Minnesota Department of Transportation

TH 23 Passing Lanes from I-90 to Willmar

Environmental Assessment Worksheet

February 2015
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ENVIRONMENTAL ASSESSMENT WORKSHEET

This Environmental Assessment Worksheet (EAW) form and EAW Guidelines are available at the Environmental Quality Board’s website at: http://www.eqb.state.mn.us/EnvRevGuidanceDocuments.htm. The EAW form provides information about a project that may have the potential for significant environmental effects. The EAW Guidelines provide additional detail and resources for completing the EAW form.

Cumulative potential effects can either be addressed under each applicable EAW Item, or can be addressed collectively under EAW Item 19.

Note to reviewers: Comments must be submitted to the RGU during the 30-day comment period following notice of the EAW in the EQB Monitor. Comments should address the accuracy and completeness of information, potential impacts that warrant further investigation and the need for an EIS.

Question #1: Project Title

TH 23 Passing Lanes from I-90 to Willmar

Question #2: Proposer

The Minnesota Department of Transportation (MnDOT) is the proposer for this project. The contact person for the Proposer is:

Jon Huseby, PE
MnDOT District 8 – District Engineer
2505 Transportation Rd
Willmar, MN 56201
Phone: 320.231.5497
Fax: 320.214.6305
E-mail: jon.huseby@state.mn.us

Question #3: Responsible Governmental Unit (RGU)

MnDOT is the RGU for this project. The contact person for the RGU is:

Susann Karnowski, PE
MnDOT District 8 – Assistant District Engineer – Project Delivery
2505 Transportation Rd
Willmar, MN 56201
Phone: 320.214.6370
Fax: 320.214.6305
E-mail: susann.karnowski@state.mn.us

Question #4: Reason for EAW Preparation

<table>
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<tr>
<td>☐ EIS Scoping</td>
<td>☐ Citizen petition</td>
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<tr>
<td>☑ Mandatory EAW</td>
<td>☐ RGU discretion</td>
</tr>
<tr>
<td>If EAW or EIS is mandatory give EQB rule category subpart number(s) and name(s): 4410.4300 subp. 22(b)</td>
<td>☐ Proposer initiated</td>
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Question #5: Project Location

County: Pipestone, Lyon, Yellow Medicine, Chippewa, and Kandiyohi

City/Twp: Coon Creek, Eden, Edwards, Grange, Gray, Lone Tree, Lucas, Minnesota Falls, Sandnes, Shelburne, Sweet, & Wood Lake Townships

Project Layout 1 (S.P. 4206-22)
- Sections 9, 10, & 16
- Section 35

Project Layout 2 (S.P. 3405-93 & 1205-30)
- Sections 25 & 26
- Sections 16 & 17

Project Layout 3 (5901-26)
- Sections 16 & 21
- Sections 26, 34, & 35

Project Layout 4 (S.P. 8701-38)
- Section 3
- Section 34
- Section 1
- Section 6
- Sections 31

Project Layout 5 (S.P. 1205-29)
- Section 5

Project Layout 6 (S.P. 5902-24)
- Sections 32 & 33
- Section 5
- Sections 14, 22, & 23

Township: 109N Range 43W
Township: 110N Range 43W
Township: 118N Range 37W
Township: 118N Range 36W
Township: 105N Range 46W
Township: 106N Range 46W
Township: 113N Range 40W
Township: 114N Range 40W
Township: 114N Range 40W
Township: 115N Range 39W
Township: 117N Range 37W

Township: 107N Range 45W
Township: 106N Range 45W
Township: 107N Range 45W

Watershed (81 major watershed scale): 25 (Minnesota River – Granite Falls), 27 (Redwood River), 29 (Cottonwood River), 82 (Big Sioux – Pipestone), 83 (Rock River)

At a minimum attach each of the following to the EAW:

- County map showing the general location of the project (see Figure 1 in Appendix A);
- U.S. Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries (photocopy acceptable) (see Figures 2A through 2F in Appendix A);
- Site plans showing all significant project and natural features. Pre-construction site plan and post-construction site plan. (see Figures 3A through 3F in Appendix A).
Question #6: Description

a. Provide the brief project summary to be published in the *EQB Monitor* (approximately 50 words).

This project involves the construction of passing lanes, turning lanes, and intersection improvements at six designated locations on Trunk Highway (TH) 23 between I-90 to Willmar in southwest Minnesota. The improvements will affect approximately 11.4 miles of the 140-mile corridor.

b. Give a complete description of the proposed project and related new construction, including infrastructure needs. If the project is an expansion include a description of the existing facility. Emphasize: 1) construction, operation methods and features that will cause physical manipulation of the environment or will produce wastes, 2) modifications to existing equipment or industrial processes, 3) significant demolition, removal or remodeling of existing structures, and 4) timing and duration of construction activities.

TH 23 is an important interregional corridor that is a key artery for the economy in the region. TH 23 is predominately a two-lane rural highway that provides the primary north-south route between I-90 and Willmar, Minnesota, a distance of approximately 140 miles. As traffic volumes increase, particularly freight truck volumes, strategically adding passing lanes is a potential low-cost/high-benefit infrastructure investment to break up traffic platoons. This allows for passing to occur with acceptable levels of service while improving the safety of the corridor.

TH 23 has been long-targeted for improvements and has recently received funding authorization through Minnesota’s Corridors of Commerce program, which has two major goals: to provide additional highway capacity on sections where there are currently bottlenecks in the system, and to improve the movement of freight and reduce barriers to commerce. To achieve the Corridors of Commerce goals, this project will provide preliminary and detailed design services for the construction of passing lanes, turning lanes, and intersection improvements at six designated locations on TH 23 between I-90 and Willmar in southwest Minnesota. Other state funds will be used on the project as well.

The *Highway 23 Passing Lane Assessment (I-90 to Willmar, MN)* completed in spring of 2014 identified priority segments along the corridor to receive passing lane improvements. These priority segments were identified through a process that established the need for a passing lane, identified appropriate passing lane concepts at specific locations, and incorporated an initial risk assessment at those locations. The results of this study directly led to the selection of the passing lane segments proposed for construction and further analyzed in this document.

The project includes six sections of TH 23, as discussed in greater detail below and as shown in Figure 1 in Appendix A. Reference points (RP), which relate to the marked mile posts along the highway, and the State Project (SP) number for each section have also been identified. The proposed typical section ("Super Two, 3-Lane Section with Buffer” Concept) is included in Appendix B. Constructed passing lane segments will also include a 2” mill and overlay across the entire roadway segment. Minor real estate acquisition will be required within Project Layout 2 to build a culvert extension according to design standards. The work is planned to be completed during the 2016 construction season.
MnDOT will also improve travel safety through at-grade railroad crossing consolidation. Consolidation of grade crossings occurs when one or more grade crossings are vacated, with the traffic directed to nearby crossings. Minnesota Administrative Rules Chapter 8830 (Railroads) and Minnesota Statute 219.073 directs and encourages MnDOT to eliminate at-grade railroad crossings when feasible.

Proposed work also includes extending 32 centerline culverts. A few of these culverts may require replacing, or jacking in new culverts depending on existing culvert conditions.

**Description of Project Layouts 1 through 6**

Project Layout 1 (Segment 6), RP 053.7 to 057.9, SP 4206-22

Between the cities of Florence and Russell, the project will widen a 1.1 mile section of TH 23 to the south for a new eastbound passing lane (in Shelburne Township, Lyon County) and a 0.92 mile section of TH 23 to the north for a new westbound lane (in Coon Creek Township, Lyon County). See Figure 3A in Appendix A for additional mapping of the proposed improvement.

Project Layout 2 (Segment 12/13), RP 131.1 to 135.9, SP 3405-93 (prime) & 1205-30

Between the cities of Clara City and Willmar, the project will widen a 0.85 mile section of TH 23 to the north for a new westbound passing lane (in Lone Tree Township, Chippewa County) and a 1.1 mile section of TH 23 to the south for a new eastbound passing lane (in Edwards Township, Kandiyohi County). MnDOT is pursuing a crossing closure at the 160th Avenue SE railroad crossing (USDOT 082465L) that is located near the westbound passing lane improvement (between County Road 1 and the City of Raymond in Lone Tree Township). Dependent on this crossing closure outcome, the passing lane segment could shift approximately 1,500’ east of the existing alignment.

The westbound passing lane contains an existing 30” culvert at approximate Station 359+62 whose extension will require real estate acquisition from BNSF Railway Company to achieve acceptable inslope design standards of 1:6 slopes. Existing inslope is less than 1:3, below acceptable design standards. Existing right-of-way width only allows the culvert extension to occur with a 1:3.4 inslope. It is anticipated this acquisition of approximately 22’ for highway right-of-way will be the only real estate acquisition necessary for the project.

See Figure 3B in Appendix A for additional mapping of the proposed improvement.

Project Layout 3 (Segment 2), RP 021.4 to 027.2, SP 5901-26

Between the cities of Jasper and Pipestone, the project will widen a 1 mile section of TH 23 to the south for a new eastbound passing lane (in Eden Township, Pipestone County) and a 1.1 mile section of TH 23 to the north for a new westbound passing lane (in Sweet Township, Pipestone County). MnDOT is pursuing a crossing closure at the 71st Street railroad crossing (USDOT 097931J) that is located near the westbound passing lane improvement (between County Road 52 and County Road 4 in Sweet Township). See Figure 3C in Appendix A for additional mapping of the proposed improvement.

Project Layout 4 (Segment 8/9), RP 089.3 to 097.4, SP 8701-38

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1 The accompanying use of the term “Segment” refers to passing lane identification in the *Highway 23 Passing Lane Assessment (I-90 to Willmar, MN)* dated May 16, 2014.
Between the City of Cottonwood and TH 274, the project will widen a 1.1 mile section of TH 23 to the north for a new westbound passing lane (in Lucas Township, Lyon County and Sandnes Township, Yellow Medicine County) and a 1.1 mile section of TH 23 to the south for a new eastbound passing lane (in Sandnes, Wood Lake, and Minnesota Falls Townships, Yellow Medicine County). MnDOT is pursuing a crossing closure at the 160th Avenue railroad crossing (USDOT 082388N) that is located near the westbound passing lane improvement (between the cities of Cottonwood and Hanley Falls in Sandnes Township). See Figure 3D in Appendix A for additional mapping of the proposed improvement.

Project Layout 5 (Segment 12), RP 126.9 to 128.5, SP 1205-29

Between the cities of Clara City and Raymond, the project will widen a 1.1 mile section of TH 23 to the south for a new eastbound passing lane (in Lone Tree Township, Chippewa County). See Figure 4E in Appendix A for additional mapping of the proposed improvement.

Project Layout 6 (Segment 3), RP 032.3 to 038.2, SP 5902-24

Between the cities of Pipestone and Holland, the project will widen a 1.1 mile section of TH 23 to the south for a new eastbound passing lane (in Gray and Grange Townships, Pipestone County) and a 0.9 mile section of TH 23 to the north for a new westbound passing lane (in Grange Township, Pipestone County). See Figure 4F in Appendix A for additional mapping of the proposed improvement.

**Construction Methods**

The construction work will consist of removing the existing roadway material and topsoil within the proposed project’s construction limits, excavating material from under the proposed new roadway areas, and placing and compacting material for the new roadway embankments. It is anticipated that the material excavated on the project will be re-used for overlay, aggregate or embankment purposes where appropriate and in accordance with best management practices established in MnDOT’s Standard Specifications for Construction.

Best management practices (BMPs) will be used to control construction related sedimentation, and turf areas will be re-established.

Some trees and vegetation will be removed as part of the project. Tree and vegetation removal are discussed in EAW Item 13.

**Construction Staging**

The project is planned for letting in February 2016, with construction beginning in spring of 2016 and completed by fall of 2016.

There are several ways that passing lane construction could be staged to accommodate traffic; however, it will be highly dependent on how the passing lanes are added onto the existing typical section and what can be tolerated to travel delays. A few different alternatives have been identified that could be utilized:

- Construct the new embankment and reconstruct the new ditch, temporarily narrow the existing lanes and reduce speeds on mainline. Remove the shoulder and while the subgrade is being constructed a flagger would need to be utilized and TH 23 would be reduced to one lane. Pave the new lane and shoulder, stripe and re-open to traffic.
• Close TH 23 and provide a detour during construction. Although this has a greater impact on traffic the construction duration would be reduced.

• Shift traffic to the existing 10-foot shoulder and construct the new lane and embankment with barrels separating traffic and construction. It would be recommended to reduce speed in this scenario as well. A possible issue with this option would be if there is a shoulder in poor condition it may not hold up to the traffic. Therefore, it would be recommended to review the shoulder condition and either repave the shoulder prior to use or use a different construction method if the shoulder cannot carry the anticipated traffic.

Transportation Management Plan

MnDOT will prepare a Transportation Management Plan (TMP) for this project. The TMP will lay out strategies for managing project work-zone impacts. The plan will include both construction traffic operation controls and public information components. It will address issues such as access by emergency services to properties adjacent to this project. TH 23 is expected to be open to traffic, however delays can be expected that are typical with highway construction projects.

c. Project Magnitude
   Total project acreage: 112.76 acres¹
   Linear project length: 140 miles (11.4 miles of improvements)
   Number and type of residential units: Not Applicable
   Commercial building area (in square feet): Not Applicable
   Industrial building area (in square feet): Not Applicable
   Institutional building area (in square feet): Not Applicable
   Other uses – specify (in square feet): Not Applicable
   Structure height(s): Not Applicable

   ¹ Area within proposed construction limits only.

   d. Explain the project purpose; if the project will be carried out by a governmental unit, explain the need for the project and identify its beneficiaries.

Purpose and Need for Project

The purpose of the project is to improve the operations and safety of the TH 23 corridor between I-90 and Willmar, which currently does not provide acceptable levels of service. The preferred alternative for improving the operations and safety is the construction of passing lane improvements at up to six locations, depending on funding. Providing the proposed passing opportunities and turning lanes should enhance highway safety and mobility by reducing pressure for traffic to make high-risk passes when traveling behind slower moving vehicles. The improvements will affect approximately 11.4 miles of the 140 mile corridor.

As the most heavily used north-south corridor within MnDOT’s District 8, strategically adding passing lanes is a potential low-cost/high-benefit infrastructure investment to break up traffic platoons. Considering substantial freight traffic and heavy vehicle percentages ranging between 8.7 and 16.5 percent, the allowance for safe passing to occur with acceptable levels of service is critical to the operations and safety of the corridor. Freight movements, mobility, and safety are the driving factors behind the need for this passing lanes project.

As previously noted, freight traffic along the TH 23 corridor is a substantial part of the overall traffic. Freight is a critical component of the corridor’s economic vitality. This sentiment is
echoed in District 8’s *Manufacturers’ Perspective Study*, more formally known as the *Manufacturers’ Perspectives on Minnesota’s Transportation System: A Pilot Study in Southwest Minnesota*. This study expresses that “Among MnDOT’s most important customer segments are Minnesota based manufacturers that ship their products over Minnesota roads to local, statewide, national and international markets. In short, economic vitality results when economic development and transportation systems are well aligned.” It was also identified in the study that “low-cost, high benefit” solutions, including expanding sections of the two-lane highway, would provide economic benefits to businesses and manufacturers who depend on freight vehicles to arrive without delay with consistent travel times.

The study also states the importance of the maintenance and operations of TH 23. It notes that “as a main north-south corridor in District 8, Highway 23 was the most heavily used.” This heavy use can create additional conflict opportunities between vehicles, which can lead to passing in unsafe ways, or at inopportune times. A passing lane would provide low-cost, high benefit improvements to the study corridor providing consistent travel times, increased corridor safety and reduced congestion between major cities along the TH 23 corridor.

To help ensure that economic development and transportation systems align, businesses along TH 23 were contacted for the Highway 23 Passing Lane Assessment (May 2014) to understand their perception of passing lanes and where they believe locations may be most advantageous. It was noted that the input would be used as an influencing criteria for prioritizing the passing lane locations while being balanced with the other factors (i.e. average daily traffic volumes, number of access points, right of way impacts, terrain and other physical constraints, etc.).

A total of 18 businesses provided input (21 businesses were contacted). The overlying theme of the responses was that passing lanes need to be added between the larger cities and more heavily traveled routes in order to break up the platoons of vehicles (I-90 to Pipestone, Pipestone to Marshall, Marshall to TH 212, and TH 212 to Willmar) with the preference of locating passing lanes immediately after departing the cities. There was also a lot of response about traffic that was exiting and entering at Marshall. Marshall is a key point in the corridor that has connections to major roadways including TH 59, TH 19 and TH 68. According to the responses, the majority of the truck traffic is year round and not seasonal.

Based on these conversations with TH 23 businesses and the *Manufacturers’ Perspective Study*, the needs of the corridor are best served with a regional approach to locating passing lanes. This approach strategically identifies passing lane locations throughout the corridor in order to achieve periodic relief from platooning and improved economic mobility.

The addition of a passing lane in one or both directions of travel on a rural two-lane highway can provide safety and traffic operational benefits when inadequate passing opportunities exist. The purpose of a passing lane is to improve the level of service (reducing delays) of a corridor by breaking up traffic platoons. Passing lanes have been proven to increase average travel speeds and reduce the percent time following along corridors. Both benefits are also realized for some distance downstream of the passing lane section. From a safety perspective, passing lanes provide opportunities for passing without using the opposing lane.

**Project Beneficiaries**

Beneficiaries of the project will include motorists and freight traffic in the immediate area and region since the improvements are anticipated to improve operations and safety conditions.
e. Are future stages of this development including development on any other property planned or likely to happen?
☐ Yes ☒ No
If yes, briefly describe future stages, relationship to present project, timeline and plans for environmental review.

Not all project layouts will be constructed in a single letting. Construction schedule of individual project layouts is dependent on future funding amounts and sources. If federal funds are utilized on any project layout, environmental review of individual project layouts may need to be revisited by FHWA. If only state funds continue to be used to construct project layouts, environmental review may need to be revisited in major changes occur in project design if major changes occur in project design.

f. Is this project a subsequent stage of an earlier project?
☐ Yes ☒ No
If yes, briefly describe the past development, timeline and any past environmental review.

### Question #7: Cover Types

Estimate the acreage of the site with each of the following cover types before and after development. If Before and After totals are not equal, explain why.

<table>
<thead>
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<th>Wetlands (acres)</th>
<th>Wooded/Forest (acres)</th>
<th>Grassland (acres)</th>
<th>Lawn/Landscaping (acres)</th>
<th>Impervious Surfaces (acres)</th>
<th>Wet Ditch (acres)</th>
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2 Source: MnDNR Data Deli, GAP Land Cover – Vector layer. GAP Land Cover layer only identifies grassland within project area. GAP Land Cover incorrectly identifies cropland within construction limits. This land is assumed Grassland within listed cover types. GAP Land Cover also does not identify existing roadway cover. As a result, the layer's existing grassland area is approximate only.

3 Source: Project layouts

4 Roadside ditches will be replaced on grassland cover type adjacent to the road improvements.
The “Before” and “After” area totals listed in Table 1 above are preliminary estimates based on existing land cover data and preliminary design files and are subject to change through more detailed design and construction. Note “Before” and “After” acreage totals may not equal the sum of individual cover types due to factors like variability in data availability and rounding.

**Question #8: Permits and Approvals Required**

List all known local, state and federal permits, approvals, certifications and financial assistance for the project. Include modifications of any existing permits, governmental review of plans and all direct and indirect forms of public financial assistance including bond guarantees, Tax Increment Financing and infrastructure. *All of these final decisions are prohibited until all appropriate environmental review has been completed. See Minnesota Rules, Chapter 4410.3100.*

**Permits and Approvals**

Permits and approvals that may be required for the proposed project are listed in Table 2 below.

**Table 2 – Permits and Approvals Required**

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<td>Section 401 Water Quality Certification</td>
<td>MPCA</td>
<td>To Be Requested</td>
</tr>
<tr>
<td>Public Waters Work Permit</td>
<td>MnDNR</td>
<td>To Be Requested; if necessary</td>
</tr>
</tbody>
</table>

5 Total represents area within proposed construction limits for the six project layouts.
**Anticipated Funding**

The project received funding authorization through Minnesota’s Corridors of Commerce program. The 2013 Minnesota Legislature created the Corridors of Commerce program via 2013 Session Law, Chapter 117 by authorizing the sale of up to $300 million in new bonds for the construction, reconstruction and improvement of trunk highways.

**Cumulative potential effects may be considered and addressed in response to individual EAW Item Nos. 9-18, or the RGU can address all cumulative potential effects in response to EAW Item No. 19. If addressing cumulative effect under individual items, make sure to include information requested in EAW Item No. 19.**

**Question #9: Land Use**

a. Describe:
   i. Existing land use of the site as well as areas adjacent to and near the site, including parks, trails, prime or unique farmlands.

**Land Use and Development**

Land use adjacent to project segments is rural predominantly agricultural. Other land uses included grassland, wetland, and light industrial. Based on county comprehensive plans, zoning maps and aerial photography, general land uses by project layout are summarized in Table 3 below.
Table 3—Adjacent Existing Land Uses by Project Layout

<table>
<thead>
<tr>
<th>Project Layout</th>
<th>Existing Land Use(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Agricultural, grassland, wetland</td>
</tr>
<tr>
<td>2</td>
<td>Agricultural, grassland, wetland, industrial, forest</td>
</tr>
<tr>
<td>3</td>
<td>Agricultural, grassland, wetland, industrial</td>
</tr>
<tr>
<td>4</td>
<td>Agricultural, grassland, wetland</td>
</tr>
<tr>
<td>5</td>
<td>Agricultural, grassland, wetland</td>
</tr>
<tr>
<td>6</td>
<td>Agricultural, grassland, wetland, industrial</td>
</tr>
</tbody>
</table>

The proposed roadway improvements would not change existing land uses. Significant right-of-way acquisitions will not be necessary throughout the project area. The westbound passing lane within Project Layout 2 will potentially require a minor real estate acquisition of approximately 22 feet from BNSF Railway Company.

Future land use plans will perpetuate the ways in which project area land is currently used. The proposed project is compatible with the surrounding land uses in that it will improve traffic flow and safety along the TH 23 corridor, which will benefit area residents, businesses, motorists, and freight traffic.

**Prime or Unique Farmlands**

The project is not anticipated to cause any adverse impact to agricultural land or operations. No agricultural land will be acquired, no farm will be severed or triangulated. The project will not have a substantial impact upon agricultural production within the project area counties.

**Parks and Trails**

State and federal parks, trails and conservation lands (e.g., Wildlife Management Areas, Waterfowl Production Areas, etc.) located throughout the greater TH 23 corridor are generally located away from project limits. As a result, these many public lands, parks trails immediately adjacent to the greater TH 23 corridor like the Casey Jones State Trail, Prairie Coteau SNA and Camden State Park will not be impacted by the project.

However, the eastbound passing lane within Project Layout 3 is located immediately adjacent and west of Split Rock Creek State Park. In addition, this eastbound passing lane segment terminates immediately south of TH 23’s crossing of Split Rock Creek. The general land uses immediately adjacent to the Split Rock Creek State park and surrounding areas will not change.

The MnUSA Primary Corridor (32) snowmobile trail is located within several project layout construction limits. However, this snowmobile trail is a grant-in-aid trail and not a state trail. It is not a Section 4(f) or Section 6(f) facility.

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6 Source: County comprehensive plans, County land use maps
It is anticipated general land uses immediately adjacent to Split Rock Creek State Park and surrounding areas will not change due to a lack of significant ROW acquisition requirements.

Comprehensive plans were reviewed in conjunction with current and future zoning and land use maps, where available. The proposed roadway improvements will not impede future land use plans for the six project layouts, with county comprehensive plans and land use maps indicating a priority to maintain the rural character and agricultural practices on land adjacent to the project. See Table 4 below for additional information.²

### Table 4 – Adjacent Planned Land Uses by Project Layout

<table>
<thead>
<tr>
<th>Layout</th>
<th>Planned Land Use(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Agricultural Preservation Area</td>
</tr>
<tr>
<td>2</td>
<td>Agricultural, Agricultural Zoning District SCS Class 3</td>
</tr>
<tr>
<td>3</td>
<td>Agricultural, Industrial</td>
</tr>
<tr>
<td>4</td>
<td>Rural Preservation District, Agricultural</td>
</tr>
<tr>
<td>5</td>
<td>Agricultural Preservation Area</td>
</tr>
<tr>
<td>6</td>
<td>Agricultural, Industrial</td>
</tr>
</tbody>
</table>

³ Zoning, including special districts or overlays such as shoreland, floodplain, wild and scenic rivers, critical area, agricultural preserves, etc.

### General Zoning

Most of the land area adjacent to the six project layouts is placed within an agricultural classification. Several small portions of layouts are immediately adjacent to industrial uses. The eastbound passing lane of Project Layout 3 passes through a Special Protection Shoreland District of Pipestone County, although this layout will not require a real estate acquisition.

Agricultural land use policies within the county comprehensive plans and zoning ordinances are intended to preserve the prime agricultural land of the area. Several plans also note the importance of maintaining highway safety and mobility within the contexts of the surrounding land uses.

### Shoreland Zoning District

Project layouts pass near or through various public waters. Counties maintain shoreland management ordinances per MnDNR rules and regulations, but most project sections do not directly pass through delineated county shoreland zoning districts as displayed on official

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² Source: County comprehensive plans, County land use maps

SP 4206-22, 3405-93, 1205-30, 5901-26, 8701-38, 1205-29, 5902-24
TH 23 Passing Lanes From I-90 to Willmar
February 2015
county zoning maps (if the county maintains such districts). While work on the state trunk highway system is generally not subject to regulation by political subdivisions of the State, the project will endeavor to comply with relevant and significant ordinances, including those identified below.

Lyon County maintains shoreland land use districts and roads within shoreland land use districts are allowed per Lyon County Zoning Ordinance.\(^8\) Shoreland zoning district impacts are not expected.

Project limits are not located within Chippewa County shoreland or river management districts per the official county zoning map.\(^9\)

In Pipestone County, the eastbound passing lane of Project Layout 3 passes through a Special Protection Shoreland District.

Yellow Medicine County maintains a Shoreland Management Ordinance regulating shoreland land use. Shoreland zoning districts do not exist, and the Minnesota River Management District is outside project limits.

Kandiyohi utilizes a Resource Shoreland Management district and a Shoreland Residential district. Project limits are not located within these districts.

### Floodplain Assessment

Flood Insurance Rate Maps from the Federal Emergency Management Agency (FEMA) were reviewed. All passing lane segments are outside of designated flood zones. However, both the eastbound and westbound passing lanes within Project Layout 3 are located immediately adjacent to areas of 100 year-flood. No floodplain impacts are expected. There are currently no known flooding or culvert capacity issues along the passing lane segments.

### Wild and Scenic Rivers – Nationwide Rivers Inventory

No rivers exist within the project limits that are included within the National Wild and Scenic Rivers System or the Nationwide Rivers Inventory.

The Minnesota River segment from Lac Qui Parle dam to Franklin is a State-designated Wild, Scenic, and Recreational River. However, the TH 23 crossing of the river near Granite Falls is outside of the project limits.

b. Discuss the project’s compatibility with nearby land uses, zoning, and plans listed in Item 9a above, concentrating on implications for environmental effects.

MnDOT has designated the TH 23 corridor as an Interregional Corridor, meant to provide transportation service across counties and link the state’s regional centers. While state highways are not subject to the local plans cited in EAW Item 9.a, the compatibility of the proposed project with local planning efforts is a consideration. Overall, the proposed improvements support the local comprehensive plans.

c. Identify measures incorporated into the proposed project to mitigate any potential incompatibility as discussed in Item 9b above.

Not applicable. The proposed action is compatible with planned land uses in the project area.

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\(^9\) Source: [http://www.co.chippewa.mn.us/county%20zoning%20map.pdf](http://www.co.chippewa.mn.us/county%20zoning%20map.pdf)
Question #10: Geology, Soils and Topography/Land Forms

a. Geology – Describe the geology underlying the project area and identify and map any susceptible geologic features such as sinkholes, shallow limestone formations, unconfined/shallow aquifers, or karst conditions. Discuss any limitations of these features for the project and any effects the project could have on these features. Identify any project designs or mitigation measures to address effects to geologic features.

The five county project area is located within the Inner Coteau, Coteau Moraines, and Minnesota River Prairie Subsections of the North Central Glaciated Plains Section. The entire project is located within the Prairie Parkland Province.\(^{10}\)

**Bedrock**\(^{11}\)

Bedrock is covered by up to 800 feet of glacial till through most of the Inner Coteau and Coteau Moraines Subsections. Most of the Minnesota River Prairie Subsection bedrock is covered by 100 to 400 feet of glacial drift.

**Geologic Hazards**

No geologic hazards that could result in groundwater impacts (e.g., sinkholes, shallow limestone formations or near-surface karst conditions) were identified.

**Mitigation**

MnDOT’s BMPs for chemical management and recovery during construction will be contained within the project Stormwater Pollution Prevention Plan (SWPPP), detail sheets, and/or special provisions of the construction plan; these management and recovery measures will prevent migration of potential chemical releases to surface water and groundwater during construction operations (e.g., surface milling, concrete sawing, equipment maintenance, washing, and refueling, chemical and equipment storage).

b. Soils and topography – Describe the soils on the site, giving NRCS (SCS) classifications and descriptions, including limitation of soils. Describe topography, any special site conditions relating to erosion potential, soil stability or other soils limitations, such as steep slopes, highly permeable soils. Provide estimated volume and acreage of soil excavation and/or grading. Discuss impacts from project activities (distinguish between construction and operational activities) related to soils and topography. Identify measures during and after project construction to address soil limitations including stabilization, soil corrections or other measures. Erosion/sedimentation control related to stormwater runoff should be addressed in response to Item 11.b.ii.

See Appendix C for detailed Natural Resources Conservation Service Web Soil Surveys for each passing lane segment within the project. These soil surveys note important information like Unified Soil Classification soil types and estimated percent slopes within the project area.

\(^{10}\) Source: MnDNR, Ecological Classification System, http://dnr.state.mn.us/ecs/index.html

\(^{11}\) Source: MnDNR Ecological Classification System, http://www.dnr.state.mn.us/ecs/251Bb/index.html
Silty and clay loams are prevalent within the project area, although a mix of soils characterizes many of the project layouts. Many soils are classified as low plasticity clay or high plasticity silt. According to the soil surveys, slopes vary within the project area but are predominantly below 6%. Project Layout 1 contains unique soil types and steeper slopes when compared to the remaining project layouts. NCRS information indicates the eastbound passing lane of Project Layout 1 contains soils with slopes as high as 25-40%.

Approximately 207,000 cubic yards of common and subgrade excavation and 238,000 cubic yards of common and select borrow embankment will be required for the improvements. The earthwork quantities are based on preliminary design and related construction limits. These estimates are subject to change as final design progresses.

As noted in Question 6, the construction work will consist of removing the existing roadway material and topsoil within the proposed project’s construction limits, excavating material from under the proposed new roadway areas, and placing and compacting material for the new roadway embankments. It is anticipated that the material excavated on the project will be re-used for overlay, aggregate or embankment purposes where appropriate and in accordance with best management practices established in MnDOT’s Standard Specifications for Construction.

**Potential for Groundwater Contamination**

According to MnDNR’s Watershed Health Assessment Framework, watersheds within the project area have moderate susceptibility of groundwater contamination. Groundwater contamination susceptibility scores for watersheds in the area range from 49 to 57. Moderate susceptibility scores are defined as between 41 and 60.

See Question 11.b.iii for additional information regarding mitigation of groundwater impacts.

**Steep Slopes and Highly Erodible Soils**

The EAW Guidelines (Minnesota EQB, 2000) identify steep slopes as slopes of 12 percent or greater. The NRCS Web Soil Survey suggests that steep slopes/highly erodible soils may be encountered, particularly steep slopes in Project Layout 1.

**Erosion and Sedimentation Control**

According to MnDNR’s Watershed Health Assessment Framework, watersheds within the project area contain highly erodible soils, with soil erodibility scores ranging from 65-74. Watersheds with scores above 60 are considered to have high erosion potential.

This project will result in some potential for erosion as existing ground cover will be disturbed. A NPDES Construction Storm Water Permit will be required for this project. A SWPPP will be developed for the project. Erosion prevention and sediment control requirements will be followed in accordance with the NPDES permit, which includes both temporary and permanent erosion and sediment control plans as well as other Best Management Practices (BMPs) to protect the resource waters. BMPs contained in MnDOT’s standard specifications, details, and special provisions will also be used.

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12 Source: MnDNR, Watershed Health Assessment Framework, http://www.dnr.state.mn.us/whaf/about/scores/geomorphology/gw_contamination.html
Question #11: Water Resources

a. Describe surface water and groundwater features on or near the site in a.i. and a.ii. below.

i. Surface water – lakes, streams, wetlands, intermittent channels, and county/judicial ditches. Include any special designations such as public waters, trout stream/lake, wildlife lakes, migratory waterfowl feeding/resting lake, and outstanding resource value water. Include water quality impairments or special designations listed on the current MPCA 303d Impaired Waters List that are within 1 mile of the project. Include DNR Public Waters Inventory number(s), if any.

See Table 5 for surface waters located within one mile of the project.

Table 5 – Surface Waters within 1 Mile by Project Layout

<table>
<thead>
<tr>
<th>Layout</th>
<th>Name</th>
<th>PWI ID</th>
<th>Public Water</th>
<th>303d Impaired Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Redwood River</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Judicial Ditch 31</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unnamed Stream</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tyler Creek</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nyrocha Flats WMA</td>
<td>42-0072-00 P</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Hawk Creek</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unnamed Stream</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Judicial Ditch 2</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Split Rock Creek</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Split Rock Reservoir</td>
<td>59-0001-00 P</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unnamed Stream</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Yellow Medicine River</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Judicial Ditch 17</td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>Judicial Ditch 24</td>
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<td></td>
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<tr>
<td></td>
<td>County Ditch 14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>County Ditch 49</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sham</td>
<td>42-0013-00 P</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cottonwood</td>
<td>42-0014-00 P</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Unnamed</td>
<td>42-0015-00 P</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Hawk Creek</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Judicial Ditch 2</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unnamed</td>
<td>12-0006-00 W</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Pipestone Creek</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

The culvert under the eastbound passing lane on Project Layout 1 (Florence to Russell) is a DNR public water. If plans develop to include work in the identified Public Water, additional DNR review may be required. MnDOT will continue to coordinate with DNR staff as more detailed design plans are developed.
Table 5 notes three listed 303d Impaired Waters located within one mile of the project area. The Redwood River, a 303d Impaired Water within Project Layout 1, has an EPA-approved Total Maximum Daily Load (TMDL) for mercury in fish tissue. This river segment requires a TMDL plan to be written for fecal coliform and fishes bioassessments. The Yellow Medicine River, a 303d Impaired Water within Project Layout 4, has an EPA-approved TMDL for mercury in fish tissue. This river segment requires a TMDL plan to be written for turbidity. Cottonwood Lake is a 303d Impaired Water within Project Layout 4. This lake has a listed impairment of nutrient/eutrophication biological indicators.

The project has the potential to impact up to 39 wetlands, 27 of which are roadside ditches. Of these ditches, 25 are cut through upland and are not connected to a natural wetland or water feature. The potential impacts are shown on Figures 3A through 3F in Appendix A and are summarized in the Table 6 below. The table describes wetland characteristics of those wetlands that are being impacted. Roadside ditches with wetland characteristics are evaluated by the U.S. Army Corps of Engineers for jurisdiction and are therefore listed below as well. Table 1 also contains summary wetland information.

Final wetland delineations and impacts are subject to the wetland Technical Evaluation Panel (TEP) and USACE approval process.

Table 6 – Wetland Impacts by Project Layout

<table>
<thead>
<tr>
<th>Layout</th>
<th>Wetland ID</th>
<th>Cowardin Type</th>
<th>C-39 Type</th>
<th>Field Wetland Type</th>
<th>Linear Wet Ditch</th>
<th>Natural Wetland</th>
<th>Dominant wetland vegetation</th>
<th>Estimated impact (sq. ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6EB-1 PEMB</td>
<td>2</td>
<td>Fresh (wet) Meadow</td>
<td>Yes</td>
<td>No</td>
<td>Kentucky bluegrass, wand panic grass</td>
<td>539</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>6EB-2 PEMB</td>
<td>2</td>
<td>Fresh (wet) Meadow</td>
<td>Yes</td>
<td>No</td>
<td>Kentucky bluegrass, wand panic grass</td>
<td>427</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>6EB-3 PEMB</td>
<td>2</td>
<td>Fresh (wet) Meadow</td>
<td>Yes</td>
<td>No</td>
<td>Kentucky bluegrass, wand panic grass</td>
<td>242</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>6WB-1 PEMB</td>
<td>2</td>
<td>Fresh (wet) Meadow</td>
<td>Yes</td>
<td>No</td>
<td>Kentucky bluegrass, wand panic grass</td>
<td>2160</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>6WB-2 PEMB</td>
<td>2</td>
<td>Fresh (wet) Meadow</td>
<td>Yes</td>
<td>No</td>
<td>Kentucky bluegrass, wand panic grass</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>6WB-4 PEMB</td>
<td>2</td>
<td>Fresh (wet) Meadow</td>
<td>Yes</td>
<td>No</td>
<td>Kentucky bluegrass, wand panic grass</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>6WB-5 PEMC</td>
<td>3</td>
<td>Shallow Marsh</td>
<td>No</td>
<td>Yes</td>
<td>Cattail, reed canary grass</td>
<td>778</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>6WB-6 PEM/SS1C</td>
<td>3/6</td>
<td>Shallow Marsh / Shrub Carr</td>
<td>Yes</td>
<td>No</td>
<td>Lakebank sedge, willow, Kentucky bluegrass</td>
<td>146</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>6WB-7 PEMB</td>
<td>2</td>
<td>Fresh (wet)</td>
<td>No</td>
<td>Yes</td>
<td>Kentucky</td>
<td>944</td>
<td></td>
</tr>
<tr>
<td>Section</td>
<td>Date</td>
<td>Type</td>
<td>Freshness</td>
<td>Presence</td>
<td>Vegetation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>------</td>
<td>------</td>
<td>-----------</td>
<td>----------</td>
<td>------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meadow</td>
<td>2</td>
<td>12/13EB-2</td>
<td>Fresh (wet) Meadow</td>
<td>Yes</td>
<td>No</td>
<td>Reed canary grass, spike rush, Kentucky bluegrass</td>
<td>19725</td>
<td></td>
</tr>
<tr>
<td>Meadow</td>
<td>2</td>
<td>12/13WB-1</td>
<td>Fresh (wet) Meadow</td>
<td>Yes</td>
<td>No</td>
<td>Reed canary grass, spike rush, Kentucky bluegrass</td>
<td>8350</td>
<td></td>
</tr>
<tr>
<td>Meadow</td>
<td>2</td>
<td>12/13WB-2</td>
<td>Fresh (wet) Meadow</td>
<td>Yes</td>
<td>No</td>
<td>Reed canary grass, spike rush, Kentucky bluegrass</td>
<td>3651</td>
<td></td>
</tr>
<tr>
<td>Meadow</td>
<td>2</td>
<td>12/13WB-3</td>
<td>Fresh (wet) Meadow</td>
<td>Yes</td>
<td>No</td>
<td>Reed canary grass, spike rush, Kentucky bluegrass</td>
<td>762</td>
<td></td>
</tr>
<tr>
<td>Meadow</td>
<td>2</td>
<td>12/13WB-4</td>
<td>Fresh (wet) Meadow</td>
<td>Yes</td>
<td>No</td>
<td>Reed canary grass, cattail</td>
<td>1565</td>
<td></td>
</tr>
<tr>
<td>Meadow</td>
<td>3</td>
<td>2EB-1</td>
<td>Fresh (wet) Meadow</td>
<td>No</td>
<td>Yes</td>
<td>Reed canary grass, Kentucky bluegrass</td>
<td>3817</td>
<td></td>
</tr>
<tr>
<td>Meadow</td>
<td>3</td>
<td>2EB-2</td>
<td>Shallow Marsh</td>
<td>No</td>
<td>Yes</td>
<td>Cattail, reed canary grass</td>
<td>1866</td>
<td></td>
</tr>
<tr>
<td>Meadow</td>
<td>3</td>
<td>2EB-3</td>
<td>Seasonally Flooded Basin</td>
<td>No</td>
<td>Yes</td>
<td>Reed canary grass</td>
<td>1093</td>
<td></td>
</tr>
<tr>
<td>Meadow</td>
<td>3</td>
<td>2WB-1</td>
<td>Fresh (wet) Meadow</td>
<td>Yes</td>
<td>No</td>
<td>Reed canary grass, Kentucky bluegrass</td>
<td>12086</td>
<td></td>
</tr>
<tr>
<td>Meadow</td>
<td>3</td>
<td>2WB-2</td>
<td>Fresh (wet) Meadow</td>
<td>No</td>
<td>Yes</td>
<td>Reed canary grass, Kentucky bluegrass</td>
<td>11565</td>
<td></td>
</tr>
<tr>
<td>Meadow</td>
<td>3</td>
<td>2WB-3</td>
<td>Fresh (wet) Meadow</td>
<td>Yes</td>
<td>No</td>
<td>Reed canary grass, lakebank sedge</td>
<td>2292</td>
<td></td>
</tr>
<tr>
<td>Meadow</td>
<td>3</td>
<td>2WB-4</td>
<td>Fresh (wet) Meadow</td>
<td>Yes</td>
<td>No</td>
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</table>
ii. Groundwater – aquifers, springs, seeps. Include: 1) depth to groundwater; 2) if project is within a MDH wellhead protection area; 3) identification of any onsite and/or nearby wells, including unique numbers and well logs if available. If there are no wells known on site or nearby, explain the methodology used to determine this.

Depths to groundwater:\textsuperscript{14}:

- Project Layout 1 Segment\textsuperscript{15} 6 EB – Approximately 1600’ to 1650’
- Project Layout 1 Segment 6 WB – Approximately 1550’ to 1600’
- Project Layout 2 – No data
- Project Layout 3 Segment 2 EB – Approximately 1600’
- Project Layout 3 Segment 2 WB – Approximately 1650’
- Project Layout 4 – No data
- Project Layout 5 – No data
- Project Layout 6 Segment 3 EB & WB – Approximately 170’ to 1750’

A portion of the Project Layout 2 eastbound passing lane segment lies within the Raymond 3 wellhead protection area. Project Layout 6 passing lane segments lie within the Pipestone wellhead protection area.

Nearby wells:\textsuperscript{16}:

- Project Layout 1 Segment 6 EB – 102737, 222468, 222474
- Project Layout 1 Segment 6 WB – 163227, 222447, 222448, 222449, 222450
- Project Layout 2 Segment 12 WB – 141783, 210573, 214094, 214768, 449979, 449987

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\textsuperscript{14} Source: Southwestern Minnesota Regional Hydrogeologic Assessment, MnDNR
\textsuperscript{15} The accompanying use of the term “Segment” refers to passing lane identification in the \textit{Highway 23 Passing Lane Assessment (I-90 to Willmar, MN)} dated May 16, 2014.
\textsuperscript{16} Source: MDH County Well Index (well log reports can be obtained upon request to the MnDOT Project Manager)
• Project Layout 2 Segment 13 EB – 184109, 184112, 210572, 519166, 700545, 750145
• Project Layout 3 Segment 2 EB – none
• Project Layout 3 Segment 2 WB – none
• Project Layout 4 Segment 8 WB – 101954, 101955
• Project Layout 4 Segment 9 EB – 161628, 161742, 330538
• Project Layout 5 Segment 12 EB – 105558, 214121, 403322, 500709, 703547
• Project Layout 6 Segment 3 EB – 141668, 212871, 222595, 630664
• Project Layout 6 Segment 3 WB – 100681, 125715, 222564

Copies of the well log reports can be obtained upon request to the MnDOT Project Manager.

**Wellhead Protection Areas (WHPA)**

The Minnesota Department of Health’s (MDH) Wellhead Protection Area database was reviewed to determine if any WHPAs were located within the project area. The purpose of a WHPA is to protect the surface and subsurface area surrounding a public water supply from contaminants entering the public drinking supply. According to MPCA Petroleum Remediation Program (PRP) and MDH County Well Index (CWI) online mapping programs, a portion of the Project Layout 2 eastbound passing lane segment lies within the Raymond 3 wellhead protection area and Project Layout 6 passing lane segments lie within the Pipestone wellhead protection area.

b. Describe effects from project activities on water resources and measures to minimize or mitigate the effects in Item b.1. through Item b.iv. below.

i. Wastewater – For each of the following, describe the sources, quantities and composition of all sanitary, municipal/domestic and industrial wastewater produced or treated at the site.

1) If the wastewater discharge is to a publicly owned treatment facility, identify any pretreatment measures and the ability of the facility to handle the added water and waste loadings, including any effects on, or required expansion of, municipal wastewater infrastructure.

2) If the wastewater discharge is to a subsurface sewage treatment systems (SSTS), describe the system used, the design flow, and suitability of site conditions for such a system.

3) If the wastewater discharge is to surface water, identify the wastewater treatment methods and identify discharge points and proposed effluent limitations to mitigate impacts. Discuss any effects to surface or groundwater from wastewater discharges.

No impacts to existing wastewater treatment or conveyance systems are anticipated.

ii. Stormwater – Describe the quantity and quality of stormwater runoff at the site prior to and post construction. Include the routes and receiving water bodies for runoff from the site (major downstream water bodies as well as the immediate receiving waters). Discuss any environmental effects from stormwater discharges. Describe stormwater pollution prevention plans including temporary and permanent runoff controls and potential BMP site locations to manage or treat stormwater runoff. Identify specific erosion control,
sedimentation control or stabilization measures to address soil limitations during and after project construction.

The addition of passing lanes will result in a net increase of approximately 14.17 acres of new impervious area. Since the project creates more than one acre of impervious surface, the MPCA NPDES water quality and volume control standards will need to be met. As necessary, relevant BMPs identified within Appendix A of the MPCA Minnesota Stormwater Manual\(^\text{17}\) will be implemented to address any potential 303d Impaired Waters impacts. An effective way to achieve these standards and mitigate runoff rate and volume increases is to install filter berms as part of the roadway ditch design. These best management practices will provide for the partial removal of total suspended solids and phosphorous to maintain stormwater quality with increased runoff. There will not be any significant changes to the current drainage patterns. Specific erosion control, sediment control and site stabilization measures will comply with the MPCA NPDES Construction Stormwater Permit.

The treatment volume which could be achieved through construction of filter berms in the ditches was estimated using a treatment volume calculator. This analysis indicated proposed water quality volumes provided by the filter berms exceeds the required water quality volumes. This allows for further refinement of filter berm locations as the design progresses. Best management practices (BMPs) will be used to control construction-related sedimentation, and turf areas will be re-established.

iii. Water appropriation – Describe if the project proposes to appropriate surface or groundwater (including dewatering). Describe the source, quantity, duration, use and purpose of the water use and if a DNR water appropriation permit is required. Describe any well abandonment. If connecting to an existing municipal water supply, identify the wells to be used as a water source and any effects on, or required expansion of, municipal water infrastructure. Discuss environmental effects from water appropriation. Identify any measures to avoid, minimize, or mitigate environmental effects from the water appropriation.

Temporary groundwater dewatering may be required during the construction period. The dewatering is not expected to require a water use appropriation permit as it is anticipated that the dewatering will be under the permit threshold of withdrawing more than 10,000 gallons of water per day or 1 million gallons per year. Dewatering shall comply with the MPCA NPDES Construction Stormwater Permit and shall be discharged in a manner that does not create nuisance conditions or adversely affect the receiving water or downstream properties.

iv. Surface Waters

a. Wetlands – Describe any anticipated physical effects or alterations to wetland features such as draining, filling, permanent inundation, dredging and vegetative removal. Discuss direct and indirect environmental effects from physical modification of wetlands, including the anticipated effects that any proposed wetland alterations may have to the host watershed. Identify measures to avoid (e.g., available alternatives that were considered), minimize, or mitigate environmental effects to wetlands. Discuss whether any required compensatory wetland mitigation for unavoidable wetland impacts will occur in the same minor or major watershed, and identify those probable locations.

\(^\text{17}\) Additional information can be found at [http://stormwater.pca.state.mn.us/index.php/APPENDIX_A](http://stormwater.pca.state.mn.us/index.php/APPENDIX_A).
Construction of the passing lanes will result in up to 2.6 acres of wetland impacts. See Table 6 for information on specific delineated wetlands. Wetlands and water courses are prevalent along most of the TH 23 corridor and the project was designed to avoid these features through careful selection of the passing lane locations.

In an effort to further minimize these impacts, slope modifications will be evaluated to minimize wetland impacts while maintaining safety. The impact stated here represents the worst case for evaluation purposes and it is expected to decrease through the use of design modifications. Final wetland impacts and documentation of avoidance and minimization efforts will be included in the required permit review process with the Army Corps of Engineers and other regulatory bodies.

The grading the TH 23 roadway will cause up to 1.94 acres of impacts to existing linear ditch features that exhibit wetland characteristics. See Table 6 for information on specific linear wet ditches. These ditches will be evaluated by the Army Corps of Engineers to determine whether or not these impacts will require replacement. Currently, the Corps counts these impacts to wet ditches in determining the type of wetland permit necessary for a project, but may not require additional replacement for these ditches if they will be replaced in kind within the project area as part of the project.

The project will impact up to 0.99 acres of wetland within Bank Service Area 10 and up to 1.60 acres of wetland with Bank Service Area 9. Wetlands will be replaced at a minimum of a 2:1 ratio (i.e. 2 acres of wetland replacement for every acre of wetland impact) and a maximum of 2.5:1, depending on the location and type of available wetland credits. Up to 6.48 acres of wetland mitigation credits will be used to satisfy the replacement requirements of the project. However, this number is a considered a maximum and replacement required might be as little as 1.30 acres if mitigation credits are not required for impacts to roadside drainage features and if sufficient wetland mitigation credits are available in BSAs 9 and 10. These credits will be withdrawn from available credits in MNDOT's wetland banks depending on the credit type and availability at the time of permit application review.

b. Other surface waters – Describe any anticipated physical effects or alterations to surface water features (lakes, streams, ponds, intermittent channels, county/judicial ditches) such as draining, filling, permanent inundation, dredging, diking, stream diversion, impoundment, aquatic plant removal and riparian alteration. Discuss direct and indirect environmental effects from physical modification of water features. Identify measures to avoid, minimize, or mitigate environmental effects to surface water features, including in-water Best Management Practices that are proposed to avoid or minimize turbidity/sedimentation while physically altering the water features. Discuss how the project will change the number of type of watercraft on any water body, including current and projected watercraft usage.

There are not any major anticipated alterations to surface water features such as lakes, streams, and ponds. The project will include minimal work to extend culvert crossings and grading of highway drainage ditches. The work below the ordinary high water shall comply with the Minnesota DNR Public Waters Work Permit and MPCA NPDES Construction Stormwater Permit by providing appropriate sediment control BMPs and perimeter control methods. Work exclusion dates, if applicable, will be followed to allow for fish spawning and migration. The project will not change the number or type of watercraft on any waterbody.
Question #12: Contamination/Hazardous Materials/Wastes

a. Pre-project site conditions – Describe existing contamination or potential environmental hazards on or in close proximity to the project site such as soil or ground water contamination, abandoned dumps, closed landfills, existing or abandoned storage tanks, and hazardous liquid or gas pipelines. Discuss any potential environmental effects from pre-project site conditions that would be caused or exacerbated by project construction and operation. Identify measures to avoid, minimize or mitigate adverse effects from existing contamination or potential environmental hazards. Include development of a Contingency Plan or Response Action Plan.

Potential Environmental Hazards

The presence of potentially contaminated properties (defined as properties where soil and/or groundwater is impacted with pollutants, contaminants or hazardous wastes) is a concern in the development of highway projects because of potential liabilities associated with ownership of such properties, potential cleanup costs, and safety concerns associated with construction personnel encountering unsuspected wastes or contaminated soil or groundwater. Contaminated materials encountered during highway construction projects must be properly handled and treated in accordance with state and federal regulations. Improper handling of contaminated materials can worsen their impact on the environment. Contaminated materials also cause adverse impacts to highway projects by increasing construction costs and causing construction delays, which also can increase project costs.

The MnDOT Contaminated Materials Management Team (CMMT) reviewed the MPCA and Minnesota Department of Agriculture (MDA) databases to check for known contaminated sites in the project area. The databases searched included: leaking underground storage tank facilities, landfills, salvage yards, voluntary investigation and cleanup (VIC) sites, Superfund sites and dump sites. Based on the database review, there are no known release sites within approximately 500 feet of the project construction areas. Given the nature and location of the project construction areas, and based on the Highway Project Development Process (HPDP) threshold criteria as summarized below, this project has a low risk of impacting potentially contaminated sites. Therefore, no additional evaluation of the project area for potential contamination is necessary.

The project requires minor right-of-way acquisition within Project Layout 2 (approximately 22') in order to build a culvert extension to acceptable design standards. An Environmental Due Diligence-1 form (EDD-1) has been submitted to the MnDOT Environmental Investigative Unit (EIU). Because the EIU has determined that there are no known release sites within approximately 500 feet of the project construction area, the minor right-of-way acquisition is not expected to introduce new environmental impacts.

Project excavation and grading will be relatively minor for resurfacing work. More extensive excavation work is associated with new road construction and culvert replacement. However, because the work is primarily in rural and more undeveloped portions of this project, this decreases the chances of encountering contaminants that may have originated from an off-site source and migrated into the right of way.

If previously unknown contaminated materials are encountered during construction, a contingency plan is in place that requires the Contractor to immediately stop work and notify
the Project Engineer. MnDOT’s Environmental Consultant will then evaluate the contamination, in consultation with MnDOT, and develop a plan for properly handing and treating contaminated soil and or/groundwater in accordance with all applicable state and federal regulations.

See Appendix D for additional EIU comments regarding contaminated and hazardous materials management.

b. Project related generation/storage of solid wastes – Describe solid wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from solid waste handling, storage and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of solid waste including source reduction and recycling.

All regulated solid wastes generated by construction of the proposed project will be disposed of properly in a permitted, licensed solid waste facility or a similarly regulated facility elsewhere. Project demolition of concrete, asphalt, and other potentially recyclable construction materials will be directed to the appropriate storage, crushing or renovation facility for recycling or reuse.

If a spill of hazardous or toxic substances should occur during or after construction of the proposed project, it is the responsibility of the transport company to notify the Minnesota Department of Public Safety, Division of Emergency Services, to arrange for corrective measures to be taken pursuant to 6 MCAR 4.9005E. Any contaminated spills or leaks that occur during construction are the responsibility of the contractor and would be responded to according to MPCA containment and remedial action procedures.

c. Project related use/storage of hazardous materials – Describe chemicals/hazardous materials used/stored during construction and/or operation of the project including method of storage. Indicate the number, location and size of any above or below ground tanks to store petroleum or other materials. Discuss potential environmental effects from accidental spill or release of hazardous materials. Identify measures to avoid, minimize or mitigate adverse effects from the use/storage of chemicals/hazardous materials including source reduction and recycling. Include development of a spill prevention plan.

Toxic or hazardous materials would not be present at the site, except for fuel and lubrication necessary for the construction equipment during construction. If a spill were to occur during construction, appropriate action to remediate would be taken immediately in accordance with MPCA guidelines and regulations.

d. Project related generation/storage of hazardous wastes – Describe hazardous wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from hazardous waste handling, storage, and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage or hazardous waste including source reduction and recycling.

No above or below-ground storage tanks are planned for permanent use in conjunction with this project. Temporary storage tanks for petroleum products may be located in the project area for construction equipment during construction. Appropriate measures would be taken during construction to avoid spills that could contaminate groundwater or surface water in the project area. In the event that a leak or spill occurs during construction, appropriate
action to remediate the situation would be taken immediately in accordance with MPCA guidelines and regulations.

**Question #13: Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources (Rare Features)**

a. Describe fish and wildlife resources as well as habitats and vegetation on or near the site.

**Fish and Wildlife**

The project’s southwest portion located within the MnDNR Ecological Classification System Inner Coteau Subsection contains some excellent tracts of remaining native prairie interspersed with wetlands and streams. These provide habitat for Swainson’s hawks, short-eared owls, dickcissels, bobolinks, upland sandpipers, plains topminnows, Richardson’s ground squirrels and a variety of ducks. In addition, the subsection’s rivers, streams, and wetlands provide some of the few refuges remaining for Blandin’s turtles in this area of the state.\(^{18}\)

Within the Coteau Moraines Subsection of the project’s central area, the abundance of publicly owned wetlands on state and federal wildlife areas and associated grasslands provides important habitat for American bitterns, Franklin’s gulls, northern harriers, short-eared owls, Forster’s terns, and multitude of nesting ducks and associated wetlands birds.\(^{19}\)

Within the Minnesota River Prairie Subsection of the project’s northeast project area, wetlands and grasslands offer habitat for bald eagles, prairie chickens, marbled godwits, upland sandpipers, Richardson’s ground squirrels, regal fritillaries, Swainson’s hawks, Forster’s terns, dickcissels, and mucket and elktoe mussels. The subsection is also an important nesting area for prairie ducks and a major migratory corridor in the Mississippi Flyway.\(^{20}\)

See Threatened and Endangered Species subsection below for information on butterfly and bat populations.

**Vegetation and Habitat**

See Appendix E for correspondence with MnDOT’s Roadside Vegetation Management Unit.

The vegetation within the project area consists of common non-native roadside grasses in addition to areas of remnant prairie with various degrees of quality. There are scattered sites with trees that serve screening, windbreak, or landscape functions at residential sites and a wayside rest area. A few records of rare plant species exist near the existing project area but not within it.

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Portions of the project area are identified as a Prairie Passage route. MnDNR’s Minnesota Prairie Conservation Plan\textsuperscript{21} highlights information related to the protection, restoration, and enhancement of existing prairie systems.

b. Describe rare features such as state-listed (endangered, threatened, or special concern) species, native plant communities, Minnesota County Biological Survey Sites of Biodiversity Significance, and other sensitive ecological resources on or within close proximity to the site. Provide the license agreement number (LA-) and/or correspondence number (ERDB) from which the data were obtained and attach the Natural Heritage letter from the DNR. Indicate if any additional habitat or species survey work has been conducted within the site and describe the results.

### Threatened and Endangered Species

Section 7 consultation will be required because of federal wetland permitting needs. Formal consultation by the Corps will occur during the permitting phase. Preliminary observations are discussed below. See Appendix F for correspondence with the MnDNR Division of Ecological and Water Resources.

Split Rock Creek State Park is located adjacent to the eastbound passing lane of Project Layout 3. Split Rock Creek within the state park is federally designated as a critical habitat for the Topeka shiner (notropis Topeka), a federally-listed endangered and state-listed special concern fish species. Topeka shiners are adversely impacted by actions that alter stream hydrology or decrease water quality.

In addition, the project area is within the distribution range of newly protected butterfly species. The Dakota skipper (Hesperia dacotae)\textsuperscript{22} is federally-listed as threatened and the Poweshiek skipperling (Oarisma poweshiek)\textsuperscript{23} is federally-listed as endangered as of November 23, 2014. Both butterfly species have critical habitat areas within project area counties, including Pipestone and Chippewa counties.

Dakota skippers live in two types of prairies. One type is moist bluestem prairie in which three wildflower species are usually blooming when Dakota skippers are adults: wood lily (Lilium philadelphicum), harebell (Campanula rotundifolia), and smooth camas (Zygradenus elegans). The second type is upland prairie that is relatively dry and often found on ridges and hillsides. Bluestem grasses and needlegrasses dominate these prairies; purple coneflower (\textit{Echinacea angustifolia}) is typical of high quality sites that support this skipper, although it also uses other flowers for nectar.\textsuperscript{24}

Poweshiek skipperlings live in high quality tallgrass prairie in both upland, dry areas as well as low, moist areas.\textsuperscript{25}

Project counties are also within the distribution range of the Northern long-eared bat (\textit{Myotis septentrionalis}) which is currently proposed to be federally-listed as endangered with a final decision due on April 2, 2015.

Northern long-eared bats spend winter hibernating in caves and mines, called hibernacula. They typically use large caves or mines with large passages and entrances; constant

\textsuperscript{21} The Minnesota Prairie Conservation Plan can be found at http://files.dnr.state.mn.us/eco/mcbs/mn_prairie_conservation_plan.pdf
\textsuperscript{22} Additional information can be found at http://www.fws.gov/midwest/endangered/insects/dask/index.html
\textsuperscript{23} Additional information can be found at http://www.fws.gov/midwest/endangered/insects/posk/index.html
\textsuperscript{24} Additional information can be found at http://www.fws.gov/midwest/endangered/insects/dask/daskFactSheet.html
\textsuperscript{25} Additional information can be found at http://www.fws.gov/midwest/endangered/insects/posk/PoweshiekSkipperlingFactSheet.html
temperatures; and high humidity with no air currents. Specific areas where they hibernate have very high humidity, so much so that droplets of water are often seen on their fur. Within hibernacula, surveyors find them in small crevices or cracks, often with only the nose and ears visible. During summer, northern long-eared bats roost singly or in colonies underneath bark, in cavities, or in crevices of both live and dead trees. Males and non-reproductive females may also roost in cooler places, like caves and mines. This bat seems opportunistic in selecting roosts, using tree species based on suitability to retain bark or provide cavities or crevices. It has also been found, rarely, roosting in structures like barns and sheds.26

**Sensitive Ecological Resources/Vegetation**

See Appendix E for correspondence with MnDOT’s Roadside Vegetation Management Unit.

There are numerous remnant prairie locations of varying quality between TH 23 and the BNSF railroad. The DNR Biological Survey has various classifications for their quality along this segment. See project layout figures within Appendix A for locations of identified remnant prairie.

c. Discuss how the identified fish, wildlife, plant communities, rare features and ecosystems may be affected by the project. Include a discussion on introduction and spread of invasive species from the project construction and operation. Separately discuss effects to known threatened and endangered species.

**Fish and Wildlife**

Typical roadway construction activities (grading, paving, culvert extensions, etc.) that encompass the nature of this project can affect wildlife habitats. However, except for potential minor right-of-way acquisition in Project Layout 2, all work will be conducted within existing state right-of-way. Wildlife corridors will not experience fragmentation. Streams and/or rivers will not be remeandered. Therefore, no substantial wildlife impacts are anticipated. Any impacts are anticipated to focus on roadway vegetation.

Special considerations and concerns related to vegetation and the federally-listed Topeka shiner are discussed separately below.

**Vegetation and Habitat**

See Appendix E for correspondence with MnDOT’s Roadside Vegetation Management Unit.

Impacts to vegetation will likely occur at sites requiring culvert repairs/replacement and road widening and related grading activities. Additional information on specific potential impacts by Layout is below.

- *Project Layout 1 (Florence to Russell):* Remnant prairie of poor quality exists on the westbound side of the westbound passing lane and could be impacted by passing lane construction. Native vegetation cover has been diminished by excessive haying. Patches of the noxious weed leafy spurge are present in the area.

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26 Additional information can be found at [http://www.fws.gov/midwest/endangered/mammals/nlba/nlbaFactSheet.html](http://www.fws.gov/midwest/endangered/mammals/nlba/nlbaFactSheet.html)
No vegetation impacts are likely on the eastbound passing lane.

- **Project Layout 2 (Clara City to Willmar):** Remnant prairie exists on the westbound side of the westbound passing lane and might be impacted by passing lane construction. Impacts are likely to several trees of a weedy species exist on the far west end of the project layout.

On the eastbound passing lane, there is fair quality prairie vegetation on the eastbound side with potential impacts from grading activities. Impacts to several medium to large trees at RP 134.5 to 134.6 depend on the extent of grading activities. Impacts are unlikely to good quality remnant prairie on the westbound side of the passing lane.

- **Project Layout 3 (Jasper to Pipestone):** No vegetation impacts are likely on the westbound passing lane.

On the eastbound passing lane, impacts are likely to good quality prairie vegetation on the eastbound side adjacent to the state park and fair quality prairie vegetation along the remainder of the eastbound side. Impacts are unlikely to remnant prairie on the westbound side.

- **Project Layout 4 (Cottonwood to TH 274):** On the westbound passing lane, impacts are likely to patches of remnant prairie.

On the eastbound passing lane, no vegetation impacts are likely in this segment.

- **Project Layout 5 (Clara City to Raymond):** On the eastbound passing lane, no vegetation impacts are likely.

- **Project Layout 6 (Pipestone to Holland):** On the westbound passing lane, there may be impacts to prairie remnants on the westbound side.

On the eastbound passing lane, no vegetation impacts are likely. Trees located southwest of the 100th Street intersection appear outside of MnDOT right-of-way and are not likely to be impacted.

### Threatened and Endangered Species

Section 7 consultation is a federal requirement and will be addressed through the review of the federal wetland permit. Formal consultation by the Corps will occur during the permitting phase.

Split Rock Creek within the state park adjacent to Project Layout 3 is federally designated as a critical habitat for the Topeka shiner. Topeka shiners are adversely impacted by actions that alter stream hydrology or decrease water quality. Potential erosion and sediment impacts to water bodies could occur from construction activities. Mitigation and prevention strategies are discussed in Question 13.d below.
d. Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to fish, wildlife, plant communities, and sensitive ecological resources

**Fish and Wildlife**

Where reasonable and feasible, design modifications (minor alignment shifts, passing lane lengths, use of guardrail, etc.) have been incorporated into the design of the proposed roadway improvements to avoid and minimize impacts to wildlife habitat.

Work Exclusion Dates established by the DNR within the General Public Waters Work Permit (GP 2004-0001) will be followed. These exclusion dates, spanning September 15 to April 15 for trout streams and ice out to June 15 for non-trout streams and lakes, prevent work from occurring within public waters to protect fish spawning and migration. The MPCA also recognizes these work-in-water restrictions. During these exclusion dates, the MPCA also requires all exposed soil areas within 200 feet of the water’s edge and drain to these waters must have erosion prevention stabilization activities initiated immediately and completed within 24 hours after construction activity has ceased.

The Topeka shiner, a federally-listed endangered and state-listed special concern fish species, maintains separate Work Exclusion Dates discussed below.

**Threatened and Endangered Species**

Mitigation strategies will be addressed within the federal Section 404 permitting phase.

MnDNR maintains special considerations to minimize or avoid adverse effects to the Topeka shiner, a federally-listed endangered and state-listed special concern fish species. These BMPs include, but are not limited to:

- Minimize removal of riparian (streamside) vegetation; if such removal is necessary, it should occur sequentially as needed over the length of the project and it should be replaced as soon as if feasible upon project completion;
- Mulch areas of disturbed soils and reseed promptly with non-invasive plant species;
- Implement appropriate erosion and sediment prevention measures to the maximum extent practicable;
- Do not operate motorized vehicles instream. Excavation, culvert replacement, etc. should be conducted from streambanks outside of standing or flowing water;
- Prevent materials and debris from falling into the water during construction.

Tributary crossings in the Pipestone area (Project Layout 3) will require additional review since this is critical habitat for the Topeka shiner. In addition, a DNR Work Exclusion Date unique to the Topeka shiner will be observed where applicable. This Work Exclusion Date time period spans from ice out to August 15.

**Vegetation/Sensitive Ecological Resources**

See Appendix E for correspondence with MnDOT’s Roadside Vegetation Management Unit.

Impacts to remnant prairie can be mitigated throughout the design process and after construction. Mitigations will include modifying the cross section to reduce encroachment into
in-place vegetation. In disturbed prairie remnants, plant material can be salvaged by removing topsoil and re-spreading it in an appropriate area within two weeks, followed by appropriate re-seeding and erosion control.

In general, roadside areas between the highway and railroad tracks will be placed off limits to parking, staging or unnecessary off-road traffic. In addition, excavation and equipment traffic for culvert work will be limited to only the extent necessary, particularly on roadways near railroad tracks. MnDOT Standard Specification for Construction 2572 will be implemented to protect areas of remnant prairie through signs, temporary fencing and other measures.

Because of the potential for impacts to existing prairie remnants and the status of much of the highway as part of the National Prairie Passage, re-vegetation will be done with native seed mixes from a local source, when available.

**Question #14: Historic Properties**

Describe any historic structures, archeological sites, and/or traditional cultural properties on or in close proximity to the site. Include: 1) historic designations, 2) known artifact areas, and 3) architectural features. Attach letter received from the State Historic Preservation Office (SHPO). Discuss any anticipated effects to historic properties during project construction and operation. Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to historic properties.

See Appendix G for correspondence with MnDOT’s Cultural Resources Unit.

The project has been reviewed pursuant to MnDOT’s responsibilities under the Minnesota Historic Sites Act, the Field Archaeology Act of Minnesota; and the Private Cemeteries Act. Since the project requires a Corps permit, the Corps will conduct a Section 106 review on the portion of the project identified by the Corps of Engineers as being within their permit area.

The MnDOT Cultural Resources Unit (CRU) has determined that the proposed undertaking has no potential to affect properties listed in the State or the National Registers of Historic Places or to affect known or suspected archaeological sites. Therefore, no consultation with the MHS or the OSA is required and the historical/archaeological review is complete.

**Question #15: Visual**

Describe any scenic views or vistas on or near the project site. Describe any project related visual effects such as vapor plumes or glare from intense lights. Discuss the potential visual effects from the project. Identify any measures to avoid, minimize, or mitigate visual impacts.

There are no existing scenic overlooks or views of note within any of the project layouts. The project will not create any vapor plumes or intense lighting. Therefore, no mitigation is required.

Visual impacts associated with construction would include the introduction of heavy construction equipment and disruption of the landscape. These impacts would be noticeable...
to drivers traveling through the area. This may present an adverse visual impact, however it is temporary and after construction will be removed.

**Question #16: Air**

a. Stationary source emissions – Describe the type, sources, quantities and compositions of any emissions from stationary sources such as boilers or exhaust stacks. Include any hazardous air pollutants, criteria pollutants, and any greenhouse gases. Discuss effects to air quality including any sensitive receptors, human health or applicable regulatory criteria. Include a discussion of any methods used to assess the project’s effect on air quality and the results of that assessment. Identify pollution control equipment and other measures that will be taken to avoid, minimize, or mitigate adverse effects from stationary source emissions.

This project will not have stationary source air emissions concerns.

b. Vehicle emissions – Describe the effect of the project’s traffic generation on air emissions. Discuss the project’s vehicle-related emissions effect on air quality. Identify measures (e.g., traffic operational improvements, diesel idling minimization plan) that will be taken to minimize or mitigate vehicle-related emissions.

**National Ambient Air Quality Standards (NAAQS) – Criteria Pollutants**

Motorized vehicles affect air quality by emitting airborne pollutants. Changes in traffic volumes, travel patterns, and roadway locations affect air quality by changing the number of vehicles and the congestion levels in a given area. The air quality impacts from the project are analyzed by addressing criteria pollutants, a group of common air pollutants regulated by the U.S. Environmental Protection Agency (EPA) on the basis of criteria (information on health and/or environmental effects of pollution). The criteria pollutants identified by the EPA are ozone, particulate matter, carbon monoxide, nitrogen dioxide, lead, and sulfur dioxide. Potential impacts resulting from these pollutants are assessed by comparing projected concentrations to National Ambient Air Quality Standards (NAAQS).

In addition to the criteria air pollutants, the EPA also regulates air toxics. The Federal Highway Administration (FHWA) provides guidance for the assessment of Mobile Source Air Toxic (MSAT) effects for transportation projects in the National Environmental Policy Act (NEPA) process. A qualitative evaluation of MSATs has been performed for this project as documented below. The scope and methods of the analysis performed were developed in collaboration with the Minnesota Department of Transportation (MnDOT) and Minnesota Pollution Control Agency (MPCA).

**Ozone**

Ground-level ozone is a primary constituent of smog and is a pollution problem throughout many areas of the United States. Exposures to ozone can cause people to be more susceptible to respiratory infection, resulting in lung inflammation, and aggravating respiratory diseases, such as asthma. Ozone is not emitted directly from vehicles but is formed when volatile organic compounds (VOCs) and nitrogen oxides (NOx) react in the presence of sunlight. Transportation sources emit NOx and VOCs and can, therefore, affect ozone concentrations. However, due to the phenomenon of atmospheric formation of ozone
from chemical precursors, concentrations are not expected to be elevated near a particular roadway.

The MPCA, in cooperation with various other agencies, industries, and groups, has encouraged voluntary control measures for ozone and has begun developing a regional ozone modeling effort. Ozone concentrations in the lower atmosphere are influenced by a complex relationship of precursor concentrations, meteorological conditions, and regional influences on background concentrations. MPCA states in *Air Quality in Minnesota: 2013 Report to the Legislature* (January, 2013) that:

All areas of Minnesota currently meet the federal ambient 8-hour standard for ozone but Minnesota is at risk for being out of compliance. In 2008, EPA tightened the federal eight-hour ambient air standard for ozone to 75 parts per billion (ppb). EPA plans to propose a revised ozone standard in September 2013, with a final standard planned for 2014. Preliminary documents indicate that EPA believes the scientific evidence on the health impacts of ozone shows that the current ambient standard is insufficient to protect public health. EPA’s Clean Air Scientific Advisory Committee has recommended that a new ambient standard be set in the range of 60-70 ppb to ensure public health protection with an adequate margin of safety. In 2010, EPA proposed a revised ozone standard in the range of 60-70 ppb but withdrew the proposal in fall 2011. Many areas of Minnesota would not meet the revised standard if the EPA sets the standard at the lowest end of the advisory committee’s recommended range.

The project is located in an area that has been designated as an unclassifiable/attainment area for ozone. This means that the project area has been identified as a geographic area that meets the national health-based standards for ozone levels, and therefore is exempt from performing further ozone analyses.

**Particulate Matter**

Particulate matter (PM) is the term for particles and liquid droplets suspended in the air. Particles come in a wide variety of sizes and have been historically assessed based on size, typically measured by the diameter of the particle in micrometers. PM$_{2.5}$, or fine particulate matter, refers to particles that are 2.5 micrometers or less in diameter. PM$_{10}$ refers to particulate matter that is 10 micrometers or less in diameter. Motor vehicles (i.e., cars, trucks, and buses) emit direct PM from their tailpipes, as well as from normal brake and tire wear. Vehicle dust from paved and unpaved roads may be reentrained, or re-suspended, in the atmosphere. In addition, PM$_{2.5}$ can be formed in the atmosphere from gases such as sulfur dioxide, nitrogen oxides, and volatile organic compounds. PM$_{2.5}$ can penetrate the human respiratory system’s natural defenses and damage the respiratory tract when inhaled. Numerous scientific studies have linked particle pollution exposure to a variety of problems, including:

- Increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing;
- Decreased lung function;
- Aggravated asthma;
- Development of chronic bronchitis;
- Irregular heartbeat;
- Heart attacks; and,
- Premature death in people with heart or lung disease.
On December 14, 2012, the EPA issued a final rule revising the annual health NAAQS for fine particles (PM$_{2.5}$). The EPA website states:

With regard to primary (health-based) standards for fine particles (generally referring to particles less than or equal to 2.5 micrometers (μm) in diameter, PM$_{2.5}$), the EPA is strengthening the annual PM$_{2.5}$ standard by lowering the level to 12.0 micrograms per cubic meter (μg/m$^3$). The existing annual standard, 15.0μg/m$^3$, was set in 1997. The EPA is revising the annual PM$_{2.5}$ standard to 12.0μg/m$^3$ so as to provide increased protection against health effects associated with long- and short-term exposures (including premature mortality, increased hospital admissions and emergency department visits, and development of chronic respiratory disease), and to retain the 24-hour PM$_{2.5}$ standard at a level of 35μg/m$^3$ (the EPA issued the 24-hour standard in 2006). The EPA is revising the Air Quality Index (AQI) for PM$_{2.5}$ to be consistent with the revised primary PM$_{2.5}$ standards.

The EPA also retained the existing standards for coarse particle pollution (PM$_{10}$). The NAAQS 24-hour standard for PM$_{10}$ is 150 μg/m$^3$ which is not to be exceeded more than once per year on average over three years.

The Clean Air Act conformity requirements include the assessment of localized air quality impacts of federally-funded or federally-approved transportation projects that are located within PM$_{2.5}$ nonattainment and maintenance areas and deemed to be projects of air quality concern. The project is located in an area that has been designated as an und classifiable/attainment area for PM. This means that the project area has been identified as a geographic area that meets the national health-based standards for PM levels, and therefore is exempt from performing PM analyses.

**Nitrogen Dioxide (Nitrogen Oxides)**

Nitrogen oxides, or NO$_x$, are the generic term for a group of highly reactive gases, all of which contain nitrogen and oxygen in varying amounts. Nitrogen oxides form when fuel is burned at high temperatures, as in a combustion process. The primary sources of NO$_x$ are motor vehicles, electric utilities, and other industrial, commercial, and residential sources that burn fuels. The *MPCA’s Air Quality in Minnesota: 2013 Report to the Legislature (January 2013)* indicates that:

*On road gasoline vehicles and diesel vehicles account for 44% of NO$_x$ emissions in Minnesota. In addition to being a precursor to ozone, NO$_x$ can worsen respiratory irritation, and increase risk of premature death from heart or lung disease.*

Nitrogen dioxide (NO$_2$), which is a form of nitrogen oxide (NO$_x$), is regularly monitored. Minnesota currently meets federal nitrogen dioxide standards, according to the *2013 Annual Air Monitoring Network Plan* (July 2012). A monitoring site meets the annual NAAQS for NO$_2$ if the annual average is less than or equal to 53 parts per billion (ppb). The 2011 Minnesota NO$_2$ monitoring site averages ranged from 5 ppb to 9 ppb; therefore, Minnesota currently meets the annual NAAQS for NO$_2$.”

The EPA's regulatory announcement, EPA420-F-99-051 (December 1999), describes the Tier 2 standards for tailpipe emissions, and states:
The new tailpipe standards are set at an average standard of 0.07 grams per mile for nitrogen oxides for all classes of passenger vehicles beginning in 2004. This includes all light-duty trucks, as well as the largest SUVs. Vehicles weighing less than 6000 pounds will be phased-in to this standard between 2004 and 2007.

As newer, cleaner cars enter the national fleet, the new tailpipe standards will significantly reduce emissions of nitrogen oxides from vehicles by about 74 percent by 2030. The standards also will reduce emissions by more than 2 million tons per year by 2020 and nearly 3 million tons annually by 2030.

Within the project area, it is unlikely that NO\textsubscript{2} standards will be approached or exceeded based on the relatively low ambient concentrations of NO\textsubscript{2} in Minnesota and on the long-term trend toward reduction of NO\textsubscript{x} emissions. Because of these factors, a specific analysis of NO\textsubscript{2} was not conducted for this project.

Sulfur Dioxide

Sulfur dioxide (SO\textsubscript{2}) and other sulfur oxide gases (SO\textsubscript{x}) are formed when fuel containing sulfur, such as coal, oil, and diesel fuel is burned. Sulfur dioxide is a heavy, pungent, colorless gas. Elevated levels can impair breathing, lead to other respiratory symptoms, and at very high levels aggravate heart disease. People with asthma are most at risk when SO\textsubscript{2} levels increase. Once emitted into the atmosphere, SO\textsubscript{2} can be further oxidized to sulfuric acid, a component of acid rain. Emissions of sulfur oxides from transportation sources are a small component of overall emissions and continue to decline due to the desulphurization of fuels.

MPCA monitoring shows ambient SO\textsubscript{2} concentrations at 32 percent of federal standards in 2011, in other words consistently below state and federal standards. (Source: Air Quality in Minnesota: 2013 Report to the Legislature, January 2013) MPCA also states that about 70 percent of SO\textsubscript{2} released into the air comes from electric power generation. Therefore a much smaller proportion is attributable to on-road mobile sources. The MPCA has concluded that long-term trends in both ambient air concentrations and total SO\textsubscript{2} emissions in Minnesota indicate steady improvement.

In the “Annual Air Monitoring Network Plan for Minnesota, 2013”, it states the following with regard to SO\textsubscript{2}:

On June 2, 2010, the EPA finalized revisions to the primary SO\textsubscript{2} NAAQS. EPA established a new 1-hour standard which is met if the three-year average of the annual 99th percentile daily maximum 1-hour SO\textsubscript{2} concentration is less than 75 ppb. In addition to creating the new 1-hour standard, the EPA revoked the existing 24-hour and annual standards. Figure 24 [Figure 1 below] describes the 2009-2011 average 99th percentile 1-hour SO\textsubscript{2} concentration and compares them to the 1-hour standard. Minnesota averages ranged from 2 ppb at FHR 442 and FHR 443 to 24 ppb in Minneapolis (954); therefore, all Minnesota sites currently meet the 1-hour NAAQS for SO\textsubscript{2}.
Because of these factors, an analysis for sulfur dioxide was not conducted for this project.

Lead

Due to the phase out of leaded gasoline, lead is no longer a pollutant associated with vehicular emissions.

Carbon Monoxide

This project is not located in an area where conformity requirements apply, and the scope of the project does not indicate that air quality impacts would be expected. Furthermore, the USEPA has approved a screening method to determine which intersections need a CO hotspot analysis. The results of the screening procedure demonstrate that traffic volumes are below the threshold of 79,400 ADT and do not require a detailed hotspot analysis. Therefore, no further air quality analysis is necessary.

Improvements in vehicle technology and in motor fuel regulations continue to result in reductions in vehicle emission rates. The EPA MOVES 2010b emissions model estimates that emission rates will continue to fall from existing rates through year 2030. Consequently, year 2030 vehicle-related CO concentrations in the study area are likely to be lower than existing concentrations even considering any increase in development-related and background traffic.

Mobile Source Air Toxics

(Source: Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA, December 6, 2012)

Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAA) of 1990, whereby Congress mandated that the U.S. Environmental Protection Agency (EPA) regulate 188 air toxics, also known as hazardous air pollutants. The EPA has assessed this expansive list in their latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007), and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (IRIS) (http://www.epa.gov/iris/). In addition, EPA
identified seven compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers from their 1999 National Air Toxics Assessment (NATA) (http://www.epa.gov/ttn/atw/nata1999/). These are acrolein, benzene, 1,3-butadiene, diesel particulate matter plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and polycyclic organic matter. While FHWA considers these the priority mobile source air toxics, the list is subject to change and may be adjusted in consideration of future EPA rules.

Motor Vehicle Emissions Simulator (MOVES)

According to EPA, MOVES improves upon the previous MOBILE model in several key aspects: MOVES is based on a vast amount of in-use vehicle data collected and analyzed since the latest release of MOBILE, including millions of emissions measurements from light-duty vehicles. Analysis of this data enhanced EPA's understanding of how mobile sources contribute to emissions inventories and the relative effectiveness of various control strategies. In addition, MOVES accounts for the significant effects that vehicle speed and temperature have on PM emissions estimates, whereas MOBILE did not. MOVES2010b includes all air toxic pollutants in NATA that are emitted by mobile sources. EPA has incorporated more recent data into MOVES2010b to update and enhance the quality of MSAT emission estimates. These data reflect advanced emission control technology and modern fuels, plus additional data for older technology vehicles.

Based on an FHWA analysis using EPA's MOVES2010b model, as shown in Figure 2, even if vehicle-miles travelled (VMT) increases by 102 percent as assumed from 2010 to 2050, a combined reduction of 83 percent in the total annual emissions for the priority MSAT is projected for the same time period.
The implications of MOVES on MSAT emissions estimates compared to MOBILE are: lower estimates of total MSAT emissions; significantly lower benzene emissions; significantly higher diesel PM emissions, especially for lower speeds. Consequently, diesel PM is projected to be the dominant component of the emissions total. (Source: http://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/aqintguidmem.cfm)

MSAT Research
Air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited. These limitations impede the ability to evaluate how potential public health risks posed by MSAT exposure should be factored into project-level decision-making within the context of NEPA.

Nonetheless, air toxics concerns continue to be raised on highway projects during the NEPA process. Even as the science emerges, we are duly expected by the public and other agencies to address MSAT impacts in our environmental documents. The FHWA, EPA, the Health Effects Institute, and others have funded and conducted research studies to try to more clearly define potential risks from MSAT emissions associated with highway projects. The FHWA will continue to monitor the developing research in this field.

NEPA Context

The NEPA requires, to the fullest extent possible, that the policies, regulations, and laws of the Federal Government be interpreted and administered in accordance with its environmental protection goals. The NEPA also requires Federal agencies to use an interdisciplinary approach in planning and decision-making for any action that adversely impacts the environment. The NEPA requires and FHWA is committed to the examination and avoidance of potential impacts to the natural and human environment when considering approval of proposed transportation projects. In addition to evaluating the potential environmental effects, we must also take into account the need for safe and efficient transportation in reaching a decision that is in the best overall public interest. The FHWA policies and procedures for implementing NEPA are contained in regulation at 23 CFR Part 771.

Incomplete or Unavailable Information for Project Specific MSAT Health Impacts Analysis

In FHWA’s view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

The EPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the Clean Air Act and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. The EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the Integrated Risk Information System (IRIS), which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects" (EPA, http://www.epa.gov/iris/). Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). Two HEI studies are summarized in Appendix D of FHWA’s Interim Guidance Update on Mobile Source Air Toxic analysis in NEPA.
Documents. Among the adverse health effects linked to MSAT compounds at high exposures are cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations (HEI, http://pubs.healtheffects.org/view.php?id=282) or in the future as vehicle emissions substantially decrease (HEI, http://pubs.healtheffects.org/view.php?id=306).

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts - each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable.

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI (http://pubs.healtheffects.org/view.php?id=282). As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA (http://www.epa.gov/risk/basicinformation.htm#g) and the HEI (http://pubs.healtheffects.org/getfile.php?u=395) have not established a basis for quantitative risk assessment of diesel PM in ambient settings.

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the Clean Air Act to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine an "acceptable" level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA's approach to addressing risk in its two step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than deemed acceptable.

Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than...
the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response, that are better suited for quantitative analysis.

Qualitative MSAT Analysis

For the Build Alternative in this EAW, the amount of MSAT emitted would be proportional to the average daily traffic, or ADT, assuming that other variables such as fleet mix are the same. The ADT estimated for the Build Alternative does not differ from that for the No Build Alternative, because the proposed project is intended to improve traffic flow on TH 23 during peak period traffic operation, and not influence regional travel patterns. Since no change in ADT is expected through the project corridor, or along parallel routes, no changes in MSAT emissions are expected compared to the No Build Alternative. There is a potential for lower MSAT emission rates due to increased speeds; according to EPA's MOVES2010b model, emissions of all of the priority MSAT decrease as speed increases. Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by over 80 percent between 2010 and 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

The passing lane sections contemplated as part of the project alternative will have the effect of moving some traffic closer to nearby homes; therefore, under each alternative there may be localized areas where ambient concentrations of MSAT could be higher under the Build Alternative than the No Build Alternative. The localized increases in MSAT concentrations would likely be most pronounced along the expanded roadway sections that would be built along TH 23. However, the magnitude and the duration of these potential increases compared to the No Build Alternative cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health impacts. In sum, when a highway is widened, the localized level of MSAT emissions for the Build Alternative could be higher relative to the No Build Alternative, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

c. Dust and odors – Describe sources, characteristics, duration, quantities, and intensity of dust and odors generated during project construction and operation. (Fugitive dust may be discussed under item 16a). Discuss the effect of dust and odors in the vicinity of the project including nearby sensitive receptors and quality of life. Identify measures that will be taken to minimize or mitigate the effects of dust and odors.

Dust generated during construction will be minimized through standard dust control measures such as applying water to exposed soils and limiting the extent and duration of exposed soil conditions. Construction contractors will be required to control dust and other airborne particulates in accordance with MnDOT specification in place at the time of project construction. After construction is complete, dust levels are anticipated to be minimal
because all soil surfaces exposed during construction would be in permanent cover (i.e., paved or re-vegetated areas).

**Question #17: Noise**

Describe sources, characteristics, duration, quantities, and intensity of noise generated during project construction and operation. Discuss the effect of noise in the vicinity of the project including 1) existing noise levels/sources in the area, 2) nearby sensitive receptors, 3) conformance to state noise standards, and 4) quality of life. Identify measures that will be taken to minimize or mitigate the effects of noise.

**Noise During Construction**

The construction activities associated with implementation of the proposed project will result in increased noise levels relative to existing conditions. These impacts will primarily be associated with construction equipment.

Table 7 shows peak noise levels monitored at 50 feet from various types of construction equipment. This equipment is primarily associated with site grading/site preparation, which is generally the roadway construction phase associated with the greatest noise levels.

<table>
<thead>
<tr>
<th>Equipment Type</th>
<th>Manufacturers Sampled</th>
<th>Total Number of Models in Sample</th>
<th>Peak Noise Level (dBA)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Range</td>
</tr>
<tr>
<td>Backhoes</td>
<td>5</td>
<td>6</td>
<td>74-92</td>
</tr>
<tr>
<td>Front Loaders</td>
<td>5</td>
<td>30</td>
<td>75-96</td>
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<tr>
<td>Dozers</td>
<td>8</td>
<td>41</td>
<td>65-95</td>
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<tr>
<td>Graders</td>
<td>3</td>
<td>15</td>
<td>72-92</td>
</tr>
<tr>
<td>Scrapers</td>
<td>2</td>
<td>27</td>
<td>76-98</td>
</tr>
<tr>
<td>Pile Drivers</td>
<td>N/A</td>
<td>N/A</td>
<td>95-105</td>
</tr>
</tbody>
</table>

Source: United States Environmental Protection Agency and Federal Highway Administration

Elevated noise levels are, to a degree, unavoidable for this type of project. MnDOT will require that construction equipment be properly muffled and in proper working order. While MnDOT and its contractor(s) are exempt from local noise ordinances, it is the practice to require contractor(s) to comply with applicable local noise restrictions and ordinances to the extent that is reasonable. Advanced notice will be provided to affected communities for any abnormally loud construction activities. It is anticipated that nighttime construction may be required to minimize traffic impacts and to improve safety. However, construction will be limited to daytime hours as much as possible. This project is expected to be under construction for one construction season.

Any associated high-impact equipment noise, such as pavement sawing, or jack hammering, will be unavoidable with construction of the proposed project. High-impact noise construction activities will be limited in duration to the greatest extent possible. The use of jack hammers, and pavement sawing equipment will be prohibited during nighttime hours.

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27 The Minnesota Pollution Control Agency (MPCA) defines daytime hours as from 7:00 a.m. to 10:00 p.m. and nighttime hours as from 10:00 p.m. to 7:00 a.m. (Minnesota Rules 7030.0020 Subp. 10).
Traffic Noise Analysis

This project is a federal Type 1 noise project requiring a traffic noise analysis. The following is a summary of the Traffic Noise Analysis Report for the proposed project. See Appendix H, the Traffic Noise Analysis Report in this EAW document for the entire text of the Traffic Noise Analysis Report. This report includes background information on noise, information regarding traffic noise regulations (i.e., federal traffic noise regulations [see Appendix H, Table 2: Federal Noise Abatement Criteria, page 3] and Minnesota noise standards [see Appendix H, Table 3: Minnesota State Noise Standards, page 4]), a discussion of the traffic noise analysis methodology, documentation of the potential traffic noise impacts associated with the proposed project, and an evaluation of noise abatement measures.

Summary of Traffic Noise Analysis

Federal and State Noise Regulations

The Federal Highway Administration’s (FHWA) traffic noise regulation is described in 23 Code of Federal Regulations (CFR) Part 772 (Procedures for Abatement of Highway Traffic Noise and Construction Noise). 23 CFR 772 requires the identification of highway traffic noise impacts and the evaluation of noise abatement measures, along with other considerations, in conjunction with the planning and design of a federal-aid highway project.

Under federal rules, traffic noise impacts are determined based on land use activities and predicted worst hourly L10 noise levels under future conditions [see Appendix H, Table 2: Federal Noise Abatement Criteria, page 3]. For example, for residential land uses (Activity Category B), the Federal Noise Abatement Criterion is 70 dBA (L10). Receptor locations where noise levels are “approaching” or exceeding the criterion level must be evaluated for noise abatement feasibility and reasonableness. In Minnesota, “approaching” is defined as 1 dBA or less below the Federal Noise Abatement Criteria. A noise impact is also defined as a “substantial increase” in the future modeled noise levels over the existing modeled noise levels. A “substantial increase” is defined as an increase of 5 dBA or greater from existing to future conditions.

In Minnesota, noise standards have been established for daytime and nighttime periods. The Minnesota Pollution Control Agency (MPCA) is the state agency responsible for enforcing state noise rules (see Appendix H, Table 3: Minnesota State Noise Standards, page 4). The MPCA defines daytime as 7:00 a.m. to 10:00 p.m. and nighttime as 10:00 p.m. to 7:00 a.m. The state noise standards for daytime and nighttime periods are based on land use activities.

28 23 CFR 772.5 (FHWA) defines a Type I project as follows:
(1) The construction of a highway on new location; or,
(2) The physical alteration of an existing highway where there is either:
   (i) Substantial Horizontal Alteration. A project that halves the distance between the traffic noise source and the closest receptor between the existing condition to the future build condition; or,
   (ii) Substantial Vertical Alteration. A project that removes shielding therefore exposing the line-of-sight between the receptor and the traffic noise source. This is done by either altering the vertical alignment of the highway or by altering the topography between the highway traffic noise source and the receptor; or,
(3) The addition of a through-traffic lane(s). This includes the addition of a through-traffic lane that functions as a HOV lane, High-Occupancy Toll (HOT) lane, bus lane, or truck climbing lane; or,
(4) The addition of an auxiliary lane, except for when the auxiliary lane is a turn lane; or,
(5) The addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange; or,
(6) Restriping existing pavement for the purpose of adding a through-traffic lane or an auxiliary lane; or,
(7) The addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot or toll plaza.
(8) If a project is determined to be a Type I project under this definition, then the entire project area as defined in the environmental document is a Type I project.
such as residential uses, commercial uses, or industrial uses. Minnesota state noise standards apply to the outdoor environment (i.e., exterior noise levels). Because state noise standards apply to trunk highway facilities, they apply to this project.

**Traffic Noise Analysis Methodology**

Traffic noise impacts are evaluated by modeling the traffic noise levels during the hours of the day and/or night that have the loudest traffic scenario. Traffic noise modeling uses existing and forecast traffic volumes, as well as characteristics of the roadway and surrounding environment, to predict traffic noise levels at representative receptor locations. Modeled traffic noise levels at receptor locations along a project corridor are then compared to state daytime and nighttime standards. If modeled traffic noise levels are projected to exceed state daytime and/or nighttime standards with the future Build Alternative, then an impact is identified and noise abatement measures (e.g., noise barriers) are considered.

For this project, it is important to note that all proposed passing lane sites were monitored, but not all were modeled. Compared to modeling, noise level monitoring documents actual existing noise levels captured at specific times. Daytime noise levels were monitored at all eleven monitoring locations. However, four of the locations had no receptors present so no additional modeling was performed.

Traffic noise levels were modeled for existing (2013) conditions, the future (2040) No Build Alternative, and the future (2040) Build Alternative using the “MINNOISEV31” model, a version of the FHWA “STAMINA” model adapted by MnDOT. Traffic noise levels were modeled at 9 representative receptor locations along the TH 23 proposed project corridor sections. These modeled receptor locations represent residential, agricultural, and industrial land uses.

**Traffic Noise Analysis Results**

The traffic noise analysis concluded that construction of the proposed project would result in increases in traffic noise levels as compared to existing conditions. Daytime modeled noise levels are predicted to range from 55.4 dBA ($L_{10}$) to 66.0 dBA ($L_{10}$) and 46.7 dBA ($L_{50}$) to 57.5 dBA ($L_{50}$) with the future (2040) Build Alternative (see Appendix H, Table 6: Traffic Noise Model Results Daytime, beginning on page 14, for existing daytime and future noise levels). Nighttime modeled noise levels are predicted to range from 54.1 dBA ($L_{10}$) to 64.5 dBA ($L_{10}$) and 44.9 dBA ($L_{50}$) to 56.0 dBA ($L_{50}$) with the future (2040) Build Alternative (see Appendix H, Table 7: Traffic Noise Model Results Nighttime, beginning on page 15, for existing nighttime and future noise levels). Modeled noise levels are predicted to exceed state daytime $L_{10}$ standards at 0 of the 9 modeled receptor locations with the future Build Alternative, and are predicted to exceed state daytime $L_{50}$ standards at 0 of the 9 modeled receptor locations under the Build Alternative. Modeled noise levels are predicted to exceed state nighttime $L_{10}$ standards at 6 of the 9 modeled receptor locations with the future Build Alternative, and are predicted to exceed state nighttime $L_{50}$ standards at 5 of the 9 modeled receptor locations under the Build Alternative.

Modeled $L_{10}$ noise levels are not projected to approach or exceed the Federal Noise Abatement Criteria at any modeled receptor locations under any Activity Category with the future Build Alternative. None of the modeled receptor locations are projected to experience a substantial increase in traffic noise levels from existing conditions to the future Build Alternative.
Noise Abatement Measures

Noise abatement measures were evaluated along the proposed project corridor adjacent to receptor locations, where modeled traffic noise levels are projected to: 1) exceed state standards; 2) approach or exceed Federal Noise Abatement Criteria; or 3) increase substantially (i.e., increase by 5 dBA or greater from existing to future Build Alternative conditions).

Based on the traffic noise analysis, MnDOT is not proposing the construction of any highway traffic noise abatement measures throughout the length of the project corridor. The analysis indicates the construction of potential noise barriers would not meet feasibility and reasonability criteria outlined in Chapter 5 of the MnDOT Highway Noise Policy (Analysis of Noise Abatement Measures). However, final noise abatement measures will be subject to final design considerations, potential impacts on the feasibility and reasonability criteria, and input from benefited residents and property owners.

Statement of Likelihood

The traffic noise analysis described above is based upon preliminary design studies completed to-date. Final mitigation decisions will be subject to final design considerations and the viewpoint of benefited residents and property owners. If it subsequently develops during the final design stage that conditions have substantially changed, noise abatement measures may not be provided. Affected benefited receptors and local officials will be notified of plans to eliminate or substantially modify a noise abatement measure prior to the final design process. This notification will explain any changes in site conditions, additional site information, any design changes implemented during the final design process, and noise barrier feasibility and reasonableness. A final decision regarding barrier installation will be made upon completion of the project’s final design and the public involvement process.

Question #18: Transportation

a. Describe traffic-related aspects of project construction and operation. Include: 1) existing and proposed additional parking spaces, 2) estimated total average daily traffic generated, 3) estimated maximum peak hour traffic generated and time of occurrence, 4) indicate source of trip generation rates used in the estimates, and 5) availability of transit and/or other alternative transportation modes.

Not Applicable – Traffic is not generated by the proposed project; rather, this project is proposed to accommodate future increases in traffic forecast for the area roadways.

b. Discuss the effect on traffic congestion on affected roads and describe any traffic improvements necessary. The analysis must discuss the project’s impact on the regional transportation system. If the peak hour traffic generated exceeds 250 vehicles or the total daily trips exceeds 2,500, a traffic impact study must be prepared as part of the EAW. Use the format and procedures described in the Minnesota Department of Transportation’s Access Management Manual, Chapter 5 (available at: http://www.dot.state.mn.us/accessmanagement/resources.html) or a similar local guidance.

Existing and Future Traffic Volumes
The existing (2013) average annual daily traffic (AADT) volumes along the TH 23 sections are listed in Table 8. The forecast year appropriate for this project is 2040. Traffic forecasts for the study area were developed as part of the *Highway 23 Passing Lane Assessment* (May 2014). The future AADTs are also summarized in Table 8.

### Table 8 – Existing and Future AADT

<table>
<thead>
<tr>
<th>Project Layout # (Segment29 #)</th>
<th>Existing AADT</th>
<th>2040 Future AADT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (6)</td>
<td>2,900</td>
<td>3,300</td>
</tr>
<tr>
<td>2 (12/13)</td>
<td>4,700 – 5,900</td>
<td>6,400 – 7,400</td>
</tr>
<tr>
<td>3 (2)</td>
<td>3,000</td>
<td>4,500</td>
</tr>
<tr>
<td>4 (8/9)</td>
<td>3,950 – 3,600</td>
<td>4,800 – 5,100</td>
</tr>
<tr>
<td>5 (12)</td>
<td>4,700</td>
<td>6,400</td>
</tr>
<tr>
<td>6 (3)</td>
<td>2,900</td>
<td>3,400</td>
</tr>
</tbody>
</table>

Source: *Highway 23 Passing Lane Assessment* (May 2014).

Providing the proposed passing opportunities and turning lanes should enhance highway safety and mobility by reducing pressure for traffic to make high-risk passes when traveling behind slower moving vehicles, commercial trucks and recreation traffic.

### Crash History

Historical crash data was collected for each corridor segment along the TH 23 corridor during the preparation of the *Highway 23 Passing Lane Assessment* (May 2014) for a five-year period from 2009-2013 using the MnCMAT crash mapping and analysis tool. Table 9 summarizes the segment crash data for the corridor by each level of severity reported.

### Table 9 – Segment Crash Data (2009-2013)

<table>
<thead>
<tr>
<th>Project Layout # (Segment #)</th>
<th>Crash Rates – All Crashes</th>
<th>Crashes</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Expected Crash Rate*</td>
<td>Actual Crash Rate</td>
<td>Critical Crash Rate</td>
</tr>
<tr>
<td>1 (6)</td>
<td>0.6</td>
<td>0.40</td>
<td>1.11</td>
</tr>
<tr>
<td>2 (12)</td>
<td>0.6</td>
<td>0.37</td>
<td>0.99</td>
</tr>
<tr>
<td>2 (13)</td>
<td>0.7</td>
<td>0.46</td>
<td>1.01</td>
</tr>
<tr>
<td>3 (2)</td>
<td>0.6</td>
<td>0.50</td>
<td>1.01</td>
</tr>
<tr>
<td>4 (8)</td>
<td>0.6</td>
<td>0.27</td>
<td>1.04</td>
</tr>
<tr>
<td>4 (9)</td>
<td>0.6</td>
<td>0.87</td>
<td>1.10</td>
</tr>
<tr>
<td>5 (12)</td>
<td>0.6</td>
<td>0.37</td>
<td>0.99</td>
</tr>
<tr>
<td>6 (3)</td>
<td>0.6</td>
<td>0.43</td>
<td>1.07</td>
</tr>
</tbody>
</table>

Source: *Highway 23 Passing Lane Assessment* (May 2014).

Notes: 2009-2013 MnCMAT Crash Data (Feb 2014); K = fatal, A = Incapacitating, B = Non-incapacitating; C = Possible incapacitating, PD = Property damage

* Expected rates from MnDOT’s 2011 Segment Green Sheets (Willmar)

Crash Rate < Expected Crash Rate

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29 The accompanying use of the term "Segment" refers to passing lane identification in the *Highway 23 Passing Lane Assessment (I-90 to Willmar, MN)* dated May 16, 2014.
Except for the eastbound passing lane of Project Layout 4, all passing lane locations had actual crash rates below both the expected crash rate and the critical crash rate. The eastbound passing lane of Project Layout 4 had an actual crash rate above the expected crash rate but below the critical crash rate. Critical crash rates are considered good measures of overall safety performance. All locations had actual crash rates below their respective critical crash rates from 2009-2013.

**System Capacity Analysis**

Existing and future capacity was calculated for the project area using the Highway Capacity Software 2010 (HCS), which is described in the *Highway 23 Passing Lane Assessment* (May 2014). A summary of the system capacity analysis for Existing 2014 and Future 2040 Build conditions is provided in Table 10.

<table>
<thead>
<tr>
<th>Layout # (Segment #)</th>
<th>Peak Hour</th>
<th>Travel Direction</th>
<th>Existing 2014 Conditions</th>
<th>Future 2040 Build Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Average Travel Speed (mph)</td>
<td>Percent Time-Spent Following</td>
</tr>
<tr>
<td>1 (6) AM</td>
<td>NB</td>
<td>60.8</td>
<td>20.9</td>
<td>61.0</td>
</tr>
<tr>
<td></td>
<td>SB</td>
<td>60.8</td>
<td>21.8</td>
<td>60.9</td>
</tr>
<tr>
<td>2 (12/13) PM</td>
<td>NB</td>
<td>58.1</td>
<td>34.9</td>
<td>58.1</td>
</tr>
<tr>
<td></td>
<td>SB</td>
<td>58.5</td>
<td>38.5</td>
<td>58.4</td>
</tr>
<tr>
<td>3 (2) PM</td>
<td>NB</td>
<td>60.4</td>
<td>26.5</td>
<td>59.4</td>
</tr>
<tr>
<td></td>
<td>SB</td>
<td>60.3</td>
<td>21.7</td>
<td>59.7</td>
</tr>
<tr>
<td>4 (8) PM</td>
<td>NB</td>
<td>59.6</td>
<td>30.8</td>
<td>59.6</td>
</tr>
<tr>
<td></td>
<td>SB</td>
<td>59.3</td>
<td>24.8</td>
<td>59.6</td>
</tr>
<tr>
<td>4 (9) PM</td>
<td>NB</td>
<td>60.1</td>
<td>27.4</td>
<td>59.6</td>
</tr>
<tr>
<td></td>
<td>SB</td>
<td>59.9</td>
<td>24.0</td>
<td>59.6</td>
</tr>
<tr>
<td>5 (12) PM</td>
<td>NB</td>
<td>58.0</td>
<td>34.2</td>
<td>58.0</td>
</tr>
<tr>
<td></td>
<td>SB</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>6 (3) PM</td>
<td>NB</td>
<td>61.1</td>
<td>26.2</td>
<td>61.3</td>
</tr>
<tr>
<td></td>
<td>SB</td>
<td>60.6</td>
<td>18.4</td>
<td>60.7</td>
</tr>
</tbody>
</table>

**Source:** *Highway 23 Passing Lane Assessment* (May 2014).

**c.** Identify measures that will be taken to minimize or mitigate project related transportation effects.

Not applicable.

**Question #19: Cumulative Potential Effects**

(Preparers can leave this item blank if cumulative potential effects are addressed under the applicable EAW Items)
a. Describe the geographic scales and timeframes of the project related environmental effects that could combine with other environmental effects resulting in cumulative potential effects.

Cumulative effects are defined as “the impact on the environment which result from the incremental impact of the action when added to other past, present, and reasonable foreseeable future actions regardless of what agency or persons undertakes such actions.”

The geographic areas considered are those areas directly adjacent to TH 23 and near the project layouts, and the timeframe of the next few years. The project impacts described herein for the TH 23 project include impacts to increased impervious surfaces and therefore increased stormwater runoff, potential affects to wetlands, and increased traffic noise.

Any railway-highway crossing closures are not expected to contribute to cumulative potential effects.

b. Describe any reasonably foreseeable future projects (for which a basis of expectation has been laid) that may interact with environmental effects of the proposed project within the geographic scales and timeframes identified above.

Future Actions Anticipated

Projects noted below were considered as future actions in this analysis and are consistent with the recent Minnesota State Supreme Court Ruling regarding cumulative potential effects. The projects: 1) are being constructed, or are planned, or are projects for which a basis of expectation has been laid; 2) are located in the surrounding area; and 3) might reasonably be expected to affect the same natural resources.

There are two future TH 23 roadway projects to consider within the surrounding area.

- A bituminous overlay project on TH 23 from Clara City to Willmar is currently scheduled for FY 2017 (SP 3405-89, Sequence 1388).
- A mill and concrete overlay project on TH 23 from Cottonwood to Granite Falls is tentatively scheduled for FY 2020. This project is outside of the four-year STIP and is subject to schedule changes.

In addition, three rail crossings within the project area have been identified as crossing closure candidates. Actions are being taken to pursue crossing closures at these locations. As a result of the roadway widening for proposed passing lanes, storage distance between the roadway and railroad tracks is lessened, potentially creating a less safe condition. See below for additional crossing information.

- 71st Street at TH 23 (Project Layout 3, WB passing lane): Near Ihlen, MN; MP 108.70 (USDOT 097931J)
- 160th Avenue SE at TH 23 (Project Layout 2, WB passing lane): Near Clara City, MN; MP 13.26 (USDOT 082465L)
- 160th Avenue at TH 23 (Project Layout 4, WB passing lane): Near Cottonwood, MN: MP 48.31 (USDOT 082388N)

c. Discuss the nature of the cumulative potential effects and summarize any other
available information relevant to determining whether there is potential for significant environmental effects due to these cumulative effects.

The projects described in Question 19.b above are not anticipated to contribute to cumulative effects on stormwater, wetlands, traffic noise, or other environmental considerations. The roadway improvement projects are not capacity expansions and have a primary purpose to improve pavement quality. As a result, they are not anticipated to result in substantial cumulative impacts. The three potential rail crossing closures would result in altered traffic patterns because of closed roadway access, resulting in increased traffic on adjacent roadways.

The potential impacts to resources identified can be avoided or minimized through existing regulatory controls such as permits and land use ordinances. During the development of this EAW, no potentially significant cumulative impacts to the resources affected by the project have been identified.

**Question #20: Other Potential Environmental Impacts**

If the project may cause any adverse environmental impacts not addressed by items 1 to 28, identify and discuss them here, along with any proposed mitigation.

**MnDOT Office of Aeronautics Review**

Coordination of construction projects within an Airport Influence Area is essential to prevent height hazards in the path of approaching and departing aircraft. MnDOT guidance suggests that projects located within five miles of a public airport contact the MnDOT Office of Aeronautics. The MnDOT Office of Aeronautics was contacted and project materials were provided to staff for review and comment. It was determined that the proposed project will have no substantial effect to the operations at either the Granite Falls or Pipestone airports.

**MnDOT Bicycle and Pedestrian Section**

The MnDOT Bicycle and Pedestrian Section was contacted to provide review and comments. Bicycle and pedestrian travel will be impacted during construction. An alternate route and detour notification should be provided to ensure bicycle and pedestrian travel is fully accommodated during construction.

To minimize bicycle and pedestrian impacts, design considerations should include maintaining a minimum 6 feet shoulder width for non-motorized travel, avoiding placement of passing lanes on bridges, and proper placement of rumble strips/stripEs.
RGU Certification

The Environmental Quality Board will only accept SIGNED Environmental Assessment Worksheets for public notice in the EQB Monitor.

I hereby certify that:

- The information contained in this document is accurate and complete to the best of my knowledge.
- The EAW describes the complete project; there are no other projects, stages or components other than those described in this document, which are related to the project as connected actions or phased actions, as defined at Minnesota Rules, parts 4410.0200, subparts 9b and 60, respectively.
- Copies of this EAW are being sent to the entire EQB distribution list.

Name and Title of Signer:

Lynn Clarkowski, PE
MnDOT Chief Environmental Officer
Director, Office of Environmental Stewardship

Date:

Feb 4, 2015

Environmental Assessment Worksheet was prepared by the staff of the Environmental Quality Board at Minnesota Planning. For additional information, worksheets or for EAW Guidelines, contact: Environmental Quality Board, 658 Cedar St., St. Paul, MN 55155, 651-296-8253, or www.mnplan.state.mn.us.