construction activities than Alternative C.</li> <li>➤ Same potential reduction in emissions due to increased efficiency of roadway network but may be offset as traffic volumes increase as Alternative B.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                              |



| Resource Area                                           | Alternative A                                                                                                                                                                                                                                                                                          | Alternative B6 - Depressed Median                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Alternative C6 - Flush Median                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Noise                                                   | <ul style="list-style-type: none"> <li>➤ Traffic noise would increase as traffic volumes increase.</li> <li>➤ Alternative A future (2047) scenario traffic noise levels ranged from 51.0 to 68.2 dB(A) with six impacted receptors.</li> <li>➤ No noise walls considered for Alternative A.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Traffic noise would increase as traffic volumes increase and location of source would be shifted horizontally and vertically.</li> <li>➤ Alternative B future (2047) scenario traffic noise levels ranged from 51.1 to 67.3 dB(A) with three impacted receptors across all segments.</li> <li>➤ Impacts to receptors with noise walls considered in Segment 6. Abatement was determined not feasible.</li> <li>➤ Temporary noise impacts during construction.</li> </ul> | <ul style="list-style-type: none"> <li>➤ Similar traffic noise would increase as traffic volumes increase and location of source would be shifted horizontally and vertically as Alternative B.</li> <li>➤ Alternative C future (2047) scenario traffic noise levels ranged from 49.1 to 68.0 dB(A) with four impacted receptors across all segments.</li> <li>➤ Similar impacts to receptors with noise walls considered in Segment 6 as Alternative B. Abatement was determined not feasible.</li> <li>➤ Same temporary noise impacts during construction as Alternative B.</li> </ul> |
| Visual                                                  | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>➤ Slightly greater temporary and permanent impact on visual resources and viewshed than Alternative C, but generally compatible with existing visual character and no impact on visual quality expected.</li> </ul>                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>➤ Slightly lower temporary and permanent impact on visual resources and viewshed than Alternative B, but same generally compatible with existing visual character and no impact on visual quality expected as Alternative B.</li> </ul>                                                                                                                                                                                                                                                                                                           |
| Hazardous Waste                                         | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>➤ No known hazardous materials sites requiring active mitigation.</li> <li>➤ Slightly greater potential to encounter hazardous materials during construction than Alternative C.</li> <li>➤ Potential for minor accidental spills or leaks of hazardous materials used during construction.</li> </ul>                                                                                                                                                                     | <ul style="list-style-type: none"> <li>➤ Same no known hazardous materials sites requiring active mitigation as Alternative B.</li> <li>➤ Slightly lower potential to encounter hazardous materials during construction than Alternative B.</li> <li>➤ Same potential for minor accidental spills or leaks of hazardous materials used during construction as Alternative B.</li> </ul>                                                                                                                                                                                                  |
| Utilities                                               | <ul style="list-style-type: none"> <li>➤ No impacts.</li> </ul>                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>➤ Removal/relocation of 17 utility poles.</li> <li>➤ Impacts to 21,417 linear feet of utilities.</li> <li>➤ Potential temporary short term service interruptions during relocations.</li> </ul>                                                                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>➤ Removal/relocation of 17 utility poles.</li> <li>➤ Impacts to 21,117 linear feet of utilities.</li> <li>➤ Same potential temporary short term service interruptions during relocations as Alternative B.</li> </ul>                                                                                                                                                                                                                                                                                                                             |
| Irreversible and Irretrievable Commitments of Resources | <ul style="list-style-type: none"> <li>➤ No commitment of resources for construction.</li> <li>➤ Commitment of resources for routine maintenance.</li> <li>➤ No increased efficiency to flow of traffic during operation with resulting reduced energy consumption.</li> </ul>                         | <ul style="list-style-type: none"> <li>➤ Commitment of resources during construction.</li> <li>➤ No significant demand on energy resources or their availability.</li> <li>➤ More efficient flow of traffic during operation with resulting reduced energy consumption.</li> </ul>                                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li>➤ Slightly lower commitment of resources during construction than Alternative B.</li> <li>➤ Same no significant demand on energy resources or their availability as Alternative B.</li> <li>➤ Same more efficient flow of traffic during operation with resulting reduced energy consumption as Alternative B.</li> </ul>                                                                                                                                                                                                                         |

## Chapter 4: Permits/Approvals, Environmental Commitments, and Compliance

### 4.1 Permits and Approvals

The following permits and approvals would be acquired prior to construction of the proposed action:

- USACE
  - Section 408 approval
  - Section 404 permit with Section 404(b)(1) analysis, if necessary
- USFWS
  - Special Use Permit and easement exchange
- NDDEQ
  - NPDES Permit
  - Section 401 water quality certification, if necessary
- NDDWR
  - Construction permit with EAP, if necessary
- Ward County
  - Floodplain permit
- City of Velva
  - Floodplain permit
- McHenry County
  - Floodplain permit
- City of Sawyer
  - Floodplain permit

### 4.2 Environmental Commitments

In addition to acquiring necessary permits and approvals, the proposed action would include environmental commitments to minimize, avoid, or compensate for impacts. Applicable environmental commitments would be included in the plans and specifications in addition to implementation of NDDOT's Standard Specifications for Road and Bridge Construction. A review of the specific limits, impacts, permitting, applicable commitments, and Special Provisions would occur during final design for segments that receive funding to move forward. Please refer to **Table 23, Summary of Environmental Commitments**.

*Table 23, Summary of Environmental Commitments*

| Number | Commitment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Segment | Implementing Entity                                           | Timing of Implementation                                                    | Environmental Impact Category                                                                                                              |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------------------------------------------------------------|-----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| 1      | Paleontological monitoring would occur during construction in high potential areas (i.e., PFYC Class 4 and 5) where cuts are greater than 10 feet deep. The areas to be monitored would be reassessed during final design using the most current PFYC dataset available from NDGS.                                                                                                                                                                                                                                                                                         | 1-6     | NDDOT and Contractor / Qualified Paleontologist, if necessary | Prior to construction and throughout construction, as necessary             | Geology                                                                                                                                    |
| 2      | An SPCC plan would be developed and implemented to minimize the likelihood of a spill and to guide containment and cleanup in the event of a spill.                                                                                                                                                                                                                                                                                                                                                                                                                        | 1-6     | Contractor                                                    | Prior to construction and throughout construction                           | Soils, Water Resources, Water Quality, Wildlife and Fisheries, Threatened and Endangered Species, Hazardous Waste                          |
| 3      | As part of the NPDES permit, the Contractor would be required to develop a SWPPP. To minimize potential impacts, BMPs would be implemented in accordance with the SWPPP. Various techniques may be used such as dust control; mulching, matting, and netting; installing filter fabric fencing; utilizing sediment traps and ponds; creating surface water interceptor swales and ditches; limiting the quantity of stockpiled materials; and ensuring stockpiles are stored away from surface water sources.                                                              | 1-6     | Contractor                                                    | Prior to construction and throughout construction                           | Soils, Water Resources, Water Quality, Air Quality, Wildlife and Fisheries, Threatened and Endangered Species, Social and Economic, Visual |
| 4      | Private landowners would be compensated for property acquired in accordance with the Uniform Act.                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1-6     | NDDOT                                                         | Prior to construction                                                       | Land Use                                                                                                                                   |
| 5      | Access would be maintained and temporary mailboxes may be used during construction activities.                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1-6     | Contractor                                                    | Throughout construction                                                     | Land Use, Social and Economic, Infrastructure                                                                                              |
| 6      | Disturbed areas would be promptly revegetated with a grass seed mixture and/or cover crop in accordance with the NDDOT Standards and Specifications for Road and Bridge Construction and NPDES permit requirements, with final stabilization occurring when a uniform perennial vegetative cover with a density of 70 percent of the native cover for unpaved areas and areas not covered by permanent structures, or equivalent permanent stabilization. Reseeding in some areas would be done in coordination with USFWS for Dakota skipper habitat mitigation purposes. | 1-6     | Contractor                                                    | Throughout construction, upon completion of construction (until stabilized) | Vegetation, Threatened and Endangered Species                                                                                              |
| 7      | Temporary impacts to native woody vegetation in riparian areas and woody draws would be reclaimed onsite at 1:1 ratio, while permanent impacts to native woody vegetation (i.e., trees and shrubs in natural settings) would be added to the NDDOT Tree Mitigation Ledger. Impacts to urban trees would be mitigated in coordination with the local public agency. Prior to impacts, woody vegetation to be removed in these areas would be recorded by a biologist and reviewed by NDDOT and added to the NDDOT Tree Mitigation Ledger.                                   | 1-6     | Contractor / Qualified Biologist / NDDOT                      | Prior to construction and upon completion of construction                   | Vegetation, Wildlife and Fisheries, Threatened and Endangered Species                                                                      |

| Number | Commitment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Segment | Implementing Entity                   | Timing of Implementation                                  | Environmental Impact Category                                                                |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------------------------------------|-----------------------------------------------------------|----------------------------------------------------------------------------------------------|
| 8      | During construction, the contractor would be responsible for implementing noxious weed control measures. Following construction, NDDOT would assume responsibility for ongoing noxious weed control within its ROW.                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1-6     | Contractor / NDDOT                    | During construction, upon completion of construction      | Vegetation, Wildlife and Fisheries, Threatened and Endangered Species                        |
| 9      | If an observation well is encountered during project activities and must be removed, the Water Appropriation Division of NDDWR would be contacted.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1-6     | Contractor / Project Engineer         | Prior to construction and throughout construction         | Water Resources                                                                              |
| 10     | Permanent impacts greater than 0.10 acres to USACE jurisdictional wetlands and any permanent impacts to natural wetlands pursuant to EO 11990 would be mitigated. Compensatory mitigation for USACE jurisdictional wetlands would occur by purchasing credits from a USACE approved wetland mitigation bank, ditch shifts, and/or offset by design. Mitigation for permanent impacts on all other natural wetlands would occur by purchasing credits from a wetland mitigation bank, ditch shifts, and/or offset by design. Permanent impacts greater than 0.030 acres of Other Waters would be mitigated by purchasing credits from a wetland mitigation bank at a 2:1 ratio. | 1-6     | NDDOT / Contractor                    | Prior to construction and upon completion of construction | Wetlands and Other Waters, Threatened and Endangered Species, Water Resources, Water Quality |
| 11     | Temporarily impacted wetlands or other waters would be restored to preconstruction contours and reseeded following construction.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1-6     | Contractor                            | Prior to construction and upon completion of construction | Wetlands and Other Waters, Water Quality                                                     |
| 12     | Equipment that was last used outside of North Dakota or within a Class I infested waterbody (identified on the NDGF website) requires an inspection by NDGF. Notify the NDGF at least 10 business days prior to pumps, watercraft, or any equipment entering a public water to allow the NDGF sufficient time to inspect any and all such equipment for ANS. Contact the NDGF ANS Coordinator for equipment inspections. Supply one of the following to the engineer as proof of compliance prior to work taking place in the water: (1) the NDGF inspection report, (2) documented NDGF correspondence (email or signed letter).                                              | 1-6     | Contractor                            | Throughout construction                                   | Wetlands and Other Waters, Wildlife and Fisheries                                            |
| 13     | Coordination with the Souris River Joint Board, would occur during final design to ensure final design does not adversely impact the Velva flood protection levee or the Sawyer flood control structure.                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2, 3, 4 | NDDOT / Project Engineer / Contractor | Prior to construction and throughout construction         | Floodplains                                                                                  |
| 14     | If any new bald or golden eagle nests are identified within 0.5 miles of the construction areas during construction activities, construction would immediately stop within 0.5 miles of the nest(s). NDDOT would coordinate with USFWS prior to the continuation of construction activities to determine any measures necessary to minimize harm to bald and/or golden eagles.                                                                                                                                                                                                                                                                                                 | 1-6     | Contractor                            | Throughout construction                                   | Wildlife and Fisheries                                                                       |



| Number | Commitment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Segment | Implementing Entity                                               | Timing of Implementation                                | Environmental Impact Category                                      |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------|---------------------------------------------------------|--------------------------------------------------------------------|
| 15     | If construction activities are to occur during the migratory bird nesting season (February 1 – July 15), work areas would be mowed and/or grubbed prior to the start of the nesting season if possible. If mowing and/or grubbing is not completed prior to the nesting season, a qualified biologist would conduct preconstruction nest surveys within the work areas. If active nests are identified, NDDOT would coordinate with USFWS prior to commencement of work to determine any measures necessary to minimize harm. In addition, a modified Special Provision for the MBTA would be included with the Construction Specifications, with stipulations pertaining to nests during construction activities involving bridges, box culverts, and structural plate culverts. | 1-6     | Contractor /<br>Qualified Biologist /<br>NDDOT                    | Prior to construction<br>and throughout<br>construction | Wildlife and<br>Fisheries                                          |
| 16     | To reduce the risk of flight collisions during the spring and fall whooping crane migration periods, NDDOT would request that utility companies install bird diverters at a 1:1 ratio (per linear foot) on any raised, lowered, and/or moved overhead utilities lines that occur within 1 mile of whooping crane stopover habitat. Each utility company would determine the type, number and placement/spacing of the line markers and may conclude that the placement of line markers is not feasible in certain areas.                                                                                                                                                                                                                                                          | 1-6     | Utility Company                                                   | Prior to construction<br>and throughout<br>construction | Threatened and<br>Endangered Species,<br>Wildlife and<br>Fisheries |
| 17     | Ensure all project operators, employees, and contractors are aware of pertinent environmental commitments and conservation measures.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1-6     | NDDOT / Contractor<br>/ Project Engineer                          | Prior to construction<br>and throughout<br>construction | Threatened and<br>Endangered Species                               |
| 18     | Preemptively lay out spoil pile locations, fueling, and/or staging areas to avoid, to the maximum extent practicable, the destruction of occupied, assumed occupied, or potential Dakota skipper habitat identified in the project area.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1, 2, 5 | Contractor / Project<br>Engineer                                  | Prior to construction<br>and throughout<br>construction | Threatened and<br>Endangered Species                               |
| 19     | Conduct tree removal activities outside of the active season for the northern long-eared bat (April 15 – October 31). In the event any tree removal needs to occur during the active season, tree removal outside of pup season (June 1 – August 15) may be allowable in coordination with USFWS.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1-6     | Contractor /<br>Qualified Biologist /<br>NDDOT                    | Prior to construction                                   | Threatened and<br>Endangered Species                               |
| 20     | Ensure tree removal is limited to that specified in the project's final plans. Install bright colored flagging/fencing prior to any tree removal to ensure contractors stay within clearing limits.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1-6     | Contractor                                                        | Prior to construction                                   | Threatened and<br>Endangered Species                               |
| 21     | In the event that northern long-eared bat roosts or foraging habitat are identified in the future, do not cut down documented roosts, trees within 0.25 miles of roosts, or document foraging habitat during any time of year. If such trees or habitat would be impacted, further ESA consultation would be required.                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1-6     | NDDOT / Contractor<br>/ Project Engineer                          | Prior to construction                                   | Threatened and<br>Endangered Species                               |
| 22     | If temporary lighting is utilized during construction, direct it away from trees during the active season for the northern long-eared bat (April 15 – October 31).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1-6     | Contractor                                                        | Throughout<br>construction                              | Threatened and<br>Endangered Species                               |
| 23     | Conduct a bat structure assessment prior to structure or culvert work (within 2 years prior to commencement). If bats are not observed, no further action is required. If bats are observed, further ESA consultation would be required.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1-6     | NDDOT / Contractor<br>/ Project Engineer /<br>Qualified Biologist | Prior to construction                                   | Threatened and<br>Endangered Species                               |
| 24     | For permanent lighting that is replaced, use downward-facing, full cut-off lens lights that are designed to be approximately the same intensity as previous lighting.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1-6     | NDDOT / Contractor                                                | Throughout<br>construction                              | Threatened and<br>Endangered Species                               |

| Number | Commitment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Segment | Implementing Entity                   | Timing of Implementation                                    | Environmental Impact Category     |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------------------------------------|-------------------------------------------------------------|-----------------------------------|
| 25     | Notify the project engineer immediately in the event any threatened or endangered species is identified within 1 mile of the proposed action. Cease all construction activities, establish at least a 0.5-mile avoidance area, and immediately coordinate with the USFWS, FHWA, and NDDOT Environmental and Transportation Services. Do not resume work within the avoidance area until the project engineer has confirmed with the agencies that work may proceed (either species have left the area or approved minimization measures have been implemented).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1-6     | NDDOT / Contractor / Project Engineer | Throughout construction                                     | Threatened and Endangered Species |
| 26     | Notify USFWS within three working days upon locating any dead, injured, or sick endangered or threatened species specimen (see Biological Opinion for details).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1-6     | Contractor / Project Engineer / NDDOT | Throughout construction                                     | Threatened and Endangered Species |
| 27     | Contract a USFWS-permitted Dakota skipper surveyor to conduct occupancy surveys, using the most recent USFWS protocol, for one year of pre-construction Dakota skipper occupancy surveys of all suitable habitat patches previously identified. If the pre-construction occupancy surveys indicate absence of the Dakota skipper, no further mitigation would occur. If pre-construction occupancy surveys indicate occupancy of the Dakota skipper, an onsite/offsite Dakota skipper conservation bank would be established in accordance with the USFWS North Dakota Field Office Guidance for Dakota Skipper Conservation Site Establishment document. The exact mitigation ratio would be determined at a later date in coordination with USFWS and NDDOT. In addition, at least one year of post-construction occupancy survey(s) would occur after vegetation establishment in disturbed areas and within five years following construction. Provide USFWS with an annual report following any year Dakota skipper occupancy surveys are completed that details the survey findings (see Biological Opinion for details). | 1, 2, 5 | NDDOT / Qualified Biologist           | Prior to construction and upon completion of construction   | Threatened and Endangered Species |
| 28     | Fence and avoid previously identified suitable Dakota skipper habitat that is not planned to be directly impacted during construction activities. Ensure all project personnel understand where clearly marked delineated suitable habitat is located prior to the start of soil/vegetation disturbance activities (see Biological Opinion for details).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1, 2, 5 | Contractor                            | Prior to construction and throughout construction           | Threatened and Endangered Species |
| 29     | Reseed disturbed areas within 250 meters of previously identified suitable Dakota skipper habitat with a seed mix high in native grasses and forbs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1, 2, 5 | Contractor                            | Throughout construction and upon completion of construction | Threatened and Endangered Species |
| 30     | Design and implement a monitoring plan to ensure that the anticipated amount or extent of Dakota skipper incidental take is not exceeded. Provide an annual report and shapefile to USFWS showing the actual disturbance of the proposed project, in relation to those activities that are expected to result in incidental take of the Dakota skipper. Ensure all conservation measures addressed in the description of the proposed action are formally adopted and implemented (see Biological Opinion for details).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1-6     | NDDOT                                 | Prior to construction and throughout construction           | Threatened and Endangered Species |

| Number | Commitment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Segment | Implementing Entity                                           | Timing of Implementation                          | Environmental Impact Category               |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------------------------------------------------------------|---------------------------------------------------|---------------------------------------------|
| 31     | Offset impacts to suitable Dakota skipper habitat by either purchasing credits from a USFWS approved Dakota skipper bank, establishing offsite or onsite mitigation site in accordance with the most recent USFWS guidance for Dakota skipper conservation bank establishment, or an alternative plan that is approved by the USFWS (see Biological Opinion for details).                                                                                                                                                                                                                                                                    | 1, 2, 5 | NDDOT                                                         | Upon completion of construction                   | Threatened and Endangered Species           |
| 32     | Removals of buildings or structures would be coordinated with affected landowners during ROW negotiations.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2, 3    | Project Engineer / NDDOT                                      | Prior to construction                             | Social and Economic                         |
| 33     | Frequent and open two-way communication between the USAF, the contractor, NDDOT, and the project engineer would occur to minimize disruption to US Highway 52 as a mission essential route for the USAF 91st Missile Wing.                                                                                                                                                                                                                                                                                                                                                                                                                   | 1-6     | Project Engineer / NDDOT / USAF 91 <sup>st</sup> Missile Wing | Throughout construction                           | Social and Economic                         |
| 34     | Develop an inadvertent discovery plan for the project prior to construction. The plan would outline requirements and procedures in the event that cultural resources are discovered.                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1-6     | NDDOT / Contractor                                            | Prior to construction and throughout construction | Cultural Resources                          |
| 35     | Five cultural resource sites would be monitored by an archaeologist during construction: one archaeological resource that is eligible for listing on the NRHP that would have placement of fill occur on the site, two other archaeological sites that are not eligible for listing on the NRHP but may have been part of a larger site along with the aforementioned eligible site, and two architectural sites consisting of cemeteries that are not eligible that would be avoided. The remaining eligible sites would be avoided, with non-architectural sites fenced during construction to minimize the risk of inadvertent discovery. | 2, 4    | Contractor / Archaeologist                                    | Prior to construction and throughout construction | Cultural Resources, Section 4(f) Properties |
| 36     | Utility conflicts would be addressed through coordination with the relevant utility companies prior to the start of construction. This includes the two USAF cables that cross US Highway 52.                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1-6     | Project Engineer / Utility Companies / USAF Cable Affairs     | Prior to construction and utility line relocation | Infrastructure, Utilities                   |
| 37     | If a utility decides to relocate outside of the existing study area, the utility company would be responsible for environmentally clearing and permitting their new corridor.                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1-6     | Utility Companies                                             | Prior to construction                             | Infrastructure, Utilities                   |
| 38     | To minimize disturbance caused by noise during construction and mitigation activities, various BMPs would be implemented (e.g., installing suitable mufflers on all internal combustion engines and certain compressor components).                                                                                                                                                                                                                                                                                                                                                                                                          | 1-6     | Contractor                                                    | Throughout construction                           | Noise                                       |
| 39     | NDDOT's Material Source Approval Process would be followed for borrow sites, waste sites, gravel sources, and staging areas.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1-6     | Contractor                                                    | Prior to construction, throughout construction    | Hazardous Waste                             |

## Chapter 5: Contributors, Public Involvement, and Coordination

### 5.1 Coordination with Agencies and Organizations

Throughout the duration of the project, several meetings were held with lead agencies (i.e., NDDOT and FHWA), the participating agency (i.e., USACE North Dakota Regulatory Office), as well as other applicable agencies and organizations such as NDSHPO, WAPA, USFWS, USACE Omaha District Office, and NDGS. Topics discussed at the meetings included, but were not limited to, scope, schedule, design, alternatives, geotechnical investigation, cultural and environmentally sensitive resources, public and agency coordination, utilities, Section 4(f), and USACE procedures.

Due to the level of local interest in the proposed project, a stakeholder working group was formed that included representatives from Brown Township, City of Minot, City of Sawyer, City of Velva, Lebanon Township, McHenry County, New Prairie Township, Sawyer Township, Sundre Township, Velva City Commission, Velva Township, Voltaire Township, Ward County, and Ward County Commission. The stakeholder working group met twice during the preliminary engineering phase: once in-person on April 29, 2024, at the NDDOT Minot District office, and once virtually on October 7, 2024. In addition, the stakeholder working group met once virtually during the environmental document phase on September 25, 2025, and an additional meeting is anticipated prior to the public hearings for this EA.

Pursuant to Section 102(2)(D)(iv) of NEPA, a solicitation of views package was sent to federal, state, and local agencies, and other interested parties, on April 10, 2024, during the preliminary engineering phase and again during the environmental document phase on April 10, 2025. The letters included a brief description of the proposed project as well as a project location map. Please refer to **Appendix B, Solicitation of Views Package and Responses** for copies of the letters sent.

The responses received provided insight into the evaluation of potential environmental impacts and helped to assess impacts from the proposed project. The responses received were incorporated into this document, where appropriate. Please refer to **Appendix B, Solicitation of Views Package and Responses** for copies of the responses received.

### 5.2 Public Involvement

#### 5.2.1 Public Input Meetings

A total of four public input meetings were held for the proposed project, two during the preliminary engineering phase and two during the environmental document phase. The public input meetings consisted of an open house with a formal presentation. The meetings were held to inform the public about the NEPA process, development of project alternatives, and to receive input on the project from the public. A 30-day public comment period was included with the public input meetings, where members of the public could comment on the proposed project.

Two public input meetings were held during the preliminary engineering phase: on October 21, 2024, in Minot, ND, and on October 22, 2024, in Velva, ND. The comment period closed on November 21, 2024, and a **Public Involvement Report (January 2025)** (appended by reference) was prepared.

Press releases for the public input meetings were released by the NDDOT on October 14, 2024. In addition, newspaper advertisements announcing the meetings were published on October 2, 2024, in the Minot Daily News and Mouse River Journal. A post was made on the NDDOT's Facebook page on October 14, 2024, and postcards were sent out to landowners along the corridor prior to the meeting.

Two public input meetings were held during the environmental document phase: on September 29, 2025, in Velva, ND and on September 30, 2025, in Minot, ND. The comment period closed on October 15, 2025, and a **Public Involvement Report (November 2025)** (appended by reference) was prepared.



Press releases for the second round of public input meetings were released by the NDDOT on September 22, 2025. In addition, newspaper advertisements announcing the meetings were published on September 10, 2025, in the Minot Daily News and Mouse River Journal. A post was made on the NDDOT's Facebook page on September 22, 2025, and postcards were sent out to landowners along the corridor prior to the meeting.

### 5.2.2 Public Hearing

Public hearings for the proposed project are anticipated to occur in spring or summer 2026 in Minot, ND, and Velva, ND. The purpose of the public hearings is to allow for public input on the EA, which is required for compliance with NEPA. The public hearings will consist of an open house format with a formal presentation. A 30-day public comment period will occur for the EA, where members of the public can comment on the EA.

## 5.3 Contributors

This EA was prepared by Ulteig Operations, LLC (Ulteig), under a contractual agreement with NDDOT. A list of the individuals with the primary responsibility of conducting this study, preparing documentation, and providing technical reviews can be found in **Table 24, Contributors**.

*Table 24, Contributors*

| <b>Affiliation</b> | <b>Name</b>             | <b>Title</b>                          | <b>Project Role</b>                               |
|--------------------|-------------------------|---------------------------------------|---------------------------------------------------|
| FHWA               | Melissa Carson (former) | Environmental Program Manager         | Project Coordination, Document Review             |
|                    | Lindsey Handel          | Deputy Division Administrator         | Document Review                                   |
|                    | Kristen Sperry          | Planning Program Manager              | Document Review                                   |
| NDDOT              | Chad Frisinger          | Assistant Division Engineer           | Technical Support                                 |
|                    | Patty Winn              | Environmental Scientist               | Technical Support                                 |
|                    | Cory Lawson             | Environmental Services Section Leader | Document Review                                   |
|                    | Alexis Wanek            | Environmental Scientist               | Document Review, Noise Review                     |
|                    | Wyatt Mack              | Wildlife Biologist                    | Document Review, BA Review                        |
|                    | Reilly Lembo            | Archaeologist II                      | Document Review, Cultural Coordination and Review |
| USACE              | Ben Soiseth             | State Project Manager                 | Document Review                                   |
|                    | Michelle Prosser        | Project Manager                       | Document Review                                   |

| <b>Affiliation</b>  | <b>Name</b>       | <b>Title</b>                                    | <b>Project Role</b>                                                                 |
|---------------------|-------------------|-------------------------------------------------|-------------------------------------------------------------------------------------|
| Ulteig              | Nikki Olson       | Engineer                                        | Environmental Lead, EA Author, Noise Analysis                                       |
|                     | Ashley Ross       | Senior Environmental Specialist                 | EA Author, Document Review                                                          |
|                     | Whitney Sauskojus | Environmental Specialist                        | EA Author, BA Author                                                                |
|                     | Mike Huffington   | Project Manager                                 | Project Manager, Senior Reviewer, Structure/Bridge Assessment, Project Coordination |
|                     | Josh Kueber       | Senior Project Manager                          | Deputy Project Manager, Design Lead                                                 |
|                     | Jeff Moss         | Lead Environmental Specialist                   | Aquatic Resource Delineation, Dakota Skipper Survey, Structure/Bridge Assessment    |
|                     | Mikayla Boche     | Environmental Technical Manager                 | Project Coordination, Document Review                                               |
|                     | Corie Ereth       | Environmental Supervisor                        | BA Review                                                                           |
|                     | Nick Anderson     | Senior Environmental Specialist                 | Aquatic Resources Delineation, Structure/Bridge Assessment                          |
|                     | Perry Sullivan    | Certified Professional Soil Classifier          | Aquatic Resources Soil Classifier                                                   |
|                     | Hal Weiser        | Certified Professional Soil Classifier          | Aquatic Resources Soil Classifier                                                   |
|                     | Dave Breker       | Certified Professional Soil Classifier          | Aquatic Resources Soil Classifier                                                   |
|                     | Bed Rhodd         | Lead Cultural Resource Specialist               | Cultural Monitor                                                                    |
| Apex                | Brent Muscha      | Civil Engineer, Project Manager                 | Project Manager, Project Coordination                                               |
|                     | Matt Mohagen      | Graduate Engineer                               | Design                                                                              |
| Metcalf Archaeology | Damita Engel      | Manager Regional Services, Senior Archaeologist | Class III Cultural Resources Inventory and Report                                   |
|                     | Michael Jackson   | Principal Investigator                          | Class III Cultural Resources Inventory and Report                                   |
|                     | Andrew Reinhard   | Principal Investigator                          | Class III Cultural Resources Inventory and Report                                   |
|                     | Emily Sakariassen | Architectural Historian (subconsultant)         | Class III Architectural Inventory                                                   |

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